Mahidol University
International College

GENERAL CATALOG

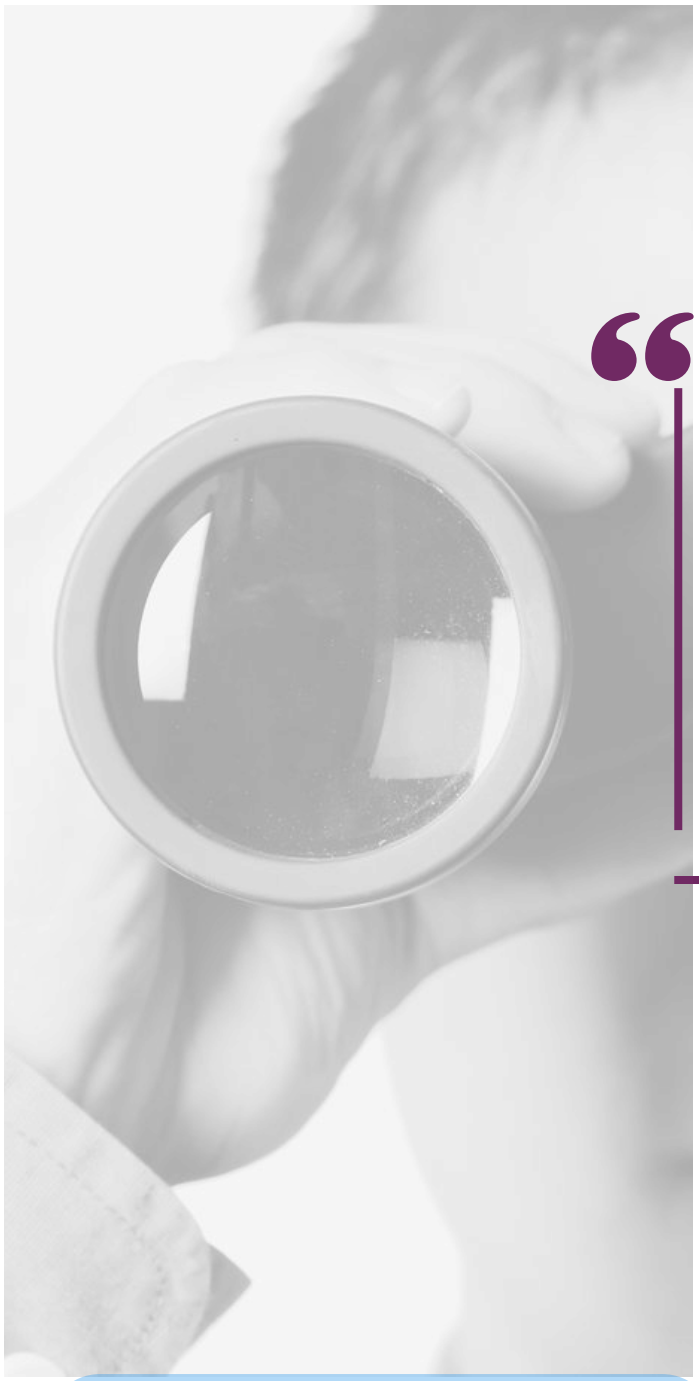
2026 - 2027



Prepared for :

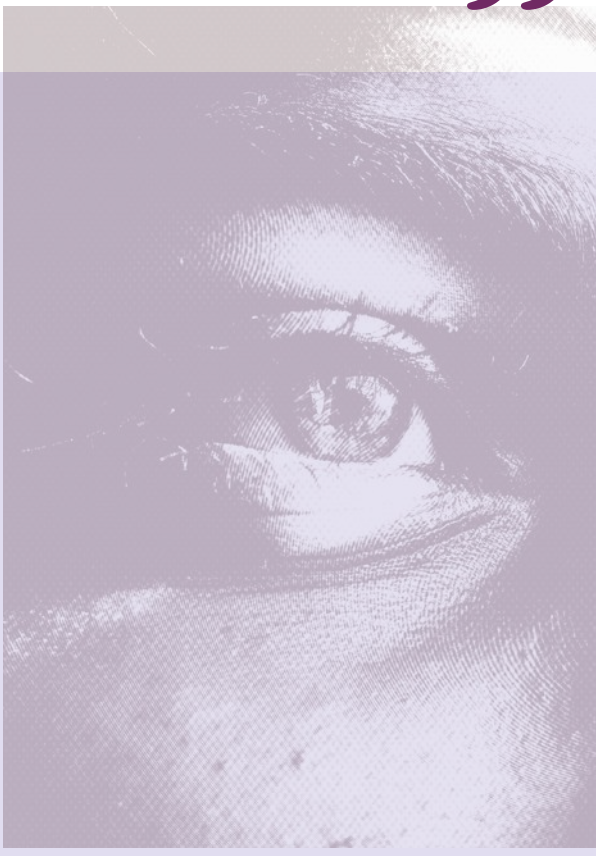
Students ID 69xxxx

as of November 16th,2026



VISION

MUIC inspires innovation, fosters human potential, and creates new knowledge through the integration of arts and sciences in an international environment, ultimately resulting in education, research, and services to serve the needs of society and benefit humankind.



MISSION

Enriching lives.
Expanding potentials.
Shaping futures.

MUIC

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BUSINESS



Business Economics

Degree Offered:

Bachelor of Business Administration (Business Economics)

B.B.A. (Business Economics)

Program Goal :

The main goal of the BBA program in Business Economics is to produce graduates who acquire desired characteristics of MU graduates (T-shaped bread & depth, Globally talented, Socially contributing, and Entrepreneurially minded) and possess entrepreneurial- and sustainability-mindset. Graduates are also able to pursue a career as Economic consultants and/or Policy advisors who devise strategic solutions for business and policy challenges based on economic foundations and data analysis.

Program Objectives :

1. To produce graduates who possess leadership, communication, and collaboration skills acquired through practical and theoretical learning, empowering them to enhance their performance through diversity awareness.
2. To produce graduates who are capable of analyzing problems, evaluating information critically, and making informed decisions by utilizing information technology within the realm of economics and business.
3. To produce graduates who possess the knowledge and skills to identify and pursue business opportunities, thus fostering innovation and creativity, while embracing life-long learning.
4. To produce graduates who understand ethical principles, are aware of sustainable business practices, and consider environmental, social, and economic impacts in decision-making processes.
5. To produce graduates who are proficient in management skills, enabling them to effectively plan, organize, assess changes, and control various aspects of business operations in both domestic and international contexts.
6. To produce Economic consultants and/or Policy advisors with an ability to integrate stakeholders' perspectives and economic theories, assess macroeconomic impacts, and use quantitative models to enhance decision-making and forecast trends in diverse business scenarios. Additionally, they are able to communicate their ideas effectively, demonstrating professionalism.

Curriculum Structure

Courses	Credit
Foundation Courses	Non-credit
General Education	No less than 30
Core Courses	68
Major Required Courses	20
Major Elective Courses	16
Practical Training Courses	8
I-Design Elective Courses	No less than 20
Free Elective Courses	No less than 8
TOTAL	**No less than 170**

COURSE LIST

Foundation Courses	**Non-credit**
ICMA 100 Foundation Mathematics	0 (4-0-0)
ICMA 101 Precalculus	0 (4-0-0)
ICME 101 Foundation English: Communication Skills	0 (4-0-0)

Note I:

- For B.B.A. students, students whose Mathematics placement is below ICMB 151 Business Mathematics are required to take ICMA 100 Foundation Mathematics and pass the course with the grade of "S" before moving to ICMB 151 Business Mathematics.
- For B.Sc. and B.Eng. students, students whose Mathematics placement is below ICMA 106 Calculus I and/or ICMA 151 Statistics for Science I are required to take ICMA 101 Precalculus and pass the course with the grade of "S" before moving to ICMA 106 Calculus I and/or ICMA 151 Statistics for Science I.
- For B.A.Sc. students, students whose Mathematics placement is below ICCT 101 Mathematics for Creative Technology I are required to take ICMA 101 Precalculus and pass the course with the grade of “S” before moving to ICCT 101 Mathematics for Creative Technology I.

Note II:

- Based on their achievement on the essay portion of the MUIC entrance exam, students whose English placement is below ICGC 104 English Studies I: The Writer's Toolkit will be placed into the

"FE Track". These students will be required to take ICME 101 Foundation English: Communication Skills and pass the course with the grade of "S" before moving to ICGC 104 English Studies I: The Writer's Toolkit.

General Education 30 Credits

General Education Group	GC2 Track*	FE and GC Track*
1. English Communication	10	14
2. GE Literacies	12	12
- MU Literacy	2	2
- Health Literacy	2	2
- Science and Environmental Literacy	2	2
- Intercultural and Global Awareness Literacy	2	2
- Civic Literacy	2	2
- Finance and Management Literacy	2	2
3. GE Electives	8	4
Total	**30**	**30**

** Students will be placed into specific tracks based on their achievement in the essay portion of the MUIC entrance exam.*

English Communication 10 – 14 Credits

ICGC 104 English Studies I: The Writer's Toolkit	4 (4-0-8)
ICGC 105 English Studies II: The Writer's Voice	4 (4-0-8)
ICGC 106 English Studies III: Public Speaking	4 (4-0-8)
ICGC 221 English Studies IV: The World of English - Global Realities	2 (2-0-4)
ICGC 222 English Studies IV: The World of English - Literary Analysis	2 (2-0-4)
ICGC 223 English Studies IV: The World of English - Creative Writing	2 (2-0-4)
ICGC 224 English Studies IV: The World of English - Advanced Oral Communication	2 (2-0-4)
ICGC 226 English Studies IV: The World of English - Literature Into Film	2 (2-0-4)
ICGC 228 English Studies IV: The World of English - Language and Culture	2 (2-0-4)
ICGC 230 English Studies IV: The World of English - First and Second Language Acquisition	2 (2-0-4)
ICGC 231 English Studies IV: The World of English – Poetry	2 (2-0-4)
ICGC 232 English Studies IV: The World of English - The Short Story and the Novel	2 (2-0-4)
ICGC 233 English Studies IV: The World of English – Drama	2 (2-0-4)

ICGC 234 English Studies IV: The World of English - Literary Non-fiction	2 (2-0-4)
ICGC 235 English Studies IV: The World of English - Writing for Research	2 (2-0-4)

Note I: Based on their achievement on the essay portion of the MUIC entrance exam, students will be placed into 3 following tracks: **'FE Track'**, **'GC Track'** and **'GC2 Track'**.

- **'FE Track'** – Students who are placed into 'FE Track' will be required to take ICME 101 (a non-credit course) and complete 14 credits in English Communication: ICGC 104, ICGC 105, ICGC 106 in order, and finally, any 200+ level English courses.
- **'GC Track'** – Students who are placed into 'GC Track' will be required to complete 14 credits in English Communication: ICGC 104, ICGC 105, ICGC 106 in order, and finally, any 200+ level English courses.
- **'GC2 Track'** – Students who are placed into 'GC2 Track' will be required to complete 10 credits in English Communication: ICGC 105, ICGC 106 in order, and finally, any 200+ level English courses.

GE Literacies — 12 Credits

Note I: Students must complete courses in the following six categories: MU Literacy, Health Literacy, Science & Environment Literacy, Intercultural & Global Awareness Literacy, and Finance & Management Literacy. Each category requires a minimum of 2 credits.

Note II: If a student selects a 4-credit course to fulfill a 2-credit literacy requirement, the excess 2 credits cannot be allocated or applied toward GE Elective or Free Elective credits. Instead, these excess credits will be entirely allocated to the literacy for which they were originally intended.

- **MU Literacy** — **2 Credits**

ICGB 101 Project Management for Impacts	2 (2-0-4)
ICGB 108 Event for Good	2 (2-0-4)
ICGN 139 Scientific Inquiry and the Community	2 (2-0-4)
ICGS 169 Learning by Doing	2 (2-0-4)
ICGS 171 Digital Campaign for Gender Issues	2 (2-0-4)
ICGS 172 Service Learning - Making Change	4 (4-0-8)
ICGS 173 Service Learning - Campaigning for a Cause	4 (4-0-8)

ICGS 175 Social Innovation and Sustainability	2 (2-0-4)
ICGS 176 Sustainable Cooking	2 (2-0-4)
ICGS 177 Social Innovation: Empowering Sustainable Communities	2 (2-0-4)
ICGT 107 Innovation: Inside Out	2 (2-0-4)

- **Health Literacy** **2 Credits**

ICGH 136 Sound & Soul: A Journey of Music, Emotion, and Well-being	2 (2-0-4)
ICGH 143 Flowers and Fragrances for Health	2 (2-0-4)
ICGN 135 Personal Health and Well-being	2 (2-0-4)
ICGP 101 American Flag Football	1 (0-2-1)
ICGP 102 Badminton	1 (0-2-1)
ICGP 103 Basketball	1 (0-2-1)
ICGP 104 Body Fitness	1 (0-2-1)
ICGP 105 Cycling	1 (0-2-1)
ICGP 106 Discover Dance	1 (0-2-1)
ICGP 107 Golf	1 (0-2-1)
ICGP 108 Mind and Body	1 (0-2-1)
ICGP 109 Selected Topics in Sports	1 (0-2-1)
ICGP 110 Self Defense (Striking)	1 (0-2-1)
ICGP 111 Self Defense (Grappling)	1 (0-2-1)
ICGP 112 Soccer	1 (0-2-1)
ICGP 113 Social Dance	1 (0-2-1)
ICGP 114 Swimming	1 (0-2-1)
ICGP 115 Tennis	1 (0-2-1)
ICGP 116 Volleyball	1 (0-2-1)
ICGP 118 Health and Wellness	2 (2-0-4)
ICGP 119 Mindful Food and Well-being	2 (2-0-4)
ICGP 120 Mind and Body: Navigating the Interplay of Brain, Behavior, and Well-being	2 (2-0-4)
ICGS 121 Abnormal Colleagues: how do I make this work?	4 (4-0-8)
ICGS 155 Pathway to Purpose: Life Design and Self-Exploration	4 (4-0-8)
ICGS 164 Positive Psychology	2 (2-0-4)
ICGS 178 Unmasking Human Behaviour: Exploring Psychological Truths about Behaviour	2 (2-0-4)
ICGS 179 Health and Society	2 (2-0-4)

ICLL 100 Self Development	2 (2-0-4)

- **Science & Environment Literacy** **2 Credits**

ICGH 131 Unraveling the Anthropocene: A Philosophical Critique of Earth's Shifts and Humanity's Roles	2 (2-0-4)
ICGH 142 Fantasy Literature's Environmental Message	2 (2-0-4)
ICGH 144 A Candle in the Dark: How to Tell Fact from Fiction	2 (2-0-4)
ICGN 105 Ecology, Ecosystems and Socio-Economics in Southeast Asia	4 (3-2-7)
ICGN 107 The Chemistry of Everyday Life	4 (4-0-8)
ICGN 108 Essentials of Culinary Science for Food Business	4 (3-2-7)
ICGN 111 Physics for CEO	4 (4-0-8)
ICGN 113 Plants, People and Poisons	4 (4-0-8)
ICGN 114 The Scientific Approach and Society	4 (4-0-8)
ICGN 115 Human Evolution, Diversity and Health	4 (4-0-8)
ICGN 116 Understanding and Visualizing Data	4 (3-2-7)
ICGN 119 Computer Essentials	4 (4-0-8)
ICGN 123 The Earth's Dynamic Structure	4 (3-2-7)
ICGN 124 Climate Change and Human Society	4 (3-2-7)
ICGN 126 Plant Society	2 (2-0-4)
ICGN 127 Practical Mathematics	2 (2-0-4)
ICGN 128 Climate Emergency, Biodiversity Crisis, and Humanity at Risk	2 (1-2-3)
ICGN 129 Programming for Problem Solving	4 (4-0-8)
ICGN 130 Cryptography: The Science of Making and Breaking Codes	2 (2-0-4)
ICGN 134 Introduction to Artificial Intelligence	2 (2-0-4)
ICGN 136 Creator Workshop	2 (2-0-4)
ICGN 137 Star Wanderer	2 (2-0-4)
ICGN 138 Cosmetics Chemistry	2 (2-0-4)
ICGN 140 Food Energy for Health	2 (2-0-4)
ICGN 141 Life in the Sea	2 (1-2-3)
ICGN 142 Energy and the Environment	2 (2-0-4)
ICGN 143 Gaia: Life on Earth	2 (1-2-3)
ICGT 101 Technology-Enhanced Learning: Harnessing AI & Digital Tools for Academic Success	2 (2-0-4)
ICGT 102 Digital Document Management	2 (2-0-4)
ICGT 103 Computational Thinking	2 (2-0-4)
ICGT 104 Tell a Great Story with Data	2 (2-0-4)

ICGT 105 No-Code Application Development	2 (2-0-4)
ICGT 106 Data and Spreadsheets	2 (2-0-4)
ICLL 102 Skills for a Digital World	2 (2-0-4)

- **Intercultural & Global Awareness Literacy** **2 Credits**

ICGH 107 Contemporary Art and Visual Culture	4 (4-0-8)
ICGH 109 Creative Thinking Through Art and Design	4 (2-4-6)
ICGH 110 Drawing as Visual Analysis	4 (2-4-6)
ICGH 115 Cinematic Language and Applications	4 (4-0-8)
ICGH 116 World Cinemas	4 (4-0-8)
ICGH 117 Drawing as Creative Expression	4 (2-4-6)
ICGH 118 Photography Visualizing in the Digital Age	4 (2-4-6)
ICGH 120 Thai and ASEAN Cinema	4 (4-0-8)
ICGH 124 Life Drawing and Anatomy	4 (2-4-6)
ICGH 128 Internet Celebrity, Culture and the Media	4 (4-0-8)
ICGH 130 The Logic Lab: Crafting Coherent Arguments	2 (2-0-4)
ICGH 132 The Rise and Fall of Ancient Athens	2 (2-0-4)
ICGH 135 The Horror Film	2 (2-0-4)
ICGH 137 Apocalypse Now, or Never, or Maybe?	2 (2-0–4)
ICGH 139 Spirituality, Sustainability, Ecosystems	2 (2-0-4)
ICGH 141 SPQR—Glimpses of Rome	2 (2-0-4)
ICGH 145 Essentials to Photography, Skills and Practices	2 (2-0-4)
ICGH 146 Acting for Self-Discovery and Empathizing with Others	2 (2-0-4)
ICGH 147 Myth and the Masks of the Divine	2 (2-0-4)
ICGH 148 Quest for Global Justice: A Philosophical Inquiry	2 (2-0-4)
ICGL 101 Elementary German I	4 (4-0-8)
ICGL 102 Elementary German II	4 (4-0-8)
ICGL 103 Elementary German III	4 (4-0-8)
ICGL 111 Elementary Japanese I	4 (4-0-8)
ICGL 112 Elementary Japanese II	4 (4-0-8)
ICGL 113 Elementary Japanese III	4 (4-0-8)
ICGL 121 Elementary French I	4 (4-0-8)
ICGL 122 Elementary French II	4 (4-0-8)
ICGL 123 Elementary French III	4 (4-0-8)

ICGL 131 Elementary Chinese I	4 (4-0-8)
ICGL 132 Elementary Chinese II	4 (4-0-8)
ICGL 133 Elementary Chinese III	4 (4-0-8)
ICGL 141 Elementary Spanish I	4 (4-0-8)
ICGL 142 Elementary Spanish II	4 (4-0-8)
ICGL 143 Elementary Spanish III	4 (4-0-8)
ICGL 160 Introduction to Thai Language and Culture	4 (4-0-8)
ICGL 161 Elementary Thai I	4 (4-0-8)
ICGL 162 Elementary Thai II	4 (4-0-8)
ICGL 163 Elementary Thai III	4 (4-0-8)
ICGL 164 Thai Writing for Specific Purposes in Workplace *for native Thai students	2 (2-0-4)
ICGL 171 Diversities in Multilingual Societies	2 (2-0-4)
ICGL 172 Chinese Influence in Thai Society	2 (2-0-4)
ICGL 173 Introduction to Japanese Societies	2 (2-0-4)
ICGL 174 From Siesta to Fiesta: Introduction to Spanish and Latin American Culture	2 (2-0-4)
ICGL 201 Pre-Intermediate German I	4 (4-0-8)
ICGL 202 Pre-Intermediate German II	4 (4-0-8)
ICGL 203 Pre-Intermediate German III	4 (4-0-8)
ICGL 211 Pre-Intermediate Japanese I	4 (4-0-8)
ICGL 212 Pre-Intermediate Japanese II	4 (4-0-8)
ICGL 213 Pre-Intermediate Japanese III	4 (4-0-8)
ICGL 221 Pre-intermediate French I	4 (4-0-8)
ICGL 222 Pre-intermediate French II	4 (4-0-8)
ICGL 223 Pre-intermediate French III	4 (4-0-8)
ICGL 231 Pre-Intermediate Chinese I	4 (4-0-8)
ICGL 232 Pre-Intermediate Chinese II	4 (4-0-8)
ICGL 233 Pre-Intermediate Chinese III	4 (4-0-8)
ICGL 241 Pre-Intermediate Spanish I	4 (4-0-8)
ICGL 242 Pre-Intermediate Spanish II	4 (4-0-8)
ICGL 243 Pre-Intermediate Spanish III	4 (4-0-8)
ICGN 125 Games and Learning	2 (2-0-4)
ICGS 112 Geography of Human Activities	4 (4-0-8)
ICGS 128 Global Gastronomy and Cuisines	4 (4-0-8)
ICGS 131 Introduction to International Studies	4 (4-0-8)

ICGS 132 Career Preparation in a Globalized World	4 (4-0-8)
ICGS 133 Foundation of Mediterranean Cultures	4 (4-0-8)
ICGS 137 Witchcraft and Gender Representation	4 (4-0-8)
ICGS 143 Introduction to Air Transport and Tourism	4 (4-0-8)
ICGS 156 Fashion and Society	2 (2-0-4)
ICGS 157 Asian Religious Traditions	2 (2-0-4)
ICGS 159 The Self and Modern Media	2 (2-0-4)
ICGS 161 Skills in Dealing with People Across Cultures	2 (2-0-4)
ICGS 162 Arts, Culture and Tourism Development	2 (2-0-4)
ICGS 165 Tea Studies	2 (2-0-4)
ICGS 167 Coffee Studies	2 (2-0-4)
ICGS 168 Faith a Lifestyle	2 (2-0-4)
ICGS 180 Cafe Story and Slow food	2 (2-0-4)
ICGS 181 Cuisine and Culture	2 (2-0-4)
ICGS 182 Humor Horizons	2 (2-0-4)

- **Civic Literacy** **2 Credits**

ICGH 126 Behavioral Ethics: Why Good People Do Bad Things	2 (2-0-4)
ICGH 129 Searching for Meaning	2 (2-0-4)
ICGH 133 Socrates, His Predecessors and Successors	2 (2-0-4)
ICGH 134 Digital Media Literacy: Skills for 21st Century Learning	2 (2-0-4)
ICGH 138 The Philosophies of Asia	2 (2-0-4)
ICGH 140 Ethics and Evolution	2 (2-0-4)
ICGH 149 Law, Technology, and Society	2 (2-0-4)
ICGH 150 Global Perspectives on Free Expression in the Digital Age	2 (2-0-4)
ICGN 131 Digital Search Literacy	2 (2-0-4)
ICGN 132 Digital Security and Privacy	2 (2-0-4)
ICGN 144 Environmental Ethics	2 (2-0-4)
ICGN 145 Food Integrity and Food Fraud: When a Food Product Is Not What It Seems	2 (2-0-4)
ICGS 134 Is Democracy Good?	4 (4-0-8)
ICGS 136 Social and Health Issues in Thailand	4 (3-2-7)
ICGS 140 Fake News, Censorship and the Politics of Truth	4 (4-0-8)
ICGS 147 Women in Leadership	4 (4-0-8)
ICGS 158 Contemporary Issues in Thailand	2 (2-0-4)

ICGS 160 Self and Society	2 (2-0-4)
ICGS 163 Popular Media and Conflicts	2 (2-0-4)
ICGS 166 Power and Politics	2 (2-0-4)
ICGS 170 Civic Action in Thailand	2 (2-0-4)
ICGS 183 Media and Community	2 (2-0-4)

- **Finance & Management Literacy** **2 Credits**

ICGB 102 Navigating the Market Landscape	2 (2-0-4)
ICGB 103 Decoding Economic News	2 (2-0-4)
ICGB 104 Entrepreneurship in a Disruptive Environment	2 (2-0-4)
ICGB 105 Personal Finance Literacy	2 (2-0-4)
ICGB 106 The Business of Fashion	2 (2-0-4)
ICGB 107 Tourism Management Perspectives	2 (2-0-4)
ICGB 109 Business Event Essentials	2 (2-0-4)
ICGB 110 Management Styles of Effective Leaders	2 (2-0-4)
ICGB 111 Leadership in a Global Society	2 (2-0-4)
ICGB 112 The Art of Pricing	2 (2-0-4)
ICGB 113 Crisis Management in Service Businesses	2 (2-0-4)
ICGB 114 Cultural Strategies for Success: Unveiling Eastern Business Dynamics	2 (2-0-4)
ICGB 115 Money: Deciphering Currencies of Value	2 (2-0-4)
ICGB 116 Managing Self and Working with Others	2 (2-0-4)
ICGH 101 Biotechnology: from Science to Business	4 (4-0-8)
ICGS 102 Business Sustainability and the Global Climate Change	4 (4-0-8)
ICGS 135 Entrepreneurial Accounting	4 (4-0-8)
ICGS 153 Social Media Management for Service Sector	2 (2-0-4)
ICGS 174 The Art of Leadership in Practice: Inspiration	2 (2-0-4)
ICGS 184 Healthy Habits, Happy Shoppers: Exploring Health Literacy in Consumer Decisions	2 (2-0-4)
ICLL 101 Professional Development	2 (2-0-4)

General Education Elective Courses 4-8 Credits

Students need to take remaining courses in any GE category to fulfill their 30 credits requirement of GE: 4 credits for students whose English Communication track are placed into ‘FE track’ or ‘GC Track’ and 8 credits for students whose English Communication track are placed into ‘GC2 Track’. Partial credits of GE course that exceed the GE requirements cannot be counted towards Free Electives.

Specific Courses — no less than 112 Credits

Core Courses — 68 Credits

ICMB 150 Introduction to Programming and Business Applications	2 (2-0-4)
ICMB 151 Business Mathematics	2 (2-0-4)
ICMB 152 Business Statistics	4 (4-0-8)
ICMB 253 Microeconomics	4 (4-0-8)
ICMB 254 Macroeconomics	4 (4-0-8)
ICMB 255 Management of Business Information	4 (4-0-8)
ICMB 256 Principles of Financial Accounting	4 (4-0-8)
ICMB 257 Business Finance for Entrepreneurs	4 (4-0-8)
ICMB 258 Business Communication	4 (4-0-8)
ICMB 259 Principles of Marketing	4 (4-0-8)
ICMB 260 Management and Organizational Behavior	4 (4-0-8)
ICMB 261 Human Resources Management	4 (4-0-8)
ICMB 262 International Business Management	4 (4-0-8)
ICMB 350 Business Law	4 (4-0-8)
ICMB 351 Business Ethics and Sustainability	4 (4-0-8)
ICMB 352 Management Science	4 (4-0-8)
ICMB 353 Operations Management	4 (4-0-8)
ICMB 450 Strategic Management	4 (4-0-8)

Note I: Students are able to take BBA courses only if they have met the following requirements:

1. Passed ICGC 104 English Studies I: The Writer's Toolkit with “S” grade or being placed in the English course level higher than ICGC 104 English Studies I: The Writer's Toolkit.
2. Passed ICMA 100 Foundation Mathematics with “S” grade or the placement Test.

Note II: ICMB 450 Strategic Management is restricted for students who have completed at least 124 credits.

Major Required Courses — 20 Credits

ICBE 311 Economics of Competition	4 (4-0-8)
ICBE 312 World Economy	4 (4-0-8)
ICBE 313 Business Econometrics	4 (4-0-8)
ICBE 411 Economics of Innovation	4 (4-0-8)

ICBE 412 Economic Policy Analysis	4 (4-0-8)

Major Elective Courses	**16 Credits**
ICBE 321 Game Theory for Business	4 (4-0-8)
ICBE 322 Economics of Sustainability	4 (4-0-8)
ICBE 421 Data Analytics in Economics and Finance	4 (4-0-8)
ICBE 422 Time Series Analysis	4 (4-0-8)
ICMK 371 Consumer Insights - A Qualitative Approach	4 (4-0-8)
ICMF 331 Financial Management	4 (4-0-8)
ICBE 423 Special Topic in Business Economics	4 (4-0-8)

Practical Training Courses	**8 Credits**
ICMB 451 Practical Business Training – Off Campus	8 (0-40-8)
ICMB 452 Innovation, Entrepreneurship and New Business Development	8 (8-0-16)

Note I: All BBA students are required to take either ICMB 451 Practical Business Training – Off Campus or ICMB 452 Innovation, Entrepreneurship and New Business Development when they have completed at least 124 credits.

Note II: For ICMB 451 Practical Business Training – Off Campus, students are not allowed to register for other courses in the trimester unless approved by their respective Program Director.

I- Design Electives 20 Credits

The purpose of the I-Design electives is to promote multidisciplinary learning. Students are encouraged to explore courses offered by diverse disciplines across MUIC, Mahidol University, and partner institutions. The I-Design electives can be satisfied upon the completion of the following course categories:

1. **Minor courses** offered by any program in **MUIC**
2. **Certificate courses** offered by any program in **MUIC**
3. **Any major courses** offered by any program in **MUIC**
4. **Any major courses** offered in **Mahidol University** (including undergraduate and graduate level courses). Courses must be approved by the student's advisor.
5. **Any major courses** offered at **partner institutions** (who have MOU with Mahidol University and/or MUIC). Courses must be approved by the student's advisor.

Free Electives 8 Credits

Students can take any courses offered by MUIC / Mahidol University or any major courses offered by the partner institutions (with MOU) as free elective courses with the approval from the advisor.

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Finance

Degree Offered:

Bachelor of Business Administration (Finance)

B.B.A. (Finance)

Program Goal :

The main goal of the B.B.A. program in Finance is to produce graduates who acquire desired characteristics of MU graduates (T-shaped bread & depth, Globally talented, Socially contributing, and Entrepreneurially minded) and possess entrepreneurial- and sustainability-mindsets. Graduates will be equipped with a well-rounded skill set that combines traditional financial expertise with technological proficiency, ethical considerations, and adaptability to change.

Program Objectives :

1. To produce graduates who possess leadership, communication, and collaboration skills acquired through practical and theoretical learning, empowering them to enhance their performance through diversity awareness.
2. To produce graduates who are capable of analyzing problems, evaluating information critically, and making informed decisions by utilizing information technology within the realm of finance and business.
3. To produce graduates who possess the knowledge, skills, and mindset to identify and pursue business opportunities, foster innovation and creativity, and adapt to dynamic environments through a commitment to life-long learning.
4. To produce graduates who understand ethical principles, are aware of sustainable business practices, and consider environmental, social, and economic impacts in decision-making.
5. To produce graduates who are proficient in management skills, enabling them to effectively plan, organize, assess changes, and control various aspects of business operations in both domestic and international contexts.
6. To produce graduates who exhibit a comprehensive understanding of financial principles, practices, and techniques and who can integrate emerging technologies into professional practices, driving the ongoing digital transformation of the financial industry.

Curriculum Structure

Courses	Credit
Foundation Courses	Non-credit
General Education	No less than 30
Core Courses	68
Major Required Courses	20
Major Elective Courses	16
Practical Training Courses	8
I-Design Elective Courses	No less than 20
Free Elective Courses	No less than 8
TOTAL	**No less than 170**

COURSE LIST

Foundation Courses — Non-credit

ICMA 100 Foundation Mathematics	0 (4-0-0)
ICMA 101 Precalculus	0 (4-0-0)
ICME 101 Foundation English: Communication Skills	0 (4-0-0)

Note I:

- For B.B.A. students, students whose Mathematics placement is below ICMB 151 Business Mathematics are required to take ICMA 100 Foundation Mathematics and pass the course with the grade of "S" before moving to ICMB 151 Business Mathematics.
- For B.Sc. and B.Eng. students, students whose Mathematics placement is below ICMA 106 Calculus I and/or ICMA 151 Statistics for Science I are required to take ICMA 101 Precalculus and pass the course with the grade of "S" before moving to ICMA 106 Calculus I and/or ICMA 151 Statistics for Science I.

Note II:

- Based on their achievement on the essay portion of the MUIC entrance exam, students whose English placement is below ICGC 104 English Studies I: The Writer's Toolkit will be placed into the

"FE Track". These students will be required to take ICME 101 Foundation English: Communication Skills and pass the course with the grade of "S" before moving to ICGC 104 English Studies I: The Writer's Toolkit.

General Education 30 Credits

General Education Group	GC2 Track*	FE and GC Track*
1. English Communication	10	14
2. GE Literacies	12	12
- MU Literacy	2	2
- Health Literacy	2	2
- Science and Environmental Literacy	2	2
- Intercultural and Global Awareness Literacy	2	2
- Civic Literacy	2	2
- Finance and Management Literacy	2	2
3. GE Electives	8	4
Total	**30**	**30**

** Students will be placed into specific tracks based on their achievement in the essay portion of the MUIC entrance exam.*

English Communication 10 – 14 Credits

ICGC 104 English Studies I: The Writer's Toolkit	4 (4-0-8)
ICGC 105 English Studies II: The Writer's Voice	4 (4-0-8)
ICGC 106 English Studies III: Public Speaking	4 (4-0-8)
ICGC 221 English Studies IV: The World of English - Global Realities	2 (2-0-4)
ICGC 222 English Studies IV: The World of English - Literary Analysis	2 (2-0-4)
ICGC 223 English Studies IV: The World of English - Creative Writing	2 (2-0-4)
ICGC 224 English Studies IV: The World of English - Advanced Oral Communication	2 (2-0-4)
ICGC 226 English Studies IV: The World of English - Literature Into Film	2 (2-0-4)
ICGC 228 English Studies IV: The World of English - Language and Culture	2 (2-0-4)
ICGC 230 English Studies IV: The World of English - First and Second Language Acquisition	2 (2-0-4)
ICGC 231 English Studies IV: The World of English – Poetry	2 (2-0-4)
ICGC 232 English Studies IV: The World of English - The Short Story and the Novel	2 (2-0-4)

ICGC 233 English Studies IV: The World of English – Drama	2 (2-0-4)
ICGC 234 English Studies IV: The World of English - Literary Non-fiction	2 (2-0-4)
ICGC 235 English Studies IV: The World of English - Writing for Research	2 (2-0-4)

Note I: Based on their achievement on the essay portion of the MUIC entrance exam, students will be placed into 3 following tracks: **'FE Track'**, **'GC Track'** and **'GC2 Track'**.

- **'FE Track'** – Students who are placed into 'FE Track' will be required to take ICME 101 (a non-credit course) and complete 14 credits in English Communication: ICGC 104, ICGC 105, ICGC 106 in order, and finally, any 200+ level English courses.
- **'GC Track'** – Students who are placed into 'GC Track' will be required to complete 14 credits in English Communication: ICGC 104, ICGC 105, ICGC 106 in order, and finally, any 200+ level English courses.
- **'GC2 Track'** – Students who are placed into 'GC2 Track' will be required to complete 10 credits in English Communication: ICGC 105, ICGC 106 in order, and finally, any 200+ level English courses.

GE Literacies — 12 Credits

Note I: Students must complete courses in the following six categories: MU Literacy, Health Literacy, Science & Environment Literacy, Intercultural & Global Awareness Literacy, and Finance & Management Literacy. Each category requires a minimum of 2 credits.

Note II: If a student selects a 4-credit course to fulfill a 2-credit literacy requirement, the excess 2 credits cannot be allocated or applied toward GE Elective or Free Elective credits. Instead, these excess credits will be entirely allocated to the literacy for which they were originally intended.

- **MU Literacy** — **2 Credits**

ICGB 101 Project Management for Impacts	2 (2-0-4)
ICGB 108 Event for Good	2 (2-0-4)
ICGN 139 Scientific Inquiry and the Community	2 (2-0-4)
ICGS 169 Learning by Doing	2 (2-0-4)
ICGS 171 Digital Campaign for Gender Issues	2 (2-0-4)
ICGS 172 Service Learning - Making Change	4 (4-0-8)

ICGS 173 Service Learning - Campaigning for a Cause	4 (4-0-8)
ICGS 175 Social Innovation and Sustainability	2 (2-0-4)
ICGS 176 Sustainable Cooking	2 (2-0-4)
ICGS 177 Social Innovation: Empowering Sustainable Communities	2 (2-0-4)
ICGT 107 Innovation: Inside Out	2 (2-0-4)

- **Health Literacy** **2 Credits**

ICGH 136 Sound & Soul: A Journey of Music, Emotion, and Well-being	2 (2-0-4)
ICGH 143 Flowers and Fragrances for Health	2 (2-0-4)
ICGN 135 Personal Health and Well-being	2 (2-0-4)
ICGP 101 American Flag Football	1 (0-2-1)
ICGP 102 Badminton	1 (0-2-1)
ICGP 103 Basketball	1 (0-2-1)
ICGP 104 Body Fitness	1 (0-2-1)
ICGP 105 Cycling	1 (0-2-1)
ICGP 106 Discover Dance	1 (0-2-1)
ICGP 107 Golf	1 (0-2-1)
ICGP 108 Mind and Body	1 (0-2-1)
ICGP 109 Selected Topics in Sports	1 (0-2-1)
ICGP 110 Self Defense (Striking)	1 (0-2-1)
ICGP 111 Self Defense (Grappling)	1 (0-2-1)
ICGP 112 Soccer	1 (0-2-1)
ICGP 113 Social Dance	1 (0-2-1)
ICGP 114 Swimming	1 (0-2-1)
ICGP 115 Tennis	1 (0-2-1)
ICGP 116 Volleyball	1 (0-2-1)
ICGP 118 Health and Wellness	2 (2-0-4)
ICGP 119 Mindful Food and Well-being	2 (2-0-4)
ICGP 120 Mind and Body: Navigating the Interplay of Brain, Behavior, and Well-being	2 (2-0-4)
ICGS 121 Abnormal Colleagues: how do I make this work?	4 (4-0-8)
ICGS 155 Pathway to Purpose: Life Design and Self-Exploration	4 (4-0-8)
ICGS 164 Positive Psychology	2 (2-0-4)
ICGS 178 Unmasking Human Behaviour: Exploring Psychological Truths about Behaviour	2 (2-0-4)

ICGS 179 Health and Society	2 (2-0-4)
ICLL 100 Self Development	2 (2-0-4)

- **Science & Environment Literacy** **2 Credits**

ICGH 131 Unraveling the Anthropocene: A Philosophical Critique of Earth's Shifts and Humanity's Roles	2 (2-0-4)
ICGH 142 Fantasy Literature's Environmental Message	2 (2-0-4)
ICGH 144 A Candle in the Dark: How to Tell Fact from Fiction	2 (2-0-4)
ICGN 105 Ecology, Ecosystems and Socio-Economics in Southeast Asia	4 (3-2-7)
ICGN 107 The Chemistry of Everyday Life	4 (4-0-8)
ICGN 108 Essentials of Culinary Science for Food Business	4 (3-2-7)
ICGN 111 Physics for CEO	4 (4-0-8)
ICGN 113 Plants, People and Poisons	4 (4-0-8)
ICGN 114 The Scientific Approach and Society	4 (4-0-8)
ICGN 115 Human Evolution, Diversity and Health	4 (4-0-8)
ICGN 116 Understanding and Visualizing Data	4 (3-2-7)
ICGN 119 Computer Essentials	4 (4-0-8)
ICGN 123 The Earth's Dynamic Structure	4 (3-2-7)
ICGN 124 Climate Change and Human Society	4 (3-2-7)
ICGN 126 Plant Society	2 (2-0-4)
ICGN 127 Practical Mathematics	2 (2-0-4)
ICGN 128 Climate Emergency, Biodiversity Crisis, and Humanity at Risk	2 (1-2-3)
ICGN 129 Programming for Problem Solving	4 (4-0-8)
ICGN 130 Cryptography: The Science of Making and Breaking Codes	2 (2-0-4)
ICGN 134 Introduction to Artificial Intelligence	2 (2-0-4)
ICGN 136 Creator Workshop	2 (2-0-4)
ICGN 137 Star Wanderer	2 (2-0-4)
ICGN 138 Cosmetics Chemistry	2 (2-0-4)
ICGN 140 Food Energy for Health	2 (2-0-4)
ICGN 141 Life in the Sea	2 (1-2-3)
ICGN 142 Energy and the Environment	2 (2-0-4)
ICGN 143 Gaia: Life on Earth	2 (1-2-3)
ICGT 101 Technology-Enhanced Learning: Harnessing AI & Digital Tools for Academic Success	2 (2-0-4)
ICGT 102 Digital Document Management	2 (2-0-4)
ICGT 103 Computational Thinking	2 (2-0-4)

ICGT 104 Tell a Great Story with Data	2 (2-0-4)
ICGT 105 No-Code Application Development	2 (2-0-4)
ICGT 106 Data and Spreadsheets	2 (2-0-4)
ICLL 102 Skills for a Digital World	2 (2-0-4)

- **Intercultural & Global Awareness Literacy** **2 Credits**

ICGH 107 Contemporary Art and Visual Culture	4 (4-0-8)
ICGH 109 Creative Thinking Through Art and Design	4 (2-4-6)
ICGH 110 Drawing as Visual Analysis	4 (2-4-6)
ICGH 115 Cinematic Language and Applications	4 (4-0-8)
ICGH 116 World Cinemas	4 (4-0-8)
ICGH 117 Drawing as Creative Expression	4 (2-4-6)
ICGH 118 Photography Visualizing in the Digital Age	4 (2-4-6)
ICGH 120 Thai and ASEAN Cinema	4 (4-0-8)
ICGH 124 Life Drawing and Anatomy	4 (2-4-6)
ICGH 128 Internet Celebrity, Culture and the Media	4 (4-0-8)
ICGH 130 The Logic Lab: Crafting Coherent Arguments	2 (2-0-4)
ICGH 132 The Rise and Fall of Ancient Athens	2 (2-0-4)
ICGH 135 The Horror Film	2 (2-0-4)
ICGH 137 Apocalypse Now, or Never, or Maybe?	2 (2-0–4)
ICGH 139 Spirituality, Sustainability, Ecosystems	2 (2-0-4)
ICGH 141 SPQR—Glimpses of Rome	2 (2-0-4)
ICGH 145 Essentials to Photography, Skills and Practices	2 (2-0-4)
ICGH 146 Acting for Self-Discovery and Empathizing with Others	2 (2-0-4)
ICGH 147 Myth and the Masks of the Divine	2 (2-0-4)
ICGH 148 Quest for Global Justice: A Philosophical Inquiry	2 (2-0-4)
ICGL 101 Elementary German I	4 (4-0-8)
ICGL 102 Elementary German II	4 (4-0-8)
ICGL 103 Elementary German III	4 (4-0-8)
ICGL 111 Elementary Japanese I	4 (4-0-8)
ICGL 112 Elementary Japanese II	4 (4-0-8)
ICGL 113 Elementary Japanese III	4 (4-0-8)
ICGL 121 Elementary French I	4 (4-0-8)
ICGL 122 Elementary French II	4 (4-0-8)

ICGL 123 Elementary French III	4 (4-0-8)
ICGL 131 Elementary Chinese I	4 (4-0-8)
ICGL 132 Elementary Chinese II	4 (4-0-8)
ICGL 133 Elementary Chinese III	4 (4-0-8)
ICGL 141 Elementary Spanish I	4 (4-0-8)
ICGL 142 Elementary Spanish II	4 (4-0-8)
ICGL 143 Elementary Spanish III	4 (4-0-8)
ICGL 160 Introduction to Thai Language and Culture	4 (4-0-8)
ICGL 161 Elementary Thai I	4 (4-0-8)
ICGL 162 Elementary Thai II	4 (4-0-8)
ICGL 163 Elementary Thai III	4 (4-0-8)
ICGL 164 Thai Writing for Specific Purposes in Workplace *for native Thai students	2 (2-0-4)
ICGL 171 Diversities in Multilingual Societies	2 (2-0-4)
ICGL 172 Chinese Influence in Thai Society	2 (2-0-4)
ICGL 173 Introduction to Japanese Societies	2 (2-0-4)
ICGL 174 From Siesta to Fiesta: Introduction to Spanish and Latin American Culture	2 (2-0-4)
ICGL 201 Pre-Intermediate German I	4 (4-0-8)
ICGL 202 Pre-Intermediate German II	4 (4-0-8)
ICGL 203 Pre-Intermediate German III	4 (4-0-8)
ICGL 211 Pre-Intermediate Japanese I	4 (4-0-8)
ICGL 212 Pre-Intermediate Japanese II	4 (4-0-8)
ICGL 213 Pre-Intermediate Japanese III	4 (4-0-8)
ICGL 221 Pre-intermediate French I	4 (4-0-8)
ICGL 222 Pre-intermediate French II	4 (4-0-8)
ICGL 223 Pre-intermediate French III	4 (4-0-8)
ICGL 231 Pre-Intermediate Chinese I	4 (4-0-8)
ICGL 232 Pre-Intermediate Chinese II	4 (4-0-8)
ICGL 233 Pre-Intermediate Chinese III	4 (4-0-8)
ICGL 241 Pre-Intermediate Spanish I	4 (4-0-8)
ICGL 242 Pre-Intermediate Spanish II	4 (4-0-8)
ICGL 243 Pre-Intermediate Spanish III	4 (4-0-8)
ICGN 125 Games and Learning	2 (2-0-4)
ICGS 112 Geography of Human Activities	4 (4-0-8)
ICGS 128 Global Gastronomy and Cuisines	4 (4-0-8)

ICGS 131 Introduction to International Studies	4 (4-0-8)
ICGS 132 Career Preparation in a Globalized World	4 (4-0-8)
ICGS 133 Foundation of Mediterranean Cultures	4 (4-0-8)
ICGS 137 Witchcraft and Gender Representation	4 (4-0-8)
ICGS 143 Introduction to Air Transport and Tourism	4 (4-0-8)
ICGS 156 Fashion and Society	2 (2-0-4)
ICGS 157 Asian Religious Traditions	2 (2-0-4)
ICGS 159 The Self and Modern Media	2 (2-0-4)
ICGS 161 Skills in Dealing with People Across Cultures	2 (2-0-4)
ICGS 162 Arts, Culture and Tourism Development	2 (2-0-4)
ICGS 165 Tea Studies	2 (2-0-4)
ICGS 167 Coffee Studies	2 (2-0-4)
ICGS 168 Faith a Lifestyle	2 (2-0-4)
ICGS 180 Cafe Story and Slow food	2 (2-0-4)
ICGS 181 Cuisine and Culture	2 (2-0-4)
ICGS 182 Humor Horizons	2 (2-0-4)

- **Civic Literacy** **2 Credits**

ICGH 126 Behavioral Ethics: Why Good People Do Bad Things	2 (2-0-4)
ICGH 129 Searching for Meaning	2 (2-0-4)
ICGH 133 Socrates, His Predecessors and Successors	2 (2-0-4)
ICGH 134 Digital Media Literacy: Skills for 21st Century Learning	2 (2-0-4)
ICGH 138 The Philosophies of Asia	2 (2-0-4)
ICGH 140 Ethics and Evolution	2 (2-0-4)
ICGH 149 Law, Technology, and Society	2 (2-0-4)
ICGH 150 Global Perspectives on Free Expression in the Digital Age	2 (2-0-4)
ICGN 131 Digital Search Literacy	2 (2-0-4)
ICGN 132 Digital Security and Privacy	2 (2-0-4)
ICGN 144 Environmental Ethics	2 (2-0-4)
ICGN 145 Food Integrity and Food Fraud: When a Food Product Is Not What It Seems	2 (2-0-4)
ICGS 134 Is Democracy Good?	4 (4-0-8)
ICGS 136 Social and Health Issues in Thailand	4 (3-2-7)
ICGS 140 Fake News, Censorship and the Politics of Truth	4 (4-0-8)
ICGS 147 Women in Leadership	4 (4-0-8)

ICGS 158 Contemporary Issues in Thailand	2 (2-0-4)
ICGS 160 Self and Society	2 (2-0-4)
ICGS 163 Popular Media and Conflicts	2 (2-0-4)
ICGS 166 Power and Politics	2 (2-0-4)
ICGS 170 Civic Action in Thailand	2 (2-0-4)
ICGS 183 Media and Community	2 (2-0-4)

- **Finance & Management Literacy** **2 Credits**

ICGB 102 Navigating the Market Landscape	2 (2-0-4)
ICGB 103 Decoding Economic News	2 (2-0-4)
ICGB 104 Entrepreneurship in a Disruptive Environment	2 (2-0-4)
ICGB 105 Personal Finance Literacy	2 (2-0-4)
ICGB 106 The Business of Fashion	2 (2-0-4)
ICGB 107 Tourism Management Perspectives	2 (2-0-4)
ICGB 109 Business Event Essentials	2 (2-0-4)
ICGB 110 Management Styles of Effective Leaders	2 (2-0-4)
ICGB 111 Leadership in a Global Society	2 (2-0-4)
ICGB 112 The Art of Pricing	2 (2-0-4)
ICGB 113 Crisis Management in Service Businesses	2 (2-0-4)
ICGB 114 Cultural Strategies for Success: Unveiling Eastern Business Dynamics	2 (2-0-4)
ICGB 115 Money: Deciphering Currencies of Value	2 (2-0-4)
ICGB 116 Managing Self and Working with Others	2 (2-0-4)
ICGH 101 Biotechnology: from Science to Business	4 (4-0-8)
ICGS 102 Business Sustainability and the Global Climate Change	4 (4-0-8)
ICGS 135 Entrepreneurial Accounting	4 (4-0-8)
ICGS 153 Social Media Management for Service Sector	2 (2-0-4)
ICGS 174 The Art of Leadership in Practice: Inspiration	2 (2-0-4)
ICGS 184 Healthy Habits, Happy Shoppers: Exploring Health Literacy in Consumer Decisions	2 (2-0-4)
ICLL 101 Professional Development	2 (2-0-4)

General Education Elective Courses **4-8 Credits**

Students need to take remaining courses in any GE category to fulfill their 30 credits requirement of GE: 4 credits for students whose English Communication track are placed into ‘FE track’ or ‘GC Track’

and 8 credits for students whose English Communication track are placed into 'GC2 Track'. Partial credits of GE course that exceed the GE requirements cannot be counted towards Free Electives.

Specific Courses — no less than 112 Credits

Core Courses — 68 Credits

ICMB 150 Introduction to Programming and Business Applications	2 (2-0-4)
ICMB 151 Business Mathematics	2 (2-0-4)
ICMB 152 Business Statistics	4 (4-0-8)
ICMB 253 Microeconomics	4 (4-0-8)
ICMB 254 Macroeconomics	4 (4-0-8)
ICMB 255 Management of Business Information	4 (4-0-8)
ICMB 256 Principles of Financial Accounting	4 (4-0-8)
ICMB 257 Business Finance for Entrepreneurs	4 (4-0-8)
ICMB 258 Business Communication	4 (4-0-8)
ICMB 259 Principles of Marketing	4 (4-0-8)
ICMB 260 Management and Organizational Behavior	4 (4-0-8)
ICMB 261 Human Resources Management	4 (4-0-8)
ICMB 262 International Business Management	4 (4-0-8)
ICMB 350 Business Law	4 (4-0-8)
ICMB 351 Business Ethics and Sustainability	4 (4-0-8)
ICMB 352 Management Science	4 (4-0-8)
ICMB 353 Operations Management	4 (4-0-8)
ICMB 450 Strategic Management	4 (4-0-8)

Note I: Students are able to take BBA courses only if they have met the following requirements:

1. Passed ICGC 104 English Studies I: The Writer's Toolkit with "S" grade or being placed in the English course level higher than ICGC 104 English Studies I: The Writer's Toolkit.
2. Passed ICMA 100 Foundation Mathematics with "S" grade or the placement Test.

Note II: ICMB 450 Strategic Management is restricted for students who have completed at least 124 credits.

Major Required Courses — 20 Credits

ICMF 331 Financial Management	4 (4-0-8)

ICMF 332 Financial Markets	4 (4-0-8)
ICMF 333 Investment Analysis and Portfolio Management	4 (4-0-8)
ICMF 334 Risk Management and Derivatives	4 (4-0-8)
ICMF 431 Financial Analysis and Modeling	4 (4-0-8)

Major Elective Courses **16 Credits**

The finance program offers three specialized tracks—Corporate Finance, Quantitative Finance, and Applied Accounting. Students can choose one of three specialized tracks of finance below. For each track, students are required to choose four courses from the respective lists without double counting the credits

- **Track 1: Corporate Finance** **16 Credits**

ICMF 347 Sustainable Finance and Investment	4 (4-0-8)
ICMF 441 Corporate and Project Valuations	4 (4-0-8)
ICMF 442 Financial Theory	4 (4-0-8)
ICMF 443 Case Studies in Finance and Accounting	4 (4-0-8)
ICMF 444 Special Topics in Finance	4 (4-0-8)
ICMI 450 International Finance and Risk Management for International Business	4 (4-0-8)

- **Track 2: Quantitative Finance** **16 Credits**

ICMF 345 Fintech Innovations and Applications	4 (4-0-8)
ICMF 346 Machine Learning in Finance	4 (4-0-8)
ICMF 443 Case Studies in Finance and Accounting	4 (4-0-8)
ICMF 444 Special Topics in Finance	4 (4-0-8)
ICBE 313 Business Econometrics	4 (4-0-8)
ICBE 421 Data Analytics for Economics and Finance	4 (4-0-8)

- **Track 3: Applied Accounting Track** **16 Credits**

ICMF 341 Intermediate Accounting I	4 (4-0-8)
ICMF 342 Intermediate Accounting II	4 (4-0-8)
ICMF 343 Business Taxation	4 (4-0-8)
ICMF 344 Cost Analysis for Business Decisions	4 (4-0-8)
ICMF 348 IT Auditing for Risk Assurance	4 (4-0-8)
ICMF 443 Case Studies in Finance and Accounting	4 (4-0-8)

Note I: For students who do not choose to focus on one of three specialized tracks specified above, they can opt to complete any four courses from the track lists; of which those credits cannot be double-counted towards fulfilling other course types (Core courses, Major required courses, and Major elective courses).

Practical Training Courses — 8 Credits

ICMB 451 Practical Business Training – Off Campus	8 (0-40-8)
ICMB 452 Innovation, Entrepreneurship and New Business Development	8 (8-0-16)

Note I: All BBA students are required to take either ICMB 451 Practical Business Training – Off Campus or ICMB 452 Innovation, Entrepreneurship and New Business Development when they have completed at least 124 credits.

Note II: For ICMB 451 Practical Business Training – Off Campus, students are not allowed to register for other courses in the trimester unless approved by their respective Program Director.

I-Design Electives — 20 Credits

The purpose of the I-Design electives is to promote multidisciplinary learning. Students are encouraged to explore courses offered by diverse disciplines across MUIC, Mahidol University, and partner institutions. The I-Design electives can be satisfied upon the completion of the following course categories:

1. **Minor courses** offered by any program in **MUIC**
2. **Certificate courses** offered by any program in **MUIC**
3. **Any major courses** offered by any program in **MUIC**
4. **Any major courses** offered in **Mahidol University** (including undergraduate and graduate level courses). Courses must be approved by the student's advisor.
5. **Any major courses** offered at **partner institutions** (who have MOU with Mahidol University and/or MUIC). Courses must be approved by the student's advisor.

Free Electives — 8 Credits

Students can take any courses offered by MUIC / Mahidol University or any major courses offered by the partner institutions (with MOU) as free elective courses with the approval from the advisor.

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International Business

Degree Offered:

Bachelor of Business Administration (International Business)

B.B.A. (International Business)

Program Goal :

The main goal of the BBA program in International Business is to produce graduates who acquire desired characteristics of MU graduates and possess entrepreneurial- and sustainability-mindset. Graduates from this program will be able to demonstrate their leadership quality, ability to think critically, innovativeness, ethical and sustainability awareness, management skills and international business-specific knowledge and skills in actual business settings.

Program Objectives :

1. To produce graduates who possess leadership, communication, and collaboration skills acquired through practical and theoretical learning, empowering them to enhance their performance through diversity awareness.
2. To produce graduates who are capable of analyzing problems, evaluating information critically, and making informed decisions within the realm of international business.
3. To produce graduates who possess the knowledge and skills to identify and pursue business opportunities, thus fostering innovation and creativity.
4. To produce graduates who understand ethical principles, are aware of sustainable business practices, and consider environmental, social, and economic impacts in decision-making processes.
5. To produce graduates who are proficient in management skills, enabling them to effectively plan, organize, assess changes, and control various aspects of business operations in both domestic and international contexts.
6. To produce international business owners and/or entrepreneurs who are adaptable, strategic thinkers, skilled in analyzing global markets, navigating cultural complexities, making ethical decisions, and committed to continuous learning to innovate and succeed in dynamic business environments.
7. To produce graduates who can integrate emerging technologies into professional practices, driving the ongoing the digital transformation of the business industry, especially in international environments.

Curriculum Structure

Courses	Credit
Foundation Courses	Non-credit
General Education	No less than 30
Core Courses	68
Major Required Courses	20
Major Elective Courses	16
Practical Training Courses	8
I-Design Elective Courses	No less than 20
Free Elective Courses	No less than 8
TOTAL	**No less than 170**

COURSE LIST

Foundation Courses	**Non-credit**
ICMA 100 Foundation Mathematics	0 (4-0-0)
ICMA 101 Precalculus	0 (4-0-0)
ICME 101 Foundation English: Communication Skills	0 (4-0-0)

Note I:

- For B.B.A. students, students whose Mathematics placement is below ICMB 151 Business Mathematics are required to take ICMA 100 Foundation Mathematics and pass the course with the grade of "S" before moving to ICMB 151 Business Mathematics.
- For B.Sc. and B.Eng. students, students whose Mathematics placement is below ICMA 106 Calculus I and/or ICMA 151 Statistics for Science I are required to take ICMA 101 Precalculus and pass the course with the grade of "S" before moving to ICMA 106 Calculus I and/or ICMA 151 Statistics for Science I.

Note II:

- Based on their achievement on the essay portion of the MUIC entrance exam, students whose English placement is below ICGC 104 English Studies I: The Writer's Toolkit will be placed into the "FE Track". These students will be required to take ICME 101 Foundation English: Communication

Skills and pass the course with the grade of "S" before moving to ICGC 104 English Studies I: The Writer's Toolkit.

General Education 30 Credits

General Education Group	GC2 Track*	FE and GC Track*
1. English Communication	10	14
2. GE Literacies	12	12
- MU Literacy	2	2
- Health Literacy	2	2
- Science and Environmental Literacy	2	2
- Intercultural and Global Awareness Literacy	2	2
- Civic Literacy	2	2
- Finance and Management Literacy	2	2
3. GE Electives	8	4
Total	**30**	**30**

** Students will be placed into specific tracks based on their achievement in the essay portion of the MUIC entrance exam.*

English Communication 10 – 14 Credits

ICGC 104 English Studies I: The Writer's Toolkit	4 (4-0-8)
ICGC 105 English Studies II: The Writer's Voice	4 (4-0-8)
ICGC 106 English Studies III: Public Speaking	4 (4-0-8)
ICGC 221 English Studies IV: The World of English - Global Realities	2 (2-0-4)
ICGC 222 English Studies IV: The World of English - Literary Analysis	2 (2-0-4)
ICGC 223 English Studies IV: The World of English - Creative Writing	2 (2-0-4)
ICGC 224 English Studies IV: The World of English - Advanced Oral Communication	2 (2-0-4)
ICGC 226 English Studies IV: The World of English - Literature Into Film	2 (2-0-4)
ICGC 228 English Studies IV: The World of English - Language and Culture	2 (2-0-4)
ICGC 230 English Studies IV: The World of English - First and Second Language Acquisition	2 (2-0-4)
ICGC 231 English Studies IV: The World of English – Poetry	2 (2-0-4)
ICGC 232 English Studies IV: The World of English - The Short Story and the Novel	2 (2-0-4)
ICGC 233 English Studies IV: The World of English – Drama	2 (2-0-4)

ICGC 234 English Studies IV: The World of English - Literary Non-fiction	2 (2-0-4)
ICGC 235 English Studies IV: The World of English - Writing for Research	2 (2-0-4)

Note I: Based on their achievement on the essay portion of the MUIC entrance exam, students will be placed into 3 following tracks: **'FE Track'**, **'GC Track'** and **'GC2 Track'**.

- **'FE Track'** – Students who are placed into 'FE Track' will be required to take ICME 101 (a non-credit course) and complete 14 credits in English Communication: ICGC 104, ICGC 105, ICGC 106 in order, and finally, any 200+ level English courses.
- **'GC Track'** – Students who are placed into 'GC Track' will be required to complete 14 credits in English Communication: ICGC 104, ICGC 105, ICGC 106 in order, and finally, any 200+ level English courses.
- **'GC2 Track'** – Students who are placed into 'GC2 Track' will be required to complete 10 credits in English Communication: ICGC 105, ICGC 106 in order, and finally, any 200+ level English courses.

GE Literacies — 12 Credits

Note I: Students must complete courses in the following six categories: MU Literacy, Health Literacy, Science & Environment Literacy, Intercultural & Global Awareness Literacy, and Finance & Management Literacy. Each category requires a minimum of 2 credits.

- **MU Literacy** — **2 Credits**

ICGB 101 Project Management for Impacts	2 (2-0-4)
ICGB 108 Event for Good	2 (2-0-4)
ICGN 139 Scientific Inquiry and the Community	2 (2-0-4)
ICGS 169 Learning by Doing	2 (2-0-4)
ICGS 171 Digital Campaign for Gender Issues	2 (2-0-4)
ICGS 172 Service Learning - Making Change	4 (4-0-8)
ICGS 173 Service Learning - Campaigning for a Cause	4 (4-0-8)
ICGS 175 Social Innovation and Sustainability	2 (2-0-4)
ICGS 176 Sustainable Cooking	2 (2-0-4)
ICGS 177 Social Innovation: Empowering Sustainable Communities	2 (2-0-4)
ICGT 107 Innovation: Inside Out	2 (2-0-4)

- **Health Literacy** **2 Credits**

ICGH 136 Sound & Soul: A Journey of Music, Emotion, and Well-being	2 (2-0-4)
ICGH 143 Flowers and Fragrances for Health	2 (2-0-4)
ICGN 135 Personal Health and Well-being	2 (2-0-4)
ICGP 101 American Flag Football	1 (0-2-1)
ICGP 102 Badminton	1 (0-2-1)
ICGP 103 Basketball	1 (0-2-1)
ICGP 104 Body Fitness	1 (0-2-1)
ICGP 105 Cycling	1 (0-2-1)
ICGP 106 Discover Dance	1 (0-2-1)
ICGP 107 Golf	1 (0-2-1)
ICGP 108 Mind and Body	1 (0-2-1)
ICGP 109 Selected Topics in Sports	1 (0-2-1)
ICGP 110 Self Defense (Striking)	1 (0-2-1)
ICGP 111 Self Defense (Grappling)	1 (0-2-1)
ICGP 112 Soccer	1 (0-2-1)
ICGP 113 Social Dance	1 (0-2-1)
ICGP 114 Swimming	1 (0-2-1)
ICGP 115 Tennis	1 (0-2-1)
ICGP 116 Volleyball	1 (0-2-1)
ICGP 118 Health and Wellness	2 (2-0-4)
ICGP 119 Mindful Food and Well-being	2 (2-0-4)
ICGP 120 Mind and Body: Navigating the Interplay of Brain, Behavior, and Well-being	2 (2-0-4)
ICGS 121 Abnormal Colleagues: how do I make this work?	4 (4-0-8)
ICGS 155 Pathway to Purpose: Life Design and Self-Exploration	4 (4-0-8)
ICGS 164 Positive Psychology	2 (2-0-4)
ICGS 178 Unmasking Human Behaviour: Exploring Psychological Truths about Behaviour	2 (2-0-4)
ICGS 179 Health and Society	2 (2-0-4)
ICLL 100 Self Development	2 (2-0-4)

- **Science & Environment Literacy** **2 Credit**

ICGH 131 Unraveling the Anthropocene: A Philosophical Critique of Earth's Shifts and Humanity's Roles	2 (2-0-4)

ICGH 142 Fantasy Literature's Environmental Message	2 (2-0-4)
ICGH 144 A Candle in the Dark: How to Tell Fact from Fiction	2 (2-0-4)
ICGN 105 Ecology, Ecosystems and Socio-Economics in Southeast Asia	4 (3-2-7)
ICGN 107 The Chemistry of Everyday Life	4 (4-0-8)
ICGN 108 Essentials of Culinary Science for Food Business	4 (3-2-7)
ICGN 111 Physics for CEO	4 (4-0-8)
ICGN 113 Plants, People and Poisons	4 (4-0-8)
ICGN 114 The Scientific Approach and Society	4 (4-0-8)
ICGN 115 Human Evolution, Diversity and Health	4 (4-0-8)
ICGN 116 Understanding and Visualizing Data	4 (3-2-7)
ICGN 119 Computer Essentials	4 (4-0-8)
ICGN 123 The Earth's Dynamic Structure	4 (3-2-7)
ICGN 124 Climate Change and Human Society	4 (3-2-7)
ICGN 126 Plant Society	2 (2-0-4)
ICGN 127 Practical Mathematics	2 (2-0-4)
ICGN 128 Climate Emergency, Biodiversity Crisis, and Humanity at Risk	2 (1-2-3)
ICGN 129 Programming for Problem Solving	4 (4-0-8)
ICGN 130 Cryptography: The Science of Making and Breaking Codes	2 (2-0-4)
ICGN 134 Introduction to Artificial Intelligence	2 (2-0-4)
ICGN 136 Creator Workshop	2 (2-0-4)
ICGN 137 Star Wanderer	2 (2-0-4)
ICGN 138 Cosmetics Chemistry	2 (2-0-4)
ICGN 140 Food Energy for Health	2 (2-0-4)
ICGN 141 Life in the Sea	2 (1-2-3)
ICGN 142 Energy and the Environment	2 (2-0-4)
ICGN 143 Gaia: Life on Earth	2 (1-2-3)
ICGT 101 Technology-Enhanced Learning: Harnessing AI & Digital Tools for Academic Success	2 (2-0-4)
ICGT 102 Digital Document Management	2 (2-0-4)
ICGT 103 Computational Thinking	2 (2-0-4)
ICGT 104 Tell a Great Story with Data	2 (2-0-4)
ICGT 105 No-Code Application Development	2 (2-0-4)
ICGT 106 Data and Spreadsheets	2 (2-0-4)
ICLL 102 Skills for a Digital World	2 (2-0-4)

• **Intercultural & Global Awareness Literacy**	**2 Credits**
ICGH 107 Contemporary Art and Visual Culture	4 (4-0-8)
ICGH 109 Creative Thinking Through Art and Design	4 (2-4-6)
ICGH 110 Drawing as Visual Analysis	4 (2-4-6)
ICGH 115 Cinematic Language and Applications	4 (4-0-8)
ICGH 116 World Cinemas	4 (4-0-8)
ICGH 117 Drawing as Creative Expression	4 (2-4-6)
ICGH 118 Photography Visualizing in the Digital Age	4 (2-4-6)
ICGH 120 Thai and ASEAN Cinema	4 (4-0-8)
ICGH 124 Life Drawing and Anatomy	4 (2-4-6)
ICGH 128 Internet Celebrity, Culture and the Media	4 (4-0-8)
ICGH 130 The Logic Lab: Crafting Coherent Arguments	2 (2-0-4)
ICGH 132 The Rise and Fall of Ancient Athens	2 (2-0-4)
ICGH 135 The Horror Film	2 (2-0-4)
ICGH 137 Apocalypse Now, or Never, or Maybe?	2 (2-0–4)
ICGH 139 Spirituality, Sustainability, Ecosystems	2 (2-0-4)
ICGH 141 SPQR—Glimpses of Rome	2 (2-0-4)
ICGH 145 Essentials to Photography, Skills and Practices	2 (2-0-4)
ICGH 146 Acting for Self-Discovery and Empathizing with Others	2 (2-0-4)
ICGH 147 Myth and the Masks of the Divine	2 (2-0-4)
ICGH 148 Quest for Global Justice: A Philosophical Inquiry	2 (2-0-4)
ICGL 101 Elementary German I	4 (4-0-8)
ICGL 102 Elementary German II	4 (4-0-8)
ICGL 103 Elementary German III	4 (4-0-8)
ICGL 111 Elementary Japanese I	4 (4-0-8)
ICGL 112 Elementary Japanese II	4 (4-0-8)
ICGL 113 Elementary Japanese III	4 (4-0-8)
ICGL 121 Elementary French I	4 (4-0-8)
ICGL 122 Elementary French II	4 (4-0-8)
ICGL 123 Elementary French III	4 (4-0-8)
ICGL 131 Elementary Chinese I	4 (4-0-8)
ICGL 132 Elementary Chinese II	4 (4-0-8)
ICGL 133 Elementary Chinese III	4 (4-0-8)
ICGL 141 Elementary Spanish I	4 (4-0-8)

ICGL 142 Elementary Spanish II	4 (4-0-8)
ICGL 143 Elementary Spanish III	4 (4-0-8)
ICGL 160 Introduction to Thai Language and Culture	4 (4-0-8)
ICGL 161 Elementary Thai I	4 (4-0-8)
ICGL 162 Elementary Thai II	4 (4-0-8)
ICGL 163 Elementary Thai III	4 (4-0-8)
ICGL 164 Thai Writing for Specific Purposes in Workplace *for native Thai students	2 (2-0-4)
ICGL 171 Diversities in Multilingual Societies	2 (2-0-4)
ICGL 172 Chinese Influence in Thai Society	2 (2-0-4)
ICGL 173 Introduction to Japanese Societies	2 (2-0-4)
ICGL 174 From Siesta to Fiesta: Introduction to Spanish and Latin American Culture	2 (2-0-4)
ICGL 201 Pre-Intermediate German I	4 (4-0-8)
ICGL 202 Pre-Intermediate German II	4 (4-0-8)
ICGL 203 Pre-Intermediate German III	4 (4-0-8)
ICGL 211 Pre-Intermediate Japanese I	4 (4-0-8)
ICGL 212 Pre-Intermediate Japanese II	4 (4-0-8)
ICGL 213 Pre-Intermediate Japanese III	4 (4-0-8)
ICGL 221 Pre-intermediate French I	4 (4-0-8)
ICGL 222 Pre-intermediate French II	4 (4-0-8)
ICGL 223 Pre-intermediate French III	4 (4-0-8)
ICGL 231 Pre-Intermediate Chinese I	4 (4-0-8)
ICGL 232 Pre-Intermediate Chinese II	4 (4-0-8)
ICGL 233 Pre-Intermediate Chinese III	4 (4-0-8)
ICGL 241 Pre-Intermediate Spanish I	4 (4-0-8)
ICGL 242 Pre-Intermediate Spanish II	4 (4-0-8)
ICGL 243 Pre-Intermediate Spanish III	4 (4-0-8)
ICGN 125 Games and Learning	2 (2-0-4)
ICGS 112 Geography of Human Activities	4 (4-0-8)
ICGS 128 Global Gastronomy and Cuisines	4 (4-0-8)
ICGS 131 Introduction to International Studies	4 (4-0-8)
ICGS 132 Career Preparation in a Globalized World	4 (4-0-8)
ICGS 133 Foundation of Mediterranean Cultures	4 (4-0-8)
ICGS 137 Witchcraft and Gender Representation	4 (4-0-8)
ICGS 143 Introduction to Air Transport and Tourism	4 (4-0-8)

ICGS 156 Fashion and Society	2 (2-0-4)
ICGS 157 Asian Religious Traditions	2 (2-0-4)
ICGS 159 The Self and Modern Media	2 (2-0-4)
ICGS 161 Skills in Dealing with People Across Cultures	2 (2-0-4)
ICGS 162 Arts, Culture and Tourism Development	2 (2-0-4)
ICGS 165 Tea Studies	2 (2-0-4)
ICGS 167 Coffee Studies	2 (2-0-4)
ICGS 168 Faith a Lifestyle	2 (2-0-4)
ICGS 180 Cafe Story and Slow food	2 (2-0-4)
ICGS 181 Cuisine and Culture	2 (2-0-4)
ICGS 182 Humor Horizons	2 (2-0-4)

- **Civic Literacy** **2 Credits**

ICGH 126 Behavioral Ethics: Why Good People Do Bad Things	2 (2-0-4)
ICGH 129 Searching for Meaning	2 (2-0-4)
ICGH 133 Socrates, His Predecessors and Successors	2 (2-0-4)
ICGH 134 Digital Media Literacy: Skills for 21st Century Learning	2 (2-0-4)
ICGH 138 The Philosophies of Asia	2 (2-0-4)
ICGH 140 Ethics and Evolution	2 (2-0-4)
ICGH 149 Law, Technology, and Society	2 (2-0-4)
ICGH 150 Global Perspectives on Free Expression in the Digital Age	2 (2-0-4)
ICGN 131 Digital Search Literacy	2 (2-0-4)
ICGN 132 Digital Security and Privacy	2 (2-0-4)
ICGN 144 Environmental Ethics	2 (2-0-4)
ICGN 145 Food Integrity and Food Fraud: When a Food Product Is Not What It Seems	2 (2-0-4)
ICGS 134 Is Democracy Good?	4 (4-0-8)
ICGS 136 Social and Health Issues in Thailand	4 (3-2-7)
ICGS 140 Fake News, Censorship and the Politics of Truth	4 (4-0-8)
ICGS 147 Women in Leadership	4 (4-0-8)
ICGS 158 Contemporary Issues in Thailand	2 (2-0-4)
ICGS 160 Self and Society	2 (2-0-4)
ICGS 163 Popular Media and Conflicts	2 (2-0-4)
ICGS 166 Power and Politics	2 (2-0-4)
ICGS 170 Civic Action in Thailand	2 (2-0-4)

ICGS 183 Media and Community	2 (2-0-4)

- **Finance & Management Literacy** **2 Credits**

ICGB 102 Navigating the Market Landscape	2 (2-0-4)
ICGB 103 Decoding Economic News	2 (2-0-4)
ICGB 104 Entrepreneurship in a Disruptive Environment	2 (2-0-4)
ICGB 105 Personal Finance Literacy	2 (2-0-4)
ICGB 106 The Business of Fashion	2 (2-0-4)
ICGB 107 Tourism Management Perspectives	2 (2-0-4)
ICGB 109 Business Event Essentials	2 (2-0-4)
ICGB 110 Management Styles of Effective Leaders	2 (2-0-4)
ICGB 111 Leadership in a Global Society	2 (2-0-4)
ICGB 112 The Art of Pricing	2 (2-0-4)
ICGB 113 Crisis Management in Service Businesses	2 (2-0-4)
ICGB 114 Cultural Strategies for Success: Unveiling Eastern Business Dynamics	2 (2-0-4)
ICGB 115 Money: Deciphering Currencies of Value	2 (2-0-4)
ICGB 116 Managing Self and Working with Others	2 (2-0-4)
ICGH 101 Biotechnology: from Science to Business	4 (4-0-8)
ICGS 102 Business Sustainability and the Global Climate Change	4 (4-0-8)
ICGS 135 Entrepreneurial Accounting	4 (4-0-8)
ICGS 153 Social Media Management for Service Sector	2 (2-0-4)
ICGS 174 The Art of Leadership in Practice: Inspiration	2 (2-0-4)
ICGS 184 Healthy Habits, Happy Shoppers: Exploring Health Literacy in Consumer Decisions	2 (2-0-4)
ICLL 101 Professional Development	2 (2-0-4)

General Education Elective Courses 4-8 Credits

Students need to take remaining courses in any GE category to fulfill their 30 credits requirement of GE: 4 credits for students whose English Communication track are placed into ‘FE track’ or ‘GC Track’ and 8 credits for students whose English Communication track are placed into ‘GC2 Track’. Partial credits of GE course that exceed the GE requirements cannot be counted towards Free Electives.

Specific Courses — no less than 112 Credits

Core Courses — 68 Credits

ICMB 150 Introduction to Programming and Business Applications	2 (2-0-4)
ICMB 151 Business Mathematics	2 (2-0-4)
ICMB 152 Business Statistics	4 (4-0-8)
ICMB 253 Microeconomics	4 (4-0-8)
ICMB 254 Macroeconomics	4 (4-0-8)
ICMB 255 Management of Business Information	4 (4-0-8)
ICMB 256 Principles of Financial Accounting	4 (4-0-8)
ICMB 257 Business Finance for Entrepreneurs	4 (4-0-8)
ICMB 258 Business Communication	4 (4-0-8)
ICMB 259 Principles of Marketing	4 (4-0-8)
ICMB 260 Management and Organizational Behavior	4 (4-0-8)
ICMB 261 Human Resources Management	4 (4-0-8)
ICMB 262 International Business Management	4 (4-0-8)
ICMB 350 Business Law	4 (4-0-8)
ICMB 351 Business Ethics and Sustainability	4 (4-0-8)
ICMB 352 Management Science	4 (4-0-8)
ICMB 353 Operations Management	4 (4-0-8)
ICMB 450 Strategic Management	4 (4-0-8)

Note I: Students are able to take BBA courses only if they have met the following requirements:

1. Passed ICGC 104 English Studies I: The Writer's Toolkit with “S” grade or being placed in the English course level higher than ICGC 104 English Studies I: The Writer's Toolkit.
2. Passed ICMA 100 Foundation Mathematics with “S” grade or the placement Test.

Note II: ICMB 450 Strategic Management is restricted for students who have completed at least 124 credits.

Major Required Courses — 20 Credits

ICMI 350 Global Logistics and Supply Chain Management	4 (4-0-8)
ICMI 351 Global Trade, Policies, and Regulations	4 (4-0-8)
ICMI 352 Diversity, Cross Culture and Expatriate Management	4 (4-0-8)
ICMI 450 International Finance and Risk Management for International Business	4 (4-0-8)

ICMI 451 Global Strategy	4 (4-0-8)

Major Elective Courses	**16 Credits**
ICMI 353 Regional Business Study	4 (4-0-8)
ICMI 354 Legal Issues in International Business	4 (4-0-8)
ICMI 355 Leadership and Change Management in Global Business	4 (4-0-8)
ICMI 356 Environment, Social and Governance (ESG) for Global Business and Sustainability	4 (4-0-8)
ICMI 357 Advancing Diversity, Equity, Inclusion, and Belonging (DEIB) in International Business	4 (4-0-8)
ICMI 358 People Analytics for Global Operations	4 (4-0-8)
ICMI 359 International Business Negotiation	4 (4-0-8)
ICMI 360 Smart Logistics and Analytics	4 (4-0-8)
ICMI 452 Special Topics in International Business	4 (4-0-8)
ICMI 453 International Marketing Management	4 (4-0-8)
ICMI 454 Sustainable Innovation and Entrepreneurship	4 (4-0-8)
ICMI 455 International Business Senior Thesis Project	12 (0-36-12)
ICBE 312 World Economy	4 (4-0-8)

Specialized Tracks

The international business program offers four specialized tracks:

- Business Development and Internationalization
- International Entrepreneurship and New Venture Creation
- People and Organizational Management
- Business Sustainability

Students can choose one of four specialized tracks of international business below. For each track, students are required to choose four courses from the respective lists without double counting the credits with other course types (Core courses, Major required courses, and Major elective courses) specified in the curriculum.

• **Track I: Business Development and Internationalization**	**16 Credits**
ICMF 331 Financial Management	4 (4-0-8)
ICMI 353 Regional Business Study	4 (4-0-8)
ICMI 354 Legal Issues in International Business	4 (4-0-8)

ICMI 355 Leadership and Change Management in Global Business	4 (4-0-8)
ICMI 356 Environment, Social and Governance (ESG) for Global Business and Sustainability	4 (4-0-8)
ICMI 360 Smart Logistics and Analytics	4 (4-0-8)
ICMI 453 International Marketing Management	4 (4-0-8)

- **Track 2: International Entrepreneurship and New Venture Creation** **16 Credits**

ICBE 411 Economics of Innovation	4 (4-0-8)
ICMF 331 Financial Management	4 (4-0-8)
ICMI 359 International Business Negotiation	4 (4-0-8)
ICMI 360 Smart Logistics and Analytics	4 (4-0-8)
ICMI 452 Special Topics in International Business	4 (4-0-8)
ICMI 454 Sustainable Innovation and Entrepreneurship	4 (4-0-8)

- **Track 3: People and Organizational Management** **16 Credits**

ICMI 355 Leadership and Change Management in Global Business	4 (4-0-8)
ICMI 357 Advancing Diversity, Equity, Inclusion, and Belonging (DEIB) in International Business	4 (4-0-8)
ICMI 358 People Analytics for Global Operations	4 (4-0-8)
ICMI 359 International Business Negotiation	4 (4-0-8)

- **Track 4: Business Sustainability** **16 Credits**

ICMI 356 Environment, Social and Governance (ESG) for Global Business and Sustainability	4 (4-0-8)
ICMI 357 Advancing Diversity, Equity, Inclusion, and Belonging (DEIB) in International Business	4 (4-0-8)
ICMI 454 Sustainable Innovation and Entrepreneurship	4 (4-0-8)
ICMF 347 Sustainable Finance and Investment	4 (4-0-8)
ICMK 380 Societal Marketing	4 (4-0-8)
ICBE 322 Economics of Sustainability	4 (4-0-8)

Note I: Students can choose to focus on one of the four international business areas: Track 1 Business Development and Internationalization, Track 2 International Entrepreneurship and New Venture Creation, Track 3 People and Organizational Management, and Track 4 Business Sustainability. Students will need to complete four courses from the respective lists below, of which those credits cannot be double counted towards fulfilling other course types (Core course, Major required courses, and Major elective courses) towards fulfilling other course types (Core course, Major required courses, and Major elective courses)

Note II: Students who do not choose one of these four international business areas can opt to complete any four courses from the track lists above: of which those credits cannot be double counted towards fulfilling other course types (Core course, Major required courses, and Major elective courses)

Practical Training Courses	**8 Credits**
ICMB 451 Practical Business Training – Off Campus	8 (0-40-8)
ICMB 452 Innovation, Entrepreneurship and New Business Development	8 (8-0-16)

Note I: All BBA students are required to take either ICMB 451 Practical Business Training – Off Campus or ICMB 452 Innovation, Entrepreneurship and New Business Development when they have completed at least 124 credits.

Note II: For ICMB 451 Practical Business Training – Off Campus, students are not allowed to register for other courses in the trimester unless approved by their respective Program Director.

I- Design Electives 20 Credits

The purpose of the I-Design electives is to promote multidisciplinary learning. Students are encouraged to explore courses offered by diverse disciplines across MUIC, Mahidol University, and partner institutions. The I-Design electives can be satisfied upon the completion of the following course categories:

1. **Minor courses** offered by any program in **MUIC**
2. **Certificate courses** offered by any program in **MUIC**
3. **Any major courses** offered by any program in **MUIC**
4. **Any major courses** offered in **Mahidol University** (including undergraduate and graduate level courses). Courses must be approved by the student's advisor.
5. **Any major courses** offered at **partner institutions** (who have MOU with Mahidol University and/or MUIC). Courses must be approved by the student's advisor.

Free Electives 8 Credits

Students can take any courses offered by MUIC / Mahidol University or any major courses offered by the partner institutions (with MOU) as free elective courses with the approval from the advisor.

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Marketing

Degree Offered:

Bachelor of Business Administration (Marketing)

B.B.A. (Marketing)

Program Goal :

The main goal of the BBA program in Marketing is to produce graduates who acquire desired characteristics of MU graduates (T-shaped bread & depth, Globally talented, Socially contributing, and Entrepreneurially minded) and possess entrepreneurial- and sustainability-mindset. Graduates are also able to pursue a career as Economic consultants and/or Policy advisors who devise strategic solutions for business and policy challenges based on economic foundations and data analysis.

Program Objectives :

1. To produce graduates who possess leadership, communication, and collaboration skills acquired through practical and theoretical learning, empowering them to enhance their performance through diversity awareness.
2. To produce graduates who are capable of analyzing problems, evaluating information critically, and making informed decisions within the realm of economics and business.
3. To produce graduates who possess the knowledge and skills to identify and pursue business opportunities, thus fostering innovation and creativity.
4. To produce graduates who understand ethical principles, are aware of sustainable business practices, and consider environmental, social, and economic impacts in decision-making processes.
5. To produce graduates who are proficient in management skills, enabling them to effectively plan, organize, assess changes, and control various aspects of business operations in both domestic and international contexts.
6. To produce Marketers who exhibit a comprehensive understanding of marketing principles, practices, and techniques enabling them to lead in the development and execution of innovative, sustainable marketing strategies.

Curriculum Structure

Courses	Credit
Foundation Courses	Non-credit
General Education	No less than 30
Core Courses	68
Major Required Courses	20
Major Elective Courses	16
Practical Training Courses	8
I-Design Elective Courses	No less than 20
Free Elective Courses	No less than 8
TOTAL	**No less than 170**

COURSE LIST

Foundation Courses — Non-credit

ICMA 100 Foundation Mathematics — 0 (4-0-0)

ICMA 101 Precalculus — 0 (4-0-0)

ICME 101 Foundation English: Communication Skills — 0 (4-0-0)

Note I:

- For B.B.A. students, students whose Mathematics placement is below ICMB 151 Business Mathematics are required to take ICMA 100 Foundation Mathematics and pass the course with the grade of "S" before moving to ICMB 151 Business Mathematics.
- For B.Sc. and B.Eng. students, students whose Mathematics placement is below ICMA 106 Calculus I and/or ICMA 151 Statistics for Science I are required to take ICMA 101 Precalculus and pass the course with the grade of "S" before moving to ICMA 106 Calculus I and/or ICMA 151 Statistics for Science I.
- For B.A.Sc. students, students whose Mathematics placement is below ICCT 101 Mathematics for Creative Technology I are required to take ICMA 101 Precalculus and pass the course with the grade of "S" before moving to ICCT 101 Mathematics for Creative Technology I.

Note II:

- Based on their achievement on the essay portion of the MUIC entrance exam, students whose English placement is below ICGC 104 English Studies I: The Writer's Toolkit will be placed into the "FE Track". These students will be required to take ICME 101 Foundation English: Communication

Skills and pass the course with the grade of "S" before moving to ICGC 104 English Studies I: The Writer's Toolkit.

General Education 30 Credits

General Education Group	GC2 Track*	FE and GC Track*
1. English Communication	10	14
2. GE Literacies	12	12
- MU Literacy	2	2
- Health Literacy	2	2
- Science and Environmental Literacy	2	2
- Intercultural and Global Awareness Literacy	2	2
- Civic Literacy	2	2
- Finance and Management Literacy	2	2
3. GE Electives	8	4
Total	**30**	**30**

** Students will be placed into specific tracks based on their achievement in the essay portion of the MUIC entrance exam.*

English Communication 10 – 14 Credits

ICGC 104 English Studies I: The Writer's Toolkit	4 (4-0-8)
ICGC 105 English Studies II: The Writer's Voice	4 (4-0-8)
ICGC 106 English Studies III: Public Speaking	4 (4-0-8)
ICGC 221 English Studies IV: The World of English - Global Realities	2 (2-0-4)
ICGC 222 English Studies IV: The World of English - Literary Analysis	2 (2-0-4)
ICGC 223 English Studies IV: The World of English - Creative Writing	2 (2-0-4)
ICGC 224 English Studies IV: The World of English - Advanced Oral Communication	2 (2-0-4)
ICGC 226 English Studies IV: The World of English - Literature Into Film	2 (2-0-4)
ICGC 228 English Studies IV: The World of English - Language and Culture	2 (2-0-4)
ICGC 230 English Studies IV: The World of English - First and Second Language Acquisition	2 (2-0-4)
ICGC 231 English Studies IV: The World of English – Poetry	2 (2-0-4)
ICGC 232 English Studies IV: The World of English - The Short Story and the Novel	2 (2-0-4)
ICGC 233 English Studies IV: The World of English – Drama	2 (2-0-4)

ICGC 234 English Studies IV: The World of English - Literary Non-fiction	2 (2-0-4)
ICGC 235 English Studies IV: The World of English - Writing for Research	2 (2-0-4)

Note I: Based on their achievement on the essay portion of the MUIC entrance exam, students will be placed into 3 following tracks: **'FE Track'**, **'GC Track'** and **'GC2 Track'**.

- **'FE Track'** – Students who are placed into 'FE Track' will be required to take ICME 101 (a non-credit course) and complete 14 credits in English Communication: ICGC 104, ICGC 105, ICGC 106 in order, and finally, any 200+ level English courses.
- **'GC Track'** – Students who are placed into 'GC Track' will be required to complete 14 credits in English Communication: ICGC 104, ICGC 105, ICGC 106 in order, and finally, any 200+ level English courses.
- **'GC2 Track'** – Students who are placed into 'GC2 Track' will be required to complete 10 credits in English Communication: ICGC 105, ICGC 106 in order, and finally, any 200+ level English courses.

GE Literacies — 12 Credits

Note I: Students must complete courses in the following six categories: MU Literacy, Health Literacy, Science & Environment Literacy, Intercultural & Global Awareness Literacy, and Finance & Management Literacy. Each category requires a minimum of 2 credits.

Note II: If a student selects a 4-credit course to fulfill a 2-credit literacy requirement, the excess 2 credits cannot be allocated or applied toward GE Elective or Free Elective credits. Instead, these excess credits will be entirely allocated to the literacy for which they were originally intended.

- **MU Literacy** — **2 Credits**

ICGB 101 Project Management for Impacts	2 (2-0-4)
ICGB 108 Event for Good	2 (2-0-4)
ICGN 139 Scientific Inquiry and the Community	2 (2-0-4)
ICGS 169 Learning by Doing	2 (2-0-4)
ICGS 171 Digital Campaign for Gender Issues	2 (2-0-4)
ICGS 172 Service Learning - Making Change	4 (4-0-8)
ICGS 173 Service Learning - Campaigning for a Cause	4 (4-0-8)
ICGS 175 Social Innovation and Sustainability	2 (2-0-4)

ICGS 176 Sustainable Cooking	2 (2-0-4)
ICGS 177 Social Innovation: Empowering Sustainable Communities	2 (2-0-4)
ICGT 107 Innovation: Inside Out	2 (2-0-4)

- **Health Literacy** **2 Credits**

ICGH 136 Sound & Soul: A Journey of Music, Emotion, and Well-being	2 (2-0-4)
ICGH 143 Flowers and Fragrances for Health	2 (2-0-4)
ICGN 135 Personal Health and Well-being	2 (2-0-4)
ICGP 101 American Flag Football	1 (0-2-1)
ICGP 102 Badminton	1 (0-2-1)
ICGP 103 Basketball	1 (0-2-1)
ICGP 104 Body Fitness	1 (0-2-1)
ICGP 105 Cycling	1 (0-2-1)
ICGP 106 Discover Dance	1 (0-2-1)
ICGP 107 Golf	1 (0-2-1)
ICGP 108 Mind and Body	1 (0-2-1)
ICGP 109 Selected Topics in Sports	1 (0-2-1)
ICGP 110 Self Defense (Striking)	1 (0-2-1)
ICGP 111 Self Defense (Grappling)	1 (0-2-1)
ICGP 112 Soccer	1 (0-2-1)
ICGP 113 Social Dance	1 (0-2-1)
ICGP 114 Swimming	1 (0-2-1)
ICGP 115 Tennis	1 (0-2-1)
ICGP 116 Volleyball	1 (0-2-1)
ICGP 118 Health and Wellness	2 (2-0-4)
ICGP 119 Mindful Food and Well-being	2 (2-0-4)
ICGP 120 Mind and Body: Navigating the Interplay of Brain, Behavior, and Well-being	2 (2-0-4)
ICGS 121 Abnormal Colleagues: how do I make this work?	4 (4-0-8)
ICGS 155 Pathway to Purpose: Life Design and Self-Exploration	4 (4-0-8)
ICGS 164 Positive Psychology	2 (2-0-4)
ICGS 178 Unmasking Human Behaviour: Exploring Psychological Truths about Behaviour	2 (2-0-4)
ICGS 179 Health and Society	2 (2-0-4)
ICLL 100 Self Development	2 (2-0-4)

- **Science & Environment Literacy** **2 Credits**

ICGH 131 Unraveling the Anthropocene: A Philosophical Critique of Earth's Shifts and Humanity's Roles	2 (2-0-4)
ICGH 142 Fantasy Literature's Environmental Message	2 (2-0-4)
ICGH 144 A Candle in the Dark: How to Tell Fact from Fiction	2 (2-0-4)
ICGN 105 Ecology, Ecosystems and Socio-Economics in Southeast Asia	4 (3-2-7)
ICGN 107 The Chemistry of Everyday Life	4 (4-0-8)
ICGN 108 Essentials of Culinary Science for Food Business	4 (3-2-7)
ICGN 111 Physics for CEO	4 (4-0-8)
ICGN 113 Plants, People and Poisons	4 (4-0-8)
ICGN 114 The Scientific Approach and Society	4 (4-0-8)
ICGN 115 Human Evolution, Diversity and Health	4 (4-0-8)
ICGN 116 Understanding and Visualizing Data	4 (3-2-7)
ICGN 119 Computer Essentials	4 (4-0-8)
ICGN 123 The Earth's Dynamic Structure	4 (3-2-7)
ICGN 124 Climate Change and Human Society	4 (3-2-7)
ICGN 126 Plant Society	2 (2-0-4)
ICGN 127 Practical Mathematics	2 (2-0-4)
ICGN 128 Climate Emergency, Biodiversity Crisis, and Humanity at Risk	2 (1-2-3)
ICGN 129 Programming for Problem Solving	4 (4-0-8)
ICGN 130 Cryptography: The Science of Making and Breaking Codes	2 (2-0-4)
ICGN 134 Introduction to Artificial Intelligence	2 (2-0-4)
ICGN 136 Creator Workshop	2 (2-0-4)
ICGN 137 Star Wanderer	2 (2-0-4)
ICGN 138 Cosmetics Chemistry	2 (2-0-4)
ICGN 140 Food Energy for Health	2 (2-0-4)
ICGN 141 Life in the Sea	2 (1-2-3)
ICGN 142 Energy and the Environment	2 (2-0-4)
ICGN 143 Gaia: Life on Earth	2 (1-2-3)
ICGT 101 Technology-Enhanced Learning: Harnessing AI & Digital Tools for Academic Success	2 (2-0-4)
ICGT 102 Digital Document Management	2 (2-0-4)
ICGT 103 Computational Thinking	2 (2-0-4)
ICGT 104 Tell a Great Story with Data	2 (2-0-4)
ICGT 105 No-Code Application Development	2 (2-0-4)

ICGT 106 Data and Spreadsheets	2 (2-0-4)
ICLL 102 Skills for a Digital World	2 (2-0-4)

- **Intercultural & Global Awareness Literacy** **2 Credits**

ICGH 107 Contemporary Art and Visual Culture	4 (4-0-8)
ICGH 109 Creative Thinking Through Art and Design	4 (2-4-6)
ICGH 110 Drawing as Visual Analysis	4 (2-4-6)
ICGH 115 Cinematic Language and Applications	4 (4-0-8)
ICGH 116 World Cinemas	4 (4-0-8)
ICGH 117 Drawing as Creative Expression	4 (2-4-6)
ICGH 118 Photography Visualizing in the Digital Age	4 (2-4-6)
ICGH 120 Thai and ASEAN Cinema	4 (4-0-8)
ICGH 124 Life Drawing and Anatomy	4 (2-4-6)
ICGH 128 Internet Celebrity, Culture and the Media	4 (4-0-8)
ICGH 130 The Logic Lab: Crafting Coherent Arguments	2 (2-0-4)
ICGH 132 The Rise and Fall of Ancient Athens	2 (2-0-4)
ICGH 135 The Horror Film	2 (2-0-4)
ICGH 137 Apocalypse Now, or Never, or Maybe?	2 (2-0–4)
ICGH 139 Spirituality, Sustainability, Ecosystems	2 (2-0-4)
ICGH 141 SPQR—Glimpses of Rome	2 (2-0-4)
ICGH 145 Essentials to Photography, Skills and Practices	2 (2-0-4)
ICGH 146 Acting for Self-Discovery and Empathizing with Others	2 (2-0-4)
ICGH 147 Myth and the Masks of the Divine	2 (2-0-4)
ICGH 148 Quest for Global Justice: A Philosophical Inquiry	2 (2-0-4)
ICGL 101 Elementary German I	4 (4-0-8)
ICGL 102 Elementary German II	4 (4-0-8)
ICGL 103 Elementary German III	4 (4-0-8)
ICGL 111 Elementary Japanese I	4 (4-0-8)
ICGL 112 Elementary Japanese II	4 (4-0-8)
ICGL 113 Elementary Japanese III	4 (4-0-8)
ICGL 121 Elementary French I	4 (4-0-8)
ICGL 122 Elementary French II	4 (4-0-8)
ICGL 123 Elementary French III	4 (4-0-8)
ICGL 131 Elementary Chinese I	4 (4-0-8)

ICGL 132 Elementary Chinese II	4 (4-0-8)
ICGL 133 Elementary Chinese III	4 (4-0-8)
ICGL 141 Elementary Spanish I	4 (4-0-8)
ICGL 142 Elementary Spanish II	4 (4-0-8)
ICGL 143 Elementary Spanish III	4 (4-0-8)
ICGL 160 Introduction to Thai Language and Culture	4 (4-0-8)
ICGL 161 Elementary Thai I	4 (4-0-8)
ICGL 162 Elementary Thai II	4 (4-0-8)
ICGL 163 Elementary Thai III	4 (4-0-8)
ICGL 164 Thai Writing for Specific Purposes in Workplace *for native Thai students	2 (2-0-4)
ICGL 171 Diversities in Multilingual Societies	2 (2-0-4)
ICGL 172 Chinese Influence in Thai Society	2 (2-0-4)
ICGL 173 Introduction to Japanese Societies	2 (2-0-4)
ICGL 174 From Siesta to Fiesta: Introduction to Spanish and Latin American Culture	2 (2-0-4)
ICGL 201 Pre-Intermediate German I	4 (4-0-8)
ICGL 202 Pre-Intermediate German II	4 (4-0-8)
ICGL 203 Pre-Intermediate German III	4 (4-0-8)
ICGL 211 Pre-Intermediate Japanese I	4 (4-0-8)
ICGL 212 Pre-Intermediate Japanese II	4 (4-0-8)
ICGL 213 Pre-Intermediate Japanese III	4 (4-0-8)
ICGL 221 Pre-intermediate French I	4 (4-0-8)
ICGL 222 Pre-intermediate French II	4 (4-0-8)
ICGL 223 Pre-intermediate French III	4 (4-0-8)
ICGL 231 Pre-Intermediate Chinese I	4 (4-0-8)
ICGL 232 Pre-Intermediate Chinese II	4 (4-0-8)
ICGL 233 Pre-Intermediate Chinese III	4 (4-0-8)
ICGL 241 Pre-Intermediate Spanish I	4 (4-0-8)
ICGL 242 Pre-Intermediate Spanish II	4 (4-0-8)
ICGL 243 Pre-Intermediate Spanish III	4 (4-0-8)
ICGN 125 Games and Learning	2 (2-0-4)
ICGS 112 Geography of Human Activities	4 (4-0-8)
ICGS 128 Global Gastronomy and Cuisines	4 (4-0-8)
ICGS 131 Introduction to International Studies	4 (4-0-8)
ICGS 132 Career Preparation in a Globalized World	4 (4-0-8)

ICGS 133 Foundation of Mediterranean Cultures	4 (4-0-8)
ICGS 137 Witchcraft and Gender Representation	4 (4-0-8)
ICGS 143 Introduction to Air Transport and Tourism	4 (4-0-8)
ICGS 156 Fashion and Society	2 (2-0-4)
ICGS 157 Asian Religious Traditions	2 (2-0-4)
ICGS 159 The Self and Modern Media	2 (2-0-4)
ICGS 161 Skills in Dealing with People Across Cultures	2 (2-0-4)
ICGS 162 Arts, Culture and Tourism Development	2 (2-0-4)
ICGS 165 Tea Studies	2 (2-0-4)
ICGS 167 Coffee Studies	2 (2-0-4)
ICGS 168 Faith a Lifestyle	2 (2-0-4)
ICGS 180 Cafe Story and Slow food	2 (2-0-4)
ICGS 181 Cuisine and Culture	2 (2-0-4)
ICGS 182 Humor Horizons	2 (2-0-4)

- **Civic Literacy** **2 Credits**

ICGH 126 Behavioral Ethics: Why Good People Do Bad Things	2 (2-0-4)
ICGH 129 Searching for Meaning	2 (2-0-4)
ICGH 133 Socrates, His Predecessors and Successors	2 (2-0-4)
ICGH 134 Digital Media Literacy: Skills for 21st Century Learning	2 (2-0-4)
ICGH 138 The Philosophies of Asia	2 (2-0-4)
ICGH 140 Ethics and Evolution	2 (2-0-4)
ICGH 149 Law, Technology, and Society	2 (2-0-4)
ICGH 150 Global Perspectives on Free Expression in the Digital Age	2 (2-0-4)
ICGN 131 Digital Search Literacy	2 (2-0-4)
ICGN 132 Digital Security and Privacy	2 (2-0-4)
ICGN 144 Environmental Ethics	2 (2-0-4)
ICGN 145 Food Integrity and Food Fraud: When a Food Product Is Not What It Seems	2 (2-0-4)
ICGS 134 Is Democracy Good?	4 (4-0-8)
ICGS 136 Social and Health Issues in Thailand	4 (3-2-7)
ICGS 140 Fake News, Censorship and the Politics of Truth	4 (4-0-8)
ICGS 147 Women in Leadership	4 (4-0-8)
ICGS 158 Contemporary Issues in Thailand	2 (2-0-4)
ICGS 160 Self and Society	2 (2-0-4)

ICGS 163 Popular Media and Conflicts	2 (2-0-4)
ICGS 166 Power and Politics	2 (2-0-4)
ICGS 170 Civic Action in Thailand	2 (2-0-4)
ICGS 183 Media and Community	2 (2-0-4)

- **Finance & Management Literacy** **2 Credits**

ICGB 102 Navigating the Market Landscape	2 (2-0-4)
ICGB 103 Decoding Economic News	2 (2-0-4)
ICGB 104 Entrepreneurship in a Disruptive Environment	2 (2-0-4)
ICGB 105 Personal Finance Literacy	2 (2-0-4)
ICGB 106 The Business of Fashion	2 (2-0-4)
ICGB 107 Tourism Management Perspectives	2 (2-0-4)
ICGB 109 Business Event Essentials	2 (2-0-4)
ICGB 110 Management Styles of Effective Leaders	2 (2-0-4)
ICGB 111 Leadership in a Global Society	2 (2-0-4)
ICGB 112 The Art of Pricing	2 (2-0-4)
ICGB 113 Crisis Management in Service Businesses	2 (2-0-4)
ICGB 114 Cultural Strategies for Success: Unveiling Eastern Business Dynamics	2 (2-0-4)
ICGB 115 Money: Deciphering Currencies of Value	2 (2-0-4)
ICGB 116 Managing Self and Working with Others	2 (2-0-4)
ICGH 101 Biotechnology: from Science to Business	4 (4-0-8)
ICGS 102 Business Sustainability and the Global Climate Change	4 (4-0-8)
ICGS 135 Entrepreneurial Accounting	4 (4-0-8)
ICGS 153 Social Media Management for Service Sector	2 (2-0-4)
ICGS 174 The Art of Leadership in Practice: Inspiration	2 (2-0-4)
ICGS 184 Healthy Habits, Happy Shoppers: Exploring Health Literacy in Consumer Decisions	2 (2-0-4)
ICLL 101 Professional Development	2 (2-0-4)

General Education Elective Courses 4-8 Credits

Students need to take remaining courses in any GE category to fulfill their 30 credits requirement of GE: 4 credits for students whose English Communication track are placed into ‘FE track’ or ‘GC Track’ and 8 credits for students whose English Communication track are placed into ‘GC2 Track’. Partial credits of GE course that exceed the GE requirements cannot be counted towards Free Electives.

Specific Courses — no less than 112 Credits

Core Courses — 68 Credits

ICMB 150 Introduction to Programming and Business Applications	2 (2-0-4)
ICMB 151 Business Mathematics	2 (2-0-4)
ICMB 152 Business Statistics	4 (4-0-8)
ICMB 253 Microeconomics	4 (4-0-8)
ICMB 254 Macroeconomics	4 (4-0-8)
ICMB 255 Management of Business Information	4 (4-0-8)
ICMB 256 Principles of Financial Accounting	4 (4-0-8)
ICMB 257 Business Finance for Entrepreneurs	4 (4-0-8)
ICMB 258 Business Communication	4 (4-0-8)
ICMB 259 Principles of Marketing	4 (4-0-8)
ICMB 260 Management and Organizational Behavior	4 (4-0-8)
ICMB 261 Human Resources Management	4 (4-0-8)
ICMB 262 International Business Management	4 (4-0-8)
ICMB 350 Business Law	4 (4-0-8)
ICMB 351 Business Ethics and Sustainability	4 (4-0-8)
ICMB 352 Management Science	4 (4-0-8)
ICMB 353 Operations Management	4 (4-0-8)
ICMB 450 Strategic Management	4 (4-0-8)

Note I: Students are able to take BBA courses only if they have met the following requirements:

1. Passed ICGC 104 English Studies I: The Writer's Toolkit with “S” grade or being placed in the English course level higher than ICGC 104 English Studies I: The Writer's Toolkit.
2. Passed ICMA 100 Foundation Mathematics with “S” grade or the placement Test.

Note II: ICMB 450 Strategic Management is restricted for students who have completed at least 124 credits.

Major Required Courses — 20 Credits

ICMB 371 Consumer Insights – A Qualitative Approach	4 (4-0-8)
ICMK 372 Market Intelligence – A Quantitative Approach	4 (4-0-8)
ICMK 373 Consumer Behavior and Decision Making	4 (4-0-8)
ICMK 379 Digital Marketing	4 (4-0-8)

ICMK 479 Marketing Strategy for Sustainability	4 (4-0-8)

Major Elective Tracks **no less than 16 Credits**

Marketing students can choose to focus on one of three marketing areas: Track I Digital Marketing; Track 2 Brand Management; Track 3 Entrepreneurial Marketing. Students will need to complete 16 credits from the respective lists below, of which those credits cannot be double-counted towards fulfilling other course types (Core courses, Major required courses, and Major elective courses)

- **Track I: Digital Marketing** **no less than 16 Credits**

ICMK 381 E-Commerce	4 (4-0-8)
ICMK 382 Integrated Marketing Communications	4 (4-0-8)
ICMK 389 Digital Content Marketing	4 (4-0-8)
ICMK 482 Omni-channel Retailing	4 (4-0-8)
ICMK 487 Digital Media Analytics	4 (4-0-8)

- **Track 2: Brand Management** **no less than 16 Credits**

ICMK 383 Brand Excellence and Consumer Experience	4 (4-0-8)
ICMK 384 The Art of Luxury Branding	2 (2-0-4)
ICMK 385 Personal Branding	2 (2-0-4)
ICMK 386 Health & Wellness Branding	2 (2-0-4)
ICMK 387 Place Branding	2 (2-0-4)
ICMK 481 Services Marketing	4 (4-0-8)
ICMK 486 New Products Management	4 (4-0-8)
ICMI 453 International Marketing Management	4 (4-0-8)

- **Track 3: Entrepreneurial Marketing** **no less than 16 Credits**

ICMK 381 E-Commerce	4 (4-0-8)
ICMK 382 Integrated Marketing Communications	4 (4-0-8)
ICMK 388 Regional Marketing: From North to South, West to East	4 (4-0-8)
ICMK 480 Entrepreneurial Marketing for Small, Startup, and Family Business	4 (4-0-8)
ICMK 485 Professional Selling Strategy	4 (4-0-8)
ICMK 486 New Products Management	4 (4-0-8)

Note I: Marketing major students who do not choose one of these three marketing tracks can opt to complete any four courses from the track lists above; of which those credits cannot be double-counted towards fulfilling other course types (Core courses, Major required courses, and Major elective courses)

Practical Training Courses 8 Credits

ICMB 451 Practical Business Training – Off Campus 8 (0-40-8)

ICMB 452 Innovation, Entrepreneurship and New Business Development 8 (8-0-16)

Note I: All BBA students are required to take either ICMB 451 Practical Business Training – Off Campus or ICMB 452 Innovation, Entrepreneurship and New Business Development when they have completed at least 124 credits.

Note II: For ICMB 451 Practical Business Training – Off Campus, students are not allowed to register for other courses in the trimester unless approved by their respective Program Director.

I-Design Electives 20 Credits

The purpose of the I-Design electives is to promote multidisciplinary learning. Students are encouraged to explore courses offered by diverse disciplines across MUIC, Mahidol University, and partner institutions. The I-Design electives can be satisfied upon the completion of the following course categories:

1. **Minor courses** offered by any program in **MUIC**
2. **Certificate courses** offered by any program in **MUIC**
3. **Any major courses** offered by any program in **MUIC**
4. **Any major courses** offered in **Mahidol University** (including undergraduate and graduate level courses). Courses must be approved by the student's advisor.
5. **Any major courses** offered at **partner institutions** (who have MOU with Mahidol University and/or MUIC). Courses must be approved by the student's advisor.

Free Electives 8 Credits

Students can take any courses offered by MUIC / Mahidol University or any major courses offered by the partner institutions (with MOU) as free elective courses with the approval from the advisor.

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DESIGN AND MEDIA



Communication Design

Degree Offered:

Bachelor of Fine Arts (Communication Design)

B.F.A. (Communication Design)

Program Goal :

The program aims to produce professional designers who have problem solving design skills in diverse contexts of the world's current issues and intercultural challenges with innovative and sustainable design solutions for positive social contributions.

Program Objectives :

Graduates will possess following competencies:

1. Apply design theories, principles, practices and communication skills as well as the design process replying to industry standards.
2. Awareness of global design trends, world's current issues involving sustainable design solutions and intercultural challenges.
3. Utilize design research, digital literacy skills, and current design-related technologies to create innovative design executions and phototypes.
4. Exemplify professionalism in design, including recognizing a sense of ownership, ethics, and intellectual property laws.
5. Demonstrate the application of design skills in various civic services for inclusiveness with partners' collaborations and contribution.
6. Encourage Lifelong learning on personal development in a professional design and related fields.

Curriculum Structure

Courses	Credit
Foundation Courses	Non-credit
General Education	No less than 30
Major Required Courses	92
Major Elective Courses (Tracks)	8
I-Design Elective Courses	No less than 20
Free Elective Courses	No less than 8
TOTAL	**No less than 158**

COURSE LIST

Foundation Courses — Non-credit

ICMA 100 Foundation Mathematics	0 (4-0-0)
ICMA 101 Precalculus	0 (4-0-0)
ICME 101 Foundation English: Communication Skills	0 (4-0-0)

Note I:

- For B.B.A. students, students whose Mathematics placement is below ICMB 151 Business Mathematics are required to take ICMA 100 Foundation Mathematics and pass the course with the grade of "S" before moving to ICMB 151 Business Mathematics.
- For B.Sc. and B.Eng. students, students whose Mathematics placement is below ICMA 106 Calculus I and/or ICMA 151 Statistics for Science I are required to take ICMA 101 Precalculus and pass the course with the grade of "S" before moving to ICMA 106 Calculus I and/or ICMA 151 Statistics for Science I.
- For B.A.Sc. students, students whose Mathematics placement is below ICCT 101 Mathematics for Creative Technology I are required to take ICMA 101 Precalculus and pass the course with the grade of "S" before moving to ICCT 101 Mathematics for Creative Technology I.

Note II:

- Based on their achievement on the essay portion of the MUIC entrance exam, students whose English placement is below ICGC 104 English Studies I: The Writer's Toolkit will be placed into the "FE Track". These students will be required to take ICME 101 Foundation English: Communication

Skills and pass the course with the grade of "S" before moving to ICGC 104 English Studies I: The Writer's Toolkit.

General Education 30 Credits

General Education Group	GC2 Track*	FE and GC Track*
1. English Communication	10	14
2. GE Literacies	12	12
- MU Literacy	2	2
- Health Literacy	2	2
- Science and Environmental Literacy	2	2
- Intercultural and Global Awareness Literacy	2	2
- Civic Literacy	2	2
- Finance and Management Literacy	2	2
3. GE Electives	8	4
Total	**30**	**30**

** Students will be placed into specific tracks based on their achievement in the essay portion of the MUIC entrance exam.*

English Communication 10 – 14 Credits

ICGC 104 English Studies I: The Writer's Toolkit	4 (4-0-8)
ICGC 105 English Studies II: The Writer's Voice	4 (4-0-8)
ICGC 106 English Studies III: Public Speaking	4 (4-0-8)
ICGC 221 English Studies IV: The World of English - Global Realities	2 (2-0-4)
ICGC 222 English Studies IV: The World of English - Literary Analysis	2 (2-0-4)
ICGC 223 English Studies IV: The World of English - Creative Writing	2 (2-0-4)
ICGC 224 English Studies IV: The World of English - Advanced Oral Communication	2 (2-0-4)
ICGC 226 English Studies IV: The World of English - Literature Into Film	2 (2-0-4)
ICGC 228 English Studies IV: The World of English - Language and Culture	2 (2-0-4)
ICGC 230 English Studies IV: The World of English - First and Second Language Acquisition	2 (2-0-4)
ICGC 231 English Studies IV: The World of English – Poetry	2 (2-0-4)
ICGC 232 English Studies IV: The World of English - The Short Story and the Novel	2 (2-0-4)
ICGC 233 English Studies IV: The World of English – Drama	2 (2-0-4)

ICGC 234 English Studies IV: The World of English - Literary Non-fiction	2 (2-0-4)
ICGC 235 English Studies IV: The World of English - Writing for Research	2 (2-0-4)

Note I: Based on their achievement on the essay portion of the MUIC entrance exam, students will be placed into 3 following tracks: **'FE Track'**, **'GC Track'** and **'GC2 Track'**.

- **'FE Track'** – Students who are placed into 'FE Track' will be required to take ICME 101 (a non-credit course) and complete 14 credits in English Communication: ICGC 104, ICGC 105, ICGC 106 in order, and finally, any 200+ level English courses.
- **'GC Track'** – Students who are placed into 'GC Track' will be required to complete 14 credits in English Communication: ICGC 104, ICGC 105, ICGC 106 in order, and finally, any 200+ level English courses.
- **'GC2 Track'** – Students who are placed into 'GC2 Track' will be required to complete 10 credits in English Communication: ICGC 105, ICGC 106 in order, and finally, any 200+ level English courses.

GE Literacies — 12 Credits

Note I: Students must complete courses in the following six categories: MU Literacy, Health Literacy, Science & Environment Literacy, Intercultural & Global Awareness Literacy, and Finance & Management Literacy. Each category requires a minimum of 2 credits.

Note II: If a student selects a 4-credit course to fulfill a 2-credit literacy requirement, the excess 2 credits cannot be allocated or applied toward GE Elective or Free Elective credits. Instead, these excess credits will be entirely allocated to the literacy for which they were originally intended.

- **MU Literacy** — **2 Credits**

ICGB 101 Project Management for Impacts	2 (2-0-4)
ICGB 108 Event for Good	2 (2-0-4)
ICGN 139 Scientific Inquiry and the Community	2 (2-0-4)
ICGS 169 Learning by Doing	2 (2-0-4)
ICGS 171 Digital Campaign for Gender Issues	2 (2-0-4)
ICGS 172 Service Learning - Making Change	4 (4-0-8)
ICGS 173 Service Learning - Campaigning for a Cause	4 (4-0-8)
ICGS 175 Social Innovation and Sustainability	2 (2-0-4)

ICGS 176 Sustainable Cooking	2 (2-0-4)
ICGS 177 Social Innovation: Empowering Sustainable Communities	2 (2-0-4)
ICGT 107 Innovation: Inside Out	2 (2-0-4)

- **Health Literacy** **2 Credits**

ICGH 136 Sound & Soul: A Journey of Music, Emotion, and Well-being	2 (2-0-4)
ICGH 143 Flowers and Fragrances for Health	2 (2-0-4)
ICGN 135 Personal Health and Well-being	2 (2-0-4)
ICGP 101 American Flag Football	1 (0-2-1)
ICGP 102 Badminton	1 (0-2-1)
ICGP 103 Basketball	1 (0-2-1)
ICGP 104 Body Fitness	1 (0-2-1)
ICGP 105 Cycling	1 (0-2-1)
ICGP 106 Discover Dance	1 (0-2-1)
ICGP 107 Golf	1 (0-2-1)
ICGP 108 Mind and Body	1 (0-2-1)
ICGP 109 Selected Topics in Sports	1 (0-2-1)
ICGP 110 Self Defense (Striking)	1 (0-2-1)
ICGP 111 Self Defense (Grappling)	1 (0-2-1)
ICGP 112 Soccer	1 (0-2-1)
ICGP 113 Social Dance	1 (0-2-1)
ICGP 114 Swimming	1 (0-2-1)
ICGP 115 Tennis	1 (0-2-1)
ICGP 116 Volleyball	1 (0-2-1)
ICGP 118 Health and Wellness	2 (2-0-4)
ICGP 119 Mindful Food and Well-being	2 (2-0-4)
ICGP 120 Mind and Body: Navigating the Interplay of Brain, Behavior, and Well-being	2 (2-0-4)
ICGS 121 Abnormal Colleagues: how do I make this work?	4 (4-0-8)
ICGS 155 Pathway to Purpose: Life Design and Self-Exploration	4 (4-0-8)
ICGS 164 Positive Psychology	2 (2-0-4)
ICGS 178 Unmasking Human Behaviour: Exploring Psychological Truths about Behaviour	2 (2-0-4)
ICGS 179 Health and Society	2 (2-0-4)
ICLL 100 Self Development	2 (2-0-4)

- **Science & Environment Literacy** **2 Credits**

ICGH 131 Unraveling the Anthropocene: A Philosophical Critique of Earth's Shifts and Humanity's Roles	2 (2-0-4)
ICGH 142 Fantasy Literature’s Environmental Message	2 (2-0-4)
ICGH 144 A Candle in the Dark: How to Tell Fact from Fiction	2 (2-0-4)
ICGN 105 Ecology, Ecosystems and Socio-Economics in Southeast Asia	4 (3-2-7)
ICGN 107 The Chemistry of Everyday Life	4 (4-0-8)
ICGN 108 Essentials of Culinary Science for Food Business	4 (3-2-7)
ICGN 111 Physics for CEO	4 (4-0-8)
ICGN 113 Plants, People and Poisons	4 (4-0-8)
ICGN 114 The Scientific Approach and Society	4 (4-0-8)
ICGN 115 Human Evolution, Diversity and Health	4 (4-0-8)
ICGN 116 Understanding and Visualizing Data	4 (3-2-7)
ICGN 119 Computer Essentials	4 (4-0-8)
ICGN 123 The Earth’s Dynamic Structure	4 (3-2-7)
ICGN 124 Climate Change and Human Society	4 (3-2-7)
ICGN 126 Plant Society	2 (2-0-4)
ICGN 127 Practical Mathematics	2 (2-0-4)
ICGN 128 Climate Emergency, Biodiversity Crisis, and Humanity at Risk	2 (1-2-3)
ICGN 129 Programming for Problem Solving	4 (4-0-8)
ICGN 130 Cryptography: The Science of Making and Breaking Codes	2 (2-0-4)
ICGN 134 Introduction to Artificial Intelligence	2 (2-0-4)
ICGN 136 Creator Workshop	2 (2-0-4)
ICGN 137 Star Wanderer	2 (2-0-4)
ICGN 138 Cosmetics Chemistry	2 (2-0-4)
ICGN 140 Food Energy for Health	2 (2-0-4)
ICGN 141 Life in the Sea	2 (1-2-3)
ICGN 142 Energy and the Environment	2 (2-0-4)
ICGN 143 Gaia: Life on Earth	2 (1-2-3)
ICGT 101 Technology-Enhanced Learning: Harnessing AI & Digital Tools for Academic Success	2 (2-0-4)
ICGT 102 Digital Document Management	2 (2-0-4)
ICGT 103 Computational Thinking	2 (2-0-4)
ICGT 104 Tell a Great Story with Data	2 (2-0-4)
ICGT 105 No-Code Application Development	2 (2-0-4)
ICGT 106 Data and Spreadsheets	2 (2-0-4)

ICLL 102 Skills for a Digital World	2 (2-0-4)

- **Intercultural & Global Awareness Literacy** **2 Credits**

ICGH 107 Contemporary Art and Visual Culture	4 (4-0-8)
ICGH 109 Creative Thinking Through Art and Design	4 (2-4-6)
ICGH 110 Drawing as Visual Analysis	4 (2-4-6)
ICGH 115 Cinematic Language and Applications	4 (4-0-8)
ICGH 116 World Cinemas	4 (4-0-8)
ICGH 117 Drawing as Creative Expression	4 (2-4-6)
ICGH 118 Photography Visualizing in the Digital Age	4 (2-4-6)
ICGH 120 Thai and ASEAN Cinema	4 (4-0-8)
ICGH 124 Life Drawing and Anatomy	4 (2-4-6)
ICGH 128 Internet Celebrity, Culture and the Media	4 (4-0-8)
ICGH 130 The Logic Lab: Crafting Coherent Arguments	2 (2-0-4)
ICGH 132 The Rise and Fall of Ancient Athens	2 (2-0-4)
ICGH 135 The Horror Film	2 (2-0-4)
ICGH 137 Apocalypse Now, or Never, or Maybe?	2 (2-0–4)
ICGH 139 Spirituality, Sustainability, Ecosystems	2 (2-0-4)
ICGH 141 SPQR—Glimpses of Rome	2 (2-0-4)
ICGH 145 Essentials to Photography, Skills and Practices	2 (2-0-4)
ICGH 146 Acting for Self-Discovery and Empathizing with Others	2 (2-0-4)
ICGH 147 Myth and the Masks of the Divine	2 (2-0-4)
ICGH 148 Quest for Global Justice: A Philosophical Inquiry	2 (2-0-4)
ICGL 101 Elementary German I	4 (4-0-8)
ICGL 102 Elementary German II	4 (4-0-8)
ICGL 103 Elementary German III	4 (4-0-8)
ICGL 111 Elementary Japanese I	4 (4-0-8)
ICGL 112 Elementary Japanese II	4 (4-0-8)
ICGL 113 Elementary Japanese III	4 (4-0-8)
ICGL 121 Elementary French I	4 (4-0-8)
ICGL 122 Elementary French II	4 (4-0-8)
ICGL 123 Elementary French III	4 (4-0-8)
ICGL 131 Elementary Chinese I	4 (4-0-8)
ICGL 132 Elementary Chinese II	4 (4-0-8)

ICGL 133 Elementary Chinese III	4 (4-0-8)
ICGL 141 Elementary Spanish I	4 (4-0-8)
ICGL 142 Elementary Spanish II	4 (4-0-8)
ICGL 143 Elementary Spanish III	4 (4-0-8)
ICGL 160 Introduction to Thai Language and Culture	4 (4-0-8)
ICGL 161 Elementary Thai I	4 (4-0-8)
ICGL 162 Elementary Thai II	4 (4-0-8)
ICGL 163 Elementary Thai III	4 (4-0-8)
ICGL 164 Thai Writing for Specific Purposes in Workplace *for native Thai students	2 (2-0-4)
ICGL 171 Diversities in Multilingual Societies	2 (2-0-4)
ICGL 172 Chinese Influence in Thai Society	2 (2-0-4)
ICGL 173 Introduction to Japanese Societies	2 (2-0-4)
ICGL 174 From Siesta to Fiesta: Introduction to Spanish and Latin American Culture	2 (2-0-4)
ICGL 201 Pre-Intermediate German I	4 (4-0-8)
ICGL 202 Pre-Intermediate German II	4 (4-0-8)
ICGL 203 Pre-Intermediate German III	4 (4-0-8)
ICGL 211 Pre-Intermediate Japanese I	4 (4-0-8)
ICGL 212 Pre-Intermediate Japanese II	4 (4-0-8)
ICGL 213 Pre-Intermediate Japanese III	4 (4-0-8)
ICGL 221 Pre-intermediate French I	4 (4-0-8)
ICGL 222 Pre-intermediate French II	4 (4-0-8)
ICGL 223 Pre-intermediate French III	4 (4-0-8)
ICGL 231 Pre-Intermediate Chinese I	4 (4-0-8)
ICGL 232 Pre-Intermediate Chinese II	4 (4-0-8)
ICGL 233 Pre-Intermediate Chinese III	4 (4-0-8)
ICGL 241 Pre-Intermediate Spanish I	4 (4-0-8)
ICGL 242 Pre-Intermediate Spanish II	4 (4-0-8)
ICGL 243 Pre-Intermediate Spanish III	4 (4-0-8)
ICGN 125 Games and Learning	2 (2-0-4)
ICGS 112 Geography of Human Activities	4 (4-0-8)
ICGS 128 Global Gastronomy and Cuisines	4 (4-0-8)
ICGS 131 Introduction to International Studies	4 (4-0-8)
ICGS 132 Career Preparation in a Globalized World	4 (4-0-8)
ICGS 133 Foundation of Mediterranean Cultures	4 (4-0-8)

ICGS 137 Witchcraft and Gender Representation	4 (4-0-8)
ICGS 143 Introduction to Air Transport and Tourism	4 (4-0-8)
ICGS 156 Fashion and Society	2 (2-0-4)
ICGS 157 Asian Religious Traditions	2 (2-0-4)
ICGS 159 The Self and Modern Media	2 (2-0-4)
ICGS 161 Skills in Dealing with People Across Cultures	2 (2-0-4)
ICGS 162 Arts, Culture and Tourism Development	2 (2-0-4)
ICGS 165 Tea Studies	2 (2-0-4)
ICGS 167 Coffee Studies	2 (2-0-4)
ICGS 168 Faith a Lifestyle	2 (2-0-4)
ICGS 180 Cafe Story and Slow food	2 (2-0-4)
ICGS 181 Cuisine and Culture	2 (2-0-4)
ICGS 182 Humor Horizons	2 (2-0-4)

- **Civic Literacy** **2 Credits**

ICGH 126 Behavioral Ethics: Why Good People Do Bad Things	2 (2-0-4)
ICGH 129 Searching for Meaning	2 (2-0-4)
ICGH 133 Socrates, His Predecessors and Successors	2 (2-0-4)
ICGH 134 Digital Media Literacy: Skills for 21st Century Learning	2 (2-0-4)
ICGH 138 The Philosophies of Asia	2 (2-0-4)
ICGH 140 Ethics and Evolution	2 (2-0-4)
ICGH 149 Law, Technology, and Society	2 (2-0-4)
ICGH 150 Global Perspectives on Free Expression in the Digital Age	2 (2-0-4)
ICGN 131 Digital Search Literacy	2 (2-0-4)
ICGN 132 Digital Security and Privacy	2 (2-0-4)
ICGN 144 Environmental Ethics	2 (2-0-4)
ICGN 145 Food Integrity and Food Fraud: When a Food Product Is Not What It Seems	2 (2-0-4)
ICGS 134 Is Democracy Good?	4 (4-0-8)
ICGS 136 Social and Health Issues in Thailand	4 (3-2-7)
ICGS 140 Fake News, Censorship and the Politics of Truth	4 (4-0-8)
ICGS 147 Women in Leadership	4 (4-0-8)
ICGS 158 Contemporary Issues in Thailand	2 (2-0-4)
ICGS 160 Self and Society	2 (2-0-4)
ICGS 163 Popular Media and Conflicts	2 (2-0-4)

ICGS 166 Power and Politics	2 (2-0-4)
ICGS 170 Civic Action in Thailand	2 (2-0-4)
ICGS 183 Media and Community	2 (2-0-4)

- **Finance & Management Literacy** **2 Credits**

ICGB 102 Navigating the Market Landscape	2 (2-0-4)
ICGB 103 Decoding Economic News	2 (2-0-4)
ICGB 104 Entrepreneurship in a Disruptive Environment	2 (2-0-4)
ICGB 105 Personal Finance Literacy	2 (2-0-4)
ICGB 106 The Business of Fashion	2 (2-0-4)
ICGB 107 Tourism Management Perspectives	2 (2-0-4)
ICGB 109 Business Event Essentials	2 (2-0-4)
ICGB 110 Management Styles of Effective Leaders	2 (2-0-4)
ICGB 111 Leadership in a Global Society	2 (2-0-4)
ICGB 112 The Art of Pricing	2 (2-0-4)
ICGB 113 Crisis Management in Service Businesses	2 (2-0-4)
ICGB 114 Cultural Strategies for Success: Unveiling Eastern Business Dynamics	2 (2-0-4)
ICGB 115 Money: Deciphering Currencies of Value	2 (2-0-4)
ICGB 116 Managing Self and Working with Others	2 (2-0-4)
ICGH 101 Biotechnology: from Science to Business	4 (4-0-8)
ICGS 102 Business Sustainability and the Global Climate Change	4 (4-0-8)
ICGS 135 Entrepreneurial Accounting	4 (4-0-8)
ICGS 153 Social Media Management for Service Sector	2 (2-0-4)
ICGS 174 The Art of Leadership in Practice: Inspiration	2 (2-0-4)
ICGS 184 Healthy Habits, Happy Shoppers: Exploring Health Literacy in Consumer Decisions	2 (2-0-4)
ICLL 101 Professional Development	2 (2-0-4)

General Education Elective Courses **4-8 Credits**

Students need to take remaining courses in any GE category to fulfill their 30 credits requirement of GE: 4 credits for students whose English Communication track are placed into ‘FE track’ or ‘GC Track’ and 8 credits for students whose English Communication track are placed into ‘GC2 Track’. Partial credits of GE course that exceed the GE requirements cannot be counted towards Free Electives.

Specific Courses no less than 100 Credits

Major Required Courses 92 Credits

ICCD 110 Art History	4 (4-0-8)
ICCD 111 Research & Conceptual Development	4 (2-4-6)
ICCD 113 Drawing Studio	4 (2-4-6)
ICCD 114 2 Dimensional Design & Color Theory	4 (2-4-6)
ICCD 115 3 Dimensional Design	4 (2-4-6)
ICCD 116 Digital Images and Processes	4 (2-4-6)
ICCD 120 Graphic Design History	4 (4-0-8)
ICCD 214 Typography & Typeface Design	4 (2-4-6)
ICCD 310 Environmental Graphic Design	4 (2-4-6)
ICCD 311 Integrated Branding	4 (2-4-6)
ICCD 312 Advertising Campaign Design	4 (2-4-6)
ICCD 313 Data Visualization & Infographics	4 (2-4-6)
ICCD 314 Online Communication & Application	4 (2-4-6)
ICCD 315 New Media Design	4 (2-4-6)
ICCD 355 Professional Ethics & Communication Design Practicum	4 (2-4-6)
ICCD 413 Thesis Research & Development	4 (4-0-8)
ICCD 414 Thesis Design & Production	4 (2-4-6)
ICCD 415 Thesis Writing Seminar	4 (4-0-8)
ICCD 416 Portfolio Development	4 (2-4-6)
ICCD 417 Exhibition Design	4 (2-4-6)

Major Elective Courses (Tracks)* 8 Credits

- **Track: Campaign Design Production**

ICCD 330 Campaign Development	4 (2-4-6)
ICCD 331 Online Communication Strategic Planning	4 (2-4-6)

- **Track: Film Production**

ICCD 340 Cinematic Production	4 (2-4-6)
ICCD 345 Post-Production & Visual Effects	4 (2-4-6)

- **Track: Animation Production**

ICCD 343 Animation Production	4 (2-4-6)
ICCD 344 Character Design	4 (2-4-6)

- **Track: Interactive New Media Design**

ICCD 332 Interactive Design & Production	4 (2-4-6)
ICCD 360 Service Design	4 (2-4-6)
ICCD 361 Integrated Design for Well-being	4 (2-4-6)

- **Track: Illustration Key Visual Design**

ICCD 362 Advance Visual Technique	4 (2-4-6)
ICCD 363 Advance Illustration	4 (2-4-6)

**There are six tracks in major elective courses, student is required to select one track (8 credits) from the six tracks.*

Other Major Electives

ICFA 240 Current Issues in Design	4 (4-0-8)
ICFA 241 Study Trips: Regional	2 (0-4-2)
ICFA 242 Study Trips: International	2 (0-4-2)
ICFA 346 International Design Language and Culture	4 (4-0-8)
ICFA 356 Internship	4 (4-0-8)
ICFA 357 Package Design	4 (2-4-6)
ICFA 358 Illustration	4 (2-4-6)
ICFA 359 Gamification	4 (2-4-6)

I-Design Electives 20 Credits

The purpose of the I-Design electives is to promote multidisciplinary learning. Students are encouraged to explore courses offered by diverse disciplines across MUIC, Mahidol University, and partner institutions. The I-Design electives can be satisfied upon the completion of the following course categories:

1. **Minor courses** offered by any program in **MUIC**
2. **Certificate courses** offered by any program in **MUIC**
3. **Any major courses** offered by any program in **MUIC**

4. **Any major courses** offered in **Mahidol University** (including undergraduate and graduate level courses). Courses must be approved by the student's advisor.

5. **Any major courses** offered at **partner institutions** (who have MOU with Mahidol University and/or MUIC). Courses must be approved by the student's advisor.

Free Electives 8 Credits

Students can take any courses offered by MUIC / Mahidol University or any major courses offered by the partner institutions (with MOU) as free elective courses with the approval from the advisor.

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Media and Communication

Degree Offered:

Bachelor of Communication Arts (Media and Communication)

B. Com. Arts. (Media and Communication)

Program Goal :

The Media and Communication program is committed to developing students into skilled, knowledgeable, and adaptable professionals ready to excel in the dynamic media landscape. With a strong emphasis on media literacy, critical thinking, and technical proficiency, the program integrates hands-on expertise in content creation, strategic planning, and digital media innovation with a solid theoretical foundation. Students will gain comprehensive insights into media production, audience analysis, and ethical considerations in communication, enabling them to contribute effectively to local and global industries.

Program Objectives :

To produce graduates who are able to:

1. Foster ethical awareness and critical thinking to address challenges in media and communication practices.
2. Encourage the creation of professional-quality media content that aligns with industry standards and audience expectations.
3. Support the development of innovative strategies for media convergence to expand content reach and engagement.
4. Promote effective communication of ideas and information tailored to diverse audiences for meaningful outcomes.
5. Build collaborative skills that enhance creativity, innovation, and adaptability in dynamic professional contexts.
6. Instill a mindset of lifelong learning to navigate advancements in media technologies and industry trends.

Curriculum Structure

Courses	Credit
Foundation Courses	Non-credit
General Education	No less than 30
Core Courses	52
Major Required Courses	38
Major Elective Courses	12
I-Design Elective Courses	No less than 20
Free Elective Courses	No less than 8
TOTAL	**No less than 160**

COURSE LIST

Foundation Courses — Non-credit

ICMA 100 Foundation Mathematics	0 (4-0-0)
ICMA 101 Precalculus	0 (4-0-0)
ICME 101 Foundation English: Communication Skills	0 (4-0-0)

Note I:

- For B.B.A. students, students whose Mathematics placement is below ICMB 151 Business Mathematics are required to take ICMA 100 Foundation Mathematics and pass the course with the grade of "S" before moving to ICMB 151 Business Mathematics.
- For B.Sc. and B.Eng. students, students whose Mathematics placement is below ICMA 106 Calculus I and/or ICMA 151 Statistics for Science I are required to take ICMA 101 Precalculus and pass the course with the grade of "S" before moving to ICMA 106 Calculus I and/or ICMA 151 Statistics for Science I.
- For B.A.Sc. students, students whose Mathematics placement is below ICCT 101 Mathematics for Creative Technology I are required to take ICMA 101 Precalculus and pass the course with the grade of "S" before moving to ICCT 101 Mathematics for Creative Technology I.

Note II:

- Based on their achievement on the essay portion of the MUIC entrance exam, students whose English placement is below ICGC 104 English Studies I: The Writer's Toolkit will be placed into the

"FE Track". These students will be required to take ICME 101 Foundation English: Communication Skills and pass the course with the grade of "S" before moving to ICGC 104 English Studies I: The Writer's Toolkit.

General Education 30 Credits

General Education Group	GC2 Track*	FE and GC Track*
1. English Communication	10	14
2. GE Literacies	12	12
- MU Literacy	2	2
- Health Literacy	2	2
- Science and Environmental Literacy	2	2
- Intercultural and Global Awareness Literacy	2	2
- Civic Literacy	2	2
- Finance and Management Literacy	2	2
3. GE Electives	8	4
Total	**30**	**30**

** Students will be placed into specific tracks based on their achievement in the essay portion of the MUIC entrance exam.*

English Communication 10 – 14 Credits

ICGC 104 English Studies I: The Writer's Toolkit	4 (4-0-8)
ICGC 105 English Studies II: The Writer's Voice	4 (4-0-8)
ICGC 106 English Studies III: Public Speaking	4 (4-0-8)
ICGC 221 English Studies IV: The World of English - Global Realities	2 (2-0-4)
ICGC 222 English Studies IV: The World of English - Literary Analysis	2 (2-0-4)
ICGC 223 English Studies IV: The World of English - Creative Writing	2 (2-0-4)
ICGC 224 English Studies IV: The World of English - Advanced Oral Communication	2 (2-0-4)
ICGC 226 English Studies IV: The World of English - Literature Into Film	2 (2-0-4)
ICGC 228 English Studies IV: The World of English - Language and Culture	2 (2-0-4)
ICGC 230 English Studies IV: The World of English - First and Second Language Acquisition	2 (2-0-4)
ICGC 231 English Studies IV: The World of English – Poetry	2 (2-0-4)
ICGC 232 English Studies IV: The World of English - The Short Story and the Novel	2 (2-0-4)

ICGC 233 English Studies IV: The World of English – Drama	2 (2-0-4)
ICGC 234 English Studies IV: The World of English - Literary Non-fiction	2 (2-0-4)
ICGC 235 English Studies IV: The World of English - Writing for Research	2 (2-0-4)

Note I: Based on their achievement on the essay portion of the MUIC entrance exam, students will be placed into 3 following tracks: **'FE Track'**, **'GC Track'** and **'GC2 Track'**.

- **'FE Track'** – Students who are placed into 'FE Track' will be required to take ICME 101 (a non-credit course) and complete 14 credits in English Communication: ICGC 104, ICGC 105, ICGC 106 in order, and finally, any 200+ level English courses.
- **'GC Track'** – Students who are placed into 'GC Track' will be required to complete 14 credits in English Communication: ICGC 104, ICGC 105, ICGC 106 in order, and finally, any 200+ level English courses.
- **'GC2 Track'** – Students who are placed into 'GC2 Track' will be required to complete 10 credits in English Communication: ICGC 105, ICGC 106 in order, and finally, any 200+level English courses.

GE Literacies — 12 Credits

Note I: Students must complete courses in the following six categories: MU Literacy, Health Literacy, Science & Environment Literacy, Intercultural & Global Awareness Literacy, and Finance & Management Literacy. Each category requires a minimum of 2 credits.

Note II: If a student selects a 4-credit course to fulfill a 2-credit literacy requirement, the excess 2 credits cannot be allocated or applied toward GE Elective or Free Elective credits. Instead, these excess credits will be entirely allocated to the literacy for which they were originally intended.

- **MU Literacy** — **2 Credits**

ICGB 101 Project Management for Impacts	2 (2-0-4)
ICGB 108 Event for Good	2 (2-0-4)
ICGN 139 Scientific Inquiry and the Community	2 (2-0-4)
ICGS 169 Learning by Doing	2 (2-0-4)
ICGS 171 Digital Campaign for Gender Issues	2 (2-0-4)
ICGS 172 Service Learning - Making Change	4 (4-0-8)
ICGS 173 Service Learning - Campaigning for a Cause	4 (4-0-8)

ICGS 175 Social Innovation and Sustainability	2 (2-0-4)
ICGS 176 Sustainable Cooking	2 (2-0-4)
ICGS 177 Social Innovation: Empowering Sustainable Communities	2 (2-0-4)
ICGT 107 Innovation: Inside Out	2 (2-0-4)

- **Health Literacy** **2 Credits**

ICGH 136 Sound & Soul: A Journey of Music, Emotion, and Well-being	2 (2-0-4)
ICGH 143 Flowers and Fragrances for Health	2 (2-0-4)
ICGN 135 Personal Health and Well-being	2 (2-0-4)
ICGP 101 American Flag Football	1 (0-2-1)
ICGP 102 Badminton	1 (0-2-1)
ICGP 103 Basketball	1 (0-2-1)
ICGP 104 Body Fitness	1 (0-2-1)
ICGP 105 Cycling	1 (0-2-1)
ICGP 106 Discover Dance	1 (0-2-1)
ICGP 107 Golf	1 (0-2-1)
ICGP 108 Mind and Body	1 (0-2-1)
ICGP 109 Selected Topics in Sports	1 (0-2-1)
ICGP 110 Self Defense (Striking)	1 (0-2-1)
ICGP 111 Self Defense (Grappling)	1 (0-2-1)
ICGP 112 Soccer	1 (0-2-1)
ICGP 113 Social Dance	1 (0-2-1)
ICGP 114 Swimming	1 (0-2-1)
ICGP 115 Tennis	1 (0-2-1)
ICGP 116 Volleyball	1 (0-2-1)
ICGP 118 Health and Wellness	2 (2-0-4)
ICGP 119 Mindful Food and Well-being	2 (2-0-4)
ICGP 120 Mind and Body: Navigating the Interplay of Brain, Behavior, and Well-being	2 (2-0-4)
ICGS 121 Abnormal Colleagues: how do I make this work?	4 (4-0-8)
ICGS 155 Pathway to Purpose: Life Design and Self-Exploration	4 (4-0-8)
ICGS 164 Positive Psychology	2 (2-0-4)
ICGS 178 Unmasking Human Behaviour: Exploring Psychological Truths about Behaviour	2 (2-0-4)
ICGS 179 Health and Society	2 (2-0-4)

ICLL 100 Self Development	2 (2-0-4)

- **Science & Environment Literacy** **2 Credits**

ICGH 131 Unraveling the Anthropocene: A Philosophical Critique of Earth's Shifts and Humanity's Roles	2 (2-0-4)
ICGH 142 Fantasy Literature's Environmental Message	2 (2-0-4)
ICGH 144 A Candle in the Dark: How to Tell Fact from Fiction	2 (2-0-4)
ICGN 105 Ecology, Ecosystems and Socio-Economics in Southeast Asia	4 (3-2-7)
ICGN 107 The Chemistry of Everyday Life	4 (4-0-8)
ICGN 108 Essentials of Culinary Science for Food Business	4 (3-2-7)
ICGN 111 Physics for CEO	4 (4-0-8)
ICGN 113 Plants, People and Poisons	4 (4-0-8)
ICGN 114 The Scientific Approach and Society	4 (4-0-8)
ICGN 115 Human Evolution, Diversity and Health	4 (4-0-8)
ICGN 116 Understanding and Visualizing Data	4 (3-2-7)
ICGN 119 Computer Essentials	4 (4-0-8)
ICGN 123 The Earth's Dynamic Structure	4 (3-2-7)
ICGN 124 Climate Change and Human Society	4 (3-2-7)
ICGN 126 Plant Society	2 (2-0-4)
ICGN 127 Practical Mathematics	2 (2-0-4)
ICGN 128 Climate Emergency, Biodiversity Crisis, and Humanity at Risk	2 (1-2-3)
ICGN 129 Programming for Problem Solving	4 (4-0-8)
ICGN 130 Cryptography: The Science of Making and Breaking Codes	2 (2-0-4)
ICGN 134 Introduction to Artificial Intelligence	2 (2-0-4)
ICGN 136 Creator Workshop	2 (2-0-4)
ICGN 137 Star Wanderer	2 (2-0-4)
ICGN 138 Cosmetics Chemistry	2 (2-0-4)
ICGN 140 Food Energy for Health	2 (2-0-4)
ICGN 141 Life in the Sea	2 (1-2-3)
ICGN 142 Energy and the Environment	2 (2-0-4)
ICGN 143 Gaia: Life on Earth	2 (1-2-3)
ICGT 101 Technology-Enhanced Learning: Harnessing AI & Digital Tools for Academic Success	2 (2-0-4)
ICGT 102 Digital Document Management	2 (2-0-4)
ICGT 103 Computational Thinking	2 (2-0-4)
ICGT 104 Tell a Great Story with Data	2 (2-0-4)

ICGT 105 No-Code Application Development	2 (2-0-4)
ICGT 106 Data and Spreadsheets	2 (2-0-4)
ICLL 102 Skills for a Digital World	2 (2-0-4)

- **Intercultural & Global Awareness Literacy** **2 Credits**

ICGH 107 Contemporary Art and Visual Culture	4 (4-0-8)
ICGH 109 Creative Thinking Through Art and Design	4 (2-4-6)
ICGH 110 Drawing as Visual Analysis	4 (2-4-6)
ICGH 115 Cinematic Language and Applications	4 (4-0-8)
ICGH 116 World Cinemas	4 (4-0-8)
ICGH 117 Drawing as Creative Expression	4 (2-4-6)
ICGH 118 Photography Visualizing in the Digital Age	4 (2-4-6)
ICGH 120 Thai and ASEAN Cinema	4 (4-0-8)
ICGH 124 Life Drawing and Anatomy	4 (2-4-6)
ICGH 128 Internet Celebrity, Culture and the Media	4 (4-0-8)
ICGH 130 The Logic Lab: Crafting Coherent Arguments	2 (2-0-4)
ICGH 132 The Rise and Fall of Ancient Athens	2 (2-0-4)
ICGH 135 The Horror Film	2 (2-0-4)
ICGH 137 Apocalypse Now, or Never, or Maybe?	2 (2-0–4)
ICGH 139 Spirituality, Sustainability, Ecosystems	2 (2-0-4)
ICGH 141 SPQR—Glimpses of Rome	2 (2-0-4)
ICGH 145 Essentials to Photography, Skills and Practices	2 (2-0-4)
ICGH 146 Acting for Self-Discovery and Empathizing with Others	2 (2-0-4)
ICGH 147 Myth and the Masks of the Divine	2 (2-0-4)
ICGH 148 Quest for Global Justice: A Philosophical Inquiry	2 (2-0-4)
ICGL 101 Elementary German I	4 (4-0-8)
ICGL 102 Elementary German II	4 (4-0-8)
ICGL 103 Elementary German III	4 (4-0-8)
ICGL 111 Elementary Japanese I	4 (4-0-8)
ICGL 112 Elementary Japanese II	4 (4-0-8)
ICGL 113 Elementary Japanese III	4 (4-0-8)
ICGL 121 Elementary French I	4 (4-0-8)
ICGL 122 Elementary French II	4 (4-0-8)
ICGL 123 Elementary French III	4 (4-0-8)

ICGL 131 Elementary Chinese I	4 (4-0-8)
ICGL 132 Elementary Chinese II	4 (4-0-8)
ICGL 133 Elementary Chinese III	4 (4-0-8)
ICGL 141 Elementary Spanish I	4 (4-0-8)
ICGL 142 Elementary Spanish II	4 (4-0-8)
ICGL 143 Elementary Spanish III	4 (4-0-8)
ICGL 160 Introduction to Thai Language and Culture	4 (4-0-8)
ICGL 161 Elementary Thai I	4 (4-0-8)
ICGL 162 Elementary Thai II	4 (4-0-8)
ICGL 163 Elementary Thai III	4 (4-0-8)
ICGL 164 Thai Writing for Specific Purposes in Workplace *for native Thai students	2 (2-0-4)
ICGL 171 Diversities in Multilingual Societies	2 (2-0-4)
ICGL 172 Chinese Influence in Thai Society	2 (2-0-4)
ICGL 173 Introduction to Japanese Societies	2 (2-0-4)
ICGL 174 From Siesta to Fiesta: Introduction to Spanish and Latin American Culture	2 (2-0-4)
ICGL 201 Pre-Intermediate German I	4 (4-0-8)
ICGL 202 Pre-Intermediate German II	4 (4-0-8)
ICGL 203 Pre-Intermediate German III	4 (4-0-8)
ICGL 211 Pre-Intermediate Japanese I	4 (4-0-8)
ICGL 212 Pre-Intermediate Japanese II	4 (4-0-8)
ICGL 213 Pre-Intermediate Japanese III	4 (4-0-8)
ICGL 221 Pre-intermediate French I	4 (4-0-8)
ICGL 222 Pre-intermediate French II	4 (4-0-8)
ICGL 223 Pre-intermediate French III	4 (4-0-8)
ICGL 231 Pre-Intermediate Chinese I	4 (4-0-8)
ICGL 232 Pre-Intermediate Chinese II	4 (4-0-8)
ICGL 233 Pre-Intermediate Chinese III	4 (4-0-8)
ICGL 241 Pre-Intermediate Spanish I	4 (4-0-8)
ICGL 242 Pre-Intermediate Spanish II	4 (4-0-8)
ICGL 243 Pre-Intermediate Spanish III	4 (4-0-8)
ICGN 125 Games and Learning	2 (2-0-4)
ICGS 112 Geography of Human Activities	4 (4-0-8)
ICGS 128 Global Gastronomy and Cuisines	4 (4-0-8)
ICGS 131 Introduction to International Studies	4 (4-0-8)

ICGS 132 Career Preparation in a Globalized World	4 (4-0-8)
ICGS 133 Foundation of Mediterranean Cultures	4 (4-0-8)
ICGS 137 Witchcraft and Gender Representation	4 (4-0-8)
ICGS 143 Introduction to Air Transport and Tourism	4 (4-0-8)
ICGS 156 Fashion and Society	2 (2-0-4)
ICGS 157 Asian Religious Traditions	2 (2-0-4)
ICGS 159 The Self and Modern Media	2 (2-0-4)
ICGS 161 Skills in Dealing with People Across Cultures	2 (2-0-4)
ICGS 162 Arts, Culture and Tourism Development	2 (2-0-4)
ICGS 165 Tea Studies	2 (2-0-4)
ICGS 167 Coffee Studies	2 (2-0-4)
ICGS 168 Faith a Lifestyle	2 (2-0-4)
ICGS 180 Cafe Story and Slow food	2 (2-0-4)
ICGS 181 Cuisine and Culture	2 (2-0-4)
ICGS 182 Humor Horizons	2 (2-0-4)

- **Civic Literacy** **2 Credits**

ICGH 126 Behavioral Ethics: Why Good People Do Bad Things	2 (2-0-4)
ICGH 129 Searching for Meaning	2 (2-0-4)
ICGH 133 Socrates, His Predecessors and Successors	2 (2-0-4)
ICGH 134 Digital Media Literacy: Skills for 21st Century Learning	2 (2-0-4)
ICGH 138 The Philosophies of Asia	2 (2-0-4)
ICGH 140 Ethics and Evolution	2 (2-0-4)
ICGH 149 Law, Technology, and Society	2 (2-0-4)
ICGH 150 Global Perspectives on Free Expression in the Digital Age	2 (2-0-4)
ICGN 131 Digital Search Literacy	2 (2-0-4)
ICGN 132 Digital Security and Privacy	2 (2-0-4)
ICGN 144 Environmental Ethics	2 (2-0-4)
ICGN 145 Food Integrity and Food Fraud: When a Food Product Is Not What It Seems	2 (2-0-4)
ICGS 134 Is Democracy Good?	4 (4-0-8)
ICGS 136 Social and Health Issues in Thailand	4 (3-2-7)
ICGS 140 Fake News, Censorship and the Politics of Truth	4 (4-0-8)
ICGS 147 Women in Leadership	4 (4-0-8)
ICGS 158 Contemporary Issues in Thailand	2 (2-0-4)

ICGS 160 Self and Society	2 (2-0-4)
ICGS 163 Popular Media and Conflicts	2 (2-0-4)
ICGS 166 Power and Politics	2 (2-0-4)
ICGS 170 Civic Action in Thailand	2 (2-0-4)
ICGS 183 Media and Community	2 (2-0-4)

- **Finance & Management Literacy** **2 Credits**

ICGB 102 Navigating the Market Landscape	2 (2-0-4)
ICGB 103 Decoding Economic News	2 (2-0-4)
ICGB 104 Entrepreneurship in a Disruptive Environment	2 (2-0-4)
ICGB 105 Personal Finance Literacy	2 (2-0-4)
ICGB 106 The Business of Fashion	2 (2-0-4)
ICGB 107 Tourism Management Perspectives	2 (2-0-4)
ICGB 109 Business Event Essentials	2 (2-0-4)
ICGB 110 Management Styles of Effective Leaders	2 (2-0-4)
ICGB 111 Leadership in a Global Society	2 (2-0-4)
ICGB 112 The Art of Pricing	2 (2-0-4)
ICGB 113 Crisis Management in Service Businesses	2 (2-0-4)
ICGB 114 Cultural Strategies for Success: Unveiling Eastern Business Dynamics	2 (2-0-4)
ICGB 115 Money: Deciphering Currencies of Value	2 (2-0-4)
ICGB 116 Managing Self and Working with Others	2 (2-0-4)
ICGH 101 Biotechnology: from Science to Business	4 (4-0-8)
ICGS 102 Business Sustainability and the Global Climate Change	4 (4-0-8)
ICGS 135 Entrepreneurial Accounting	4 (4-0-8)
ICGS 153 Social Media Management for Service Sector	2 (2-0-4)
ICGS 174 The Art of Leadership in Practice: Inspiration	2 (2-0-4)
ICGS 184 Healthy Habits, Happy Shoppers: Exploring Health Literacy in Consumer Decisions	2 (2-0-4)
ICLL 101 Professional Development	2 (2-0-4)

General Education Elective Courses **4-8 Credits**

Students need to take remaining courses in any GE category to fulfill their 30 credits requirement of GE: 4 credits for students whose English Communication track are placed into ‘FE track’ or ‘GC Track’

and 8 credits for students whose English Communication track are placed into 'GC2 Track'. Partial credits of GE course that exceed the GE requirements cannot be counted towards Free Electives.

Specific Courses — no less than 110 Credits

Core Courses — 52 Credits

ICMC 102 Man and Arts for Media and Communication	4 (4-0-8)
ICMC 104 Audio Communication	4 (4-0-8)
ICMC 108 Visual Culture and Sociology	4 (4-0-8)
ICMC 112 Media and Culture in the Digital Age	4 (4-0-8)
ICMC 113 Introduction to Communication and Collaboration	4 (4-0-8)
ICMC 114 Writing for Interactive and Digital Media	4 (4-0-8)
ICMC 201 Media and Communication Regulations and Ethics	4 (4-0-8)
ICMC 202 Media and Cultural Theory	4 (4-0-8)
ICMC 204 Research Methods and Basic Statistics in Communication and Cultural Studies	4 (4-0-8)
ICMC 208 Transmedia Storytelling	4 (4-0-8)
ICMC 209 Creativity and Digital Communication	4 (4-0-8)
ICMC 210 Basic Acting	4 (2-4-6)
ICMC 217 Media Psychology	4 (4-0-8)

Major Required Courses — 38 Credits

The program offers students two distinct tracks, allowing them to choose from one of the following options.

- **Track I: Content Creation** — **20 credits**

ICMC 223 Southeast Asian Creative Content Analysis: from Ethno-Historiography Perspectives	4 (4-0-8)
ICMC 229 Digital Media Production	4 (2-4-6)
ICMC 240 Storytelling for Content Creation	4 (4-0-8)
ICMC 241 Pre-Production Mastery: Directing Focus	4 (4-0-8)
ICMC 242 Directing Fictional Film: The Art of Digital Storycraft	4 (2-4-6)

- **Track II: Integrated Media Communication** — **20 credits**

ICMC 232 Branded Storytelling	4 (4-0-8)
ICMC 233 Social Media Strategy, Execution and Trends	4 (4-0-8)

ICMC 234 Integrated Marketing Communication	4 (4-0-8)
ICMC 235 Strategic Communication	4 (4-0-8)
ICMC 376 Targeted Audience Analysis	4 (4-0-8)

- **Capstone courses that are part of the major require** **18 credits**

ICMC 398 Professional Internship in Media and Communication	8 (0-40-8)
ICMC 411 Media and Communication Thesis I: Research and Preparation	4 (0-8-4)
ICMC 412 Media and Communication Thesis II: Producing, Execution and Operation	4 (0-8-4)
ICMC 413 Media and Communication Thesis Exhibition	2 (0-4-2)

Major Elective Courses 12 Credits

Study one module or select three subjects from any of the following twelve modules.

- **Module I: Live Performance**

ICMC 308 Theatre Production I	4 (2-4-6)
ICMC 309 Theatre Management I	4 (2-4-6)
ICMC 310 Theatre Production II	4 (2-4-6)
ICMC 398 Professional Internship in Media and Communication	8 (0-40-8)
ICMC 411 Media and Communication Thesis I: Research and Preparation	4 (0-8-4)
ICMC 412 Media and Communication Thesis II: Producing, Execution and Operation	4 (0-8-4)
ICMC 413 Media and Communication Thesis Exhibition	2 (0-4-2)

- **Module II: Writing**

ICMC 313 Film Screenwriting	4 (4-0-8)
ICMC 316 Advertisement & Copywriting	4 (4-0-8)
ICMC 317 Journalistic Writing	4 (4-0-8)

- **Module III: Acting**

ICMC 325 Acting I: the Fundamentals	4 (2-4-6)
ICMC 326 Acting II: Advanced Acting	4 (2-4-6)
ICMC 327 Acting for TV and Film	4 (2-4-6)

- **Module IV: Directing**

ICMC 333 Directing I: Directing the Actors	4 (2-4-6)

ICMC 334 Directing II: Directing for Recorded Media	4 (2-4-6)
ICMC 335 Directing Live Performance	4 (2-4-6)

- **Module V: AI For Media and Communication**

ICMC 336 AI For Storytelling	4 (4-0-8)
ICMC 337 AI For Design and Brand Identity	4 (4-0-8)
ICMC 338 AI For Media Creation	4 (4-0-8)

- **Module VI: Film Making**

ICMC 348 Art Direction & Production Design	4 (2-4-6)
ICMC 349 Cinematic Lighting and Film Production Sound	4 (2-4-6)
ICMC 350 Short Film Creation	4 (2-4-6)

- **Module VII: Dance & Choreography**

ICMC 354 Movement and Human Body	4 (2-4-6)
ICMC 355 Choreography I	4 (2-4-6)
ICMC 356 Choreography II	4 (2-4-6)

- **Module VIII: Video and Film Editing**

ICMC 357 Post- Production I	4 (2-4-6)
ICMC 358 Post- Production II	4 (2-4-6)
ICMC 359 Post- Production III	4 (2-4-6)

- **Module IX: Cinematography**

ICMC 368 Cinematography I	4 (2-4-6)
ICMC 369 Cinematography II	4 (2-4-6)
ICMC 357 Post-Production I	4 (2-4-6)

- **Module X: Media Entrepreneur**

ICMC 378 Entertainment Management	4 (4-0-8)
ICMC 379 Media Creator (S/L, Livestream)	4 (4-0-8)
ICMC 380 Media Creator Business and Social Commerce	4 (4-0-8)

- **Module XI: Design for Media Creators**

ICMC 328 Design for Video and Film	4 (2-4-6)
ICMC 329 Design for Live Performances	4 (2-4-6)
ICMC 330 Design for Immersive Experience	4 (2-4-6)

- **Module XII: Factual Content Creation**

ICMC 395 Video on demand (Factual Digital Media Approach: Researching, Creating, Communication)	4 (4-0-8)
ICMC 396 Digital Storytelling Through Podcasting	4 (2-4-6)
ICMC 397 Live Streaming Production: Techniques and Strategies	4 (2-4-6)

Additional Major Electives

The program also provides the following courses, which can be counted toward either major electives, I-Design electives, or additional electives.

ICMC 203 Popular Entertainment	4 (4-0-8)
ICMC 218 Journalism in the Transmedia Age	4 (4-0-8)
ICMC 219 Writing for Convergence Journalism and Media	4 (4-0-8)
ICMC 220 Mass Media and Public Policy: Thailand, ASEAN and the World	4 (4-0-8)
ICMC 227 New Media Content Creation	4 (2-4-6)
ICMC 230 Literature for Content Creation	4 (4-0-8)
ICMC 236 Media Production Essentials	4 (2-4-6)
ICMC 237 Influencer Communication, Strategies and Practices	4 (4-0-8)
ICMC 238 Foundations of Organizational Communication	4 (4-0-8)
ICMC 239 Pitching and Presenting for Success	4 (4-0-8)
ICMC 243 Persuasion and Negotiation	4 (4-0-8)
ICMC 342 Film Criticism	4 (4-0-8)
ICMC 347 Cinema: Beyond the New Waves	4 (4-0-8)
ICMC 375 Art of Persuasion	4 (4-0-8)
ICMC 377 Film & Media Planning, Funding & Administrating	4 (4-0-8)
ICMC 381 Field Study in Media and Communication	4 (4-0-8)
ICMC 382 Independent Study in Media and Communication	4 (4-0-8)
ICMC 383 Seminar in Media and Communication	4 (4-0-8)
ICMC 386 Event Management for Media and Communication	4 (4-0-8)
ICMC 389 Special Effects Make-up for Television and Film	4 (4-0-8)

ICMC 390 Documentary Photography/Still Images in a Moving World	4 (2-4-6)
ICMC 392 Experimental Film	4 (4-0-8)
ICMC 393 Theatre Production and Management	4 (4-0-8)
ICMC 394 Art Photography	4 (2-4-6)

I-Design Electives 20 Credits

The purpose of the I-Design electives is to promote multidisciplinary learning. Students are encouraged to explore courses offered by diverse disciplines across MUIC, Mahidol University, and partner institutions. The I-Design electives can be satisfied upon the completion of the following course categories:

1. **Minor courses** offered by any program in **MUIC**
2. **Certificate courses** offered by any program in **MUIC**
3. **Any major** courses offered by any program in **MUIC**
4. **Any major** courses offered in **Mahidol University** (including undergraduate and graduate level courses). Courses must be approved by the student's advisor.
5. **Any major** courses offered at **partner institutions** (who have MOU with Mahidol University and/or MUIC). Courses must be approved by the student's advisor.

Free Electives 8 Credits

Students can take any courses offered by MUIC / Mahidol University or any major courses offered by the partner institutions (with MOU) as free elective courses with the approval from the advisor.

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HUMANITIES AND LANGUAGES

Intercultural Studies and Languages

Degree Offered:

Bachelor of Arts (Intercultural Studies and Languages)

B.A. (Intercultural Studies and Languages)

Program Goal :

The Bachelor program in Intercultural Studies and Languages aims to be innovative in its design and responsive to today's rapidly changing world in order to achieve all of Mahidol University's graduate attributes, while remaining faithful to the ideals of the liberal arts tradition, foremost of which is to promote good global citizenship by fostering cultural appreciation, critical thinking skills, ethical leadership and creative problem solving through collaboration.

Thanks to its interdisciplinary nature, this program allows students to develop their cross-cultural communication proficiency, through the ability to communicate confidently within and across diverse cultures in both oral and written forms as well as the ability to critically analyze and synthesize information, engaging with diverse perspectives to deepen understanding and develop informed viewpoints.

Program Objectives :

To produce graduates who have the characteristics, knowledge, and skills as follows:

1. Understand cultural diversity through various cultural contexts and their respective histories.
2. Demonstrate cultural sensitivity in intercultural negotiation and mediation.
3. Take personal responsibility for their studies/work by developing intrinsic motivation and creativity to achieve success.
4. Apply analytical and critical thinking skills to become independent, active lifelong learners.
5. Use cultural awareness, ethics, and advanced communication skills to contribute to academic and professional fields.
6. Employ collaboration and teamwork skills effectively within culturally diverse groups.

Curriculum Structure

Courses	Credit
Foundation Courses	Non-credit
General Education	No less than 30
Core Courses	36
Capstone Courses	8
Concentration Courses	60
I-Design Elective Courses	No less than 20
Free Elective Courses	No less than 8
TOTAL	**No less than 162**

COURSE LIST

Foundation Courses — Non-credit

ICMA 100 Foundation Mathematics	0 (4-0-0)
ICMA 101 Precalculus	0 (4-0-0)
ICME 101 Foundation English: Communication Skills	0 (4-0-0)

Note I:

- For B.B.A. students, students whose Mathematics placement is below ICMB 151 Business Mathematics are required to take ICMA 100 Foundation Mathematics and pass the course with the grade of "S" before moving to ICMB 151 Business Mathematics.
- For B.Sc. and B.Eng. students, students whose Mathematics placement is below ICMA 106 Calculus I and/or ICMA 151 Statistics for Science I are required to take ICMA 101 Precalculus and pass the course with the grade of "S" before moving to ICMA 106 Calculus I and/or ICMA 151 Statistics for Science I.
- For B.A.Sc. students, students whose Mathematics placement is below ICCT 101 Mathematics for Creative Technology I are required to take ICMA 101 Precalculus and pass the course with the grade of “S” before moving to ICCT 101 Mathematics for Creative Technology I.

Note II:

- Based on their achievement on the essay portion of the MUIC entrance exam, students whose English placement is below ICGC 104 English Studies I: The Writer's Toolkit will be placed into the "FE Track". These students will be required to take ICME 101 Foundation English: Communication Skills and pass the course with the grade of "S" before moving to ICGC 104 English Studies I: The Writer's Toolkit.

General Education 30 Credits

General Education Group	GC2 Track*	FE and GC Track*
1. English Communication	10	14
2. GE Literacies	12	12
- MU Literacy	2	2
- Health Literacy	2	2
- Science and Environmental Literacy	2	2
- Intercultural and Global Awareness Literacy	2	2
- Civic Literacy	2	2
- Finance and Management Literacy	2	2
3. GE Electives	8	4
Total	**30**	**30**

** Students will be placed into specific tracks based on their achievement in the essay portion of the MUIC entrance exam.*

English Communication 10 – 14 Credits

ICGC 104 English Studies I: The Writer's Toolkit	4 (4-0-8)
ICGC 105 English Studies II: The Writer's Voice	4 (4-0-8)
ICGC 106 English Studies III: Public Speaking	4 (4-0-8)
ICGC 221 English Studies IV: The World of English - Global Realities	2 (2-0-4)
ICGC 222 English Studies IV: The World of English - Literary Analysis	2 (2-0-4)
ICGC 223 English Studies IV: The World of English - Creative Writing	2 (2-0-4)
ICGC 224 English Studies IV: The World of English - Advanced Oral Communication	2 (2-0-4)

ICGC 226 English Studies IV: The World of English - Literature Into Film	2 (2-0-4)
ICGC 228 English Studies IV: The World of English - Language and Culture	2 (2-0-4)
ICGC 230 English Studies IV: The World of English - First and Second Language Acquisition	2 (2-0-4)
ICGC 231 English Studies IV: The World of English – Poetry	2 (2-0-4)
ICGC 232 English Studies IV: The World of English - The Short Story and the Novel	2 (2-0-4)
ICGC 233 English Studies IV: The World of English – Drama	2 (2-0-4)
ICGC 234 English Studies IV: The World of English - Literary Non-fiction	2 (2-0-4)
ICGC 235 English Studies IV: The World of English - Writing for Research	2 (2-0-4)

Note I: Based on their achievement on the essay portion of the MUIC entrance exam, students will be placed into 3 following tracks: **'FE Track'**, **'GC Track'** and **'GC2 Track'**.

- **'FE Track'** – Students who are placed into 'FE Track' will be required to take ICME 101 (a non-credit course) and complete 14 credits in English Communication: ICGC 104, ICGC 105, ICGC 106 in order, and finally, any 200+ level English courses.
- **'GC Track'** – Students who are placed into 'GC Track' will be required to complete 14 credits in English Communication: ICGC 104, ICGC 105, ICGC 106 in order, and finally, any 200+ level English courses.
- **'GC2 Track'** – Students who are placed into 'GC2 Track' will be required to complete 10 credits in English Communication: ICGC 105, ICGC 106 in order, and finally, any 200+ level English courses.

GE Literacies 12 Credits

Note I: Students must complete courses in the following six categories: MU Literacy, Health Literacy, Science & Environment Literacy, Intercultural & Global Awareness Literacy, and Finance & Management Literacy. Each category requires a minimum of 2 credits.

Note II: If a student selects a 4-credit course to fulfill a 2-credit literacy requirement, the excess 2 credits cannot be allocated or applied toward GE Elective or Free Elective credits. Instead, these excess credits will be entirely allocated to the literacy for which they were originally intended.

- **MU Literacy** **2 Credits**

ICGB 101 Project Management for Impacts	2 (2-0-4)

ICGB 108 Event for Good	2 (2-0-4)
ICGN 139 Scientific Inquiry and the Community	2 (2-0-4)
ICGS 169 Learning by Doing	2 (2-0-4)
ICGS 171 Digital Campaign for Gender Issues	2 (2-0-4)
ICGS 172 Service Learning - Making Change	4 (4-0-8)
ICGS 173 Service Learning - Campaigning for a Cause	4 (4-0-8)
ICGS 175 Social Innovation and Sustainability	2 (2-0-4)
ICGS 176 Sustainable Cooking	2 (2-0-4)
ICGS 177 Social Innovation: Empowering Sustainable Communities	2 (2-0-4)
ICGT 107 Innovation: Inside Out	2 (2-0-4)

- **Health Literacy** **2 Credits**

ICGH 136 Sound & Soul: A Journey of Music, Emotion, and Well-being	2 (2-0-4)
ICGH 143 Flowers and Fragrances for Health	2 (2-0-4)
ICGN 135 Personal Health and Well-being	2 (2-0-4)
ICGP 101 American Flag Football	1 (0-2-1)
ICGP 102 Badminton	1 (0-2-1)
ICGP 103 Basketball	1 (0-2-1)
ICGP 104 Body Fitness	1 (0-2-1)
ICGP 105 Cycling	1 (0-2-1)
ICGP 106 Discover Dance	1 (0-2-1)
ICGP 107 Golf	1 (0-2-1)
ICGP 108 Mind and Body	1 (0-2-1)
ICGP 109 Selected Topics in Sports	1 (0-2-1)
ICGP 110 Self Defense (Striking)	1 (0-2-1)
ICGP 111 Self Defense (Grappling)	1 (0-2-1)
ICGP 112 Soccer	1 (0-2-1)
ICGP 113 Social Dance	1 (0-2-1)
ICGP 114 Swimming	1 (0-2-1)
ICGP 115 Tennis	1 (0-2-1)
ICGP 116 Volleyball	1 (0-2-1)
ICGP 118 Health and Wellness	2 (2-0-4)
ICGP 119 Mindful Food and Well-being	2 (2-0-4)
ICGP 120 Mind and Body: Navigating the Interplay of Brain, Behavior, and Well-being	2 (2-0-4)

ICGS 121 Abnormal Colleagues: how do I make this work?	4 (4-0-8)
ICGS 155 Pathway to Purpose: Life Design and Self-Exploration	4 (4-0-8)
ICGS 164 Positive Psychology	2 (2-0-4)
ICGS 178 Unmasking Human Behaviour: Exploring Psychological Truths about Behaviour	2 (2-0-4)
ICGS 179 Health and Society	2 (2-0-4)
ICLL 100 Self Development	2 (2-0-4)

- **Science & Environment Literacy** **2 Credits**

ICGH 131 Unraveling the Anthropocene: A Philosophical Critique of Earth's Shifts and Humanity's Roles	2 (2-0-4)
ICGH 142 Fantasy Literature's Environmental Message	2 (2-0-4)
ICGH 144 A Candle in the Dark: How to Tell Fact from Fiction	2 (2-0-4)
ICGN 105 Ecology, Ecosystems and Socio-Economics in Southeast Asia	4 (3-2-7)
ICGN 107 The Chemistry of Everyday Life	4 (4-0-8)
ICGN 108 Essentials of Culinary Science for Food Business	4 (3-2-7)
ICGN 111 Physics for CEO	4 (4-0-8)
ICGN 113 Plants, People and Poisons	4 (4-0-8)
ICGN 114 The Scientific Approach and Society	4 (4-0-8)
ICGN 115 Human Evolution, Diversity and Health	4 (4-0-8)
ICGN 116 Understanding and Visualizing Data	4 (3-2-7)
ICGN 119 Computer Essentials	4 (4-0-8)
ICGN 123 The Earth's Dynamic Structure	4 (3-2-7)
ICGN 124 Climate Change and Human Society	4 (3-2-7)
ICGN 126 Plant Society	2 (2-0-4)
ICGN 127 Practical Mathematics	2 (2-0-4)
ICGN 128 Climate Emergency, Biodiversity Crisis, and Humanity at Risk	2 (1-2-3)
ICGN 129 Programming for Problem Solving	4 (4-0-8)
ICGN 130 Cryptography: The Science of Making and Breaking Codes	2 (2-0-4)
ICGN 134 Introduction to Artificial Intelligence	2 (2-0-4)
ICGN 134 Introduction to Artificial Intelligence	2 (2-0-4)
ICGN 136 Creator Workshop	2 (2-0-4)
ICGN 137 Star Wanderer	2 (2-0-4)
ICGN 138 Cosmetics Chemistry	2 (2-0-4)
ICGN 140 Food Energy for Health	2 (2-0-4)

ICGN 141 Life in the Sea	2 (1-2-3)
ICGN 142 Energy and the Environment	2 (2-0-4)
ICGN 143 Gaia: Life on Earth	2 (1-2-3)
ICGT 101 Technology-Enhanced Learning: Harnessing AI & Digital Tools for Academic Success	2 (2-0-4)
ICGT 102 Digital Document Management	2 (2-0-4)
ICGT 103 Computational Thinking	2 (2-0-4)
ICGT 104 Tell a Great Story with Data	2 (2-0-4)
ICGT 105 No-Code Application Development	2 (2-0-4)
ICGT 106 Data and Spreadsheets	2 (2-0-4)
ICLL 102 Skills for a Digital World	2 (2-0-4)

- **Intercultural & Global Awareness Literacy** **2 Credits**

ICGH 107 Contemporary Art and Visual Culture	4 (4-0-8)
ICGH 109 Creative Thinking Through Art and Design	4 (2-4-6)
ICGH 110 Drawing as Visual Analysis	4 (2-4-6)
ICGH 115 Cinematic Language and Applications	4 (4-0-8)
ICGH 116 World Cinemas	4 (4-0-8)
ICGH 117 Drawing as Creative Expression	4 (2-4-6)
ICGH 118 Photography Visualizing in the Digital Age	4 (2-4-6)
ICGH 120 Thai and ASEAN Cinema	4 (4-0-8)
ICGH 124 Life Drawing and Anatomy	4 (2-4-6)
ICGH 128 Internet Celebrity, Culture and the Media	4 (4-0-8)
ICGH 130 The Logic Lab: Crafting Coherent Arguments	2 (2-0-4)
ICGH 132 The Rise and Fall of Ancient Athens	2 (2-0-4)
ICGH 135 The Horror Film	2 (2-0-4)
ICGH 137 Apocalypse Now, or Never, or Maybe?	2 (2-0–4)
ICGH 139 Spirituality, Sustainability, Ecosystems	2 (2-0-4)
ICGH 141 SPQR—Glimpses of Rome	2 (2-0-4)
ICGH 145 Essentials to Photography, Skills and Practices	2 (2-0-4)
ICGH 146 Acting for Self-Discovery and Empathizing with Others	2 (2-0-4)
ICGH 147 Myth and the Masks of the Divine	2 (2-0-4)
ICGH 148 Quest for Global Justice: A Philosophical Inquiry	2 (2-0-4)
ICGL 101 Elementary German I	4 (4-0-8)
ICGL 102 Elementary German II	4 (4-0-8)

ICGL 103 Elementary German III	4 (4-0-8)
ICGL 111 Elementary Japanese I	4 (4-0-8)
ICGL 112 Elementary Japanese II	4 (4-0-8)
ICGL 113 Elementary Japanese III	4 (4-0-8)
ICGL 121 Elementary French I	4 (4-0-8)
ICGL 122 Elementary French II	4 (4-0-8)
ICGL 123 Elementary French III	4 (4-0-8)
ICGL 131 Elementary Chinese I	4 (4-0-8)
ICGL 132 Elementary Chinese II	4 (4-0-8)
ICGL 133 Elementary Chinese III	4 (4-0-8)
ICGL 141 Elementary Spanish I	4 (4-0-8)
ICGL 142 Elementary Spanish II	4 (4-0-8)
ICGL 143 Elementary Spanish III	4 (4-0-8)
ICGL 160 Introduction to Thai Language and Culture	4 (4-0-8)
ICGL 161 Elementary Thai I	4 (4-0-8)
ICGL 162 Elementary Thai II	4 (4-0-8)
ICGL 163 Elementary Thai III	4 (4-0-8)
ICGL 164 Thai Writing for Specific Purposes in Workplace *for native Thai students	2 (2-0-4)
ICGL 171 Diversities in Multilingual Societies	2 (2-0-4)
ICGL 172 Chinese Influence in Thai Society	2 (2-0-4)
ICGL 173 Introduction to Japanese Societies	2 (2-0-4)
ICGL 174 From Siesta to Fiesta: Introduction to Spanish and Latin American Culture	2 (2-0-4)
ICGL 201 Pre-Intermediate German I	4 (4-0-8)
ICGL 202 Pre-Intermediate German II	4 (4-0-8)
ICGL 203 Pre-Intermediate German III	4 (4-0-8)
ICGL 211 Pre-Intermediate Japanese I	4 (4-0-8)
ICGL 212 Pre-Intermediate Japanese II	4 (4-0-8)
ICGL 213 Pre-Intermediate Japanese III	4 (4-0-8)
ICGL 221 Pre-intermediate French I	4 (4-0-8)
ICGL 222 Pre-intermediate French II	4 (4-0-8)
ICGL 223 Pre-intermediate French III	4 (4-0-8)
ICGL 231 Pre-Intermediate Chinese I	4 (4-0-8)
ICGL 232 Pre-Intermediate Chinese II	4 (4-0-8)
ICGL 233 Pre-Intermediate Chinese III	4 (4-0-8)

ICGL 241 Pre-Intermediate Spanish I	4 (4-0-8)
ICGL 242 Pre-Intermediate Spanish II	4 (4-0-8)
ICGL 243 Pre-Intermediate Spanish III	4 (4-0-8)
ICGN 125 Games and Learning	2 (2-0-4)
ICGS 112 Geography of Human Activities	4 (4-0-8)
ICGS 128 Global Gastronomy and Cuisines	4 (4-0-8)
ICGS 131 Introduction to International Studies	4 (4-0-8)
ICGS 132 Career Preparation in a Globalized World	4 (4-0-8)
ICGS 133 Foundation of Mediterranean Cultures	4 (4-0-8)
ICGS 137 Witchcraft and Gender Representation	4 (4-0-8)
ICGS 143 Introduction to Air Transport and Tourism	4 (4-0-8)
ICGS 156 Fashion and Society	2 (2-0-4)
ICGS 157 Asian Religious Traditions	2 (2-0-4)
ICGS 159 The Self and Modern Media	2 (2-0-4)
ICGS 161 Skills in Dealing with People Across Cultures	2 (2-0-4)
ICGS 162 Arts, Culture and Tourism Development	2 (2-0-4)
ICGS 165 Tea Studies	2 (2-0-4)
ICGS 167 Coffee Studies	2 (2-0-4)
ICGS 168 Faith a Lifestyle	2 (2-0-4)
ICGS 180 Cafe Story and Slow food	2 (2-0-4)
ICGS 181 Cuisine and Culture	2 (2-0-4)
ICGS 182 Humor Horizons	2 (2-0-4)

- **Civic Literacy** **2 Credits**

ICGH 126 Behavioral Ethics: Why Good People Do Bad Things	2 (2-0-4)
ICGH 129 Searching for Meaning	2 (2-0-4)
ICGH 133 Socrates, His Predecessors and Successors	2 (2-0-4)
ICGH 134 Digital Media Literacy: Skills for 21st Century Learning	2 (2-0-4)
ICGH 138 The Philosophies of Asia	2 (2-0-4)
ICGH 140 Ethics and Evolution	2 (2-0-4)
ICGH 149 Law, Technology, and Society	2 (2-0-4)
ICGH 150 Global Perspectives on Free Expression in the Digital Age	2 (2-0-4)
ICGN 131 Digital Search Literacy	2 (2-0-4)
ICGN 132 Digital Security and Privacy	2 (2-0-4)

ICGN 144 Environmental Ethics	2 (2-0-4)
ICGN 145 Food Integrity and Food Fraud: When a Food Product Is Not What It Seems	2 (2-0-4)
ICGS 134 Is Democracy Good?	4 (4-0-8)
ICGS 136 Social and Health Issues in Thailand	4 (3-2-7)
ICGS 140 Fake News, Censorship and the Politics of Truth	4 (4-0-8)
ICGS 147 Women in Leadership	4 (4-0-8)
ICGS 158 Contemporary Issues in Thailand	2 (2-0-4)
ICGS 160 Self and Society	2 (2-0-4)
ICGS 163 Popular Media and Conflicts	2 (2-0-4)
ICGS 166 Power and Politics	2 (2-0-4)
ICGS 170 Civic Action in Thailand	2 (2-0-4)
ICGS 183 Media and Community	2 (2-0-4)

- **Finance & Management Literacy** **2 Credits**

ICGB 102 Navigating the Market Landscape	2 (2-0-4)
ICGB 103 Decoding Economic News	2 (2-0-4)
ICGB 104 Entrepreneurship in a Disruptive Environment	2 (2-0-4)
ICGB 105 Personal Finance Literacy	2 (2-0-4)
ICGB 106 The Business of Fashion	2 (2-0-4)
ICGB 107 Tourism Management Perspectives	2 (2-0-4)
ICGB 109 Business Event Essentials	2 (2-0-4)
ICGB 110 Management Styles of Effective Leaders	2 (2-0-4)
ICGB 111 Leadership in a Global Society	2 (2-0-4)
ICGB 112 The Art of Pricing	2 (2-0-4)
ICGB 113 Crisis Management in Service Businesses	2 (2-0-4)
ICGB 114 Cultural Strategies for Success: Unveiling Eastern Business Dynamics	2 (2-0-4)
ICGB 115 Money: Deciphering Currencies of Value	2 (2-0-4)
ICGB 116 Managing Self and Working with Others	2 (2-0-4)
ICGH 101 Biotechnology: from Science to Business	4 (4-0-8)
ICGS 102 Business Sustainability and the Global Climate Change	4 (4-0-8)
ICGS 135 Entrepreneurial Accounting	4 (4-0-8)
ICGS 153 Social Media Management for Service Sector	2 (2-0-4)
ICGS 174 The Art of Leadership in Practice: Inspiration	2 (2-0-4)
ICGS 184 Healthy Habits, Happy Shoppers: Exploring Health Literacy in Consumer Decisions	2 (2-0-4)

ICLL 101 Professional Development 2 (2-0-4)

General Education Elective Courses **4-8 Credits**

Students need to take remaining courses in any GE category to fulfill their 30 credits requirement of GE: 4 credits for students whose English Communication track are placed into 'FE track' or 'GC Track' and 8 credits for students whose English Communication track are placed into 'GC2 Track'. Partial credits of GE course that exceed the GE requirements cannot be counted towards Free Electives.

Specific Courses no less than 104 Credits

Core Courses **36 Credits**

ICIC 251 Contemporary Southeast Asia: Cultural Studies 4 (4-0-8)

ICIC 252 Formal Reasoning: Human and Artificial 4 (4-0-8)

ICIC 253 Value Studies 4 (4-0-8)

ICIC 254 History of Ideas I 4 (4-0-8)

ICIC 255 History of Ideas II 4 (4-0-8)

ICIC 256 Ethics and Media 4 (4-0-8)

ICIC 257 The Evolutionary Origins of Language and Culture 4 (4-0-8)

ICIC 258 Language: The Human Essence 4 (4-0-8)

ICIC 259 Intercultural Communication 4 (4-0-8)

Capstone Courses **8 credits**

Option 1: Research

ICIC 451 Senior Writing Seminar 4 (4-0-8)

ICIC 452 Independent Project in Humanities and Languages 4 (4-0-8)

Option 2: Internship

ICIC 454 Internship 8 (0-40-8)

Note : Students have the option of taking the Research: Option 1 (Senior Writing Seminar and Independent Project) or doing an Internship : Option 2 in their final year.

Foreign Language and Culture Concentration (FLC)

Required Courses	**4 Credits**
ICIC 353 Comparative Literature and Civilization	4 (4-0-8)
ICIC 382 Translation and Interpretation in the Digital Era	4 (4-0-8)

Note I: Students must take 1 course from the above list of required courses in the Foreign Language and Culture Concentration.

Note II: ICIC 382 Translation and Interpretation in the Digital Era must be taken after completion of Intermediate II level.

Elective Courses **56 Credits**

Languages:

1. Students must complete 11 consecutive course levels in Language 1 (44 credits)
2. Students must complete 3 consecutive course levels in Language 2 (in any language other than Language 1). Previous knowledge accepted (placement test required). (12 credits)
3. Below are the languages that students can choose.

- **German**

ICIC 101 Elementary German I - Language and Culture	4 (4-0-8)
ICIC 102 Elementary German II - Language and Culture	4 (4-0-8)
ICIC 103 Elementary German III - Language and Culture	4 (4-0-8)
ICIC 201 Pre-Intermediate German I - Language and Culture	4 (4-0-8)
ICIC 202 Pre-Intermediate German II - Language and Culture	4 (4-0-8)
ICIC 203 Pre-Intermediate German III - Language and Culture	4 (4-0-8)
ICIC 301 Intermediate German I - Language and Culture	4 (4-0-8)
ICIC 302 Intermediate German II - Language and Culture	4 (4-0-8)
ICIC 303 Intermediate German III - Language and Culture	4 (4-0-8)
ICIC 401 Advanced German I – Language and Culture	4 (4-0-8)
ICIC 402 Advanced German II - Language and Culture	4 (4-0-8)

- **Japanese**

ICIC 111 Elementary Japanese I - Language and Culture	4 (4-0-8)

ICIC 112 Elementary Japanese II - Language and Culture	4 (4-0-8)
ICIC 113 Elementary Japanese III - Language and Culture	4 (4-0-8)
ICIC 211 Pre-Intermediate Japanese I - Language and Culture	4 (4-0-8)
ICIC 212 Pre-Intermediate Japanese II - Language and Culture	4 (4-0-8)
ICIC 213 Pre-Intermediate Japanese III - Language and Culture	4 (4-0-8)
ICIC 311 Intermediate Japanese I - Language and Culture	4 (4-0-8)
ICIC 312 Intermediate Japanese II - Language and Culture	4 (4-0-8)
ICIC 313 Intermediate Japanese III - Language and Culture	4 (4-0-8)
ICIC 411 Advanced Japanese I – Language and Culture	4 (4-0-8)
ICIC 412 Advanced Japanese II - Language and Culture	4 (4-0-8)

- **French**

ICIC 121 Elementary French I - Language and Culture	4 (4-0-8)
ICIC 122 Elementary French II - Language and Culture	4 (4-0-8)
ICIC 123 Elementary French III - Language and Culture	4 (4-0-8)
ICIC 221 Pre-Intermediate French I - Language and Culture	4 (4-0-8)
ICIC 222 Pre-Intermediate French II - Language and Culture	4 (4-0-8)
ICIC 223 Pre-Intermediate French III - Language and Culture	4 (4-0-8)
ICIC 321 Intermediate French I - Language and Culture	4 (4-0-8)
ICIC 322 Intermediate French II - Language and Culture	4 (4-0-8)
ICIC 323 Intermediate French III - Language and Culture	4 (4-0-8)
ICIC 421 Advanced French I – Language and Culture	4 (4-0-8)
ICIC 422 Advanced French II - Language and Culture	4 (4-0-8)

- **Chinese**

ICIC 131 Elementary Chinese I - Language and Culture	4 (4-0-8)
ICIC 132 Elementary Chinese II - Language and Culture	4 (4-0-8)
ICIC 133 Elementary Chinese III - Language and Culture	4 (4-0-8)
ICIC 231 Pre-Intermediate Chinese I - Language and Culture	4 (4-0-8)
ICIC 232 Pre-Intermediate Chinese II - Language and Culture	4 (4-0-8)
ICIC 233 Pre-Intermediate Chinese III - Language and Culture	4 (4-0-8)
ICIC 331 Intermediate Chinese I - Language and Culture	4 (4-0-8)
ICIC 332 Intermediate Chinese II - Language and Culture	4 (4-0-8)
ICIC 333 Intermediate Chinese III - Language and Culture	4 (4-0-8)

ICIC 431 Advanced Chinese I – Language and Culture	4 (4-0-8)
ICIC 432 Advanced Chinese II - Language and Culture	4 (4-0-8)

- **Spanish**

ICIC 141 Elementary Spanish I - Language and Culture	4 (4-0-8)
ICIC 142 Elementary Spanish II - Language and Culture	4 (4-0-8)
ICIC 143 Elementary Spanish III - Language and Culture	4 (4-0-8)
ICIC 241 Pre-Intermediate Spanish I - Language and Culture	4 (4-0-8)
ICIC 242 Pre-Intermediate Spanish II - Language and Culture	4 (4-0-8)
ICIC 243 Pre-Intermediate Spanish III - Language and Culture	4 (4-0-8)
ICIC 341 Intermediate Spanish I - Language and Culture	4 (4-0-8)
ICIC 342 Intermediate Spanish II - Language and Culture	4 (4-0-8)
ICIC 343 Intermediate Spanish III - Language and Culture	4 (4-0-8)
ICIC 441 Advanced Spanish I – Language and Culture	4 (4-0-8)
ICIC 442 Advanced Spanish II - Language and Culture	4 (4-0-8)

Literary and Cultural Studies Concentration (LCS)

Required Courses	**20 Credits**
ICIC 351 Thinking the Other	4 (4-0-8)
ICIC 353 Comparative Literature and Civilization	4 (4-0-8)
ICIC 354 Women and Gender Studies	4 (4-0-8)
ICIC 364 Literary Theory and Criticism	4 (4-0-8)
ICIC 380 Postcolonialism	4 (4-0-8)

Note : ICIC 452 Independent Project in Humanities and Languages is to be taken in the final year of the program, concurrently with ICIC 451 Senior Writing Seminar.

Elective Courses	**40 Credits**
ICIC 361 Literature and Poetry in Western Culture	4 (4-0-8)
ICIC 362 Literature and Poetry in Eastern Culture	4 (4-0-8)
ICIC 363 Introduction to Eastern and Western Art	4 (4-0-8)
ICIC 365 Diasporic Literature	4 (4-0-8)
ICIC 366 Popular Culture	4 (4-0-8)
ICIC 367 Narratives, Nations, and Nationalism	4 (4-0-8)

ICIC 368 Language, Power and Culture	4 (4-0-8)
ICIC 369 Humanity Today: Between Science and Fiction	4 (4-0-8)
ICIC 370 The Story of English	4 (4-0-8)
ICIC 381 Selected Topics in Literary and Cultural Studies	4 (4-0-8)

Note : Students must take 6 courses from the above list of elective courses in the Literary and Cultural Studies Concentration. To fulfill their required number of credits, students in this concentration must take an additional 4 courses from elective courses offered in any ICIC concentration.

Ethics, Philosophy, and Economics Concentration (EPE)

Required Courses	**20 Credits**
ICIC 355 Judgment and Decision Making	4 (4-0-8)
ICIC 356 Ethics and Politics	4 (4-0-8)
ICIC 357 Philosophy of Economics	4 (4-0-8)
ICIC 358 Behavioral Economics	4 (4-0-8)
ICIC 373 Reason and Passion: The Philosophy of Emotion	4 (4-0-8)

Elective Courses	**40 Credits**
ICIC 371 Minds and Machines	4 (4-0-8)
ICIC 372 From Modernism to Postmodernism	4 (4-0-8)
ICIC 374 Philosophy and Religion	4 (4-0-8)
ICIC 375 Behavior, Ethics and Technology	4 (4-0-8)
ICIC 376 Information, Knowledge, Representation	4 (4-0-8)
ICIC 377 The Market and the Environment	4 (4-0-8)
ICIC 378 Ancient Myths, Gods and Heroes	4 (4-0-8)
ICIC 379 The Philosophy of Science and Technology	4 (4-0-8)
ICIC 453 Research Seminar	4 (4-0-8)
ICMB 152 Business Statistics	4 (4-0-8)
ICMB 253 Microeconomics	4 (4-0-8)
ICMB 254 Macroeconomics	4 (4-0-8)

Note : Students must take at least 6 courses from the above list of elective courses in the Ethics, Philosophy, and Economics Concentration. To fulfill the required number of elective credits,

students in the EPE concentration must take an additional 4 courses (16 credits) from the elective courses offered in any ICIC concentration.

I-Design Electives 20 Credits

The purpose of the I-Design electives is to promote multidisciplinary learning. Students are encouraged to explore courses offered by diverse disciplines across MUIC, Mahidol University, and partner institutions. The I-Design electives can be satisfied upon the completion of the following course categories:

1. **Minor courses** offered by any program in **MUIC**
2. **Certificate courses** offered by any program in **MUIC**
3. **Any major courses** offered by any program in **MUIC**
4. **Any major courses** offered in **Mahidol University** (including undergraduate and graduate level courses). Courses must be approved by the student's advisor.
5. **Any major courses** offered at **partner institutions** (who have MOU with Mahidol University and/or MUIC). Courses must be approved by the student's advisor.

Free Electives 8 Credits

Students can take any courses offered by MUIC / Mahidol University or any major courses offered by the partner institutions (with MOU) as free elective courses with the approval from the advisor.

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INTERNATIONAL RELATIONS

International Relations and Global Affairs

Degree Offered:

Bachelor of Arts (International Relations and Global Affairs)

B.A. (Intercultural Studies and Languages)

Program Goal :

The Bachelor program in International Relations and Global Affairs fosters critical thinking, evidence-based reasoning, and open exchange in a supportive atmosphere of mutual respect and cultural awareness. It aims to help students grow into T-shaped graduates and lifelong learners, globally talented and socially contributing, and equipped with 21st century learning skills

Program Objectives :

To produce graduates equipped for success in a competitive, interdependent and rapidly changing world. The program aims to help students grow into graduates

1. who are able to analyze and synthesize key features of and issues concerning the current world order, with particular attention to the Asia-Pacific region;
2. who have acquired knowledge of and critical perspectives towards the contemporary world and its historical development by applying relevant concepts, methods and theories in the field of international relations;
3. who demonstrate the ability to allocate and evaluate relevant and reliable data and other source materials in the field of international relations and global affairs;
4. who have developed strong verbal and written communication skills and are able to engage in constructive debates in the field of international relations and global affairs, identifying problems and proposing solutions;
5. who are respectful of cultural differences and able to work in culturally diverse groups effectively;
6. who have developed goals for life-long learning and are able to continuously reflect upon and adjust individual approaches to learning based on their educational and personal experiences;
7. who embrace internationally recognized ethical standards and apply principles of ethical reasoning to decision-making, civic engagement, and research.

Curriculum Structure

Courses	Credit
Foundation Courses	Non-credit
General Education	No less than 30
Core Courses	52
Major Elective Courses	44
Capstone Courses	8
I-Design Elective Courses	No less than 20
Free Elective Courses	No less than 8
TOTAL	**No less than 162**

COURSE LIST

Foundation Courses — Non-credit

ICMA 100 Foundation Mathematics	0 (4-0-0)
ICMA 101 Precalculus	0 (4-0-0)
ICME 101 Foundation English: Communication Skills	0 (4-0-0)

Note I:

- For B.B.A. students, students whose Mathematics placement is below ICMB 151 Business Mathematics are required to take ICMA 100 Foundation Mathematics and pass the course with the grade of "S" before moving to ICMB 151 Business Mathematics.
- For B.Sc. and B.Eng. students, students whose Mathematics placement is below ICMA 106 Calculus I and/or ICMA 151 Statistics for Science I are required to take ICMA 101 Precalculus and pass the course with the grade of "S" before moving to ICMA 106 Calculus I and/or ICMA 151 Statistics for Science I.
- For B.A.Sc. students, students whose Mathematics placement is below ICCT 101 Mathematics for Creative Technology I are required to take ICMA 101 Precalculus and pass the course with the grade of “S” before moving to ICCT 101 Mathematics for Creative Technology I.

Note II:

- Based on their achievement on the essay portion of the MUIC entrance exam, students whose English placement is below ICGC 104 English Studies I: The Writer's Toolkit will be placed into the "FE Track". These students will be required to take ICME 101 Foundation English: Communication Skills and pass the course with the grade of "S" before moving to ICGC 104 English Studies I: The Writer's Toolkit.

General Education 30 Credits

General Education Group	GC2 Track*	FE and GC Track*
1. English Communication	10	14
2. GE Literacies	12	12
- MU Literacy	2	2
- Health Literacy	2	2
- Science and Environmental Literacy	2	2
- Intercultural and Global Awareness Literacy	2	2
- Civic Literacy	2	2
- Finance and Management Literacy	2	2
3. GE Electives	8	4
Total	**30**	**30**

** Students will be placed into specific tracks based on their achievement in the essay portion of the MUIC entrance exam.*

English Communication 10 – 14 Credits

ICGC 104 English Studies I: The Writer's Toolkit	4 (4-0-8)
ICGC 105 English Studies II: The Writer's Voice	4 (4-0-8)
ICGC 106 English Studies III: Public Speaking	4 (4-0-8)
ICGC 221 English Studies IV: The World of English - Global Realities	2 (2-0-4)
ICGC 222 English Studies IV: The World of English - Literary Analysis	2 (2-0-4)
ICGC 223 English Studies IV: The World of English - Creative Writing	2 (2-0-4)
ICGC 224 English Studies IV: The World of English - Advanced Oral Communication	2 (2-0-4)
ICGC 226 English Studies IV: The World of English - Literature Into Film	2 (2-0-4)
ICGC 228 English Studies IV: The World of English - Language and Culture	2 (2-0-4)
ICGC 230 English Studies IV: The World of English - First and Second Language Acquisition	2 (2-0-4)

ICGC 231 English Studies IV: The World of English – Poetry	2 (2-0-4)
ICGC 232 English Studies IV: The World of English - The Short Story and the Novel	2 (2-0-4)
ICGC 233 English Studies IV: The World of English – Drama	2 (2-0-4)
ICGC 234 English Studies IV: The World of English - Literary Non-fiction	2 (2-0-4)
ICGC 235 English Studies IV: The World of English - Writing for Research	2 (2-0-4)

Note I: Based on their achievement on the essay portion of the MUIC entrance exam, students will be placed into 3 following tracks: **'FE Track'**, **'GC Track'** and **'GC2 Track'**.

- **'FE Track'** – Students who are placed into 'FE Track' will be required to take ICME 101 (a non-credit course) and complete 14 credits in English Communication: ICGC 104, ICGC 105, ICGC 106 in order, and finally, any 200+ level English courses.
- **'GC Track'** – Students who are placed into 'GC Track' will be required to complete 14 credits in English Communication: ICGC 104, ICGC 105, ICGC 106 in order, and finally, any 200+ level English courses.
- **'GC2 Track'** – Students who are placed into 'GC2 Track' will be required to complete 10 credits in English Communication: ICGC 105, ICGC 106 in order, and finally, any 200+ level English courses.

GE Literacies — 12 Credits

Note I: Students must complete courses in the following six categories: MU Literacy, Health Literacy, Science & Environment Literacy, Intercultural & Global Awareness Literacy, and Finance & Management Literacy. Each category requires a minimum of 2 credits.

Note II: If a student selects a 4-credit course to fulfill a 2-credit literacy requirement, the excess 2 credits cannot be allocated or applied toward GE Elective or Free Elective credits. Instead, these excess credits will be entirely allocated to the literacy for which they were originally intended.

- **MU Literacy** — **2 Credits**

ICGB 101 Project Management for Impacts	2 (2-0-4)
ICGB 108 Event for Good	2 (2-0-4)
ICGN 139 Scientific Inquiry and the Community	2 (2-0-4)
ICGS 169 Learning by Doing	2 (2-0-4)

ICGS 171 Digital Campaign for Gender Issues	2 (2-0-4)
ICGS 172 Service Learning - Making Change	4 (4-0-8)
ICGS 173 Service Learning - Campaigning for a Cause	4 (4-0-8)
ICGS 175 Social Innovation and Sustainability	2 (2-0-4)
ICGS 176 Sustainable Cooking	2 (2-0-4)
ICGS 177 Social Innovation: Empowering Sustainable Communities	2 (2-0-4)
ICGT 107 Innovation: Inside Out	2 (2-0-4)

- **Health Literacy** **2 Credits**

ICGH 136 Sound & Soul: A Journey of Music, Emotion, and Well-being	2 (2-0-4)
ICGH 143 Flowers and Fragrances for Health	2 (2-0-4)
ICGN 135 Personal Health and Well-being	2 (2-0-4)
ICGP 101 American Flag Football	1 (0-2-1)
ICGP 102 Badminton	1 (0-2-1)
ICGP 103 Basketball	1 (0-2-1)
ICGP 104 Body Fitness	1 (0-2-1)
ICGP 105 Cycling	1 (0-2-1)
ICGP 106 Discover Dance	1 (0-2-1)
ICGP 107 Golf	1 (0-2-1)
ICGP 108 Mind and Body	1 (0-2-1)
ICGP 109 Selected Topics in Sports	1 (0-2-1)
ICGP 110 Self Defense (Striking)	1 (0-2-1)
ICGP 111 Self Defense (Grappling)	1 (0-2-1)
ICGP 112 Soccer	1 (0-2-1)
ICGP 113 Social Dance	1 (0-2-1)
ICGP 114 Swimming	1 (0-2-1)
ICGP 115 Tennis	1 (0-2-1)
ICGP 116 Volleyball	1 (0-2-1)
ICGP 118 Health and Wellness	2 (2-0-4)
ICGP 119 Mindful Food and Well-being	2 (2-0-4)
ICGP 120 Mind and Body: Navigating the Interplay of Brain, Behavior, and Well-being	2 (2-0-4)
ICGS 121 Abnormal Colleagues: how do I make this work?	4 (4-0-8)
ICGS 155 Pathway to Purpose: Life Design and Self-Exploration	4 (4-0-8)

ICGS 164 Positive Psychology	2 (2-0-4)
ICGS 178 Unmasking Human Behaviour: Exploring Psychological Truths about Behaviour	2 (2-0-4)
ICGS 179 Health and Society	2 (2-0-4)
ICLL 100 Self Development	2 (2-0-4)

- **Science & Environment Literacy** **2 Credits**

ICGH 131 Unraveling the Anthropocene: A Philosophical Critique of Earth's Shifts and Humanity's Roles	2 (2-0-4)
ICGH 142 Fantasy Literature's Environmental Message	2 (2-0-4)
ICGH 144 A Candle in the Dark: How to Tell Fact from Fiction	2 (2-0-4)
ICGN 105 Ecology, Ecosystems and Socio-Economics in Southeast Asia	4 (3-2-7)
ICGN 107 The Chemistry of Everyday Life	4 (4-0-8)
ICGN 108 Essentials of Culinary Science for Food Business	4 (3-2-7)
ICGN 111 Physics for CEO	4 (4-0-8)
ICGN 113 Plants, People and Poisons	4 (4-0-8)
ICGN 114 The Scientific Approach and Society	4 (4-0-8)
ICGN 115 Human Evolution, Diversity and Health	4 (4-0-8)
ICGN 116 Understanding and Visualizing Data	4 (3-2-7)
ICGN 119 Computer Essentials	4 (4-0-8)
ICGN 123 The Earth's Dynamic Structure	4 (3-2-7)
ICGN 124 Climate Change and Human Society	4 (3-2-7)
ICGN 126 Plant Society	2 (2-0-4)
ICGN 127 Practical Mathematics	2 (2-0-4)
ICGN 128 Climate Emergency, Biodiversity Crisis, and Humanity at Risk	2 (1-2-3)
ICGN 129 Programming for Problem Solving	4 (4-0-8)
ICGN 130 Cryptography: The Science of Making and Breaking Codes	2 (2-0-4)
ICGN 134 Introduction to Artificial Intelligence	2 (2-0-4)
ICGN 136 Creator Workshop	2 (2-0-4)
ICGN 137 Star Wanderer	2 (2-0-4)
ICGN 138 Cosmetics Chemistry	2 (2-0-4)
ICGN 140 Food Energy for Health	2 (2-0-4)
ICGN 141 Life in the Sea	2 (1-2-3)
ICGN 142 Energy and the Environment	2 (2-0-4)
ICGN 143 Gaia: Life on Earth	2 (1-2-3)
ICGT 101 Technology-Enhanced Learning: Harnessing AI & Digital Tools for Academic Success	2 (2-0-4)

ICGT 102 Digital Document Management	2 (2-0-4)
ICGT 103 Computational Thinking	2 (2-0-4)
ICGT 104 Tell a Great Story with Data	2 (2-0-4)
ICGT 105 No-Code Application Development	2 (2-0-4)
ICGT 106 Data and Spreadsheets	2 (2-0-4)
ICLL 102 Skills for a Digital World	2 (2-0-4)

- **Intercultural & Global Awareness Literacy** **2 Credits**

ICGH 107 Contemporary Art and Visual Culture	4 (4-0-8)
ICGH 109 Creative Thinking Through Art and Design	4 (2-4-6)
ICGH 110 Drawing as Visual Analysis	4 (2-4-6)
ICGH 115 Cinematic Language and Applications	4 (4-0-8)
ICGH 116 World Cinemas	4 (4-0-8)
ICGH 117 Drawing as Creative Expression	4 (2-4-6)
ICGH 118 Photography Visualizing in the Digital Age	4 (2-4-6)
ICGH 120 Thai and ASEAN Cinema	4 (4-0-8)
ICGH 124 Life Drawing and Anatomy	4 (2-4-6)
ICGH 128 Internet Celebrity, Culture and the Media	4 (4-0-8)
ICGH 130 The Logic Lab: Crafting Coherent Arguments	2 (2-0-4)
ICGH 132 The Rise and Fall of Ancient Athens	2 (2-0-4)
ICGH 135 The Horror Film	2 (2-0-4)
ICGH 137 Apocalypse Now, or Never, or Maybe?	2 (2-0–4)
ICGH 139 Spirituality, Sustainability, Ecosystems	2 (2-0-4)
ICGH 141 SPQR—Glimpses of Rome	2 (2-0-4)
ICGH 145 Essentials to Photography, Skills and Practices	2 (2-0-4)
ICGH 146 Acting for Self-Discovery and Empathizing with Others	2 (2-0-4)
ICGH 147 Myth and the Masks of the Divine	2 (2-0-4)
ICGH 148 Quest for Global Justice: A Philosophical Inquiry	2 (2-0-4)
ICGL 101 Elementary German I	4 (4-0-8)
ICGL 102 Elementary German II	4 (4-0-8)
ICGL 103 Elementary German III	4 (4-0-8)
ICGL 111 Elementary Japanese I	4 (4-0-8)
ICGL 112 Elementary Japanese II	4 (4-0-8)
ICGL 113 Elementary Japanese III	4 (4-0-8)

ICGL 121 Elementary French I	4 (4-0-8)
ICGL 122 Elementary French II	4 (4-0-8)
ICGL 123 Elementary French III	4 (4-0-8)
ICGL 131 Elementary Chinese I	4 (4-0-8)
ICGL 132 Elementary Chinese II	4 (4-0-8)
ICGL 133 Elementary Chinese III	4 (4-0-8)
ICGL 141 Elementary Spanish I	4 (4-0-8)
ICGL 142 Elementary Spanish II	4 (4-0-8)
ICGL 143 Elementary Spanish III	4 (4-0-8)
ICGL 160 Introduction to Thai Language and Culture	4 (4-0-8)
ICGL 161 Elementary Thai I	4 (4-0-8)
ICGL 162 Elementary Thai II	4 (4-0-8)
ICGL 163 Elementary Thai III	4 (4-0-8)
ICGL 164 Thai Writing for Specific Purposes in Workplace *for native Thai students	2 (2-0-4)
ICGL 171 Diversities in Multilingual Societies	2 (2-0-4)
ICGL 172 Chinese Influence in Thai Society	2 (2-0-4)
ICGL 173 Introduction to Japanese Societies	2 (2-0-4)
ICGL 174 From Siesta to Fiesta: Introduction to Spanish and Latin American Culture	2 (2-0-4)
ICGL 201 Pre-Intermediate German I	4 (4-0-8)
ICGL 202 Pre-Intermediate German II	4 (4-0-8)
ICGL 203 Pre-Intermediate German III	4 (4-0-8)
ICGL 211 Pre-Intermediate Japanese I	4 (4-0-8)
ICGL 212 Pre-Intermediate Japanese II	4 (4-0-8)
ICGL 213 Pre-Intermediate Japanese III	4 (4-0-8)
ICGL 221 Pre-intermediate French I	4 (4-0-8)
ICGL 222 Pre-intermediate French II	4 (4-0-8)
ICGL 223 Pre-intermediate French III	4 (4-0-8)
ICGL 231 Pre-Intermediate Chinese I	4 (4-0-8)
ICGL 232 Pre-Intermediate Chinese II	4 (4-0-8)
ICGL 233 Pre-Intermediate Chinese III	4 (4-0-8)
ICGL 241 Pre-Intermediate Spanish I	4 (4-0-8)
ICGL 242 Pre-Intermediate Spanish II	4 (4-0-8)
ICGL 243 Pre-Intermediate Spanish III	4 (4-0-8)
ICGN 125 Games and Learning	2 (2-0-4)

ICGS 112 Geography of Human Activities	4 (4-0-8)
ICGS 128 Global Gastronomy and Cuisines	4 (4-0-8)
ICGS 131 Introduction to International Studies	4 (4-0-8)
ICGS 132 Career Preparation in a Globalized World	4 (4-0-8)
ICGS 133 Foundation of Mediterranean Cultures	4 (4-0-8)
ICGS 137 Witchcraft and Gender Representation	4 (4-0-8)
ICGS 143 Introduction to Air Transport and Tourism	4 (4-0-8)
ICGS 156 Fashion and Society	2 (2-0-4)
ICGS 157 Asian Religious Traditions	2 (2-0-4)
ICGS 159 The Self and Modern Media	2 (2-0-4)
ICGS 161 Skills in Dealing with People Across Cultures	2 (2-0-4)
ICGS 162 Arts, Culture and Tourism Development	2 (2-0-4)
ICGS 165 Tea Studies	2 (2-0-4)
ICGS 167 Coffee Studies	2 (2-0-4)
ICGS 168 Faith a Lifestyle	2 (2-0-4)
ICGS 180 Cafe Story and Slow food	2 (2-0-4)
ICGS 181 Cuisine and Culture	2 (2-0-4)
ICGS 182 Humor Horizons	2 (2-0-4)

- **Civic Literacy** **2 Credits**

ICGH 126 Behavioral Ethics: Why Good People Do Bad Things	2 (2-0-4)
ICGH 129 Searching for Meaning	2 (2-0-4)
ICGH 133 Socrates, His Predecessors and Successors	2 (2-0-4)
ICGH 134 Digital Media Literacy: Skills for 21st Century Learning	2 (2-0-4)
ICGH 138 The Philosophies of Asia	2 (2-0-4)
ICGH 140 Ethics and Evolution	2 (2-0-4)
ICGH 149 Law, Technology, and Society	2 (2-0-4)
ICGH 150 Global Perspectives on Free Expression in the Digital Age	2 (2-0-4)
ICGN 131 Digital Search Literacy	2 (2-0-4)
ICGN 132 Digital Security and Privacy	2 (2-0-4)
ICGN 144 Environmental Ethics	2 (2-0-4)
ICGN 145 Food Integrity and Food Fraud: When a Food Product Is Not What It Seems	2 (2-0-4)
ICGS 134 Is Democracy Good?	4 (4-0-8)
ICGS 136 Social and Health Issues in Thailand	4 (3-2-7)

ICGS 140 Fake News, Censorship and the Politics of Truth	4 (4-0-8)
ICGS 147 Women in Leadership	4 (4-0-8)
ICGS 158 Contemporary Issues in Thailand	2 (2-0-4)
ICGS 160 Self and Society	2 (2-0-4)
ICGS 163 Popular Media and Conflicts	2 (2-0-4)
ICGS 166 Power and Politics	2 (2-0-4)
ICGS 170 Civic Action in Thailand	2 (2-0-4)
ICGS 183 Media and Community	2 (2-0-4)

- **Finance & Management Literacy** **2 Credits**

ICGB 102 Navigating the Market Landscape	2 (2-0-4)
ICGB 103 Decoding Economic News	2 (2-0-4)
ICGB 104 Entrepreneurship in a Disruptive Environment	2 (2-0-4)
ICGB 105 Personal Finance Literacy	2 (2-0-4)
ICGB 106 The Business of Fashion	2 (2-0-4)
ICGB 107 Tourism Management Perspectives	2 (2-0-4)
ICGB 109 Business Event Essentials	2 (2-0-4)
ICGB 110 Management Styles of Effective Leaders	2 (2-0-4)
ICGB 111 Leadership in a Global Society	2 (2-0-4)
ICGB 112 The Art of Pricing	2 (2-0-4)
ICGB 113 Crisis Management in Service Businesses	2 (2-0-4)
ICGB 114 Cultural Strategies for Success: Unveiling Eastern Business Dynamics	2 (2-0-4)
ICGB 115 Money: Deciphering Currencies of Value	2 (2-0-4)
ICGB 116 Managing Self and Working with Others	2 (2-0-4)
ICGH 101 Biotechnology: from Science to Business	4 (4-0-8)
ICGS 102 Business Sustainability and the Global Climate Change	4 (4-0-8)
ICGS 135 Entrepreneurial Accounting	4 (4-0-8)
ICGS 153 Social Media Management for Service Sector	2 (2-0-4)
ICGS 174 The Art of Leadership in Practice: Inspiration	2 (2-0-4)
ICGS 184 Healthy Habits, Happy Shoppers: Exploring Health Literacy in Consumer Decisions	2 (2-0-4)
ICLL 101 Professional Development	2 (2-0-4)

General Education Elective Courses **4-8 Credits**

Students need to take remaining courses in any GE category to fulfill their 30 credits requirement of GE: 4 credits for students whose English Communication track are placed into 'FE track' or 'GC Track' and 8 credits for students whose English Communication track are placed into 'GC2 Track'. Partial credits of GE course that exceed the GE requirements cannot be counted towards Free Electives.

Specific Courses no less than 104 Credits

NB: All students are strongly advised to complete **ICIR 101 Approaches to International Relations and Global Affairs** and **ICIR 102 Approaches to Comparative Politics and Systems** before they enroll in any other IRGA major courses.

Core Courses **52 Credits**

ICIR 101 Approaches to International Relations and Global Affairs	4 (4-0-8)
ICIR 102 Approaches to Comparative Politics and Systems	4 (4-0-8)
ICIR 201 The Formation of the Modern World : From the Industrial Revolution to High Imperialism	4 (4-0-8)
ICIR 202 Globalization and the International Order in the Twentieth Century : From the First World War to 9/11	4 (4-0-8)
ICIR 203 Foundations of Political Thought	4 (4-0-8)
ICIR 204 Perspectives on International Relations	4 (4-0-8)
ICIR 213 Conflict, War and Peace Studies	4 (4-0-8)
ICIR 215 Thai Foreign Policy	4 (4-0-8)
ICIR 221 International Political Economy	4 (4-0-8)
ICIR 222 International Organizations	4 (4-0-8)
ICIR 301 Research Methods	4 (4-0-8)
ICIR 302 ASEAN and Southeast Asian Regionalism	4 (4-0-8)
ICIR 343 The Creative Job Search	4 (4-0-8)

Major Elective Courses **no less than 44 Credits**

- **International Relations and World Politics Module**

ICIR 211 Globalization and Social Change	4 (4-0-8)
ICIR 218 Authoritarian Populism	4 (4-0-8)
ICIR 223 Democracy as a Political System	4 (4-0-8)
ICIR 224 Security and Conflict in a Global Perspective	4 (4-0-8)
ICIR 225 Global Media, Social Change and International Relations	4 (4-0-8)
ICIR 226 The History and Concept of Diplomacy	4 (4-0-8)
ICIR 242 Geopolitics and Geoeconomics	4 (4-0-8)
ICIR 243 US Foreign Policy: 1945-Present	4 (4-0-8)
ICIR 303 Transnational Movements and Migration	4 (4-0-8)
ICIR 304 Transnational Crime	4 (4-0-8)
ICIR 305 Conflict Resolution	4 (4-0-8)
ICIR 307 The United Nations and Contemporary World Politics	4 (4-0-8)
ICIR 309 Public Diplomacy and Nation Branding	4 (4-0-8)
ICIR 311 Foreign Policy Analysis	4 (4-0-8)
ICIR 312 International Law and International Relations	4 (4-0-8)
ICIR 313 Human Rights and International Relations	4 (4-0-8)
ICIR 314 International Development Studies	4 (4-0-8)
ICIR 321 Political Risk, Business and International Relations	4 (4-0-8)
ICIR 322 The Politics and Economics of Non-Governmental Organizations	4 (4-0-8)
ICIR 328 Citizenship and Transnationalism	4 (4-0-8)
ICIR 323 The Practice of Diplomacy	4 (4-0-8)
ICIR 332 Comparative Regionalism	4 (4-0-8)
ICIR 334 Terrorism, Counterterrorism and Political Violence	4 (4-0-8)
ICIR 341 Current Issues in International Relations and Global Affairs	4 (4-0-8)

- **Global Affairs: Asia and Beyond Module**

ICIR 212 Social Institutions of the Modern World	4 (4-0-8)
ICIR 214 Perspectives on Thailand	4 (4-0-8)
ICIR 216 Religious Movements and Diversity in Asia	4 (4-0-8)
ICIR 217 Culture and Power	4 (4-0-8)
ICIR 219 Genders and Sexual Diversity in the Globalized World	4 (4-0-8)

ICIR 227 Approaches to Culture and Society	4 (4-0-8)
ICIR 228 Europe and the 'West' in the Contemporary World	4 (4-0-8)
ICIR 229 Environment and Natural Resources in Global Affairs	4 (4-0-8)
ICIR 231 Imperial Legacies in Asia	4 (4-0-8)
ICIR 232 Tradition and Modernity Asia	4 (4-0-8)
ICIR 235 Strategic Networks in Asia-Pacific	4 (4-0-8)
ICIR 237 International Economic Relations	4 (4-0-8)
ICIR 238 Politics and Identity in Cold War Europe, 1945-1991	4 (4-0-8)
ICIR 239 Nations and Nationalisms	4 (4-0-8)
ICIR 241 International Relations of South Asia: From Imperialism to the Modern World	4 (4-0-8)
ICIR 244 Sustainable Development: Politics and Practice	4 (4-0-8)
ICIR 306 Intelligence, Data and Surveillance	4 (4-0-8)
ICIR 308 Political Islam	4 (4-0-8)
ICIR 324 Society and Technology in the Modern World	4 (4-0-8)
ICIR 325 Migration, Diasporas and the Politics of Space	4 (4-0-8)
ICIR 326 Contemporary China: Global, Regional, and Local Perspectives	4 (4-0-8)
ICIR 327 Ethnicity and Representation in International Affairs	4 (4-0-8)
ICIR 331 Religion and Politics in the Contemporary World	4 (4-0-8)
ICIR 333 Politics of Memory in Asia	4 (4-0-8)
ICIR 342 Current Issues in Asia	4 (4-0-8)

Capstone Courses **no less than 8 Credits**

Senior Thesis or Internship (Final Trimester)

ICIR 401 Internship	8 (0-40-8)
ICIR 402 Senior Thesis	8 (0-0-68)

Note I: Students can substitute alternative electives in the modules of 'International Relations and World Politics' and 'Global Affairs: Asia and Beyond' from other institutions upon approval of the Program Director and the Chair of the Division

Note II: Students may freely choose courses from both the 'International Relations and World Politics' and the 'Global Affairs: Asia and Beyond" modules to complete their major elective requirements without restriction.

Note III: For their capstone course in the final trimester, students can choose to complete either an external internship **(ICIR 401)** or a senior thesis that is supervised by SSD faculty members **(ICIR 402).**

I-Design Electives 20 Credits

The purpose of the I-Design electives is to promote multidisciplinary learning. Students are encouraged to explore courses offered by diverse disciplines across MUIC, Mahidol University, and partner institutions. The I-Design electives can be satisfied upon the completion of the following course categories:

1. **Minor courses** offered by any program in **MUIC**
2. **Certificate courses** offered by any program in **MUIC**
3. **Any major courses** offered by any program in **MUIC**
4. **Any major courses** offered in **Mahidol University** (including undergraduate and graduate level courses). Courses must be approved by the student's advisor.
5. **Any major courses** offered at **partner institutions** (who have MOU with Mahidol University and/or MUIC). Courses must be approved by the student's advisor.

Free Electives no less than 8 Credits

Students can take any courses offered by MUIC / Mahidol University or any major courses offered by the partner institutions (with MOU) as free elective courses with the approval from the advisor.

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SCIENCES

Applied Mathematics

Degree Offered:

Bachelor of Science (Applied Mathematics)

B.Sc. (Applied Mathematics)

Program Goal :

The Applied Mathematics Program is designed to help students synthesize and evaluate complex mathematical concepts, promoting a detailed and advanced understanding of the subject matter. Through interdisciplinary applications, learners will demonstrate higher-order cognitive skills by critically analyzing and integrating mathematical principles to solve real-world challenges. The program also aims to cultivate well-rounded graduates who embody MU's Graduate Attributes, ensuring they are prepared to excel in diverse environments and contribute meaningfully to society. Specifically, students will develop T-shaped breadth and depth, gaining both a broad interdisciplinary perspective and deep expertise in applied mathematics. They will be equipped to become globally talented professionals with the knowledge and experience needed to compete on a global stage. The program fosters a strong sense of social contribution, encouraging students to apply their skills to benefit society. Additionally, it nurtures an entrepreneurial mindset, empowering students to think critically, innovate, and act decisively in addressing complex problems. By integrating these attributes into the curriculum, the program ensures that graduates are academically proficient, socially responsible, and capable of thriving in a competitive global environment.

Program Objectives :

Upon completing the Applied Mathematics Program, students will have acquired the following competencies and skills:

1. Demonstrate the capacity to synthesize and apply mathematical knowledge across disciplines, solving real-world problems.
2. Demonstrate advanced reasoning skills, including logical argumentation, pattern recognition, generalization, abstraction, and rigorous formal proof construction.
3. Articulate mathematical ideas and problem-solving procedures accurately and coherently, using oral and written communication.
4. Foster a mindset of academic integrity, professional ethics and responsibility within the mathematical community.

5. Foster inquiry and self-directed learning through engagement with complex mathematical concepts and analysis.

Curriculum Structure

Courses	Credit
Foundation Courses	Non-credit
General Education	No less than 30
Basic Science Courses	30
Major Required Courses	56
Major Elective Courses	16
I-Design Elective Courses	No less than 20
Free Elective Courses	No less than 8
TOTAL	**No less than 160**

COURSE LIST

Foundation Courses — Non-credit

ICMA 100 Foundation Mathematics	0 (4-0-0)
ICMA 101 Precalculus	0 (4-0-0)
ICME 101 Foundation English: Communication Skills	0 (4-0-0)

Note I:

- For B.B.A. students, students whose Mathematics placement is below ICMB 151 Business Mathematics are required to take ICMA 100 Foundation Mathematics and pass the course with the grade of "S" before moving to ICMB 151 Business Mathematics.
- For B.Sc. and B.Eng. students, students whose Mathematics placement is below ICMA 106 Calculus I and/or ICMA 151 Statistics for Science I are required to take ICMA 101 Precalculus and pass the course with the grade of "S" before moving to ICMA 106 Calculus I and/or ICMA 151 Statistics for Science I.
- For B.A.Sc. students, students whose Mathematics placement is below ICCT 101 Mathematics for Creative Technology I are required to take ICMA 101 Precalculus and pass the course with the grade of “S” before moving to ICCT 101 Mathematics for Creative Technology I.

Note II:

- Based on their achievement on the essay portion of the MUIC entrance exam, students whose English placement is below ICGC 104 English Studies I: The Writer's Toolkit will be placed into the

"FE Track". These students will be required to take ICME 101 Foundation English: Communication Skills and pass the course with the grade of "S" before moving to ICGC 104 English Studies I: The Writer's Toolkit.

General Education 30 Credits

General Education Group	GC2 Track*	FE and GC Track*
1. English Communication	10	14
2. GE Literacies	12	12
- MU Literacy	2	2
- Health Literacy	2	2
- Science and Environmental Literacy	2	2
- Intercultural and Global Awareness Literacy	2	2
- Civic Literacy	2	2
- Finance and Management Literacy	2	2
3. GE Electives	8	4
Total	**30**	**30**

** Students will be placed into specific tracks based on their achievement in the essay portion of the MUIC entrance exam.*

English Communication 10 – 14 Credits

ICGC 104 English Studies I: The Writer's Toolkit	4 (4-0-8)
ICGC 105 English Studies II: The Writer's Voice	4 (4-0-8)
ICGC 106 English Studies III: Public Speaking	4 (4-0-8)
ICGC 221 English Studies IV: The World of English - Global Realities	2 (2-0-4)
ICGC 222 English Studies IV: The World of English - Literary Analysis	2 (2-0-4)
ICGC 223 English Studies IV: The World of English - Creative Writing	2 (2-0-4)
ICGC 224 English Studies IV: The World of English - Advanced Oral Communication	2 (2-0-4)
ICGC 226 English Studies IV: The World of English - Literature Into Film	2 (2-0-4)
ICGC 228 English Studies IV: The World of English - Language and Culture	2 (2-0-4)
ICGC 230 English Studies IV: The World of English - First and Second Language Acquisition	2 (2-0-4)
ICGC 231 English Studies IV: The World of English – Poetry	2 (2-0-4)
ICGC 232 English Studies IV: The World of English - The Short Story and the Novel	2 (2-0-4)

ICGC 233 English Studies IV: The World of English – Drama	2 (2-0-4)
ICGC 234 English Studies IV: The World of English - Literary Non-fiction	2 (2-0-4)
ICGC 235 English Studies IV: The World of English - Writing for Research	2 (2-0-4)

Note I: Based on their achievement on the essay portion of the MUIC entrance exam, students will be placed into 3 following tracks: **'FE Track'**, **'GC Track'** and **'GC2 Track'**.

- **'FE Track'** – Students who are placed into 'FE Track' will be required to take ICME 101 (a non-credit course) and complete 14 credits in English Communication: ICGC 104, ICGC 105, ICGC 106 in order, and finally, any 200+ level English courses.
- **'GC Track'** – Students who are placed into 'GC Track' will be required to complete 14 credits in English Communication: ICGC 104, ICGC 105, ICGC 106 in order, and finally, any 200+ level English courses.
- **'GC2 Track'** – Students who are placed into 'GC2 Track' will be required to complete 10 credits in English Communication: ICGC 105, ICGC 106 in order, and finally, any 200+ level English courses.

GE Literacies — 12 Credits

Note I: Students must complete courses in the following six categories: MU Literacy, Health Literacy, Science & Environment Literacy, Intercultural & Global Awareness Literacy, and Finance & Management Literacy. Each category requires a minimum of 2 credits.

Note II: If a student selects a 4-credit course to fulfill a 2-credit literacy requirement, the excess 2 credits cannot be allocated or applied toward GE Elective or Free Elective credits. Instead, these excess credits will be entirely allocated to the literacy for which they were originally intended.

- **MU Literacy** — **2 Credits**

ICGB 101 Project Management for Impacts	2 (2-0-4)
ICGB 108 Event for Good	2 (2-0-4)
ICGN 139 Scientific Inquiry and the Community	2 (2-0-4)
ICGS 169 Learning by Doing	2 (2-0-4)
ICGS 171 Digital Campaign for Gender Issues	2 (2-0-4)
ICGS 172 Service Learning - Making Change	4 (4-0-8)
ICGS 173 Service Learning - Campaigning for a Cause	4 (4-0-8)

ICGS 175 Social Innovation and Sustainability	2 (2-0-4)
ICGS 176 Sustainable Cooking	2 (2-0-4)
ICGS 177 Social Innovation: Empowering Sustainable Communities	2 (2-0-4)
ICGT 107 Innovation: Inside Out	2 (2-0-4)

- **Health Literacy** **2 Credits**

ICGH 136 Sound & Soul: A Journey of Music, Emotion, and Well-being	2 (2-0-4)
ICGH 143 Flowers and Fragrances for Health	2 (2-0-4)
ICGN 135 Personal Health and Well-being	2 (2-0-4)
ICGP 101 American Flag Football	1 (0-2-1)
ICGP 102 Badminton	1 (0-2-1)
ICGP 103 Basketball	1 (0-2-1)
ICGP 104 Body Fitness	1 (0-2-1)
ICGP 105 Cycling	1 (0-2-1)
ICGP 106 Discover Dance	1 (0-2-1)
ICGP 107 Golf	1 (0-2-1)
ICGP 108 Mind and Body	1 (0-2-1)
ICGP 109 Selected Topics in Sports	1 (0-2-1)
ICGP 110 Self Defense (Striking)	1 (0-2-1)
ICGP 111 Self Defense (Grappling)	1 (0-2-1)
ICGP 112 Soccer	1 (0-2-1)
ICGP 113 Social Dance	1 (0-2-1)
ICGP 114 Swimming	1 (0-2-1)
ICGP 115 Tennis	1 (0-2-1)
ICGP 116 Volleyball	1 (0-2-1)
ICGP 118 Health and Wellness	2 (2-0-4)
ICGP 119 Mindful Food and Well-being	2 (2-0-4)
ICGP 120 Mind and Body: Navigating the Interplay of Brain, Behavior, and Well-being	2 (2-0-4)
ICGS 121 Abnormal Colleagues: how do I make this work?	4 (4-0-8)
ICGS 155 Pathway to Purpose: Life Design and Self-Exploration	4 (4-0-8)
ICGS 164 Positive Psychology	2 (2-0-4)
ICGS 178 Unmasking Human Behaviour: Exploring Psychological Truths about Behaviour	2 (2-0-4)
ICGS 179 Health and Society	2 (2-0-4)

ICLL 100 Self Development 2 (2-0-4)

- **Science & Environment Literacy** **2 Credits**

ICGH 131 Unraveling the Anthropocene: A Philosophical Critique of Earth's Shifts and Humanity's Roles 2 (2-0-4)
ICGH 142 Fantasy Literature's Environmental Message 2 (2-0-4)
ICGH 144 A Candle in the Dark: How to Tell Fact from Fiction 2 (2-0-4)
ICGN 105 Ecology, Ecosystems and Socio-Economics in Southeast Asia 4 (3-2-7)
ICGN 107 The Chemistry of Everyday Life 4 (4-0-8)
ICGN 108 Essentials of Culinary Science for Food Business 4 (3-2-7)
ICGN 111 Physics for CEO 4 (4-0-8)
ICGN 113 Plants, People and Poisons 4 (4-0-8)
ICGN 114 The Scientific Approach and Society 4 (4-0-8)
ICGN 115 Human Evolution, Diversity and Health 4 (4-0-8)
ICGN 116 Understanding and Visualizing Data 4 (3-2-7)
ICGN 119 Computer Essentials 4 (4-0-8)
ICGN 123 The Earth's Dynamic Structure 4 (3-2-7)
ICGN 124 Climate Change and Human Society 4 (3-2-7)
ICGN 126 Plant Society 2 (2-0-4)
ICGN 127 Practical Mathematics 2 (2-0-4)
ICGN 128 Climate Emergency, Biodiversity Crisis, and Humanity at Risk 2 (1-2-3)
ICGN 129 Programming for Problem Solving 4 (4-0-8)
ICGN 130 Cryptography: The Science of Making and Breaking Codes 2 (2-0-4)
ICGN 134 Introduction to Artificial Intelligence 2 (2-0-4)
ICGN 136 Creator Workshop 2 (2-0-4)
ICGN 137 Star Wanderer 2 (2-0-4)
ICGN 138 Cosmetics Chemistry 2 (2-0-4)
ICGN 140 Food Energy for Health 2 (2-0-4)
ICGN 141 Life in the Sea 2 (1-2-3)
ICGN 142 Energy and the Environment 2 (2-0-4)
ICGN 143 Gaia: Life on Earth 2 (1-2-3)
ICGT 101 Technology-Enhanced Learning: Harnessing AI & Digital Tools for Academic Success 2 (2-0-4)
ICGT 102 Digital Document Management 2 (2-0-4)
ICGT 103 Computational Thinking 2 (2-0-4)
ICGT 104 Tell a Great Story with Data 2 (2-0-4)

ICGT 105 No-Code Application Development	2 (2-0-4)
ICGT 106 Data and Spreadsheets	2 (2-0-4)
ICLL 102 Skills for a Digital World	2 (2-0-4)

- **Intercultural & Global Awareness Literacy** **2 Credits**

ICGH 107 Contemporary Art and Visual Culture	4 (4-0-8)
ICGH 109 Creative Thinking Through Art and Design	4 (2-4-6)
ICGH 110 Drawing as Visual Analysis	4 (2-4-6)
ICGH 115 Cinematic Language and Applications	4 (4-0-8)
ICGH 116 World Cinemas	4 (4-0-8)
ICGH 117 Drawing as Creative Expression	4 (2-4-6)
ICGH 118 Photography Visualizing in the Digital Age	4 (2-4-6)
ICGH 120 Thai and ASEAN Cinema	4 (4-0-8)
ICGH 124 Life Drawing and Anatomy	4 (2-4-6)
ICGH 128 Internet Celebrity, Culture and the Media	4 (4-0-8)
ICGH 130 The Logic Lab: Crafting Coherent Arguments	2 (2-0-4)
ICGH 132 The Rise and Fall of Ancient Athens	2 (2-0-4)
ICGH 135 The Horror Film	2 (2-0-4)
ICGH 137 Apocalypse Now, or Never, or Maybe?	2 (2-0–4)
ICGH 139 Spirituality, Sustainability, Ecosystems	2 (2-0-4)
ICGH 141 SPQR—Glimpses of Rome	2 (2-0-4)
ICGH 145 Essentials to Photography, Skills and Practices	2 (2-0-4)
ICGH 146 Acting for Self-Discovery and Empathizing with Others	2 (2-0-4)
ICGH 147 Myth and the Masks of the Divine	2 (2-0-4)
ICGH 148 Quest for Global Justice: A Philosophical Inquiry	2 (2-0-4)
ICGL 101 Elementary German I	4 (4-0-8)
ICGL 102 Elementary German II	4 (4-0-8)
ICGL 103 Elementary German III	4 (4-0-8)
ICGL 111 Elementary Japanese I	4 (4-0-8)
ICGL 112 Elementary Japanese II	4 (4-0-8)
ICGL 113 Elementary Japanese III	4 (4-0-8)
ICGL 121 Elementary French I	4 (4-0-8)
ICGL 122 Elementary French II	4 (4-0-8)
ICGL 123 Elementary French III	4 (4-0-8)

ICGL 131 Elementary Chinese I	4 (4-0-8)
ICGL 132 Elementary Chinese II	4 (4-0-8)
ICGL 133 Elementary Chinese III	4 (4-0-8)
ICGL 141 Elementary Spanish I	4 (4-0-8)
ICGL 142 Elementary Spanish II	4 (4-0-8)
ICGL 143 Elementary Spanish III	4 (4-0-8)
ICGL 160 Introduction to Thai Language and Culture	4 (4-0-8)
ICGL 161 Elementary Thai I	4 (4-0-8)
ICGL 162 Elementary Thai II	4 (4-0-8)
ICGL 163 Elementary Thai III	4 (4-0-8)
ICGL 164 Thai Writing for Specific Purposes in Workplace *for native Thai students	2 (2-0-4)
ICGL 171 Diversities in Multilingual Societies	2 (2-0-4)
ICGL 172 Chinese Influence in Thai Society	2 (2-0-4)
ICGL 173 Introduction to Japanese Societies	2 (2-0-4)
ICGL 174 From Siesta to Fiesta: Introduction to Spanish and Latin American Culture	2 (2-0-4)
ICGL 201 Pre-Intermediate German I	4 (4-0-8)
ICGL 202 Pre-Intermediate German II	4 (4-0-8)
ICGL 203 Pre-Intermediate German III	4 (4-0-8)
ICGL 211 Pre-Intermediate Japanese I	4 (4-0-8)
ICGL 212 Pre-Intermediate Japanese II	4 (4-0-8)
ICGL 213 Pre-Intermediate Japanese III	4 (4-0-8)
ICGL 221 Pre-intermediate French I	4 (4-0-8)
ICGL 222 Pre-intermediate French II	4 (4-0-8)
ICGL 223 Pre-intermediate French III	4 (4-0-8)
ICGL 231 Pre-Intermediate Chinese I	4 (4-0-8)
ICGL 232 Pre-Intermediate Chinese II	4 (4-0-8)
ICGL 233 Pre-Intermediate Chinese III	4 (4-0-8)
ICGL 241 Pre-Intermediate Spanish I	4 (4-0-8)
ICGL 242 Pre-Intermediate Spanish II	4 (4-0-8)
ICGL 243 Pre-Intermediate Spanish III	4 (4-0-8)
ICGN 125 Games and Learning	2 (2-0-4)
ICGS 112 Geography of Human Activities	4 (4-0-8)
ICGS 128 Global Gastronomy and Cuisines	4 (4-0-8)
ICGS 131 Introduction to International Studies	4 (4-0-8)

ICGS 132 Career Preparation in a Globalized World	4 (4-0-8)
ICGS 133 Foundation of Mediterranean Cultures	4 (4-0-8)
ICGS 137 Witchcraft and Gender Representation	4 (4-0-8)
ICGS 143 Introduction to Air Transport and Tourism	4 (4-0-8)
ICGS 156 Fashion and Society	2 (2-0-4)
ICGS 157 Asian Religious Traditions	2 (2-0-4)
ICGS 159 The Self and Modern Media	2 (2-0-4)
ICGS 161 Skills in Dealing with People Across Cultures	2 (2-0-4)
ICGS 162 Arts, Culture and Tourism Development	2 (2-0-4)
ICGS 165 Tea Studies	2 (2-0-4)
ICGS 167 Coffee Studies	2 (2-0-4)
ICGS 168 Faith a Lifestyle	2 (2-0-4)
ICGS 180 Cafe Story and Slow food	2 (2-0-4)
ICGS 181 Cuisine and Culture	2 (2-0-4)
ICGS 182 Humor Horizons	2 (2-0-4)

- **Civic Literacy** **2 Credits**

ICGH 126 Behavioral Ethics: Why Good People Do Bad Things	2 (2-0-4)
ICGH 129 Searching for Meaning	2 (2-0-4)
ICGH 133 Socrates, His Predecessors and Successors	2 (2-0-4)
ICGH 134 Digital Media Literacy: Skills for 21st Century Learning	2 (2-0-4)
ICGH 138 The Philosophies of Asia	2 (2-0-4)
ICGH 140 Ethics and Evolution	2 (2-0-4)
ICGH 149 Law, Technology, and Society	2 (2-0-4)
ICGH 150 Global Perspectives on Free Expression in the Digital Age	2 (2-0-4)
ICGN 131 Digital Search Literacy	2 (2-0-4)
ICGN 132 Digital Security and Privacy	2 (2-0-4)
ICGN 144 Environmental Ethics	2 (2-0-4)
ICGN 145 Food Integrity and Food Fraud: When a Food Product Is Not What It Seems	2 (2-0-4)
ICGS 134 Is Democracy Good?	4 (4-0-8)
ICGS 136 Social and Health Issues in Thailand	4 (3-2-7)
ICGS 140 Fake News, Censorship and the Politics of Truth	4 (4-0-8)
ICGS 147 Women in Leadership	4 (4-0-8)
ICGS 158 Contemporary Issues in Thailand	2 (2-0-4)

ICGS 160 Self and Society	2 (2-0-4)
ICGS 163 Popular Media and Conflicts	2 (2-0-4)
ICGS 166 Power and Politics	2 (2-0-4)
ICGS 170 Civic Action in Thailand	2 (2-0-4)
ICGS 183 Media and Community	2 (2-0-4)

- **Finance & Management Literacy** **2 Credits**

ICGB 102 Navigating the Market Landscape	2 (2-0-4)
ICGB 103 Decoding Economic News	2 (2-0-4)
ICGB 104 Entrepreneurship in a Disruptive Environment	2 (2-0-4)
ICGB 105 Personal Finance Literacy	2 (2-0-4)
ICGB 106 The Business of Fashion	2 (2-0-4)
ICGB 107 Tourism Management Perspectives	2 (2-0-4)
ICGB 109 Business Event Essentials	2 (2-0-4)
ICGB 110 Management Styles of Effective Leaders	2 (2-0-4)
ICGB 111 Leadership in a Global Society	2 (2-0-4)
ICGB 112 The Art of Pricing	2 (2-0-4)
ICGB 113 Crisis Management in Service Businesses	2 (2-0-4)
ICGB 114 Cultural Strategies for Success: Unveiling Eastern Business Dynamics	2 (2-0-4)
ICGB 115 Money: Deciphering Currencies of Value	2 (2-0-4)
ICGB 116 Managing Self and Working with Others	2 (2-0-4)
ICGH 101 Biotechnology: from Science to Business	4 (4-0-8)
ICGS 102 Business Sustainability and the Global Climate Change	4 (4-0-8)
ICGS 135 Entrepreneurial Accounting	4 (4-0-8)
ICGS 153 Social Media Management for Service Sector	2 (2-0-4)
ICGS 174 The Art of Leadership in Practice: Inspiration	2 (2-0-4)
ICGS 184 Healthy Habits, Happy Shoppers: Exploring Health Literacy in Consumer Decisions	2 (2-0-4)
ICLL 101 Professional Development	2 (2-0-4)

General Education Elective Courses 4-8 Credits

Students need to take remaining courses in any GE category to fulfill their 30 credits requirement of GE: 4 credits for students whose English Communication track are placed into ‘FE track’ or ‘GC Track’ and 8 credits for students whose English Communication track are placed into ‘GC2 Track’. Partial credits of GE course that exceed the GE requirements cannot be counted towards Free Electives.

Specific Courses — no less than 102 Credits

Basic Science Courses — 30 credits

- **Mandatory Basic Science Courses — 26 credits**

Students are required to complete 26 credits from the following list of courses. These courses are designed to provide a solid foundation in applied mathematics and are compulsory for all students in the program.

ICCS 102 Coding for All	4 (4-0-8)
ICCS 111 Programming and Abstractions	4 (4-0-8)
ICMA 106 Calculus I	4 (4-0-8)
ICMA 151 Statistics for Science I	4 (4-0-8)
ICMA 213 Calculus II	4 (4-0-8)
ICPY 101 Physics I	4 (4-0-8)
ICPY 105 Integrated Laboratory in Physics I	2 (0-4-2)

- **Elective Basic Science Courses — 4 credits**

Students must complete 4 credits from the following list of courses. These courses allow students to tailor their education to their interests and career goals within the field of applied mathematics.

ICBI 105 Molecules to Living Cells	4 (2-4-6)
ICCH 101 General Chemistry I	4 (4-0-8)
ICPY 102 Physics II	4 (4-0-8)

Major Required Courses — 56 Credits

Students are required to complete 48 credits from the following list of courses. These courses are designed to provide a broad and comprehensive foundation in applied mathematics, covering a wide range of essential topics.

ICMA 120 Mathematical Foundations and Proof Techniques	4 (4-0-8)
ICMA 214 Ordinary Differential Equations	4 (4-0-8)
ICMA 218 Multivariable Calculus	4 (4-0-8)
ICMA 240 Linear Algebra I	4 (4-0-8)

ICMA 241 Linear Algebra II	4 (4-0-8)
ICMA 242 Discrete Mathematics	4 (4-0-8)
ICMA 253 Statistics for Science II	4 (4-0-8)
ICMA 322 Advanced Calculus	4 (4-0-8)
ICMA 335 Complex Variables	4 (4-0-8)
ICMA 338 Numerical Methods	4 (4-0-8)
ICMA 346 Optimization	4 (4-0-8)
ICMA 350 Probability	4 (4-0-8)

Capstone Experience Courses **8 Credits**

Students must complete **8 credits** as part of the Capstone Experience. There are **two** options available:

- **Option 1: Senior Project** **8 credits**

Students who choose this option will undertake a significant research project under the guidance of a faculty advisor. This project involves independent research, application of mathematical theories, and the presentation of findings.

ICMA 445 Seminar in Applied Mathematics	2 (2-0-4)
ICMA 447 Research Project in Applied Mathematics A	3 (3-0-6)
ICMA 448 Research Project in Applied Mathematics B	3 (3-0-6)

- **Option 2: Cooperative Education** **8 credits**

Students who choose this option will participate in a co-op program, gaining practical experience by working in an industry setting. This involves applying mathematical skills in real-world scenarios and gaining professional experience.

ICCS 431 Cooperative and Work integrated Education Seminar	2 (2-0-4)
ICCS 432 Cooperative and Work integrated Education I	3 (0-40-8)
ICCS 433 Cooperative and Work integrated Education II	3 (0-40-8)

Note: *This option is ideal for students seeking to enter the workforce immediately after graduation.*

Major Elective Courses **no less than 16 Credits**

In addition to the Major Required Courses, students must complete at least 16 credits from the following list of Major Elective Courses. These courses allow students to further specialize in areas of interest within applied mathematics, providing flexibility to tailor their education to their career goals.

ICCS 261 Principles of Data Science	4 (4-0-8)
ICIC 355 Judgment and Decision Making	4 (4-0-8)
ICIC 358 Behavioral Economics	4 (4-0-8)
ICMA 313 Number Theory and Cryptography	4 (4-0-8)
ICMA 316 Graph Theory	4 (4-0-8)
ICMA 319 Combinatorics	4 (4-0-8)
ICMA 321 Game Theory	4 (4-0-8)
ICMA 323 Partial Differential Equations	4 (4-0-8)
ICMA 344 Time Series Analysis	4 (4-0-8)
ICMA 353 Actuarial Mathematics I	4 (4-0-8)
ICMA 354 Actuarial Mathematics II	4 (4-0-8)
ICMA 356 Decision Analysis	4 (4-0-8)
ICMA 393 Special Topics in Applied Mathematics I	4 (4-0-8)
ICMA 395 Special Topics in Applied Mathematics II	4 (4-0-8)
ICMA 410 Stochastic Processes	4 (4-0-8)
ICMA 412 Heuristic Optimization	4 (4-0-8)
ICMA 424 Abstract Algebra	4 (4-0-8)
ICMA 425 Differential Geometry	4 (4-0-8)
ICMA 432 Multivariate Analysis	4 (4-0-8)
ICMA 435 Regression Analysis	4 (4-0-8)
ICMA 450 Mathematical Modeling	4 (4-0-8)
ICMA 452 Mathematical Finance and Derivatives	4 (4-0-8)
ICMA 484 Special Topics in Applied Mathematics III	4 (4-0-8)
ICMA 485 Special Topics in Applied Mathematics IV	4 (4-0-8)
ICMA 486 Special Topics in Applied Mathematics V	4 (4-0-8)
ICMA 487 Special Topics in Applied Mathematics VI	4 (4-0-8)
ICMB 253 Microeconomics	4 (4-0-8)
ICMB 254 Macroeconomics	4 (4-0-8)
ICMB 255 Management of Business Information	4 (4-0-8)

ICMB 256 Principles of Financial Accounting	4 (4-0-8)
ICMB 257 Business Finance for Entrepreneurs	4 (4-0-8)
ICMF 331 Financial Management	4 (4-0-8)
ICMF 332 Financial Markets	4 (4-0-8)
ICMF 334 Risk Management and Derivatives	4 (4-0-8)

Note: *Select any combination of courses from the above list to fulfill the Major Elective Courses requirement. Consult with your academic advisor to ensure your choices align with your academic and career objectives.*

I-Design Electives 20 Credits

The purpose of the I-Design electives is to promote multidisciplinary learning. Students are encouraged to explore courses offered by diverse disciplines across MUIC, Mahidol University, and partner institutions. The I-Design electives can be satisfied upon the completion of the following course categories:

1. **Minor courses** offered by any program in **MUIC**
2. **Certificate courses** offered by any program in **MUIC**
3. **Any major courses** offered by any program in **MUIC**
4. **Any major courses** offered in **Mahidol University** (including undergraduate and graduate level courses). Courses must be approved by the student's advisor.
5. **Any major courses** offered at **partner institutions** (who have MOU with Mahidol University and/or MUIC). Courses must be approved by the student's advisor.

Free Electives 8 Credits

Students can take any courses offered by MUIC / Mahidol University or any major courses offered by the partner institutions (with MOU) as free elective courses with the approval from the advisor.

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Biological Sciences

Degree Offered:

Bachelor of Science (Biological Sciences)

B.Sc. (Biological Sciences)

Program Goal :

The goal of the Biological Sciences program is to produce graduates who possess the MU graduate characters. The graduates should be able to use their biological knowledge and skills to solve real-world problems. The program also aims to promote ethical values and new ideas that promote the well-being of individuals and the environment.

Program Objectives :

1. Enable students to integrate knowledge and technical skills in biological disciplines to address health, social, and environmental challenges.
2. Develop students' ability to critically appraise scientific information and employ biological research methodologies to draw meaningful and conclusive insights.
3. Develop proficiency in communication, ensuring students can convey complex biological science concepts both within the scientific community and to a broader audience.
4. Instill professionalism, scientific integrity, and competency in students, fostering their ability to function both independently and as collaborative team members.
5. Nurture the capacity to create innovative solutions to biological challenges, emphasizing the well-being of individuals, communities, and the natural environment.
6. Instill the mindset of life-long learning
7. Prepare students for various scopes of future paths, including employment in biological sciences or related fields, post-graduate studies and professional degrees

Curriculum Structure

Courses	Credit
Foundation Courses	Non-credit
General Education	No less than 30
Core Courses	22
Major Core Courses	30
Major Required Courses	34
Major Elective Courses	24
I-Design Elective Courses	No less than 20
Free Elective Courses	No less than 8
TOTAL	**No less than 168**

COURSE LIST

Foundation Courses — Non-credit

ICMA 100 Foundation Mathematics — 0 (4-0-0)

ICMA 101 Precalculus — 0 (4-0-0)

ICME 101 Foundation English: Communication Skills — 0 (4-0-0)

Note I:

- For B.B.A. students, students whose Mathematics placement is below ICMB 151 Business Mathematics are required to take ICMA 100 Foundation Mathematics and pass the course with the grade of "S" before moving to ICMB 151 Business Mathematics.
- For B.Sc. and B.Eng. students, students whose Mathematics placement is below ICMA 106 Calculus I and/or ICMA 151 Statistics for Science I are required to take ICMA 101 Precalculus and pass the course with the grade of "S" before moving to ICMA 106 Calculus I and/or ICMA 151 Statistics for Science I.
- For B.A.Sc. students, students whose Mathematics placement is below ICCT 101 Mathematics for Creative Technology I are required to take ICMA 101 Precalculus and pass the course with the grade of "S" before moving to ICCT 101 Mathematics for Creative Technology I.

Note II:

- Based on their achievement on the essay portion of the MUIC entrance exam, students whose English placement is below ICGC 104 English Studies I: The Writer's Toolkit will be placed into the "FE Track". These students will be required to take ICME 101 Foundation English: Communication

Skills and pass the course with the grade of "S" before moving to ICGC 104 English Studies I: The Writer's Toolkit.

General Education 30 Credits

General Education Group	GC2 Track*	FE and GC Track*
1. English Communication	10	14
2. GE Literacies	12	12
- MU Literacy	2	2
- Health Literacy	2	2
- Science and Environmental Literacy	2	2
- Intercultural and Global Awareness Literacy	2	2
- Civic Literacy	2	2
- Finance and Management Literacy	2	2
3. GE Electives	8	4
Total	**30**	**30**

** Students will be placed into specific tracks based on their achievement in the essay portion of the MUIC entrance exam.*

English Communication 10 – 14 Credits

ICGC 104 English Studies I: The Writer's Toolkit	4 (4-0-8)
ICGC 105 English Studies II: The Writer's Voice	4 (4-0-8)
ICGC 106 English Studies III: Public Speaking	4 (4-0-8)
ICGC 221 English Studies IV: The World of English - Global Realities	2 (2-0-4)
ICGC 222 English Studies IV: The World of English - Literary Analysis	2 (2-0-4)
ICGC 223 English Studies IV: The World of English - Creative Writing	2 (2-0-4)
ICGC 224 English Studies IV: The World of English - Advanced Oral Communication	2 (2-0-4)
ICGC 226 English Studies IV: The World of English - Literature Into Film	2 (2-0-4)
ICGC 228 English Studies IV: The World of English - Language and Culture	2 (2-0-4)
ICGC 230 English Studies IV: The World of English - First and Second Language Acquisition	2 (2-0-4)
ICGC 231 English Studies IV: The World of English – Poetry	2 (2-0-4)
ICGC 232 English Studies IV: The World of English - The Short Story and the Novel	2 (2-0-4)
ICGC 233 English Studies IV: The World of English – Drama	2 (2-0-4)
ICGC 234 English Studies IV: The World of English - Literary Non-fiction	2 (2-0-4)
ICGC 235 English Studies IV: The World of English - Writing for Research	2 (2-0-4)

Note I: Based on their achievement on the essay portion of the MUIC entrance exam, students will be placed into 3 following tracks: **'FE Track'**, **'GC Track'** and **'GC2 Track'**.

- **'FE Track'** – Students who are placed into 'FE Track' will be required to take ICME 101 (a non-credit course) and complete 14 credits in English Communication: ICGC 104, ICGC 105, ICGC 106 in order, and finally, any 200+ level English courses.
- **'GC Track'** – Students who are placed into 'GC Track' will be required to complete 14 credits in English Communication: ICGC 104, ICGC 105, ICGC 106 in order, and finally, any 200+ level English courses.
- **'GC2 Track'** – Students who are placed into 'GC2 Track' will be required to complete 10 credits in English Communication: ICGC 105, ICGC 106 in order, and finally, any 200+ level English courses.

GE Literacies — 12 Credits

Note I: Students must complete courses in the following six categories: MU Literacy, Health Literacy, Science & Environment Literacy, Intercultural & Global Awareness Literacy, and Finance & Management Literacy. Each category requires a minimum of 2 credits.

Note II: If a student selects a 4-credit course to fulfill a 2-credit literacy requirement, the excess 2 credits cannot be allocated or applied toward GE Elective or Free Elective credits. Instead, these excess credits will be entirely allocated to the literacy for which they were originally intended.

- **MU Literacy** — **2 Credits**

ICGB 101 Project Management for Impacts	2 (2-0-4)
ICGB 108 Event for Good	2 (2-0-4)
ICGN 139 Scientific Inquiry and the Community	2 (2-0-4)
ICGS 169 Learning by Doing	2 (2-0-4)
ICGS 171 Digital Campaign for Gender Issues	2 (2-0-4)
ICGS 172 Service Learning - Making Change	4 (4-0-8)
ICGS 173 Service Learning - Campaigning for a Cause	4 (4-0-8)
ICGS 175 Social Innovation and Sustainability	2 (2-0-4)
ICGS 176 Sustainable Cooking	2 (2-0-4)

ICGS 177 Social Innovation: Empowering Sustainable Communities	2 (2-0-4)
ICGT 107 Innovation: Inside Out	2 (2-0-4)

- **Health Literacy** **2 Credits**

ICGH 136 Sound & Soul: A Journey of Music, Emotion, and Well-being	2 (2-0-4)
ICGH 143 Flowers and Fragrances for Health	2 (2-0-4)
ICGN 135 Personal Health and Well-being	2 (2-0-4)
ICGP 101 American Flag Football	1 (0-2-1)
ICGP 102 Badminton	1 (0-2-1)
ICGP 103 Basketball	1 (0-2-1)
ICGP 104 Body Fitness	1 (0-2-1)
ICGP 105 Cycling	1 (0-2-1)
ICGP 106 Discover Dance	1 (0-2-1)
ICGP 107 Golf	1 (0-2-1)
ICGP 108 Mind and Body	1 (0-2-1)
ICGP 109 Selected Topics in Sports	1 (0-2-1)
ICGP 110 Self Defense (Striking)	1 (0-2-1)
ICGP 111 Self Defense (Grappling)	1 (0-2-1)
ICGP 112 Soccer	1 (0-2-1)
ICGP 113 Social Dance	1 (0-2-1)
ICGP 114 Swimming	1 (0-2-1)
ICGP 115 Tennis	1 (0-2-1)
ICGP 116 Volleyball	1 (0-2-1)
ICGP 118 Health and Wellness	2 (2-0-4)
ICGP 119 Mindful Food and Well-being	2 (2-0-4)
ICGP 120 Mind and Body: Navigating the Interplay of Brain, Behavior, and Well-being	2 (2-0-4)
ICGS 121 Abnormal Colleagues: how do I make this work?	4 (4-0-8)
ICGS 155 Pathway to Purpose: Life Design and Self-Exploration	4 (4-0-8)
ICGS 164 Positive Psychology	2 (2-0-4)
ICGS 178 Unmasking Human Behaviour: Exploring Psychological Truths about Behaviour	2 (2-0-4)
ICGS 179 Health and Society	2 (2-0-4)
ICLL 100 Self Development	2 (2-0-4)

- **Science & Environment Literacy** **2 Credits**

ICGH 131 Unraveling the Anthropocene: A Philosophical Critique of Earth's Shifts and Humanity's Roles 2 (2-0-4)
ICGH 142 Fantasy Literature’s Environmental Message 2 (2-0-4)
ICGH 144 A Candle in the Dark: How to Tell Fact from Fiction 2 (2-0-4)
ICGN 105 Ecology, Ecosystems and Socio-Economics in Southeast Asia 4 (3-2-7)
ICGN 107 The Chemistry of Everyday Life 4 (4-0-8)
ICGN 108 Essentials of Culinary Science for Food Business 4 (3-2-7)
ICGN 111 Physics for CEO 4 (4-0-8)
ICGN 113 Plants, People and Poisons 4 (4-0-8)
ICGN 114 The Scientific Approach and Society 4 (4-0-8)
ICGN 115 Human Evolution, Diversity and Health 4 (4-0-8)
ICGN 116 Understanding and Visualizing Data 4 (3-2-7)
ICGN 119 Computer Essentials 4 (4-0-8)
ICGN 123 The Earth’s Dynamic Structure 4 (3-2-7)
ICGN 124 Climate Change and Human Society 4 (3-2-7)
ICGN 126 Plant Society 2 (2-0-4)
ICGN 127 Practical Mathematics 2 (2-0-4)
ICGN 128 Climate Emergency, Biodiversity Crisis, and Humanity at Risk 2 (1-2-3)
ICGN 129 Programming for Problem Solving 4 (4-0-8)
ICGN 130 Cryptography: The Science of Making and Breaking Codes 2 (2-0-4)
ICGN 134 Introduction to Artificial Intelligence 2 (2-0-4)
ICGN 136 Creator Workshop 2 (2-0-4)
ICGN 137 Star Wanderer 2 (2-0-4)
ICGN 138 Cosmetics Chemistry 2 (2-0-4)
ICGN 140 Food Energy for Health 2 (2-0-4)
ICGN 141 Life in the Sea 2 (1-2-3)
ICGN 142 Energy and the Environment 2 (2-0-4)
ICGN 143 Gaia: Life on Earth 2 (1-2-3)
ICGT 101 Technology-Enhanced Learning: Harnessing AI & Digital Tools for Academic Success 2 (2-0-4)
ICGT 102 Digital Document Management 2 (2-0-4)
ICGT 103 Computational Thinking 2 (2-0-4)
ICGT 104 Tell a Great Story with Data 2 (2-0-4)
ICGT 105 No-Code Application Development 2 (2-0-4)
ICGT 106 Data and Spreadsheets 2 (2-0-4)

ICLL 102 Skills for a Digital World	2 (2-0-4)

- **Intercultural & Global Awareness Literacy** **2 Credits**

ICGH 107 Contemporary Art and Visual Culture	4 (4-0-8)
ICGH 109 Creative Thinking Through Art and Design	4 (2-4-6)
ICGH 110 Drawing as Visual Analysis	4 (2-4-6)
ICGH 115 Cinematic Language and Applications	4 (4-0-8)
ICGH 116 World Cinemas	4 (4-0-8)
ICGH 117 Drawing as Creative Expression	4 (2-4-6)
ICGH 118 Photography Visualizing in the Digital Age	4 (2-4-6)
ICGH 120 Thai and ASEAN Cinema	4 (4-0-8)
ICGH 124 Life Drawing and Anatomy	4 (2-4-6)
ICGH 128 Internet Celebrity, Culture and the Media	4 (4-0-8)
ICGH 130 The Logic Lab: Crafting Coherent Arguments	2 (2-0-4)
ICGH 132 The Rise and Fall of Ancient Athens	2 (2-0-4)
ICGH 135 The Horror Film	2 (2-0-4)
ICGH 137 Apocalypse Now, or Never, or Maybe?	2 (2-0–4)
ICGH 139 Spirituality, Sustainability, Ecosystems	2 (2-0-4)
ICGH 141 SPQR—Glimpses of Rome	2 (2-0-4)
ICGH 145 Essentials to Photography, Skills and Practices	2 (2-0-4)
ICGH 146 Acting for Self-Discovery and Empathizing with Others	2 (2-0-4)
ICGH 147 Myth and the Masks of the Divine	2 (2-0-4)
ICGH 148 Quest for Global Justice: A Philosophical Inquiry	2 (2-0-4)
ICGL 101 Elementary German I	4 (4-0-8)
ICGL 102 Elementary German II	4 (4-0-8)
ICGL 103 Elementary German III	4 (4-0-8)
ICGL 111 Elementary Japanese I	4 (4-0-8)
ICGL 112 Elementary Japanese II	4 (4-0-8)
ICGL 113 Elementary Japanese III	4 (4-0-8)
ICGL 121 Elementary French I	4 (4-0-8)
ICGL 122 Elementary French II	4 (4-0-8)
ICGL 123 Elementary French III	4 (4-0-8)
ICGL 131 Elementary Chinese I	4 (4-0-8)
ICGL 132 Elementary Chinese II	4 (4-0-8)

ICGL 133 Elementary Chinese III	4 (4-0-8)
ICGL 141 Elementary Spanish I	4 (4-0-8)
ICGL 142 Elementary Spanish II	4 (4-0-8)
ICGL 143 Elementary Spanish III	4 (4-0-8)
ICGL 160 Introduction to Thai Language and Culture	4 (4-0-8)
ICGL 161 Elementary Thai I	4 (4-0-8)
ICGL 162 Elementary Thai II	4 (4-0-8)
ICGL 163 Elementary Thai III	4 (4-0-8)
ICGL 164 Thai Writing for Specific Purposes in Workplace *for native Thai students	2 (2-0-4)
ICGL 171 Diversities in Multilingual Societies	2 (2-0-4)
ICGL 172 Chinese Influence in Thai Society	2 (2-0-4)
ICGL 173 Introduction to Japanese Societies	2 (2-0-4)
ICGL 174 From Siesta to Fiesta: Introduction to Spanish and Latin American Culture	2 (2-0-4)
ICGL 201 Pre-Intermediate German I	4 (4-0-8)
ICGL 202 Pre-Intermediate German II	4 (4-0-8)
ICGL 203 Pre-Intermediate German III	4 (4-0-8)
ICGL 211 Pre-Intermediate Japanese I	4 (4-0-8)
ICGL 212 Pre-Intermediate Japanese II	4 (4-0-8)
ICGL 213 Pre-Intermediate Japanese III	4 (4-0-8)
ICGL 221 Pre-intermediate French I	4 (4-0-8)
ICGL 222 Pre-intermediate French II	4 (4-0-8)
ICGL 223 Pre-intermediate French III	4 (4-0-8)
ICGL 231 Pre-Intermediate Chinese I	4 (4-0-8)
ICGL 232 Pre-Intermediate Chinese II	4 (4-0-8)
ICGL 233 Pre-Intermediate Chinese III	4 (4-0-8)
ICGL 241 Pre-Intermediate Spanish I	4 (4-0-8)
ICGL 242 Pre-Intermediate Spanish II	4 (4-0-8)
ICGL 243 Pre-Intermediate Spanish III	4 (4-0-8)
ICGN 125 Games and Learning	2 (2-0-4)
ICGS 112 Geography of Human Activities	4 (4-0-8)
ICGS 128 Global Gastronomy and Cuisines	4 (4-0-8)
ICGS 131 Introduction to International Studies	4 (4-0-8)
ICGS 132 Career Preparation in a Globalized World	4 (4-0-8)
ICGS 133 Foundation of Mediterranean Cultures	4 (4-0-8)

ICGS 137 Witchcraft and Gender Representation	4 (4-0-8)
ICGS 143 Introduction to Air Transport and Tourism	4 (4-0-8)
ICGS 156 Fashion and Society	2 (2-0-4)
ICGS 157 Asian Religious Traditions	2 (2-0-4)
ICGS 159 The Self and Modern Media	2 (2-0-4)
ICGS 161 Skills in Dealing with People Across Cultures	2 (2-0-4)
ICGS 162 Arts, Culture and Tourism Development	2 (2-0-4)
ICGS 165 Tea Studies	2 (2-0-4)
ICGS 167 Coffee Studies	2 (2-0-4)
ICGS 168 Faith a Lifestyle	2 (2-0-4)
ICGS 180 Cafe Story and Slow food	2 (2-0-4)
ICGS 181 Cuisine and Culture	2 (2-0-4)
ICGS 182 Humor Horizons	2 (2-0-4)

- **Civic Literacy** **2 Credits**

ICGH 126 Behavioral Ethics: Why Good People Do Bad Things	2 (2-0-4)
ICGH 129 Searching for Meaning	2 (2-0-4)
ICGH 133 Socrates, His Predecessors and Successors	2 (2-0-4)
ICGH 134 Digital Media Literacy: Skills for 21st Century Learning	2 (2-0-4)
ICGH 138 The Philosophies of Asia	2 (2-0-4)
ICGH 140 Ethics and Evolution	2 (2-0-4)
ICGH 149 Law, Technology, and Society	2 (2-0-4)
ICGH 150 Global Perspectives on Free Expression in the Digital Age	2 (2-0-4)
ICGN 131 Digital Search Literacy	2 (2-0-4)
ICGN 132 Digital Security and Privacy	2 (2-0-4)
ICGN 144 Environmental Ethics	2 (2-0-4)
ICGN 145 Food Integrity and Food Fraud: When a Food Product Is Not What It Seems	2 (2-0-4)
ICGS 134 Is Democracy Good?	4 (4-0-8)
ICGS 136 Social and Health Issues in Thailand	4 (3-2-7)
ICGS 140 Fake News, Censorship and the Politics of Truth	4 (4-0-8)
ICGS 147 Women in Leadership	4 (4-0-8)
ICGS 158 Contemporary Issues in Thailand	2 (2-0-4)
ICGS 160 Self and Society	2 (2-0-4)
ICGS 163 Popular Media and Conflicts	2 (2-0-4)

ICGS 166 Power and Politics	2 (2-0-4)
ICGS 170 Civic Action in Thailand	2 (2-0-4)
ICGS 183 Media and Community	2 (2-0-4)

- **Finance & Management Literacy** **2 Credits**

ICGB 102 Navigating the Market Landscape	2 (2-0-4)
ICGB 103 Decoding Economic News	2 (2-0-4)
ICGB 104 Entrepreneurship in a Disruptive Environment	2 (2-0-4)
ICGB 105 Personal Finance Literacy	2 (2-0-4)
ICGB 106 The Business of Fashion	2 (2-0-4)
ICGB 107 Tourism Management Perspectives	2 (2-0-4)
ICGB 109 Business Event Essentials	2 (2-0-4)
ICGB 110 Management Styles of Effective Leaders	2 (2-0-4)
ICGB 111 Leadership in a Global Society	2 (2-0-4)
ICGB 112 The Art of Pricing	2 (2-0-4)
ICGB 113 Crisis Management in Service Businesses	2 (2-0-4)
ICGB 114 Cultural Strategies for Success: Unveiling Eastern Business Dynamics	2 (2-0-4)
ICGB 115 Money: Deciphering Currencies of Value	2 (2-0-4)
ICGB 116 Managing Self and Working with Others	2 (2-0-4)
ICGH 101 Biotechnology: from Science to Business	4 (4-0-8)
ICGS 102 Business Sustainability and the Global Climate Change	4 (4-0-8)
ICGS 135 Entrepreneurial Accounting	4 (4-0-8)
ICGS 153 Social Media Management for Service Sector	2 (2-0-4)
ICGS 174 The Art of Leadership in Practice: Inspiration	2 (2-0-4)
ICGS 184 Healthy Habits, Happy Shoppers: Exploring Health Literacy in Consumer Decisions	2 (2-0-4)
ICLL 101 Professional Development	2 (2-0-4)

General Education Elective Courses 4-8 Credits

Students need to take remaining courses in any GE category to fulfill their 30 credits requirement of GE: 4 credits for students whose English Communication track are placed into ‘FE track’ or ‘GC Track’ and 8 credits for students whose English Communication track are placed into ‘GC2 Track’. Partial credits of GE course that exceed the GE requirements cannot be counted towards Free Electives.

Specific Courses — no less than 110 Credits

Core Courses — 22 credits

ICBI 110 Quantitative Reasoning in Biological Sciences	4 (4-0-8)
ICCH 101 General Chemistry I	4 (4-0-8)
ICCH 102 General Chemistry II	4 (4-0-8)
ICCH 103 Integrated Laboratory in Chemistry	2 (0-4-2)
ICCS 102 Coding for All	4 (4-0-8)
ICMA 151 Statistics for Science I	4 (4-0-8)

Major Core Courses — 30 Credits

ICBI 105 Molecules to Living Cells	4 (2-4-6)
ICBI 106 Organisms to Ecosystems	2 (2-0-4)
ICBI 207 Ethics for Bioscience	4 (4-0-8)
ICBI 219 Design Thinking in Biological Sciences	2 (2-0-4)
ICBI 253 Biological Statistics and Analytics	4 (4-0-8)
ICBI 263 Practical Sustainability and Biodiversity	4 (2-4-6)
ICBI 334 Biological Research Methodology	4 (4-0-8)
ICBI 463 From Ideas to Actions	4 (4-0-8)
ICBI 468 Scientific Writing	2 (2-0-4)

Major Required Courses — 34 Credits

ICCH 221 Organic Chemistry I	4 (4-0-8)
ICCH 231 Biochemistry	4 (4-0-8)
ICCH 232 Biochemistry Laboratory	2 (2-4-6)
ICBI 213 Genetics	4 (4-0-8)
ICBI 214 General Microbiology	4 (4-0-8)
ICBI 218 Cellular Systems	4 (4-0-8)
ICBI 350 Techniques in Molecular Science	4 (2-0-4)

ICBI 492 Research Internship in Biological Sciences	8 (0-40-0)
OR	
ICBI 493 Internship in the Industrial/Commercial and Applied Life Sciences	8 (0-40-0)

Note: All Biological Sciences students are required to take either ICBI 492 Research Internship in Biological Sciences or ICBI 493 Internship in the Industrial/Commercial and Applied Life Sciences. During the trimester that the students enroll in either ICBI 492 or ICBI 493, students are not allowed to register for other courses.

Major Elective Courses 24 Credits

Students in the Biological Sciences are required to complete 24 credits of Major Electives. The courses can be selected from the list below. Furthermore, to provide the students with specialization, three tracks are available to select from, namely Premedicine Track, Molecular Science and Medicine Track, and Health and Wellness Track. To complete a track, a list of the required courses for each track is specified below. However, the students may also complete their study without completing a track

- **Premedicine Track** **24 Credits**

ICSP 113 General Psychology	4 (4-0-8)
ICBI 305 Human Anatomy I	4 (2-4-6)
ICBI 306 Human Anatomy II	4 (2-4-6)
ICBI 311 Human Physiology	4 (3-2-7)
ICBI 410 Epidemiology	4 (4-0-8)
ICBI 416 Community Health Innovation	4 (4-0-8)

- **Molecular Science and Medicine Track** **24 Credits**

ICCH 224 Organic Chemistry Laboratory	2 (0-4-2)
ICBI 271 General Microbiology Laboratory	2 (0-4-2)
ICBI 302 Mechanisms of Gene Expression	2 (2-0-4)
ICBI 303 Basic Immunology	4 (4-0-8)
ICBI 314 Genetics of Bacteria and Viruses	2 (2-0-4)
ICBI 378 Bioinformatics	4 (4-0-8)
ICBI 381 Evolutionary Biology	4 (4-0-8)
ICBI 389 Infectious Disease Ecology	4 (4-0-8)

- **Health and Wellness Track** **24 Credits**

ICSP 113 General Psychology	4 (4-0-8)
ICTB 202 Principles of Management	4 (4-0-8)

ICTB 263 Healthcare and Medical Business	4 (4-0-8)
ICBI 307 Nutrition and Dietetics	4 (4-0-8)
ICBI 311 Human Physiology	4 (3-2-7)
ICBI 391 Health Psychology	4 (4-0-8)

- **Major Electives Courses** **24 Credits**

ICBI 232 Comparative Anatomy and Physiology of Animals and Plants	4 (3-2-7)
ICBI 303 Basic Immunology	4 (4-0-8)
ICBI 305 Human Anatomy I	4 (2-4-6)
ICBI 306 Human Anatomy II	4 (2-4-6)
ICBI 307 Nutrition and Dietetics	4 (4-0-8)
ICBI 309 Pathobiology	4 (3-2-7)
ICBI 311 Human Physiology	4 (3-2-7)
ICBI 408 Advanced Molecular Science	2 (2-0-4)
ICBI 324 Introduction to Medical Toxicology	4 (4-0-8)
ICBI 325 Special Topics in Bioinformatics and Molecular Genetics	4 (4-0-8)
ICBI 328 Essential Pharmacology	4 (4-0-8)
ICBI 329 Animal and Plant Behavior	4 (4-0-8)
ICBI 332 Medical Microbiology	4 (4-0-8)
ICBI 341 Neurobiology	4 (3-2-7)
ICBI 342 Science of Ageing	2 (2-0-4)
ICBI 378 Bioinformatics	4 (4-0-8)
ICBI 379 Introduction to Systems and Structural Biology	4 (4-0-8)
ICBI 381 Evolutionary Biology	4 (4-0-8)
ICBI 383 Systematic Biology and Biodiversity	2 (2-0-4)
ICBI 385 Freshwater Ecology and Conservation	4 (4-0-8)
ICBI 386 Practical Freshwater Ecology and Conservation	2 (0-4-2)
ICBI 387 Terrestrial Ecology and Conservation	4 (4-0-8)
ICBI 388 Practical Terrestrial Ecology and Conservation	2 (0-4-2)
ICBI 389 Infectious Disease Ecology	4 (4-0-8)
ICBI 391 Health Psychology	4 (4-0-8)
ICBI 403 Introduction to Tropical Medicine	4 (4-0-8)
ICBI 407 Occupational Health and Safety	4 (4-0-8)
ICBI 410 Epidemiology	4 (4-0-8)

ICBI 411 Psychopathology	4 (4-0-8)
ICBI 412 Biomedical Parasitology	4 (3-2-7)
ICBI 415 Biotechnology	4 (4-0-8)
ICBI 416 Community Health Innovation	4 (4-0-8)
ICBI 417 Design Thinking in Health Innovation	4 (4-0-8)
ICBI 418 Case Studies in Health Innovation	4 (4-0-8)
ICBI 419 Cutting-Edge Technology for Biodesign	4 (2-4-6)
ICBI 420 Entrepreneurship and Innovation in Science	4 (4-0-8)
ICBI 422 Insects Biology and Ecology	4 (3-2-7)
ICBI 440 Marine Ecology and Conservation	4 (4-0-8)
ICBI 442 Practical Marine Ecology and Conservation	2 (0-4-2)
ICBI 461 Cell Technology	4 (3-2-7)
ICBI 462 Advanced Cancer Biology	2 (2-0-4)
ICBI 471 Special Topics in Biological Sciences A	4 (4-0-8)
ICBI 472 Special Topics in Biological Sciences B	4 (4-0-8)
ICBI 473 Special Topics in Biological Sciences C	4 (4-0-8)
ICBI 476 Undergraduate Research A	2 (0-10-0)
ICBI 477 Undergraduate Research B	4 (0-20-0)
ICBI 478 Undergraduate Research C	8 (0-40-0)
ICBI 481 Current Issues in Biological Sciences A	2 (2-0-4)
ICCH 222 Organic Chemistry II	4 (4-0-8)
ICCH 224 Organic Chemistry Laboratory	2 (0-4-2)
ICMA 106 Calculus I	4 (4-0-8)
ICMA 213 Calculus II	4 (4-0-8)
ICPY 101 Physics I	4 (4-0-8)
ICPY 102 Physics II	4 (4-0-8)
ICPY 105 Integrated Laboratory in Physics I	2 (0-4-2)

*Upon enrolling in ICBI 478, 492, or 493, students are not allowed to register for other courses in the trimester, which either one of the three courses is taken.

I-Design Electives 20 Credits

The purpose of the I-Design electives is to promote multidisciplinary learning. Students are encouraged to explore courses offered by diverse disciplines across MUIC, Mahidol University, and partner institutions. The I-Design electives can be satisfied upon the completion of the following course categories:

1. **Minor courses** offered by any program in **MUIC**
2. **Certificate courses** offered by any program in **MUIC**
3. **Any major courses** offered by any program in **MUIC**
4. **Any major courses** offered in **Mahidol University** (including undergraduate and graduate level courses). Courses must be approved by the student's advisor.
5. **Any major courses** offered at **partner institutions** (who have MOU with Mahidol University and/or MUIC). Courses must be approved by the student's advisor.

Free Electives 8 Credits

Students can take any courses offered by MUIC / Mahidol University or any major courses offered by the partner institutions (with MOU) as free elective courses with the approval from the advisor.

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Chemistry

Degree Offered:

Bachelor of Science (Chemistry)

B.Sc. (Chemistry)

Program Goal :

To produce graduates with Chemistry knowledge, skills and attitudes in alignment with the ACS international guidelines for global programs in chemical sciences, with emphasis on critical thinking, problem-solving, communication, collaboration, lab and data skills, and scientific reasoning. Graduates are expected to possess lifelong learning skills and the desired characteristics for MU graduates.

Program Objectives :

To produce graduates who are able to:

1. Demonstrate knowledge in five areas of chemistry: analytical chemistry, biochemistry, inorganic chemistry, organic chemistry, physical chemistry (ABIOP) and related disciplines.
2. Think critically and solve problems related to chemistry and other scientific applications and understand the underlying theoretical principles governing the chemical behavior at the atomic, molecular and macroscopic levels.
3. Follow ethical and professional practices in chemistry with commitment to society and sustainability.
4. Communicate and collaborate with technical/non-technical people effectively for chemistry related work.
5. Design and conduct experiments or research with proficiency in laboratory skills, that include preparative techniques, methods for safe disposing and handling toxic compounds and wastes, and usage of modern instrumentations.
6. Engage in lifelong learning practices and continuously develop one’s academic potential to be an internationally competent and responsible chemical professional.

Curriculum Structure

Courses	Plan A (Credits)		Plan B (Credits)	
Foundation Courses (Non-credit)	0		0	
General Education *	**FE and GC tracks**	**GC2 track**	**FE and GC tracks**	**GC2 track**
- English Communication	14	10	14	10
- GE Literacies	12	12	12	12
- GE Electives	4	8	4	8
Specific Courses				
- Core Courses	42	42	42 (MU)	42 (MU)
- Major Required Courses	55	55	11 (MU) + 44 (Flinders U.)	11 (MU) + 44 (Flinders U.)
- Major Elective Courses	4	4	16 (Flinders U.)	16 (Flinders U.)
I-Design Elective Courses	20	20	24 (Flinders U.)	24 (Flinders U.)
Free Elective Courses	8	8	12 (Flinders U.)	12 (Flinders U.)
TOTAL	**No less than 159**			

Note I: *Students may choose General Education courses provided by other programs/departments/ faculties to fulfill the credit requirements

Note II: Students who are placed in FE and GC tracks are required to complete 14 credits of English Communication and 4 credits for GE Electives, while students in GC2 track are required to complete 10 credits of English Communication and 8 credits for GE Electives.

Note III: Students who select **plan B track** are required to complete 42 credits of Core Courses and 11 credits of Major Required Courses at **Mahidol University**:

- ICCH 100 Chemistry and Careers 1 (1-0-2)
- ICCH 221 Organic Chemistry I 4 (4-0-8)
- ICCH 222 Organic Chemistry II 4 (4-0-8)
- ICCH 224 Organic Chemistry Laboratory 2 (0-4-2)

Note IV: Students who select **plan B track** are required to complete some of required credits at **Flinders University**

Plan selection:

With their academic advisors' consultation, students can nominate their plan at any time during the first two years of their study in the program. After three trimesters of study, the Program director of chemistry approves the student's nominated plan in consultation with the partners (Flinders University, University of Canterbury, and Siriraj for Plan B and 4+1 plan respectively). It is expected that high performing students (GPAX >= 3.20 for Plan B and GPAX >= 3.00 for Siriraj) will be able to choose any plans of his/her choice. For other students, the default option is Plan A. Students may need to pass additional interviews and/or demonstrate further evidence of their commitment towards Plan B or 4+1 track to be approved.

COURSE LIST

Foundation Courses	**Non-credit**
ICMA 100 Foundation Mathematics	0 (4-0-0)
ICMA 101 Precalculus	0 (4-0-0)
ICME 101 Foundation English: Communication Skills	0 (4-0-0)

Note I:

- For B.B.A. students, students whose Mathematics placement is below ICMB 151 Business Mathematics are required to take ICMA 100 Foundation Mathematics and pass the course with the grade of "S" before moving to ICMB 151 Business Mathematics.
- For B.Sc. and B.Eng. students, students whose Mathematics placement is below ICMA 106 Calculus I and/or ICMA 151 Statistics for Science I are required to take ICMA 101 Precalculus and pass the course with the grade of "S" before moving to ICMA 106 Calculus I and/or ICMA 151 Statistics for Science I.
- For B.A.Sc. students, students whose Mathematics placement is below ICCT 101 Mathematics for Creative Technology I are required to take ICMA 101 Precalculus and pass the course with the grade of "S" before moving to ICCT 101 Mathematics for Creative Technology I.

Note II:

- Based on their achievement on the essay portion of the MUIC entrance exam, students whose English placement is below ICGC 104 English Studies I: The Writer's Toolkit will be placed into the "FE Track". These students will be required to take ICME 101 Foundation English: Communication Skills and pass the course with the grade of "S" before moving to ICGC 104 English Studies I: The Writer's Toolkit.

General Education — 30 Credits

English Communication — 10 – 14 Credits

ICGC 104 English Studies I: The Writer's Toolkit	4 (4-0-8)
ICGC 105 English Studies II: The Writer's Voice	4 (4-0-8)
ICGC 106 English Studies III: Public Speaking	4 (4-0-8)
ICGC 221 English Studies IV: The World of English - Global Realities	2 (2-0-4)
ICGC 222 English Studies IV: The World of English - Literary Analysis	2 (2-0-4)
ICGC 223 English Studies IV: The World of English - Creative Writing	2 (2-0-4)
ICGC 224 English Studies IV: The World of English - Advanced Oral Communication	2 (2-0-4)
ICGC 226 English Studies IV: The World of English - Literature Into Film	2 (2-0-4)
ICGC 228 English Studies IV: The World of English - Language and Culture	2 (2-0-4)
ICGC 230 English Studies IV: The World of English - First and Second Language Acquisition	2 (2-0-4)
ICGC 231 English Studies IV: The World of English – Poetry	2 (2-0-4)
ICGC 232 English Studies IV: The World of English - The Short Story and the Novel	2 (2-0-4)
ICGC 233 English Studies IV: The World of English – Drama	2 (2-0-4)
ICGC 234 English Studies IV: The World of English - Literary Non-fiction	2 (2-0-4)
ICGC 235 English Studies IV: The World of English - Writing for Research	2 (2-0-4)

Note I: Based on their achievement on the essay portion of the MUIC entrance exam, students will be placed into 3 following tracks: **'FE Track'**, **'GC Track'** and **'GC2 Track'**.

- **'FE Track'** – Students who are placed into 'FE Track' will be required to take ICME 101 (a non-credit course) and complete 14 credits in English Communication: ICGC 104, ICGC 105, ICGC 106 in order, and finally, any 200+ level English courses.
- **'GC Track'** – Students who are placed into 'GC Track' will be required to complete 14 credits in English Communication: ICGC 104, ICGC 105, ICGC 106 in order, and finally, any 200+ level English courses.
- **'GC2 Track'** – Students who are placed into 'GC2 Track' will be required to complete 10 credits in English Communication: ICGC 105, ICGC 106 in order, and finally, any 200+ level English courses.

GE Literacies 12 Credits

Note I: Students must complete courses in the following six categories: MU Literacy, Health Literacy, Science & Environment Literacy, Intercultural & Global Awareness Literacy, and Finance & Management Literacy. Each category requires a minimum of 2 credits.

Note II: If a student selects a 4-credit course to fulfill a 2-credit literacy requirement, the excess 2 credits cannot be allocated or applied toward GE Elective or Free Elective credits. Instead, these excess credits will be entirely allocated to the literacy for which they were originally intended.

- **MU Literacy** **2 Credits**

ICGB 101 Project Management for Impacts	2 (2-0-4)
ICGB 108 Event for Good	2 (2-0-4)
ICGN 139 Scientific Inquiry and the Community	2 (2-0-4)
ICGS 169 Learning by Doing	2 (2-0-4)
ICGS 171 Digital Campaign for Gender Issues	2 (2-0-4)
ICGS 172 Service Learning - Making Change	4 (4-0-8)
ICGS 173 Service Learning - Campaigning for a Cause	4 (4-0-8)
ICGS 175 Social Innovation and Sustainability	2 (2-0-4)
ICGS 176 Sustainable Cooking	2 (2-0-4)
ICGS 177 Social Innovation: Empowering Sustainable Communities	2 (2-0-4)
ICGT 107 Innovation: Inside Out	2 (2-0-4)

- **Health Literacy** **2 Credits**

ICGH 136 Sound & Soul: A Journey of Music, Emotion, and Well-being	2 (2-0-4)
ICGH 143 Flowers and Fragrances for Health	2 (2-0-4)
ICGN 135 Personal Health and Well-being	2 (2-0-4)
ICGP 101 American Flag Football	1 (0-2-1)
ICGP 102 Badminton	1 (0-2-1)
ICGP 103 Basketball	1 (0-2-1)
ICGP 104 Body Fitness	1 (0-2-1)
ICGP 105 Cycling	1 (0-2-1)
ICGP 106 Discover Dance	1 (0-2-1)
ICGP 107 Golf	1 (0-2-1)

ICGP 108 Mind and Body	1 (0-2-1)
ICGP 109 Selected Topics in Sports	1 (0-2-1)
ICGP 110 Self Defense (Striking)	1 (0-2-1)
ICGP 111 Self Defense (Grappling)	1 (0-2-1)
ICGP 112 Soccer	1 (0-2-1)
ICGP 113 Social Dance	1 (0-2-1)
ICGP 114 Swimming	1 (0-2-1)
ICGP 115 Tennis	1 (0-2-1)
ICGP 116 Volleyball	1 (0-2-1)
ICGP 118 Health and Wellness	2 (2-0-4)
ICGP 119 Mindful Food and Well-being	2 (2-0-4)
ICGP 120 Mind and Body: Navigating the Interplay of Brain, Behavior, and Well-being	2 (2-0-4)
ICGS 121 Abnormal Colleagues: how do I make this work?	4 (4-0-8)
ICGS 155 Pathway to Purpose: Life Design and Self-Exploration	4 (4-0-8)
ICGS 164 Positive Psychology	2 (2-0-4)
ICGS 178 Unmasking Human Behaviour: Exploring Psychological Truths about Behaviour	2 (2-0-4)
ICGS 179 Health and Society	2 (2-0-4)
ICLL 100 Self Development	2 (2-0-4)

- **Science & Environment Literacy** **2 Credits**

ICGH 131 Unraveling the Anthropocene: A Philosophical Critique of Earth's Shifts and Humanity's Roles	2 (2-0-4)
ICGH 142 Fantasy Literature’s Environmental Message	2 (2-0-4)
ICGH 144 A Candle in the Dark: How to Tell Fact from Fiction	2 (2-0-4)
ICGN 105 Ecology, Ecosystems and Socio-Economics in Southeast Asia	4 (3-2-7)
ICGN 107 The Chemistry of Everyday Life	4 (4-0-8)
ICGN 108 Essentials of Culinary Science for Food Business	4 (3-2-7)
ICGN 111 Physics for CEO	4 (4-0-8)
ICGN 113 Plants, People and Poisons	4 (4-0-8)
ICGN 114 The Scientific Approach and Society	4 (4-0-8)
ICGN 115 Human Evolution, Diversity and Health	4 (4-0-8)
ICGN 116 Understanding and Visualizing Data	4 (3-2-7)
ICGN 119 Computer Essentials	4 (4-0-8)
ICGN 123 The Earth’s Dynamic Structure	4 (3-2-7)

ICGN 124 Climate Change and Human Society	4 (3-2-7)
ICGN 126 Plant Society	2 (2-0-4)
ICGN 127 Practical Mathematics	2 (2-0-4)
ICGN 128 Climate Emergency, Biodiversity Crisis, and Humanity at Risk	2 (1-2-3)
ICGN 129 Programming for Problem Solving	4 (4-0-8)
ICGN 130 Cryptography: The Science of Making and Breaking Codes	2 (2-0-4)
ICGN 134 Introduction to Artificial Intelligence	2 (2-0-4)
ICGN 136 Creator Workshop	2 (2-0-4)
ICGN 137 Star Wanderer	2 (2-0-4)
ICGN 138 Cosmetics Chemistry	2 (2-0-4)
ICGN 140 Food Energy for Health	2 (2-0-4)
ICGN 141 Life in the Sea	2 (1-2-3)
ICGN 142 Energy and the Environment	2 (2-0-4)
ICGN 143 Gaia: Life on Earth	2 (1-2-3)
ICGT 101 Technology-Enhanced Learning: Harnessing AI & Digital Tools for Academic Success	2 (2-0-4)
ICGT 102 Digital Document Management	2 (2-0-4)
ICGT 103 Computational Thinking	2 (2-0-4)
ICGT 104 Tell a Great Story with Data	2 (2-0-4)
ICGT 105 No-Code Application Development	2 (2-0-4)
ICGT 106 Data and Spreadsheets	2 (2-0-4)
ICLL 102 Skills for a Digital World	2 (2-0-4)

- **Intercultural & Global Awareness Literacy** **2 Credits**

ICGH 107 Contemporary Art and Visual Culture	4 (4-0-8)
ICGH 109 Creative Thinking Through Art and Design	4 (2-4-6)
ICGH 110 Drawing as Visual Analysis	4 (2-4-6)
ICGH 115 Cinematic Language and Applications	4 (4-0-8)
ICGH 116 World Cinemas	4 (4-0-8)
ICGH 117 Drawing as Creative Expression	4 (2-4-6)
ICGH 118 Photography Visualizing in the Digital Age	4 (2-4-6)
ICGH 120 Thai and ASEAN Cinema	4 (4-0-8)
ICGH 124 Life Drawing and Anatomy	4 (2-4-6)
ICGH 128 Internet Celebrity, Culture and the Media	4 (4-0-8)
ICGH 130 The Logic Lab: Crafting Coherent Arguments	2 (2-0-4)

ICGH 132 The Rise and Fall of Ancient Athens	2 (2-0-4)
ICGH 135 The Horror Film	2 (2-0-4)
ICGH 137 Apocalypse Now, or Never, or Maybe?	2 (2-0–4)
ICGH 139 Spirituality, Sustainability, Ecosystems	2 (2-0-4)
ICGH 141 SPQR—Glimpses of Rome	2 (2-0-4)
ICGH 145 Essentials to Photography, Skills and Practices	2 (2-0-4)
ICGH 146 Acting for Self-Discovery and Empathizing with Others	2 (2-0-4)
ICGH 147 Myth and the Masks of the Divine	2 (2-0-4)
ICGH 148 Quest for Global Justice: A Philosophical Inquiry	2 (2-0-4)
ICGL 101 Elementary German I	4 (4-0-8)
ICGL 102 Elementary German II	4 (4-0-8)
ICGL 103 Elementary German III	4 (4-0-8)
ICGL 111 Elementary Japanese I	4 (4-0-8)
ICGL 112 Elementary Japanese II	4 (4-0-8)
ICGL 113 Elementary Japanese III	4 (4-0-8)
ICGL 121 Elementary French I	4 (4-0-8)
ICGL 122 Elementary French II	4 (4-0-8)
ICGL 123 Elementary French III	4 (4-0-8)
ICGL 131 Elementary Chinese I	4 (4-0-8)
ICGL 132 Elementary Chinese II	4 (4-0-8)
ICGL 133 Elementary Chinese III	4 (4-0-8)
ICGL 141 Elementary Spanish I	4 (4-0-8)
ICGL 142 Elementary Spanish II	4 (4-0-8)
ICGL 143 Elementary Spanish III	4 (4-0-8)
ICGL 160 Introduction to Thai Language and Culture	4 (4-0-8)
ICGL 161 Elementary Thai I	4 (4-0-8)
ICGL 162 Elementary Thai II	4 (4-0-8)
ICGL 163 Elementary Thai III	4 (4-0-8)
ICGL 164 Thai Writing for Specific Purposes in Workplace *for native Thai students	2 (2-0-4)
ICGL 171 Diversities in Multilingual Societies	2 (2-0-4)
ICGL 172 Chinese Influence in Thai Society	2 (2-0-4)
ICGL 173 Introduction to Japanese Societies	2 (2-0-4)
ICGL 174 From Siesta to Fiesta: Introduction to Spanish and Latin American Culture	2 (2-0-4)
ICGL 201 Pre-Intermediate German I	4 (4-0-8)

ICGL 202 Pre-Intermediate German II	4 (4-0-8)
ICGL 203 Pre-Intermediate German III	4 (4-0-8)
ICGL 211 Pre-Intermediate Japanese I	4 (4-0-8)
ICGL 212 Pre-Intermediate Japanese II	4 (4-0-8)
ICGL 213 Pre-Intermediate Japanese III	4 (4-0-8)
ICGL 221 Pre-intermediate French I	4 (4-0-8)
ICGL 222 Pre-intermediate French II	4 (4-0-8)
ICGL 223 Pre-intermediate French III	4 (4-0-8)
ICGL 231 Pre-Intermediate Chinese I	4 (4-0-8)
ICGL 232 Pre-Intermediate Chinese II	4 (4-0-8)
ICGL 233 Pre-Intermediate Chinese III	4 (4-0-8)
ICGL 241 Pre-Intermediate Spanish I	4 (4-0-8)
ICGL 242 Pre-Intermediate Spanish II	4 (4-0-8)
ICGL 243 Pre-Intermediate Spanish III	4 (4-0-8)
ICGN 125 Games and Learning	2 (2-0-4)
ICGS 112 Geography of Human Activities	4 (4-0-8)
ICGS 128 Global Gastronomy and Cuisines	4 (4-0-8)
ICGS 131 Introduction to International Studies	4 (4-0-8)
ICGS 132 Career Preparation in a Globalized World	4 (4-0-8)
ICGS 133 Foundation of Mediterranean Cultures	4 (4-0-8)
ICGS 137 Witchcraft and Gender Representation	4 (4-0-8)
ICGS 143 Introduction to Air Transport and Tourism	4 (4-0-8)
ICGS 156 Fashion and Society	2 (2-0-4)
ICGS 157 Asian Religious Traditions	2 (2-0-4)
ICGS 159 The Self and Modern Media	2 (2-0-4)
ICGS 161 Skills in Dealing with People Across Cultures	2 (2-0-4)
ICGS 162 Arts, Culture and Tourism Development	2 (2-0-4)
ICGS 165 Tea Studies	2 (2-0-4)
ICGS 167 Coffee Studies	2 (2-0-4)
ICGS 168 Faith a Lifestyle	2 (2-0-4)
ICGS 180 Cafe Story and Slow food	2 (2-0-4)
ICGS 181 Cuisine and Culture	2 (2-0-4)
ICGS 182 Humor Horizons	2 (2-0-4)

- **Civic Literacy** **2 Credits**

ICGH 126 Behavioral Ethics: Why Good People Do Bad Things	2 (2-0-4)
ICGH 129 Searching for Meaning	2 (2-0-4)
ICGH 133 Socrates, His Predecessors and Successors	2 (2-0-4)
ICGH 134 Digital Media Literacy: Skills for 21st Century Learning	2 (2-0-4)
ICGH 138 The Philosophies of Asia	2 (2-0-4)
ICGH 140 Ethics and Evolution	2 (2-0-4)
ICGH 149 Law, Technology, and Society	2 (2-0-4)
ICGH 150 Global Perspectives on Free Expression in the Digital Age	2 (2-0-4)
ICGN 131 Digital Search Literacy	2 (2-0-4)
ICGN 132 Digital Security and Privacy	2 (2-0-4)
ICGN 144 Environmental Ethics	2 (2-0-4)
ICGN 145 Food Integrity and Food Fraud: When a Food Product Is Not What It Seems	2 (2-0-4)
ICGS 134 Is Democracy Good?	4 (4-0-8)
ICGS 136 Social and Health Issues in Thailand	4 (3-2-7)
ICGS 140 Fake News, Censorship and the Politics of Truth	4 (4-0-8)
ICGS 147 Women in Leadership	4 (4-0-8)
ICGS 158 Contemporary Issues in Thailand	2 (2-0-4)
ICGS 160 Self and Society	2 (2-0-4)
ICGS 163 Popular Media and Conflicts	2 (2-0-4)
ICGS 166 Power and Politics	2 (2-0-4)
ICGS 170 Civic Action in Thailand	2 (2-0-4)
ICGS 183 Media and Community	2 (2-0-4)

- **Finance & Management Literacy** **2 Credits**

ICGB 102 Navigating the Market Landscape	2 (2-0-4)
ICGB 103 Decoding Economic News	2 (2-0-4)
ICGB 104 Entrepreneurship in a Disruptive Environment	2 (2-0-4)
ICGB 105 Personal Finance Literacy	2 (2-0-4)
ICGB 106 The Business of Fashion	2 (2-0-4)
ICGB 107 Tourism Management Perspectives	2 (2-0-4)
ICGB 109 Business Event Essentials	2 (2-0-4)
ICGB 110 Management Styles of Effective Leaders	2 (2-0-4)
ICGB 111 Leadership in a Global Society	2 (2-0-4)

ICGB 112 The Art of Pricing	2 (2-0-4)
ICGB 113 Crisis Management in Service Businesses	2 (2-0-4)
ICGB 114 Cultural Strategies for Success: Unveiling Eastern Business Dynamics	2 (2-0-4)
ICGB 115 Money: Deciphering Currencies of Value	2 (2-0-4)
ICGB 116 Managing Self and Working with Others	2 (2-0-4)
ICGH 101 Biotechnology: from Science to Business	4 (4-0-8)
ICGS 102 Business Sustainability and the Global Climate Change	4 (4-0-8)
ICGS 135 Entrepreneurial Accounting	4 (4-0-8)
ICGS 153 Social Media Management for Service Sector	2 (2-0-4)
ICGS 174 The Art of Leadership in Practice: Inspiration	2 (2-0-4)
ICGS 184 Healthy Habits, Happy Shoppers: Exploring Health Literacy in Consumer Decisions	2 (2-0-4)
ICLL 101 Professional Development	2 (2-0-4)

General Education Elective Courses — 4-8 Credits

Students need to take remaining courses in any GE category to fulfill their 30 credits requirement of GE: 4 credits for students whose English Communication track are placed into 'FE track' or 'GC Track' and 8 credits for students whose English Communication track are placed into 'GC2 Track'. Partial credits of GE course that exceed the GE requirements cannot be counted towards Free Electives.

Specific Courses — no less than 101 Credits

Core Courses — 42 Credits

ICBI 105 Molecules to Living Cells	4 (2-4-6)
ICBI 106 Organisms to Ecosystems	2 (2-0-4)
ICCH 101 General Chemistry I	4 (4-0-8)
ICCH 102 General Chemistry II	4 (4-0-8)
ICCH 103 Integrated Laboratory in Chemistry	2 (0-4-2)
ICCS 102 Coding for All	4 (4-0-8)
ICMA 106 Calculus I	4 (4-0-8)
ICMA 151 Statistics for Science I	4 (4-0-8)
ICMA 218 Multivariable Calculus	4 (4-0-8)
ICPY 101 Physics I	4 (4-0-8)
ICPY 102 Physics II	4 (4-0-8)
ICPY 105 Integrated Laboratory in Physics I	2 (0-4-2)

Major Required Courses	55 Credits
ICCH 100 Chemistry and Careers	1 (1-0-2)
ICCH 221 Organic Chemistry I	4 (4-0-8)
ICCH 222 Organic Chemistry II	4 (4-0-8)
ICCH 224 Organic Chemistry Laboratory	2 (0-4-2)
ICCH 231 Biochemistry	4 (4-0-8)
ICCH 232 Biochemistry Laboratory	2 (0-4-2)
ICCH 261 Analytical Chemistry and Instrumental Analysis	4 (4-0-8)
ICCH 262 Analytical Chemistry Laboratory	2 (0-4-2)
ICCH 321 Chemical Spectroscopy	4 (4-0-8)
ICCH 322 Polymer Science and Technology	2 (2-0-4)
ICCH 363 Physical Chemistry A	4 (4-0-8)
ICCH 364 Physical Chemistry B	4 (4-0-8)
ICCH 365 Physical Chemistry Laboratory	2 (0-4-2)
ICCH 391 Inorganic Chemistry A	4 (4-0-8)
ICCH 392 Inorganic Chemistry B	4 (4-0-8)
ICCH 393 Inorganic Chemistry Laboratory	2 (0-4-2)
ICCH 471 Chemical Unknown Detective	2 (0-4-2)
ICCH 472 Senior Project in Chemistry	4 (0-8-4)

Major Elective Courses **at least 4 Credits**

Elective major courses are designed to provide advanced and contemporary knowledge in various disciplines of chemistry. The program offered both specific courses and extemporaneous topics. These courses include pure, applied and multidisciplinary chemistry topics such as biophysical, materials, medicinal, theoretical or mathematical chemistry. These are also used for credit equivalency of courses transferred from other institutions and graduate programs with approval from the program committee. In addition to the listed courses, students may take any relevant courses offered by the partner institutions (with MOU) as major elective courses with the approval from the program director.

ICCH 340 Current Topics in Chemistry A	4 (4-0-8)
ICCH 341 Current Topics in Chemistry B	4 (4-0-8)
ICCH 342 Current Topics in Chemistry C	4 (4-0-8)
ICCH 343 Current Topics in Chemistry D	4 (4-0-8)
ICCH 344 Current Topics in Chemistry E	4 (4-0-8)

ICCH 345 Special Topics in Chemistry A	2 (2-0-4)
ICCH 346 Special Topics in Chemistry B	2 (2-0-4)
ICCH 347 Special Topics in Chemistry C	2 (2-0-4)
ICCH 348 Special Topics in Chemistry D	2 (2-0-4)
ICCH 349 Special Topics in Chemistry E	2 (2-0-4)
ICCH 350 Contemporary Topics in Chemistry A	1 (1-0-2)
ICCH 351 Contemporary Topics in Chemistry B	1 (1-0-2)
ICCH 352 Contemporary Topics in Chemistry C	1 (1-0-2)
ICCH 353 Contemporary Topics in Chemistry D	1 (1-0-2)
ICCH 354 Contemporary Topics in Chemistry E	1 (1-0-2)
ICCH 355 Special Practice in Chemistry A	1 (0-2-1)
ICCH 356 Special Practice in Chemistry B	1 (0-2-1)
ICCH 357 Special Practice in Chemistry C	1 (0-2-1)
ICCH 358 Special Practice in Chemistry D	1 (0-2-1)
ICCH 359 Special Practice in Chemistry E	1 (0-2-1)
ICCH 402 Undergraduate Thesis	6 (0-12-6)
ICCH 403 Field Study A	1 (0-3-1)
ICCH 404 Field Study B	1 (0-3-1)
ICCH 407 Internship	8 (0-40-8)
ICCH 408 Summer Internship	2 (0-40-8)
ICCH 451 Advanced Organic Chemistry	2 (2-0-4)
ICCH 452 Materials Science	2 (2-0-4)
ICCH 453 Computational Chemistry	2 (2-0-4)
ICCH 454 Biophysical Chemistry	2 (2-0-4)
ICCH 455 Advanced Inorganic Chemistry	2 (2-0-4)
ICCH 456 Chemistry Innovation and Entrepreneurship	2 (2-0-4)
ICCH 457 Advanced Analytical Chemistry	2 (2-0-4)
ICCH 458 Bioinorganic Chemistry	2 (2-0-4)
ICCH 459 Supramolecular Chemistry	2 (2-0-4)
ICCH 460 Petroleum and Petrochemical Industry	2 (2-0-4)

I-Design Electives 20 Credits

The purpose of the I-Design electives is to promote multidisciplinary learning. Students are encouraged to explore courses offered by diverse disciplines across MUIC, Mahidol University, and partner institutions. The I-Design electives can be satisfied upon the completion of the following course categories:

1. **Minor courses** offered by any program in **MUIC**
2. **Certificate courses** offered by any program in **MUIC**
3. Any major courses offered by any program in **MUIC**
4. **Any major courses** offered in **Mahidol University** (including undergraduate and graduate level courses). Courses must be approved by the student's advisor.
5. **Any major courses** offered at **partner institutions** (who have MOU with Mahidol University and/or MUIC). Courses must be approved by the student's advisor.

Free Electives 8 Credits

Students can take any courses offered by MUIC / Mahidol University or any major courses offered by the partner institutions (with MOU) as free elective courses with the approval from the advisor. Minor in Chemistry for non-chemistry students

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Computer Engineering

Degree Offered:

Bachelor of Engineering (Computer Engineering)

B.Eng. (Computer Engineering)

Program Goal :

To produce competent computer engineers, who can effectively design and develop software/hardware/computer systems by using tools proficiently and possess problem-solving, communication, collaboration and life-long learning skills to pursue careers in computer engineering that meet the international professional standard. We aim to develop not only graduates with technical competency but also will become responsible professionals with social responsibilities and professional ethics and has all Mahidol university graduate attributes.

Program Objectives :

The program aims to produce computer engineering graduates who have:

1. Computer engineering knowledge that can be applied for problem-solving and find a solution that meets industrial requirements up to international professional standards.
2. Design and development skills that can be used to develop software/hardware products and/or computer systems while adhering to legal and professional ethics.
3. Use computer engineering tools proficiently to develop and test software/hardware products and/or computer systems in accordance international safety and professional standards.
4. Communication and collaboration skills with customers, stakeholders, colleagues and peers.
5. Engage in lifelong learning practices and continuously develop one’s academic potential to be an internationally competent and responsible computer engineering professional.

Curriculum Structure

Courses	Credit
Foundation Courses	Non-credit
General Education	No less than 30
Core Courses	38
Major Required Courses	66
Major Elective Courses	8
I-Design Elective Courses	No less than 20
Free Elective Courses	No less than 8
TOTAL	**No less than 170**

COURSE LIST

Foundation Courses — Non-credit

ICMA 100 Foundation Mathematics — 0 (4-0-0)

ICMA 101 Precalculus — 0 (4-0-0)

ICME 101 Foundation English: Communication Skills — 0 (4-0-0)

Note I:

- For B.Sc. and B.Eng. students, students whose Mathematics placement is below ICMA 106 Calculus I and/or ICMA 151 Statistics for Science I are required to take ICMA 101 Precalculus and pass the course with the grade of "S" before moving to ICMA 106 Calculus I and/or ICMA 151 Statistics for Science I.

Note II:

- Based on their achievement on the essay portion of the MUIC entrance exam, students whose English placement is below ICGC 104 English Studies I: The Writer's Toolkit will be placed into the “FE Track”. These students will be required to take ICME 101 Foundation English: Communication Skills and pass the course with the grade of "S" before moving to ICGC 104 English Studies I: The Writer's Toolkit.

General Education 30 Credits

General Education Group	GC2 Track*	FE and GC Track*
1. English Communication	10	14
2. GE Literacies	12	12
- MU Literacy	2	2
- Health Literacy	2	2
- Science and Environmental Literacy	2	2
- Intercultural and Global Awareness Literacy	2	2
- Civic Literacy	2	2
- Finance and Management Literacy	2	2
3. GE Electives	8	4
Total	**30**	**30**

** Students will be placed into specific tracks based on their achievement in the essay portion of the MUIC entrance exam.*

English Communication 10 – 14 Credits

ICGC 104 English Studies I: The Writer's Toolkit	4 (4-0-8)
ICGC 105 English Studies II: The Writer's Voice	4 (4-0-8)
ICGC 106 English Studies III: Public Speaking	4 (4-0-8)
ICGC 221 English Studies IV: The World of English - Global Realities	2 (2-0-4)
ICGC 222 English Studies IV: The World of English - Literary Analysis	2 (2-0-4)
ICGC 223 English Studies IV: The World of English - Creative Writing	2 (2-0-4)
ICGC 224 English Studies IV: The World of English - Advanced Oral Communication	2 (2-0-4)
ICGC 226 English Studies IV: The World of English - Literature Into Film	2 (2-0-4)
ICGC 228 English Studies IV: The World of English - Language and Culture	2 (2-0-4)
ICGC 230 English Studies IV: The World of English - First and Second Language Acquisition	2 (2-0-4)
ICGC 231 English Studies IV: The World of English – Poetry	2 (2-0-4)
ICGC 232 English Studies IV: The World of English - The Short Story and the Novel	2 (2-0-4)
ICGC 233 English Studies IV: The World of English – Drama	2 (2-0-4)
ICGC 234 English Studies IV: The World of English - Literary Non-fiction	2 (2-0-4)
ICGC 235 English Studies IV: The World of English - Writing for Research	2 (2-0-4)

Note I: Based on their achievement on the essay portion of the MUIC entrance exam, students will be placed into 3 following tracks: **'FE Track'**, **'GC Track'** and **'GC2 Track'**.

- **'FE Track'** – Students who are placed into 'FE Track' will be required to take ICME 101 (a non-credit course) and complete 14 credits in English Communication: ICGC 104, ICGC 105, ICGC 106 in order, and finally, any 200+ level English courses.
- **'GC Track'** – Students who are placed into 'GC Track' will be required to complete 14 credits in English Communication: ICGC 104, ICGC 105, ICGC 106 in order, and finally, any 200+ level English courses.
- **'GC2 Track'** – Students who are placed into 'GC2 Track' will be required to complete 10 credits in English Communication: ICGC 105, ICGC 106 in order, and finally, any 200+ level English courses.

GE Literacies — 12 Credits

Note I: Students must complete courses in the following six categories: MU Literacy, Health Literacy, Science & Environment Literacy, Intercultural & Global Awareness Literacy, and Finance & Management Literacy. Each category requires a minimum of 2 credits.

Note II: If a student selects a 4-credit course to fulfill a 2-credit literacy requirement, the excess 2 credits cannot be allocated or applied toward GE Elective or Free Elective credits. Instead, these excess credits will be entirely allocated to the literacy for which they were originally intended.

- **MU Literacy** — **2 Credits**

ICGB 101 Project Management for Impacts	2 (2-0-4)
ICGB 108 Event for Good	2 (2-0-4)
ICGN 139 Scientific Inquiry and the Community	2 (2-0-4)
ICGS 169 Learning by Doing	2 (2-0-4)
ICGS 171 Digital Campaign for Gender Issues	2 (2-0-4)
ICGS 172 Service Learning - Making Change	4 (4-0-8)
ICGS 173 Service Learning - Campaigning for a Cause	4 (4-0-8)
ICGS 175 Social Innovation and Sustainability	2 (2-0-4)
ICGS 176 Sustainable Cooking	2 (2-0-4)
ICGS 177 Social Innovation: Empowering Sustainable Communities	2 (2-0-4)

ICGT 107 Innovation: Inside Out	2 (2-0-4)

- **Health Literacy** **2 Credits**

ICGH 136 Sound & Soul: A Journey of Music, Emotion, and Well-being	2 (2-0-4)
ICGH 143 Flowers and Fragrances for Health	2 (2-0-4)
ICGN 135 Personal Health and Well-being	2 (2-0-4)
ICGP 101 American Flag Football	1 (0-2-1)
ICGP 102 Badminton	1 (0-2-1)
ICGP 103 Basketball	1 (0-2-1)
ICGP 104 Body Fitness	1 (0-2-1)
ICGP 105 Cycling	1 (0-2-1)
ICGP 106 Discover Dance	1 (0-2-1)
ICGP 107 Golf	1 (0-2-1)
ICGP 108 Mind and Body	1 (0-2-1)
ICGP 109 Selected Topics in Sports	1 (0-2-1)
ICGP 110 Self Defense (Striking)	1 (0-2-1)
ICGP 111 Self Defense (Grappling)	1 (0-2-1)
ICGP 112 Soccer	1 (0-2-1)
ICGP 113 Social Dance	1 (0-2-1)
ICGP 114 Swimming	1 (0-2-1)
ICGP 115 Tennis	1 (0-2-1)
ICGP 116 Volleyball	1 (0-2-1)
ICGP 118 Health and Wellness	2 (2-0-4)
ICGP 119 Mindful Food and Well-being	2 (2-0-4)
ICGP 120 Mind and Body: Navigating the Interplay of Brain, Behavior, and Well-being	2 (2-0-4)
ICGS 121 Abnormal Colleagues: how do I make this work?	4 (4-0-8)
ICGS 155 Pathway to Purpose: Life Design and Self-Exploration	4 (4-0-8)
ICGS 164 Positive Psychology	2 (2-0-4)
ICGS 178 Unmasking Human Behaviour: Exploring Psychological Truths about Behaviour	2 (2-0-4)
ICGS 179 Health and Society	2 (2-0-4)
ICLL 100 Self Development	2 (2-0-4)

- **Science & Environment Literacy** **2 Credits**

ICGH 131 Unraveling the Anthropocene: A Philosophical Critique of Earth's Shifts and Humanity's Roles 2 (2-0-4)
ICGH 142 Fantasy Literature’s Environmental Message 2 (2-0-4)
ICGH 144 A Candle in the Dark: How to Tell Fact from Fiction 2 (2-0-4)
ICGN 105 Ecology, Ecosystems and Socio-Economics in Southeast Asia 4 (3-2-7)
ICGN 107 The Chemistry of Everyday Life 4 (4-0-8)
ICGN 108 Essentials of Culinary Science for Food Business 4 (3-2-7)
ICGN 111 Physics for CEO 4 (4-0-8)
ICGN 113 Plants, People and Poisons 4 (4-0-8)
ICGN 114 The Scientific Approach and Society 4 (4-0-8)
ICGN 115 Human Evolution, Diversity and Health 4 (4-0-8)
ICGN 116 Understanding and Visualizing Data 4 (3-2-7)
ICGN 119 Computer Essentials 4 (4-0-8)
ICGN 123 The Earth’s Dynamic Structure 4 (3-2-7)
ICGN 124 Climate Change and Human Society 4 (3-2-7)
ICGN 126 Plant Society 2 (2-0-4)
ICGN 127 Practical Mathematics 2 (2-0-4)
ICGN 128 Climate Emergency, Biodiversity Crisis, and Humanity at Risk 2 (1-2-3)
ICGN 129 Programming for Problem Solving 4 (4-0-8)
ICGN 130 Cryptography: The Science of Making and Breaking Codes 2 (2-0-4)
ICGN 134 Introduction to Artificial Intelligence 2 (2-0-4)
ICGN 136 Creator Workshop 2 (2-0-4)
ICGN 137 Star Wanderer 2 (2-0-4)
ICGN 138 Cosmetics Chemistry 2 (2-0-4)
ICGN 140 Food Energy for Health 2 (2-0-4)
ICGN 141 Life in the Sea 2 (1-2-3)
ICGN 142 Energy and the Environment 2 (2-0-4)
ICGN 143 Gaia: Life on Earth 2 (1-2-3)
ICGT 101 Technology-Enhanced Learning: Harnessing AI & Digital Tools for Academic Success 2 (2-0-4)
ICGT 102 Digital Document Management 2 (2-0-4)
ICGT 103 Computational Thinking 2 (2-0-4)
ICGT 104 Tell a Great Story with Data 2 (2-0-4)
ICGT 105 No-Code Application Development 2 (2-0-4)
ICGT 106 Data and Spreadsheets 2 (2-0-4)

ICLL 102 Skills for a Digital World	2 (2-0-4)

- **Intercultural & Global Awareness Literacy** **2 Credits**

ICGH 107 Contemporary Art and Visual Culture	4 (4-0-8)
ICGH 109 Creative Thinking Through Art and Design	4 (2-4-6)
ICGH 110 Drawing as Visual Analysis	4 (2-4-6)
ICGH 115 Cinematic Language and Applications	4 (4-0-8)
ICGH 116 World Cinemas	4 (4-0-8)
ICGH 117 Drawing as Creative Expression	4 (2-4-6)
ICGH 118 Photography Visualizing in the Digital Age	4 (2-4-6)
ICGH 120 Thai and ASEAN Cinema	4 (4-0-8)
ICGH 124 Life Drawing and Anatomy	4 (2-4-6)
ICGH 128 Internet Celebrity, Culture and the Media	4 (4-0-8)
ICGH 130 The Logic Lab: Crafting Coherent Arguments	2 (2-0-4)
ICGH 132 The Rise and Fall of Ancient Athens	2 (2-0-4)
ICGH 135 The Horror Film	2 (2-0-4)
ICGH 137 Apocalypse Now, or Never, or Maybe?	2 (2-0–4)
ICGH 139 Spirituality, Sustainability, Ecosystems	2 (2-0-4)
ICGH 141 SPQR—Glimpses of Rome	2 (2-0-4)
ICGH 145 Essentials to Photography, Skills and Practices	2 (2-0-4)
ICGH 146 Acting for Self-Discovery and Empathizing with Others	2 (2-0-4)
ICGH 147 Myth and the Masks of the Divine	2 (2-0-4)
ICGH 148 Quest for Global Justice: A Philosophical Inquiry	2 (2-0-4)
ICGL 101 Elementary German I	4 (4-0-8)
ICGL 102 Elementary German II	4 (4-0-8)
ICGL 103 Elementary German III	4 (4-0-8)
ICGL 111 Elementary Japanese I	4 (4-0-8)
ICGL 112 Elementary Japanese II	4 (4-0-8)
ICGL 113 Elementary Japanese III	4 (4-0-8)
ICGL 121 Elementary French I	4 (4-0-8)
ICGL 122 Elementary French II	4 (4-0-8)
ICGL 123 Elementary French III	4 (4-0-8)
ICGL 131 Elementary Chinese I	4 (4-0-8)
ICGL 132 Elementary Chinese II	4 (4-0-8)

ICGL 133 Elementary Chinese III	4 (4-0-8)
ICGL 141 Elementary Spanish I	4 (4-0-8)
ICGL 142 Elementary Spanish II	4 (4-0-8)
ICGL 143 Elementary Spanish III	4 (4-0-8)
ICGL 160 Introduction to Thai Language and Culture	4 (4-0-8)
ICGL 161 Elementary Thai I	4 (4-0-8)
ICGL 162 Elementary Thai II	4 (4-0-8)
ICGL 163 Elementary Thai III	4 (4-0-8)
ICGL 164 Thai Writing for Specific Purposes in Workplace *for native Thai students	2 (2-0-4)
ICGL 171 Diversities in Multilingual Societies	2 (2-0-4)
ICGL 172 Chinese Influence in Thai Society	2 (2-0-4)
ICGL 173 Introduction to Japanese Societies	2 (2-0-4)
ICGL 174 From Siesta to Fiesta: Introduction to Spanish and Latin American Culture	2 (2-0-4)
ICGL 201 Pre-Intermediate German I	4 (4-0-8)
ICGL 202 Pre-Intermediate German II	4 (4-0-8)
ICGL 203 Pre-Intermediate German III	4 (4-0-8)
ICGL 211 Pre-Intermediate Japanese I	4 (4-0-8)
ICGL 212 Pre-Intermediate Japanese II	4 (4-0-8)
ICGL 213 Pre-Intermediate Japanese III	4 (4-0-8)
ICGL 221 Pre-intermediate French I	4 (4-0-8)
ICGL 222 Pre-intermediate French II	4 (4-0-8)
ICGL 223 Pre-intermediate French III	4 (4-0-8)
ICGL 231 Pre-Intermediate Chinese I	4 (4-0-8)
ICGL 232 Pre-Intermediate Chinese II	4 (4-0-8)
ICGL 233 Pre-Intermediate Chinese III	4 (4-0-8)
ICGL 241 Pre-Intermediate Spanish I	4 (4-0-8)
ICGL 242 Pre-Intermediate Spanish II	4 (4-0-8)
ICGL 243 Pre-Intermediate Spanish III	4 (4-0-8)
ICGN 125 Games and Learning	2 (2-0-4)
ICGS 112 Geography of Human Activities	4 (4-0-8)
ICGS 128 Global Gastronomy and Cuisines	4 (4-0-8)
ICGS 131 Introduction to International Studies	4 (4-0-8)
ICGS 132 Career Preparation in a Globalized World	4 (4-0-8)
ICGS 133 Foundation of Mediterranean Cultures	4 (4-0-8)

ICGS 137 Witchcraft and Gender Representation	4 (4-0-8)
ICGS 143 Introduction to Air Transport and Tourism	4 (4-0-8)
ICGS 156 Fashion and Society	2 (2-0-4)
ICGS 157 Asian Religious Traditions	2 (2-0-4)
ICGS 159 The Self and Modern Media	2 (2-0-4)
ICGS 161 Skills in Dealing with People Across Cultures	2 (2-0-4)
ICGS 162 Arts, Culture and Tourism Development	2 (2-0-4)
ICGS 165 Tea Studies	2 (2-0-4)
ICGS 167 Coffee Studies	2 (2-0-4)
ICGS 168 Faith a Lifestyle	2 (2-0-4)
ICGS 180 Cafe Story and Slow food	2 (2-0-4)
ICGS 181 Cuisine and Culture	2 (2-0-4)
ICGS 182 Humor Horizons	2 (2-0-4)

- **Civic Literacy** **2 Credits**

ICGH 126 Behavioral Ethics: Why Good People Do Bad Things	2 (2-0-4)
ICGH 129 Searching for Meaning	2 (2-0-4)
ICGH 133 Socrates, His Predecessors and Successors	2 (2-0-4)
ICGH 134 Digital Media Literacy: Skills for 21st Century Learning	2 (2-0-4)
ICGH 138 The Philosophies of Asia	2 (2-0-4)
ICGH 140 Ethics and Evolution	2 (2-0-4)
ICGH 149 Law, Technology, and Society	2 (2-0-4)
ICGH 150 Global Perspectives on Free Expression in the Digital Age	2 (2-0-4)
ICGN 131 Digital Search Literacy	2 (2-0-4)
ICGN 132 Digital Security and Privacy	2 (2-0-4)
ICGN 144 Environmental Ethics	2 (2-0-4)
ICGN 145 Food Integrity and Food Fraud: When a Food Product Is Not What It Seems	2 (2-0-4)
ICGS 134 Is Democracy Good?	4 (4-0-8)
ICGS 136 Social and Health Issues in Thailand	4 (3-2-7)
ICGS 140 Fake News, Censorship and the Politics of Truth	4 (4-0-8)
ICGS 147 Women in Leadership	4 (4-0-8)
ICGS 158 Contemporary Issues in Thailand	2 (2-0-4)
ICGS 160 Self and Society	2 (2-0-4)
ICGS 163 Popular Media and Conflicts	2 (2-0-4)

ICGS 166 Power and Politics	2 (2-0-4)
ICGS 170 Civic Action in Thailand	2 (2-0-4)
ICGS 183 Media and Community	2 (2-0-4)

- **Finance & Management Literacy** **2 Credits**

ICGB 102 Navigating the Market Landscape	2 (2-0-4)
ICGB 103 Decoding Economic News	2 (2-0-4)
ICGB 104 Entrepreneurship in a Disruptive Environment	2 (2-0-4)
ICGB 105 Personal Finance Literacy	2 (2-0-4)
ICGB 106 The Business of Fashion	2 (2-0-4)
ICGB 107 Tourism Management Perspectives	2 (2-0-4)
ICGB 109 Business Event Essentials	2 (2-0-4)
ICGB 110 Management Styles of Effective Leaders	2 (2-0-4)
ICGB 111 Leadership in a Global Society	2 (2-0-4)
ICGB 112 The Art of Pricing	2 (2-0-4)
ICGB 113 Crisis Management in Service Businesses	2 (2-0-4)
ICGB 114 Cultural Strategies for Success: Unveiling Eastern Business Dynamics	2 (2-0-4)
ICGB 115 Money: Deciphering Currencies of Value	2 (2-0-4)
ICGB 116 Managing Self and Working with Others	2 (2-0-4)
ICGH 101 Biotechnology: from Science to Business	4 (4-0-8)
ICGS 102 Business Sustainability and the Global Climate Change	4 (4-0-8)
ICGS 135 Entrepreneurial Accounting	4 (4-0-8)
ICGS 153 Social Media Management for Service Sector	2 (2-0-4)
ICGS 174 The Art of Leadership in Practice: Inspiration	2 (2-0-4)
ICGS 184 Healthy Habits, Happy Shoppers: Exploring Health Literacy in Consumer Decisions	2 (2-0-4)
ICLL 101 Professional Development	2 (2-0-4)

General Education Elective Courses 4-8 Credits

Students need to take remaining courses in any GE category to fulfill their 30 credits requirement of GE: 4 credits for students whose English Communication track are placed into ‘FE track’ or ‘GC Track’ and 8 credits for students whose English Communication track are placed into ‘GC2 Track’. Partial credits of GE course that exceed the GE requirements cannot be counted towards Free Electives.

Specific Courses — no less than 112 Credits

Core Courses — 38 Credits

ICMA 106 Calculus I	4 (4-0-8)
ICMA 213 Calculus II	4 (4-0-8)
ICPY 101 Physics I	4 (4-0-8)
ICPY 102 Physics II	4 (4-0-8)
EGCI 113 Fundamental Computer Programming	3 (2-2-5)
EGCI 201 Discrete Mathematics	4 (4-0-8)
EGCI 211 Advanced Computer Programming	3 (2-2-5)
EGCI 230 Electric Circuit Analysis	4 (4-0-8)
EGCI 232 Engineering Electronics	4 (3-2-7)
EGCI 305 Statistics for Research in Computer Engineering	4 (4-0-8)

Major Required Courses — 66 Credits

ICMA 240 Linear Algebra I	4 (4-0-8)
EGCI 202 Engineering Mathematics for Signal and System	4 (4-0-8)
EGCI 213 Programming Paradigms	4 (4-0-8)
EGCI 221 Data Structures and Algorithms	4 (4-0-8)
EGCI 231 Digital Circuit Design	4 (4-0-8)
EGCI 233 Digital Circuit Design Lab	1 (0-2-1)
EGCI 252 System Programming	4 (4-0-8)
EGCI 321 Database Systems	4 (4-0-8)
EGCI 330 Microprocessor and Interfacing	4 (4-0-8)
EGCI 332 Embedded Systems	4 (4-0-8)
EGCI 333 Computer Architecture	4 (4-0-8)
EGCI 340 Software Design	2 (2-0-4)
EGCI 341 Software Engineering	4 (4-0-8)
EGCI 351 Operating Systems	4 (4-0-8)
EGCI 371 Computer Networks and Information Security	4 (4-0-8)
EGCI 419 Computer Engineering Internship	8 (0-40-8)
EGCI 491 Computer Engineering Seminar	1 (0-2-1)
EGCI 492 Computer Engineering Project	2 (0-4-2)

Major Elective Courses **no less than 8 Credits**

- Normal track students must have to complete at least 8 credits of major elective courses
- To earn specialization in each field, students must complete at least 12 major elective course credits or 12 I-Design course credits from each track.

Computer Engineering Tracks

- **Track 1: Cybersecurity**

EGCI 470 Reverse Engineering	4 (4-0-8)
EGCI 471 Blockchain	4 (4-0-8)
EGCI 476 Cryptography and Computer Security	4 (4-0-8)
EGCI 477 Penetration Testing and Prevention	4 (4-0-8)
EGCI 478 Wireless Communication	4 (4-0-8)
EGCI 494 Fundamental of Digital Forensics	4 (4-0-8)

- **Track 2: Artificial Intelligence**

EGCI 425 Data Mining	4 (4-0-8)
EGCI 461 Artificial Intelligence	4 (4-0-8)
EGCI 463 Pattern Recognition	4 (4-0-8)
EGCI 466 Big Data Processing	4 (4-0-8)
EGCI 467 Natural Language and Speech Processing	4 (4-0-8)
EGCI 486 Image Processing	4 (4-0-8)
EGCI 487 Computer Vision	4 (4-0-8)

- **Track 3: Digital System**

EGCI 406 Mechatronics	4 (3-2-7)
EGCI 407 Human-Robot Interaction (HRI)	4 (4-0-8)
EGCI 427 Web Programming	4 (4-0-8)
EGCI 428 Mobile Device Programming	4 (4-0-8)
EGCI 429 Web Application Architecture	4 (4-0-8)
EGCI 451 Cloud Computing	4 (4-0-8)
EGCI 452 System Engineering	4 (4-0-8)
EGCI 453 Open Source Software Engineering	4 (4-0-8)
EGCI 466 Big Data Processing	4 (4-0-8)

EGCI 471 Blockchain	4 (4-0-8)
EGCI 474 Internetworking Technologies I	4 (3-2-7)
EGCI 475 Internetworking Technologies II	4 (3-2-7)
EGCI 488 Metaverse	4 (4-0-8)

Elective Courses for Study Experience (no track)

EGCI 495 Regional Study Experience	1 (0-2-1)
EGCI 496 International Study Experience	2 (0-4-2)

Advanced Topics

EGCI 382 Special Topics in Computer Engineering (Course Title I)	4 (4-0-8)
EGCI 383 Special Topics in Computer Engineering (Course Title II)	4 (4-0-8)
EGCI 384 Special Topics in Computer Engineering (Course Title III)	4 (4-0-8)
EGCI 385 Special Topics in Computer Engineering (Course Title IV)	4 (4-0-8)
EGCI 386 Special Topics in Computer Engineering (Course Title V)	4 (4-0-8)
EGCI 394 Special Topics in Computer Engineering (Course Title VI)	4 (3-2-7)
EGCI 395 Special Topics in Computer Engineering (Course Title VII)	4 (3-2-7)
EGCI 396 Special Topics in Computer Engineering (Course Title VIII)	4 (3-2-7)
EGCI 397 Special Topics in Computer Engineering (Course Title IX)	4 (3-2-7)
EGCI 398 Special Topics in Computer Engineering (Course Title X)	4 (3-2-7)

I-Design Electives 20 Credits

The purpose of the I-Design electives is to promote multidisciplinary learning. Students are encouraged to explore courses offered by diverse disciplines across MUIC, Mahidol University, and partner institutions. The I-Design electives can be satisfied upon the completion of the following course categories:

1. **Minor courses** offered by any program in **MUIC**
2. **Certificate courses** offered by any program in **MUIC**
3. **Any major courses** offered by any program in **MUIC**
4. **Any major courses** offered in **Mahidol University** (including undergraduate and graduate level courses). Courses must be approved by the student's advisor.
5. **Any major courses** offered at **partner institutions** (who have MOU with Mahidol University and/or MUIC). Courses must be approved by the student's advisor.

Free Electives 8 Credits

Students can take any courses offered by MUIC / Mahidol University or any major courses offered by the partner institutions (with MOU) as free elective courses with the approval from the advisor.

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Computer Science

Degree Offered:

Bachelor of Science (Computer Science)

B.Sc. (Computer Science)

Program Goal :

To produce competent computer science graduates who are innovative, ethical, professional, and well-equipped with 21st century and communication skills, ready for the job market in IT/computing globally and for further study. Graduates are expected to possess lifelong learning skills and the desired characteristics for MU graduates.

Program Objectives :

To produce graduates who are able to:

1. Demonstrate knowledge in the areas of algorithms and data structures, computer systems and security, artificial Intelligence, software engineering.
2. Display strong critical-thinking and problem-solving skills, naturally utilizing ICT literacy and quantitative reasoning as an integral part of the thought process
3. Appreciate the synergy between theoretical principles and practical considerations, and can integrate them into a viable solution that meets design and performance constraints
4. Communicate and collaborate with people from within and outside of the field of IT/computing effectively using the appropriate means and platforms.
5. Engage in lifelong learning practices and continuously develop one’s own academic potential to be an internationally competent and responsible computer science professional.

Curriculum Structure

Courses	Credit
Foundation Courses	Non-credit
General Education	No less than 30
Core Courses	30
Major Required Courses	52
Capstone Required Courses	8
Major Elective Courses	16
I-Design Elective Courses	No less than 20
Free Elective Courses	No less than 8
TOTAL	**No less than 164**

COURSE LIST

Foundation Courses — Non-credit

ICMA 100 Foundation Mathematics — 0 (4-0-0)

ICMA 101 Precalculus — 0 (4-0-0)

ICME 101 Foundation English: Communication Skills — 0 (4-0-0)

Note I:

- For B.B.A. students, students whose Mathematics placement is below ICMB 151 Business Mathematics are required to take ICMA 100 Foundation Mathematics and pass the course with the grade of "S" before moving to ICMB 151 Business Mathematics.
- For B.Sc. and B.Eng. students, students whose Mathematics placement is below ICMA 106 Calculus I and/or ICMA 151 Statistics for Science I are required to take ICMA 101 Precalculus and pass the course with the grade of "S" before moving to ICMA 106 Calculus I and/or ICMA 151 Statistics for Science I.
- For B.A.Sc. students, students whose Mathematics placement is below ICCT 101 Mathematics for Creative Technology I are required to take ICMA 101 Precalculus and pass the course with the grade of "S" before moving to ICCT 101 Mathematics for Creative Technology I.

Note II:

- Based on their achievement on the essay portion of the MUIC entrance exam, students whose English placement is below ICGC 104 English Studies I: The Writer's Toolkit will be placed into the "FE Track". These students will be required to take ICME 101 Foundation English: Communication

Skills and pass the course with the grade of "S" before moving to ICGC 104 English Studies I: The Writer's Toolkit.

General Education 30 Credits

General Education Group	GC2 Track*	FE and GC Track*
1. English Communication	10	14
2. GE Literacies	12	12
- MU Literacy	2	2
- Health Literacy	2	2
- Science and Environmental Literacy	2	2
- Intercultural and Global Awareness Literacy	2	2
- Civic Literacy	2	2
- Finance and Management Literacy	2	2
3. GE Electives	8	4
Total	**30**	**30**

** Students will be placed into specific tracks based on their achievement in the essay portion of the MUIC entrance exam.*

English Communication 10 – 14 Credits

ICGC 104 English Studies I: The Writer's Toolkit	4 (4-0-8)
ICGC 105 English Studies II: The Writer's Voice	4 (4-0-8)
ICGC 106 English Studies III: Public Speaking	4 (4-0-8)
ICGC 221 English Studies IV: The World of English - Global Realities	2 (2-0-4)
ICGC 222 English Studies IV: The World of English - Literary Analysis	2 (2-0-4)
ICGC 223 English Studies IV: The World of English - Creative Writing	2 (2-0-4)
ICGC 224 English Studies IV: The World of English - Advanced Oral Communication	2 (2-0-4)
ICGC 226 English Studies IV: The World of English - Literature Into Film	2 (2-0-4)
ICGC 228 English Studies IV: The World of English - Language and Culture	2 (2-0-4)
ICGC 230 English Studies IV: The World of English - First and Second Language Acquisition	2 (2-0-4)
ICGC 231 English Studies IV: The World of English – Poetry	2 (2-0-4)
ICGC 232 English Studies IV: The World of English - The Short Story and the Novel	2 (2-0-4)
ICGC 233 English Studies IV: The World of English – Drama	2 (2-0-4)
ICGC 234 English Studies IV: The World of English - Literary Non-fiction	2 (2-0-4)

ICGC 235 English Studies IV: The World of English - Writing for Research 2 (2-0-4)

Note I: Based on their achievement on the essay portion of the MUIC entrance exam, students will be placed into 3 following tracks: **'FE Track'**, **'GC Track'** and **'GC2 Track'**.

- **'FE Track'** – Students who are placed into 'FE Track' will be required to take ICME 101 (a non-credit course) and complete 14 credits in English Communication: ICGC 104, ICGC 105, ICGC 106 in order, and finally, any 200+ level English courses.
- **'GC Track'** – Students who are placed into 'GC Track' will be required to complete 14 credits in English Communication: ICGC 104, ICGC 105, ICGC 106 in order, and finally, any 200+ level English courses.
- **'GC2 Track'** – Students who are placed into 'GC2 Track' will be required to complete 10 credits in English Communication: ICGC 105, ICGC 106 in order, and finally, any 200+ level English courses.

GE Literacies 12 Credits

Note I: Students must complete courses in the following six categories: MU Literacy, Health Literacy, Science & Environment Literacy, Intercultural & Global Awareness Literacy, and Finance & Management Literacy. Each category requires a minimum of 2 credits.

Note II: If a student selects a 4-credit course to fulfill a 2-credit literacy requirement, the excess 2 credits cannot be allocated or applied toward GE Elective or Free Elective credits. Instead, these excess credits will be entirely allocated to the literacy for which they were originally intended.

- **MU Literacy** **2 Credits**

ICGB 101 Project Management for Impacts 2 (2-0-4)
ICGB 108 Event for Good 2 (2-0-4)
ICGN 139 Scientific Inquiry and the Community 2 (2-0-4)
ICGS 169 Learning by Doing 2 (2-0-4)
ICGS 171 Digital Campaign for Gender Issues 2 (2-0-4)
ICGS 172 Service Learning - Making Change 4 (4-0-8)
ICGS 173 Service Learning - Campaigning for a Cause 4 (4-0-8)
ICGS 175 Social Innovation and Sustainability 2 (2-0-4)
ICGS 176 Sustainable Cooking 2 (2-0-4)

ICGS 177 Social Innovation: Empowering Sustainable Communities	2 (2-0-4)
ICGT 107 Innovation: Inside Out	2 (2-0-4)

- **Health Literacy** **2 Credits**

ICGH 136 Sound & Soul: A Journey of Music, Emotion, and Well-being	2 (2-0-4)
ICGH 143 Flowers and Fragrances for Health	2 (2-0-4)
ICGN 135 Personal Health and Well-being	2 (2-0-4)
ICGP 101 American Flag Football	1 (0-2-1)
ICGP 102 Badminton	1 (0-2-1)
ICGP 103 Basketball	1 (0-2-1)
ICGP 104 Body Fitness	1 (0-2-1)
ICGP 105 Cycling	1 (0-2-1)
ICGP 106 Discover Dance	1 (0-2-1)
ICGP 107 Golf	1 (0-2-1)
ICGP 108 Mind and Body	1 (0-2-1)
ICGP 109 Selected Topics in Sports	1 (0-2-1)
ICGP 110 Self Defense (Striking)	1 (0-2-1)
ICGP 111 Self Defense (Grappling)	1 (0-2-1)
ICGP 112 Soccer	1 (0-2-1)
ICGP 113 Social Dance	1 (0-2-1)
ICGP 114 Swimming	1 (0-2-1)
ICGP 115 Tennis	1 (0-2-1)
ICGP 116 Volleyball	1 (0-2-1)
ICGP 118 Health and Wellness	2 (2-0-4)
ICGP 119 Mindful Food and Well-being	2 (2-0-4)
ICGP 120 Mind and Body: Navigating the Interplay of Brain, Behavior, and Well-being	2 (2-0-4)
ICGS 121 Abnormal Colleagues: how do I make this work?	4 (4-0-8)
ICGS 155 Pathway to Purpose: Life Design and Self-Exploration	4 (4-0-8)
ICGS 164 Positive Psychology	2 (2-0-4)
ICGS 178 Unmasking Human Behaviour: Exploring Psychological Truths about Behaviour	2 (2-0-4)
ICGS 179 Health and Society	2 (2-0-4)
ICLL 100 Self Development	2 (2-0-4)

- **Science & Environment Literacy** **2 Credits**

ICGH 131 Unraveling the Anthropocene: A Philosophical Critique of Earth's Shifts and Humanity's Roles 2 (2-0-4)
ICGH 142 Fantasy Literature’s Environmental Message 2 (2-0-4)
ICGH 144 A Candle in the Dark: How to Tell Fact from Fiction 2 (2-0-4)
ICGN 105 Ecology, Ecosystems and Socio-Economics in Southeast Asia 4 (3-2-7)
ICGN 107 The Chemistry of Everyday Life 4 (4-0-8)
ICGN 108 Essentials of Culinary Science for Food Business 4 (3-2-7)
ICGN 111 Physics for CEO 4 (4-0-8)
ICGN 113 Plants, People and Poisons 4 (4-0-8)
ICGN 114 The Scientific Approach and Society 4 (4-0-8)
ICGN 115 Human Evolution, Diversity and Health 4 (4-0-8)
ICGN 116 Understanding and Visualizing Data 4 (3-2-7)
ICGN 119 Computer Essentials 4 (4-0-8)
ICGN 123 The Earth’s Dynamic Structure 4 (3-2-7)
ICGN 124 Climate Change and Human Society 4 (3-2-7)
ICGN 126 Plant Society 2 (2-0-4)
ICGN 127 Practical Mathematics 2 (2-0-4)
ICGN 128 Climate Emergency, Biodiversity Crisis, and Humanity at Risk 2 (1-2-3)
ICGN 129 Programming for Problem Solving 4 (4-0-8)
ICGN 130 Cryptography: The Science of Making and Breaking Codes 2 (2-0-4)
ICGN 134 Introduction to Artificial Intelligence 2 (2-0-4)
ICGN 136 Creator Workshop 2 (2-0-4)
ICGN 137 Star Wanderer 2 (2-0-4)
ICGN 138 Cosmetics Chemistry 2 (2-0-4)
ICGN 140 Food Energy for Health 2 (2-0-4)
ICGN 141 Life in the Sea 2 (1-2-3)
ICGN 142 Energy and the Environment 2 (2-0-4)
ICGN 143 Gaia: Life on Earth 2 (1-2-3)
ICGT 101 Technology-Enhanced Learning: Harnessing AI & Digital Tools for Academic Success 2 (2-0-4)
ICGT 102 Digital Document Management 2 (2-0-4)
ICGT 103 Computational Thinking 2 (2-0-4)
ICGT 104 Tell a Great Story with Data 2 (2-0-4)
ICGT 105 No-Code Application Development 2 (2-0-4)
ICGT 106 Data and Spreadsheets 2 (2-0-4)

ICLL 102 Skills for a Digital World	2 (2-0-4)

- **Intercultural & Global Awareness Literacy** **2 Credits**

ICGH 107 Contemporary Art and Visual Culture	4 (4-0-8)
ICGH 109 Creative Thinking Through Art and Design	4 (2-4-6)
ICGH 110 Drawing as Visual Analysis	4 (2-4-6)
ICGH 115 Cinematic Language and Applications	4 (4-0-8)
ICGH 116 World Cinemas	4 (4-0-8)
ICGH 117 Drawing as Creative Expression	4 (2-4-6)
ICGH 118 Photography Visualizing in the Digital Age	4 (2-4-6)
ICGH 120 Thai and ASEAN Cinema	4 (4-0-8)
ICGH 124 Life Drawing and Anatomy	4 (2-4-6)
ICGH 128 Internet Celebrity, Culture and the Media	4 (4-0-8)
ICGH 130 The Logic Lab: Crafting Coherent Arguments	2 (2-0-4)
ICGH 132 The Rise and Fall of Ancient Athens	2 (2-0-4)
ICGH 135 The Horror Film	2 (2-0-4)
ICGH 137 Apocalypse Now, or Never, or Maybe?	2 (2-0–4)
ICGH 139 Spirituality, Sustainability, Ecosystems	2 (2-0-4)
ICGH 141 SPQR—Glimpses of Rome	2 (2-0-4)
ICGH 145 Essentials to Photography, Skills and Practices	2 (2-0-4)
ICGH 146 Acting for Self-Discovery and Empathizing with Others	2 (2-0-4)
ICGH 147 Myth and the Masks of the Divine	2 (2-0-4)
ICGH 148 Quest for Global Justice: A Philosophical Inquiry	2 (2-0-4)
ICGL 101 Elementary German I	4 (4-0-8)
ICGL 102 Elementary German II	4 (4-0-8)
ICGL 103 Elementary German III	4 (4-0-8)
ICGL 111 Elementary Japanese I	4 (4-0-8)
ICGL 112 Elementary Japanese II	4 (4-0-8)
ICGL 113 Elementary Japanese III	4 (4-0-8)
ICGL 121 Elementary French I	4 (4-0-8)
ICGL 122 Elementary French II	4 (4-0-8)
ICGL 123 Elementary French III	4 (4-0-8)
ICGL 131 Elementary Chinese I	4 (4-0-8)
ICGL 132 Elementary Chinese II	4 (4-0-8)

ICGL 133 Elementary Chinese III	4 (4-0-8)
ICGL 141 Elementary Spanish I	4 (4-0-8)
ICGL 142 Elementary Spanish II	4 (4-0-8)
ICGL 143 Elementary Spanish III	4 (4-0-8)
ICGL 160 Introduction to Thai Language and Culture	4 (4-0-8)
ICGL 161 Elementary Thai I	4 (4-0-8)
ICGL 162 Elementary Thai II	4 (4-0-8)
ICGL 163 Elementary Thai III	4 (4-0-8)
ICGL 164 Thai Writing for Specific Purposes in Workplace *for native Thai students	2 (2-0-4)
ICGL 171 Diversities in Multilingual Societies	2 (2-0-4)
ICGL 172 Chinese Influence in Thai Society	2 (2-0-4)
ICGL 173 Introduction to Japanese Societies	2 (2-0-4)
ICGL 174 From Siesta to Fiesta: Introduction to Spanish and Latin American Culture	2 (2-0-4)
ICGL 201 Pre-Intermediate German I	4 (4-0-8)
ICGL 202 Pre-Intermediate German II	4 (4-0-8)
ICGL 203 Pre-Intermediate German III	4 (4-0-8)
ICGL 211 Pre-Intermediate Japanese I	4 (4-0-8)
ICGL 212 Pre-Intermediate Japanese II	4 (4-0-8)
ICGL 213 Pre-Intermediate Japanese III	4 (4-0-8)
ICGL 221 Pre-intermediate French I	4 (4-0-8)
ICGL 222 Pre-intermediate French II	4 (4-0-8)
ICGL 223 Pre-intermediate French III	4 (4-0-8)
ICGL 231 Pre-Intermediate Chinese I	4 (4-0-8)
ICGL 232 Pre-Intermediate Chinese II	4 (4-0-8)
ICGL 233 Pre-Intermediate Chinese III	4 (4-0-8)
ICGL 241 Pre-Intermediate Spanish I	4 (4-0-8)
ICGL 242 Pre-Intermediate Spanish II	4 (4-0-8)
ICGL 243 Pre-Intermediate Spanish III	4 (4-0-8)
ICGN 125 Games and Learning	2 (2-0-4)
ICGS 112 Geography of Human Activities	4 (4-0-8)
ICGS 128 Global Gastronomy and Cuisines	4 (4-0-8)
ICGS 131 Introduction to International Studies	4 (4-0-8)
ICGS 132 Career Preparation in a Globalized World	4 (4-0-8)
ICGS 133 Foundation of Mediterranean Cultures	4 (4-0-8)

ICGS 137 Witchcraft and Gender Representation	4 (4-0-8)
ICGS 143 Introduction to Air Transport and Tourism	4 (4-0-8)
ICGS 156 Fashion and Society	2 (2-0-4)
ICGS 157 Asian Religious Traditions	2 (2-0-4)
ICGS 159 The Self and Modern Media	2 (2-0-4)
ICGS 161 Skills in Dealing with People Across Cultures	2 (2-0-4)
ICGS 162 Arts, Culture and Tourism Development	2 (2-0-4)
ICGS 165 Tea Studies	2 (2-0-4)
ICGS 167 Coffee Studies	2 (2-0-4)
ICGS 168 Faith a Lifestyle	2 (2-0-4)
ICGS 180 Cafe Story and Slow food	2 (2-0-4)
ICGS 181 Cuisine and Culture	2 (2-0-4)
ICGS 182 Humor Horizons	2 (2-0-4)

- **Civic Literacy** **2 Credits**

ICGH 126 Behavioral Ethics: Why Good People Do Bad Things	2 (2-0-4)
ICGH 129 Searching for Meaning	2 (2-0-4)
ICGH 133 Socrates, His Predecessors and Successors	2 (2-0-4)
ICGH 134 Digital Media Literacy: Skills for 21st Century Learning	2 (2-0-4)
ICGH 138 The Philosophies of Asia	2 (2-0-4)
ICGH 140 Ethics and Evolution	2 (2-0-4)
ICGH 149 Law, Technology, and Society	2 (2-0-4)
ICGH 150 Global Perspectives on Free Expression in the Digital Age	2 (2-0-4)
ICGN 131 Digital Search Literacy	2 (2-0-4)
ICGN 132 Digital Security and Privacy	2 (2-0-4)
ICGN 144 Environmental Ethics	2 (2-0-4)
ICGN 145 Food Integrity and Food Fraud: When a Food Product Is Not What It Seems	2 (2-0-4)
ICGS 134 Is Democracy Good?	4 (4-0-8)
ICGS 136 Social and Health Issues in Thailand	4 (3-2-7)
ICGS 140 Fake News, Censorship and the Politics of Truth	4 (4-0-8)
ICGS 147 Women in Leadership	4 (4-0-8)
ICGS 158 Contemporary Issues in Thailand	2 (2-0-4)
ICGS 160 Self and Society	2 (2-0-4)
ICGS 163 Popular Media and Conflicts	2 (2-0-4)

ICGS 166 Power and Politics	2 (2-0-4)
ICGS 170 Civic Action in Thailand	2 (2-0-4)
ICGS 183 Media and Community	2 (2-0-4)

- **Finance & Management Literacy** **2 Credits**

ICGB 102 Navigating the Market Landscape	2 (2-0-4)
ICGB 103 Decoding Economic News	2 (2-0-4)
ICGB 104 Entrepreneurship in a Disruptive Environment	2 (2-0-4)
ICGB 105 Personal Finance Literacy	2 (2-0-4)
ICGB 106 The Business of Fashion	2 (2-0-4)
ICGB 107 Tourism Management Perspectives	2 (2-0-4)
ICGB 109 Business Event Essentials	2 (2-0-4)
ICGB 110 Management Styles of Effective Leaders	2 (2-0-4)
ICGB 111 Leadership in a Global Society	2 (2-0-4)
ICGB 112 The Art of Pricing	2 (2-0-4)
ICGB 113 Crisis Management in Service Businesses	2 (2-0-4)
ICGB 114 Cultural Strategies for Success: Unveiling Eastern Business Dynamics	2 (2-0-4)
ICGB 115 Money: Deciphering Currencies of Value	2 (2-0-4)
ICGB 116 Managing Self and Working with Others	2 (2-0-4)
ICGH 101 Biotechnology: from Science to Business	4 (4-0-8)
ICGS 102 Business Sustainability and the Global Climate Change	4 (4-0-8)
ICGS 135 Entrepreneurial Accounting	4 (4-0-8)
ICGS 153 Social Media Management for Service Sector	2 (2-0-4)
ICGS 174 The Art of Leadership in Practice: Inspiration	2 (2-0-4)
ICGS 184 Healthy Habits, Happy Shoppers: Exploring Health Literacy in Consumer Decisions	2 (2-0-4)
ICLL 101 Professional Development	2 (2-0-4)

General Education Elective Courses 4-8 Credits

Students need to take remaining courses in any GE category to fulfill their 30 credits requirement of GE: 4 credits for students whose English Communication track are placed into ‘FE track’ or ‘GC Track’ and 8 credits for students whose English Communication track are placed into ‘GC2 Track’. Partial credits of GE course that exceed the GE requirements cannot be counted towards Free Electives.

Specific Courses — no less than 106 Credits

Core Courses	30 Credits
ICCS 205 Numerical Computation	4 (4-0-8)
ICCS 206 Discrete Mathematics	4 (4-0-8)
ICCS 309 Scientific Research and Presentations	4 (4-0-8)
ICMA 106 Calculus I	4 (4-0-8)
ICMA 151 Statistics for Science I	4 (4-0-8)
ICPY 101 Physics I	4 (4-0-8)
ICPY 102 Physics II	4 (4-0-8)
ICPY 105 Integrated Laboratory in Physics I	2 (0-4-2)

Major Required Courses	52 Credits
ICCS 102 Coding for All*	4 (4-0-8)
ICCS 111 Programming and Abstractions	4 (4-0-8)
ICCS 121 System Skills and Low-level Programming	4 (4-0-8)
ICCS 209 Data Structures	4 (4-0-8)
ICCS 225 Database Foundations	4 (4-0-8)
ICCS 227 Principles of Computer Systems and Architecture	4 (4-0-8)
ICCS 261 Principles of Data Science	4 (4-0-8)
ICCS 271 Interaction Design	4 (4-0-8)
ICCS 311 Functional and Parallel Programming	4 (4-0-8)
ICCS 312 Algorithms and Tractability	4 (4-0-8)
ICCS 370 Software System Construction	4 (4-0-8)
ICMA 218 Multivariable Calculus	4 (4-0-8)
ICMA 240 Linear Algebra I	4 (4-0-8)

** For computer science majors, students have the option to bypass ICCS 102 by successfully completing a placement test. However, they must enroll in an additional ICCS course to meet the required credit count for the curriculum. For students from other majors, it is possible to substitute ICCS 102 with ICCS 111, provided they pass the placement test.*

Capstone Required Courses — 8 Credits

- **Option 1: Senior Project**

ICCS 402 Senior Project in Computer Science I	4 (0-8-4)
ICCS 403 Senior Project in Computer Science II	4 (0-8-4)

- **Option 2: Cooperative and Work integrated Education**

ICCS 431 Cooperative and Work integrated Education Seminar	2 (2-0-4)
ICCS 432 Cooperative and Work integrated Education I	3 (0-40-8)
ICCS 433 Cooperative and Work integrated Education II	3 (0-40-8)

Major Elective Courses — at least 16 Credits

ICCS 302 Human Computer Interaction and Visualization	4 (4-0-8)
ICCS 303 Competitive Programming	4 (4-0-8)
ICCS 315 Applied Algorithms	4 (4-0-8)
ICCS 320 Computer Networks	4 (4-0-8)
ICCS 322 Operating Systems Design and Implementation	4 (4-0-8)
ICCS 323 IoT Electronics	4 (4-0-8)
ICCS 324 Computer Architecture	4 (4-0-8)
ICCS 340 Web Application Development	4 (4-0-8)
ICCS 362 Data Engineering	4 (4-0-8)
ICCS 371 Scalable Systems	4 (4-0-8)
ICCS 372 Software Engineering	4 (4-0-8)
ICCS 373 Cloud Computing	4 (4-0-8)
ICCS 404 Computer Graphics and Augmented Reality	4 (4-0-8)
ICCS 412 Topics in Theory I	4 (4-0-8)
ICCS 413 Topics in Theory II	4 (4-0-8)
ICCS 414 Topics in Theory III	4 (4-0-8)
ICCS 418 Computer System Security	4 (4-0-8)
ICCS 423 Topics in Systems I	4 (4-0-8)
ICCS 424 Topics in Systems II	4 (4-0-8)
ICCS 425 Topics in Systems III	4 (4-0-8)
ICCS 445 E-Commerce Innovation and Technology Management	4 (4-0-8)
ICCS 448 Mobile Application Programming	4 (4-0-8)
ICCS 461 Machine Learning	4 (4-0-8)

ICCS 462 Deep Learning	4 (4-0-8)
ICCS 463 Special Topics in Machine Learning I	4 (4-0-8)
ICCS 464 Special Topics in Machine Learning II	4 (4-0-8)
ICCS 465 Special Topics in Machine Learning III	4 (4-0-8)
ICCS 471 Topics in Software Technology I	4 (4-0-8)
ICCS 472 Topics in Software Technology II	4 (4-0-8)
ICCS 473 Topics in Software Technology III	4 (4-0-8)
ICCS 491 Topics in Computer Science I	4 (4-0-8)
ICCS 492 Topics in Computer Science II	4 (4-0-8)
ICMA 214 Ordinary Differential Equations	4 (4-0-8)
ICMA 241 Linear Algebra II	4 (4-0-8)
ICMA 322 Advanced Calculus	4 (4-0-8)
ICMA 346 Optimization	4 (4-0-8)
ICMA 350 Probability	4 (4-0-8)
ICMA 424 Abstract Algebra	4 (4-0-8)

I-Design Electives 20 Credits

The purpose of the I-Design electives is to promote multidisciplinary learning. Students are encouraged to explore courses offered by diverse disciplines across MUIC, Mahidol University, and partner institutions. The I-Design electives can be satisfied upon the completion of the following course categories:

1. **Minor courses** offered by any program in **MUIC**
2. **Certificate courses** offered by any program in **MUIC**
3. **Any major courses** offered by any program in **MUIC**
4. **Any major courses** offered in Mahidol University (including undergraduate and graduate level courses). Courses must be approved by the student's advisor.
5. **Any major courses** offered at **partner institutions** (who have MOU with Mahidol University and/or MUIC). Courses must be approved by the student's advisor.

Free Electives 8 Credits

Students can take any courses offered by MUIC / Mahidol University or any major courses offered by the partner institutions (with MOU) as free elective courses with the approval from the advisor.

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Creative Technology

Degree Offered:

Bachelor of Arts and Science (Creative Technology)

B.A.Sc. (Creative Technology)

Program Goal :

To produce competent graduates with professional ethics who are transdisciplinary, adaptable and capable of integrating technology with creative initiatives that are in alignment with the needs of the industry and the society. Graduates are expected to possess lifelong learning skills and the desired characteristics for MU graduates.

Program Objectives :

To produce well-rounded graduates who are able to:

1. Demonstrate knowledge and skills in computer science, graphic design, communication design, and digital technologies.
2. Apply design thinking, technological tools, problem-solving, and innovative approaches to develop practical solutions.
3. Follow professional ethics and take social responsibility.
4. Develop open mindedness and awareness of the needs and expectations of inclusive societies.
5. Engage in lifelong learning practices and develop skills that include cognitive, social and emotional skills to react to a changing world.
6. Communicate ideas effectively and be able to work in a team with diverse cultures and backgrounds

Curriculum Structure

Courses	Credit
Foundation Courses	Non-credit
General Education	No less than 30
Major Required Courses	82
Major Required Experiential Learning	8
Major Elective Courses	12
I-Design Elective Courses	No less than 20
Free Elective Courses	No less than 8
TOTAL	**No less than 160**

COURSE LIST

Foundation Courses — Non-credit

ICMA 100 Foundation Mathematics	0 (4-0-0)
ICMA 101 Precalculus	0 (4-0-0)
ICME 101 Foundation English: Communication Skills	0 (4-0-0)

Note I:

- For B.B.A. students, students whose Mathematics placement is below ICMB 151 Business Mathematics are required to take ICMA 100 Foundation Mathematics and pass the course with the grade of "S" before moving to ICMB 151 Business Mathematics.
- For B.Sc. and B.Eng. students, students whose Mathematics placement is below ICMA 106 Calculus I and/or ICMA 151 Statistics for Science I are required to take ICMA 101 Precalculus and pass the course with the grade of "S" before moving to ICMA 106 Calculus I and/or ICMA 151 Statistics for Science I.
- For B.A.Sc. students, students whose Mathematics placement is below ICCT 101 Mathematics for Creative Technology I are required to take ICMA 101 Precalculus and pass the course with the grade of “S” before moving to ICCT 101 Mathematics for Creative Technology I.

Note II:

- Based on their achievement on the essay portion of the MUIC entrance exam, students whose English placement is below ICGC 104 English Studies I: The Writer's Toolkit will be placed into the “FE Track”. These students will be required to take ICME 101 Foundation English: Communication Skills and pass the course with the grade of "S" before moving to ICGC 104 English Studies I: The Writer's Toolkit.

General Education 30 Credits

General Education Group	GC2 Track*	FE and GC Track*
1. English Communication	10	14
2. GE Literacies	12	12
- MU Literacy	2	2
- Health Literacy	2	2
- Science and Environmental Literacy	2	2
- Intercultural and Global Awareness Literacy	2	2
- Civic Literacy	2	2
- Finance and Management Literacy	2	2
3. GE Electives	8	4
TOTAL	30	30

** Students will be placed into specific tracks based on their achievement in the essay portion of the MUIC entrance exam.*

English Communication 10 – 14 Credits

ICGC 104 English Studies I: The Writer's Toolkit	4 (4-0-8)
ICGC 105 English Studies II: The Writer's Voice	4 (4-0-8)
ICGC 106 English Studies III: Public Speaking	4 (4-0-8)
ICGC 221 English Studies IV: The World of English - Global Realities	2 (2-0-4)
ICGC 222 English Studies IV: The World of English - Literary Analysis	2 (2-0-4)
ICGC 223 English Studies IV: The World of English - Creative Writing	2 (2-0-4)
ICGC 224 English Studies IV: The World of English - Advanced Oral Communication	2 (2-0-4)
ICGC 226 English Studies IV: The World of English - Literature Into Film	2 (2-0-4)
ICGC 228 English Studies IV: The World of English - Language and Culture	2 (2-0-4)
ICGC 230 English Studies IV: The World of English - First and Second Language Acquisition	2 (2-0-4)
ICGC 231 English Studies IV: The World of English – Poetry	2 (2-0-4)
ICGC 232 English Studies IV: The World of English - The Short Story and the Novel	2 (2-0-4)
ICGC 233 English Studies IV: The World of English – Drama	2 (2-0-4)
ICGC 234 English Studies IV: The World of English - Literary Non-fiction	2 (2-0-4)
ICGC 235 English Studies IV: The World of English - Writing for Research	2 (2-0-4)

Note I: Based on their achievement on the essay portion of the MUIC entrance exam, students will be placed into 3 following tracks: **'FE Track'**, **'GC Track'** and **'GC2 Track'**.

- **'FE Track'** – Students who are placed into 'FE Track' will be required to take ICME 101 (a non-credit course) and complete 14 credits in English Communication: ICGC 104, ICGC 105, ICGC 106 in order, and finally, any 200+ level English courses.
- **'GC Track'** – Students who are placed into 'GC Track' will be required to complete 14 credits in English Communication: ICGC 104, ICGC 105, ICGC 106 in order, and finally, any 200+ level English courses.
- **'GC2 Track'** – Students who are placed into 'GC2 Track' will be required to complete 10 credits in English Communication: ICGC 105, ICGC 106 in order, and finally, any 200+ Level English courses.

GE Literacies — 12 Credits

Note I: Students must complete courses in the following six categories: MU Literacy, Health Literacy, Science & Environment Literacy, Intercultural & Global Awareness Literacy, and Finance & Management Literacy. Each category requires a minimum of 2 credits.

Note II: If a student selects a 4-credit course to fulfill a 2-credit literacy requirement, the excess 2 credits cannot be allocated or applied toward GE Elective or Free Elective credits. Instead, these excess credits will be entirely allocated to the literacy for which they were originally intended.

- **MU Literacy** — **2 Credits**

ICGB 101 Project Management for Impacts	2 (2-0-4)
ICGB 108 Event for Good	2 (2-0-4)
ICGN 139 Scientific Inquiry and the Community	2 (2-0-4)
ICGS 169 Learning by Doing	2 (2-0-4)
ICGS 171 Digital Campaign for Gender Issues	2 (2-0-4)
ICGS 172 Service Learning - Making Change	4 (4-0-8)
ICGS 173 Service Learning - Campaigning for a Cause	4 (4-0-8)
ICGS 175 Social Innovation and Sustainability	2 (2-0-4)
ICGS 176 Sustainable Cooking	2 (2-0-4)
ICGS 177 Social Innovation: Empowering Sustainable Communities	2 (2-0-4)

ICGT 107 Innovation: Inside Out	2 (2-0-4)

- **Health Literacy** **2 Credits**

ICGH 136 Sound & Soul: A Journey of Music, Emotion, and Well-being	2 (2-0-4)
ICGH 143 Flowers and Fragrances for Health	2 (2-0-4)
ICGN 135 Personal Health and Well-being	2 (2-0-4)
ICGP 101 American Flag Football	1 (0-2-1)
ICGP 102 Badminton	1 (0-2-1)
ICGP 103 Basketball	1 (0-2-1)
ICGP 104 Body Fitness	1 (0-2-1)
ICGP 105 Cycling	1 (0-2-1)
ICGP 106 Discover Dance	1 (0-2-1)
ICGP 107 Golf	1 (0-2-1)
ICGP 108 Mind and Body	1 (0-2-1)
ICGP 109 Selected Topics in Sports	1 (0-2-1)
ICGP 110 Self Defense (Striking)	1 (0-2-1)
ICGP 111 Self Defense (Grappling)	1 (0-2-1)
ICGP 112 Soccer	1 (0-2-1)
ICGP 113 Social Dance	1 (0-2-1)
ICGP 114 Swimming	1 (0-2-1)
ICGP 115 Tennis	1 (0-2-1)
ICGP 116 Volleyball	1 (0-2-1)
ICGP 118 Health and Wellness	2 (2-0-4)
ICGP 119 Mindful Food and Well-being	2 (2-0-4)
ICGP 120 Mind and Body: Navigating the Interplay of Brain, Behavior, and Well-being	2 (2-0-4)
ICGS 121 Abnormal Colleagues: how do I make this work?	4 (4-0-8)
ICGS 155 Pathway to Purpose: Life Design and Self-Exploration	4 (4-0-8)
ICGS 164 Positive Psychology	2 (2-0-4)
ICGS 178 Unmasking Human Behaviour: Exploring Psychological Truths about Behaviour	2 (2-0-4)
ICGS 179 Health and Society	2 (2-0-4)
ICLL 100 Self Development	2 (2-0-4)

- **Science & Environment Literacy** **2 Credits**

ICGH 131 Unraveling the Anthropocene: A Philosophical Critique of Earth's Shifts and Humanity's Roles	2 (2-0-4)
ICGH 142 Fantasy Literature's Environmental Message	2 (2-0-4)
ICGH 144 A Candle in the Dark: How to Tell Fact from Fiction	2 (2-0-4)
ICGN 105 Ecology, Ecosystems and Socio-Economics in Southeast Asia	4 (3-2-7)
ICGN 107 The Chemistry of Everyday Life	4 (4-0-8)
ICGN 108 Essentials of Culinary Science for Food Business	4 (3-2-7)
ICGN 111 Physics for CEO	4 (4-0-8)
ICGN 113 Plants, People and Poisons	4 (4-0-8)
ICGN 114 The Scientific Approach and Society	4 (4-0-8)
ICGN 115 Human Evolution, Diversity and Health	4 (4-0-8)
ICGN 116 Understanding and Visualizing Data	4 (3-2-7)
ICGN 119 Computer Essentials	4 (4-0-8)
ICGN 123 The Earth's Dynamic Structure	4 (3-2-7)
ICGN 124 Climate Change and Human Society	4 (3-2-7)
ICGN 126 Plant Society	2 (2-0-4)
ICGN 127 Practical Mathematics	2 (2-0-4)
ICGN 128 Climate Emergency, Biodiversity Crisis, and Humanity at Risk	2 (1-2-3)
ICGN 129 Programming for Problem Solving	4 (4-0-8)
ICGN 130 Cryptography: The Science of Making and Breaking Codes	2 (2-0-4)
ICGN 134 Introduction to Artificial Intelligence	2 (2-0-4)
ICGN 136 Creator Workshop	2 (2-0-4)
ICGN 137 Star Wanderer	2 (2-0-4)
ICGN 138 Cosmetics Chemistry	2 (2-0-4)
ICGN 140 Food Energy for Health	2 (2-0-4)
ICGN 141 Life in the Sea	2 (1-2-3)
ICGN 142 Energy and the Environment	2 (2-0-4)
ICGN 143 Gaia: Life on Earth	2 (1-2-3)
ICGT 101 Technology-Enhanced Learning: Harnessing AI & Digital Tools for Academic Success	2 (2-0-4)
ICGT 102 Digital Document Management	2 (2-0-4)
ICGT 103 Computational Thinking	2 (2-0-4)
ICGT 104 Tell a Great Story with Data	2 (2-0-4)
ICGT 105 No-Code Application Development	2 (2-0-4)
ICGT 106 Data and Spreadsheets	2 (2-0-4)
ICLL 102 Skills for a Digital World	2 (2-0-4)

• **Intercultural & Global Awareness Literacy**	**2 Credits**
ICGH 107 Contemporary Art and Visual Culture	4 (4-0-8)
ICGH 109 Creative Thinking Through Art and Design	4 (2-4-6)
ICGH 110 Drawing as Visual Analysis	4 (2-4-6)
ICGH 115 Cinematic Language and Applications	4 (4-0-8)
ICGH 116 World Cinemas	4 (4-0-8)
ICGH 117 Drawing as Creative Expression	4 (2-4-6)
ICGH 118 Photography Visualizing in the Digital Age	4 (2-4-6)
ICGH 120 Thai and ASEAN Cinema	4 (4-0-8)
ICGH 124 Life Drawing and Anatomy	4 (2-4-6)
ICGH 128 Internet Celebrity, Culture and the Media	4 (4-0-8)
ICGH 130 The Logic Lab: Crafting Coherent Arguments	2 (2-0-4)
ICGH 132 The Rise and Fall of Ancient Athens	2 (2-0-4)
ICGH 135 The Horror Film	2 (2-0-4)
ICGH 137 Apocalypse Now, or Never, or Maybe?	2 (2-0–4)
ICGH 139 Spirituality, Sustainability, Ecosystems	2 (2-0-4)
ICGH 141 SPQR—Glimpses of Rome	2 (2-0-4)
ICGH 145 Essentials to Photography, Skills and Practices	2 (2-0-4)
ICGH 146 Acting for Self-Discovery and Empathizing with Others	2 (2-0-4)
ICGH 147 Myth and the Masks of the Divine	2 (2-0-4)
ICGH 148 Quest for Global Justice: A Philosophical Inquiry	2 (2-0-4)
ICGL 101 Elementary German I	4 (4-0-8)
ICGL 102 Elementary German II	4 (4-0-8)
ICGL 103 Elementary German III	4 (4-0-8)
ICGL 111 Elementary Japanese I	4 (4-0-8)
ICGL 112 Elementary Japanese II	4 (4-0-8)
ICGL 113 Elementary Japanese III	4 (4-0-8)
ICGL 121 Elementary French I	4 (4-0-8)
ICGL 122 Elementary French II	4 (4-0-8)
ICGL 123 Elementary French III	4 (4-0-8)
ICGL 131 Elementary Chinese I	4 (4-0-8)
ICGL 132 Elementary Chinese II	4 (4-0-8)
ICGL 133 Elementary Chinese III	4 (4-0-8)

ICGL 141 Elementary Spanish I	4 (4-0-8)
ICGL 142 Elementary Spanish II	4 (4-0-8)
ICGL 143 Elementary Spanish III	4 (4-0-8)
ICGL 160 Introduction to Thai Language and Culture	4 (4-0-8)
ICGL 161 Elementary Thai I	4 (4-0-8)
ICGL 162 Elementary Thai II	4 (4-0-8)
ICGL 163 Elementary Thai III	4 (4-0-8)
ICGL 164 Thai Writing for Specific Purposes in Workplace *for native Thai students	2 (2-0-4)
ICGL 171 Diversities in Multilingual Societies	2 (2-0-4)
ICGL 172 Chinese Influence in Thai Society	2 (2-0-4)
ICGL 173 Introduction to Japanese Societies	2 (2-0-4)
ICGL 174 From Siesta to Fiesta: Introduction to Spanish and Latin American Culture	2 (2-0-4)
ICGL 201 Pre-Intermediate German I	4 (4-0-8)
ICGL 202 Pre-Intermediate German II	4 (4-0-8)
ICGL 203 Pre-Intermediate German III	4 (4-0-8)
ICGL 211 Pre-Intermediate Japanese I	4 (4-0-8)
ICGL 212 Pre-Intermediate Japanese II	4 (4-0-8)
ICGL 213 Pre-Intermediate Japanese III	4 (4-0-8)
ICGL 221 Pre-intermediate French I	4 (4-0-8)
ICGL 222 Pre-intermediate French II	4 (4-0-8)
ICGL 223 Pre-intermediate French III	4 (4-0-8)
ICGL 231 Pre-Intermediate Chinese I	4 (4-0-8)
ICGL 232 Pre-Intermediate Chinese II	4 (4-0-8)
ICGL 233 Pre-Intermediate Chinese III	4 (4-0-8)
ICGL 241 Pre-Intermediate Spanish I	4 (4-0-8)
ICGL 242 Pre-Intermediate Spanish II	4 (4-0-8)
ICGL 243 Pre-Intermediate Spanish III	4 (4-0-8)
ICGN 125 Games and Learning	2 (2-0-4)
ICGS 112 Geography of Human Activities	4 (4-0-8)
ICGS 128 Global Gastronomy and Cuisines	4 (4-0-8)
ICGS 131 Introduction to International Studies	4 (4-0-8)
ICGS 132 Career Preparation in a Globalized World	4 (4-0-8)
ICGS 133 Foundation of Mediterranean Cultures	4 (4-0-8)
ICGS 137 Witchcraft and Gender Representation	4 (4-0-8)

ICGS 143 Introduction to Air Transport and Tourism	4 (4-0-8)
ICGS 156 Fashion and Society	2 (2-0-4)
ICGS 157 Asian Religious Traditions	2 (2-0-4)
ICGS 159 The Self and Modern Media	2 (2-0-4)
ICGS 161 Skills in Dealing with People Across Cultures	2 (2-0-4)
ICGS 162 Arts, Culture and Tourism Development	2 (2-0-4)
ICGS 165 Tea Studies	2 (2-0-4)
ICGS 167 Coffee Studies	2 (2-0-4)
ICGS 168 Faith a Lifestyle	2 (2-0-4)
ICGS 180 Cafe Story and Slow food	2 (2-0-4)
ICGS 181 Cuisine and Culture	2 (2-0-4)
ICGS 182 Humor Horizons	2 (2-0-4)

- **Civic Literacy** **2 Credits**

ICGH 126 Behavioral Ethics: Why Good People Do Bad Things	2 (2-0-4)
ICGH 129 Searching for Meaning	2 (2-0-4)
ICGH 133 Socrates, His Predecessors and Successors	2 (2-0-4)
ICGH 134 Digital Media Literacy: Skills for 21st Century Learning	2 (2-0-4)
ICGH 138 The Philosophies of Asia	2 (2-0-4)
ICGH 140 Ethics and Evolution	2 (2-0-4)
ICGH 149 Law, Technology, and Society	2 (2-0-4)
ICGH 150 Global Perspectives on Free Expression in the Digital Age	2 (2-0-4)
ICGN 131 Digital Search Literacy	2 (2-0-4)
ICGN 132 Digital Security and Privacy	2 (2-0-4)
ICGN 144 Environmental Ethics	2 (2-0-4)
ICGN 145 Food Integrity and Food Fraud: When a Food Product Is Not What It Seems	2 (2-0-4)
ICGS 134 Is Democracy Good?	4 (4-0-8)
ICGS 136 Social and Health Issues in Thailand	4 (3-2-7)
ICGS 140 Fake News, Censorship and the Politics of Truth	4 (4-0-8)
ICGS 147 Women in Leadership	4 (4-0-8)
ICGS 158 Contemporary Issues in Thailand	2 (2-0-4)
ICGS 160 Self and Society	2 (2-0-4)
ICGS 163 Popular Media and Conflicts	2 (2-0-4)
ICGS 166 Power and Politics	2 (2-0-4)

ICGS 170 Civic Action in Thailand	2 (2-0-4)
ICGS 183 Media and Community	2 (2-0-4)

- **Finance & Management Literacy** **2 Credits**

ICGB 102 Navigating the Market Landscape	2 (2-0-4)
ICGB 103 Decoding Economic News	2 (2-0-4)
ICGB 104 Entrepreneurship in a Disruptive Environment	2 (2-0-4)
ICGB 105 Personal Finance Literacy	2 (2-0-4)
ICGB 106 The Business of Fashion	2 (2-0-4)
ICGB 107 Tourism Management Perspectives	2 (2-0-4)
ICGB 109 Business Event Essentials	2 (2-0-4)
ICGB 110 Management Styles of Effective Leaders	2 (2-0-4)
ICGB 111 Leadership in a Global Society	2 (2-0-4)
ICGB 112 The Art of Pricing	2 (2-0-4)
ICGB 113 Crisis Management in Service Businesses	2 (2-0-4)
ICGB 114 Cultural Strategies for Success: Unveiling Eastern Business Dynamics	2 (2-0-4)
ICGB 115 Money: Deciphering Currencies of Value	2 (2-0-4)
ICGB 116 Managing Self and Working with Others	2 (2-0-4)
ICGH 101 Biotechnology: from Science to Business	4 (4-0-8)
ICGS 102 Business Sustainability and the Global Climate Change	4 (4-0-8)
ICGS 135 Entrepreneurial Accounting	4 (4-0-8)
ICGS 153 Social Media Management for Service Sector	2 (2-0-4)
ICGS 174 The Art of Leadership in Practice: Inspiration	2 (2-0-4)
ICGS 184 Healthy Habits, Happy Shoppers: Exploring Health Literacy in Consumer Decisions	2 (2-0-4)
ICLL 101 Professional Development	2 (2-0-4)

General Education Elective Courses 4-8 Credits

Students need to take remaining courses in any GE category to fulfill their 30 credits requirement of GE: 4 credits for students whose English Communication track are placed into ‘FE track’ or ‘GC Track’ and 8 credits for students whose English Communication track are placed into ‘GC2 Track’. Partial credits of GE course that exceed the GE requirements cannot be counted towards Free Electives.

Specific Courses no less than 102 Credits

Major Required Courses	82 Credits
ICCD 110 Art History	4 (4-0-8)
ICCD 114 2 Dimensional Design & Color Theory	4 (2-4-6)
ICCD 311 Integrated Branding	4 (2-4-6)
ICCD 315 New Media Design	4 (2-4-6)
ICCD 360 Service Design	4 (2-4-6)
ICCT 111 Introduction to Programming for Creative Technology	4 (4-0-8)
ICCT 201 Professional Ethics	2 (2-0-4)
ICCT 441 Capstone Project for Creative Technology	6 (0-12-6)
ICMA 106 Calculus I	4 (4-0-8)
ICMA 151 Statistics for Science I	4 (4-0-8)
ICMA 240 Linear Algebra I	4 (4-0-8)
ITCT 101 Computing Technologies	4 (4-0-8)
ITCT 202 Advanced Programming and Data Structure	4 (4-0-8)
ITCT 203 Introduction to Interactive Multimedia Technology	4 (4-0-8)
ITCT 204 User Experience Research and Prototyping	4 (4-0-8)
ITCT 302 Interactive Multimedia and Game Development Technology	4 (4-0-8)
ITCT 303 Data Technology	4 (4-0-8)
ITCT 344 Human-Computer Interaction	4 (4-0-8)
MSCT 101 Music Appreciation	2 (2-0-4)
MSCT 111 Music Fundamentals and Keyboard Skills I	1 (0-2-1)
MSCT 112 Music Fundamentals and Keyboard Skills II	1 (0-2-1)
MSCT 211 Electronic Music Production I	1 (0-2-1)
MSCT 212 Electronic Music Production II	1 (0-2-1)
RACT 201 Learning Management and Classroom Management for Students with Special Needs	4 (3-2-7)

Major Required Experiential Learning — 8 Credits

Students are required to take one of the two following experiential learning options.

- **Option 1: Internship**

ICCT 444 Internship	8 (0-40-8)

- **Option 2: Cooperative and Work Integrated Education**

ICCS 431 Cooperative and Work Integrated Education Seminar	2 (2-0-4)
ICCT 445 Cooperative and Work Integrated Education	6 (0-40-8)

Major Elective Courses — 12 Credits

Students are required to complete at least 12 credits.

ICCD 344 Character Design	4 (2-4-6)
ICCD 345 Post-Production & Visual Effects	4 (2-4-6)
ICCD 361 Integrated Design for Well-Being	4 (2-4-6)
ICCT 446 Extended Internship for Professional Growth	4 (0-12-2)
ITCT 318 Internet of Things and Its Application	4 (4-0-8)
ITCT 324 Immersive Technology	4 (4-0-8)
ITCT 332 Data Visualisation	4 (4-0-8)
ITCT 333 Advanced Game Development	4 (4-0-8)
ITCT 345 Interactive Multimedia Production	4 (4-0-8)
ITCT 346 Web Technology and Development	4 (4-0-8)
ITCT 363 Artificial Intelligence in Multimedia Applications	4 (4-0-8)
ITCT 391 Special Topics in Multimedia Systems	4 (4-0-8)
RACT 202 Introduction to the Thai Sign Language	4 (2-4-6)

I-Design Electives 20 Credits

The purpose of the I-Design electives is to promote multidisciplinary learning. Students are encouraged to explore courses offered by diverse disciplines across MUIC, Mahidol University, and partner institutions. The I-Design electives can be satisfied upon the completion of the following course categories:

1. **Minor courses** offered by any program in **MUIC**
2. **Certificate courses** offered by any program in **MUIC**
3. **Any major courses** offered by any program in **MUIC**
4. **Any major courses** offered in **Mahidol University** (including undergraduate and graduate level courses). Courses must be approved by the student's advisor.
5. **Any major courses** offered at **partner institutions** (who have MOU with Mahidol University and/or MUIC). Courses must be approved by the student's advisor.

Free Electives 8 Credits

Students can take any courses offered by MUIC / Mahidol University or any major courses offered by the partner institutions (with MOU) as free elective courses with the approval from the advisor.

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Food Science and Technology

Degree Offered:

Bachelor of Science (Food Science and Technology)

B.Sc. (Food Science and Technology)

Program Goal :

To have MU graduates that are able to integrate all food science disciplines with an entrepreneurial mindset and to develop multi/interdisciplinary and lifelong learning approaches.

Program Objectives :

1. Graduates have cognitive and psychomotor skills in the area of food chemistry, food analysis, and ingredients functionality, food safety and microbiology, food processing and engineering, nutrition and its health impact, food policy and regulation, food science application and integration.
2. Graduates conduct themselves with integrity, ethical responsibility and are skilled in entrepreneurship and competent in the food sector and in real world situations.
3. Graduates have communication and collaborative skills and MU characteristics Engage in lifelong learning practices and continuously develop one's academic potential to be an internationally competent and responsible chemical professional.

Curriculum Structure

Courses	Credit
Foundation Courses	Non-credit
General Education	No less than 30
Core Courses	30
Major Required Courses	63
Experiential Learning Courses	8
Major Elective Courses	8
I-Design Elective Courses	No less than 20
Free Elective Courses	No less than 8
TOTAL	**No less than 167**

COURSE LIST

Foundation Courses	Non-credit
ICMA 100 Foundation Mathematics	0 (4-0-0)
ICMA 101 Precalculus	0 (4-0-0)
ICME 101 Foundation English: Communication Skills	0 (4-0-0)

Note I:

- For B.B.A. students, students whose Mathematics placement is below ICMB 151 Business Mathematics are required to take ICMA 100 Foundation Mathematics and pass the course with the grade of "S" before moving to ICMB 151 Business Mathematics.
- For B.Sc. and B.Eng. students, students whose Mathematics placement is below ICMA 106 Calculus I and/or ICMA 151 Statistics for Science I are required to take ICMA 101 Precalculus and pass the course with the grade of "S" before moving to ICMA 106 Calculus I and/or ICMA 151 Statistics for Science I.
- For B.A.Sc. students, students whose Mathematics placement is below ICCT 101 Mathematics for Creative Technology I are required to take ICMA 101 Precalculus and pass the course with the grade of “S” before moving to ICCT 101 Mathematics for Creative Technology I.

Note II:

- Based on their achievement on the essay portion of the MUIC entrance exam, students whose English placement is below ICGC 104 English Studies I: The Writer's Toolkit will be placed into the “FE Track”. These students will be required to take ICME 101 Foundation English: Communication Skills and pass the course with the grade of "S" before moving to ICGC 104 English Studies I: The Writer's Toolkit.

General Education 30 Credits

General Education Group	GC2 Track*	FE and GC Track*
1. English Communication	10	14
2. GE Literacies	12	12
- MU Literacy	2	2
- Health Literacy	2	2
- Science and Environmental Literacy	2	2
- Intercultural and Global Awareness Literacy	2	2
- Civic Literacy	2	2
- Finance and Management Literacy	2	2
3. GE Electives	8	4
Total	**30**	**30**

** Students will be placed into specific tracks based on their achievement in the essay portion of the MUIC entrance exam.*

English Communication 10 – 14 Credits

ICGC 104 English Studies I: The Writer's Toolkit	4 (4-0-8)
ICGC 105 English Studies II: The Writer's Voice	4 (4-0-8)
ICGC 106 English Studies III: Public Speaking	4 (4-0-8)
ICGC 221 English Studies IV: The World of English - Global Realities	2 (2-0-4)
ICGC 222 English Studies IV: The World of English - Literary Analysis	2 (2-0-4)
ICGC 223 English Studies IV: The World of English - Creative Writing	2 (2-0-4)
ICGC 224 English Studies IV: The World of English - Advanced Oral Communication	2 (2-0-4)
ICGC 226 English Studies IV: The World of English - Literature Into Film	2 (2-0-4)
ICGC 228 English Studies IV: The World of English - Language and Culture	2 (2-0-4)
ICGC 230 English Studies IV: The World of English - First and Second Language Acquisition	2 (2-0-4)
ICGC 231 English Studies IV: The World of English – Poetry	2 (2-0-4)
ICGC 232 English Studies IV: The World of English - The Short Story and the Novel	2 (2-0-4)
ICGC 233 English Studies IV: The World of English – Drama	2 (2-0-4)
ICGC 234 English Studies IV: The World of English - Literary Non-fiction	2 (2-0-4)
ICGC 235 English Studies IV: The World of English - Writing for Research	2 (2-0-4)

Note I: Based on their achievement on the essay portion of the MUIC entrance exam, students will be placed into 3 following tracks: **'FE Track'**, **'GC Track'** and **'GC2 Track'**.

- **'FE Track'** – Students who are placed into 'FE Track' will be required to take ICME 101 (a non-credit course) and complete 14 credits in English Communication: ICGC 104, ICGC 105, ICGC 106 in order, and finally, any 200+ level English courses.
- **'GC Track'** – Students who are placed into 'GC Track' will be required to complete 14 credits in English Communication: ICGC 104, ICGC 105, ICGC 106 in order, and finally, any 200+ level English courses.
- **'GC2 Track'** – Students who are placed into 'GC2 Track' will be required to complete 10 credits in English Communication: ICGC 105, ICGC 106 in order, and finally, any 200+ level English courses.

GE Literacies — 12 Credits

Note I: Students must complete courses in the following six categories: MU Literacy, Health Literacy, Science & Environment Literacy, Intercultural & Global Awareness Literacy, and Finance & Management Literacy. Each category requires a minimum of 2 credits.

Note II: If a student selects a 4-credit course to fulfill a 2-credit literacy requirement, the excess 2 credits cannot be allocated or applied toward GE Elective or Free Elective credits. Instead, these excess credits will be entirely allocated to the literacy for which they were originally intended.

- **MU Literacy** — **2 Credits**

ICGB 101 Project Management for Impacts	2 (2-0-4)
ICGB 108 Event for Good	2 (2-0-4)
ICGN 139 Scientific Inquiry and the Community	2 (2-0-4)
ICGS 169 Learning by Doing	2 (2-0-4)
ICGS 171 Digital Campaign for Gender Issues	2 (2-0-4)
ICGS 172 Service Learning - Making Change	4 (4-0-8)
ICGS 173 Service Learning - Campaigning for a Cause	4 (4-0-8)
ICGS 175 Social Innovation and Sustainability	2 (2-0-4)
ICGS 176 Sustainable Cooking	2 (2-0-4)
ICGS 177 Social Innovation: Empowering Sustainable Communities	2 (2-0-4)

ICGT 107 Innovation: Inside Out	2 (2-0-4)

- **Health Literacy** **2 Credits**

ICGH 136 Sound & Soul: A Journey of Music, Emotion, and Well-being	2 (2-0-4)
ICGH 143 Flowers and Fragrances for Health	2 (2-0-4)
ICGN 135 Personal Health and Well-being	2 (2-0-4)
ICGP 101 American Flag Football	1 (0-2-1)
ICGP 102 Badminton	1 (0-2-1)
ICGP 103 Basketball	1 (0-2-1)
ICGP 104 Body Fitness	1 (0-2-1)
ICGP 105 Cycling	1 (0-2-1)
ICGP 106 Discover Dance	1 (0-2-1)
ICGP 107 Golf	1 (0-2-1)
ICGP 108 Mind and Body	1 (0-2-1)
ICGP 109 Selected Topics in Sports	1 (0-2-1)
ICGP 110 Self Defense (Striking)	1 (0-2-1)
ICGP 111 Self Defense (Grappling)	1 (0-2-1)
ICGP 112 Soccer	1 (0-2-1)
ICGP 113 Social Dance	1 (0-2-1)
ICGP 114 Swimming	1 (0-2-1)
ICGP 115 Tennis	1 (0-2-1)
ICGP 116 Volleyball	1 (0-2-1)
ICGP 118 Health and Wellness	2 (2-0-4)
ICGP 119 Mindful Food and Well-being	2 (2-0-4)
ICGP 120 Mind and Body: Navigating the Interplay of Brain, Behavior, and Well-being	2 (2-0-4)
ICGS 121 Abnormal Colleagues: how do I make this work?	4 (4-0-8)
ICGS 155 Pathway to Purpose: Life Design and Self-Exploration	4 (4-0-8)
ICGS 164 Positive Psychology	2 (2-0-4)
ICGS 178 Unmasking Human Behaviour: Exploring Psychological Truths about Behaviour	2 (2-0-4)
ICGS 179 Health and Society	2 (2-0-4)
ICLL 100 Self Development	2 (2-0-4)

- **Science & Environment Literacy** **2 Credits**

ICGH 131 Unraveling the Anthropocene: A Philosophical Critique of Earth's Shifts and Humanity's Roles 2 (2-0-4)
ICGH 142 Fantasy Literature’s Environmental Message 2 (2-0-4)
ICGH 144 A Candle in the Dark: How to Tell Fact from Fiction 2 (2-0-4)
ICGN 105 Ecology, Ecosystems and Socio-Economics in Southeast Asia 4 (3-2-7)
ICGN 107 The Chemistry of Everyday Life 4 (4-0-8)
ICGN 108 Essentials of Culinary Science for Food Business 4 (3-2-7)
ICGN 111 Physics for CEO 4 (4-0-8)
ICGN 113 Plants, People and Poisons 4 (4-0-8)
ICGN 114 The Scientific Approach and Society 4 (4-0-8)
ICGN 115 Human Evolution, Diversity and Health 4 (4-0-8)
ICGN 116 Understanding and Visualizing Data 4 (3-2-7)
ICGN 119 Computer Essentials 4 (4-0-8)
ICGN 123 The Earth’s Dynamic Structure 4 (3-2-7)
ICGN 124 Climate Change and Human Society 4 (3-2-7)
ICGN 126 Plant Society 2 (2-0-4)
ICGN 127 Practical Mathematics 2 (2-0-4)
ICGN 128 Climate Emergency, Biodiversity Crisis, and Humanity at Risk 2 (1-2-3)
ICGN 129 Programming for Problem Solving 4 (4-0-8)
ICGN 130 Cryptography: The Science of Making and Breaking Codes 2 (2-0-4)
ICGN 134 Introduction to Artificial Intelligence 2 (2-0-4)
ICGN 136 Creator Workshop 2 (2-0-4)
ICGN 137 Star Wanderer 2 (2-0-4)
ICGN 138 Cosmetics Chemistry 2 (2-0-4)
ICGN 140 Food Energy for Health 2 (2-0-4)
ICGN 141 Life in the Sea 2 (1-2-3)
ICGN 142 Energy and the Environment 2 (2-0-4)
ICGN 143 Gaia: Life on Earth 2 (1-2-3)
ICGT 101 Technology-Enhanced Learning: Harnessing AI & Digital Tools for Academic Success 2 (2-0-4)
ICGT 102 Digital Document Management 2 (2-0-4)
ICGT 103 Computational Thinking 2 (2-0-4)
ICGT 104 Tell a Great Story with Data 2 (2-0-4)
ICGT 105 No-Code Application Development 2 (2-0-4)
ICGT 106 Data and Spreadsheets 2 (2-0-4)

ICLL 102 Skills for a Digital World	2 (2-0-4)

- **Intercultural & Global Awareness Literacy** **2 Credits**

ICGH 107 Contemporary Art and Visual Culture	4 (4-0-8)
ICGH 109 Creative Thinking Through Art and Design	4 (2-4-6)
ICGH 110 Drawing as Visual Analysis	4 (2-4-6)
ICGH 115 Cinematic Language and Applications	4 (4-0-8)
ICGH 116 World Cinemas	4 (4-0-8)
ICGH 117 Drawing as Creative Expression	4 (2-4-6)
ICGH 118 Photography Visualizing in the Digital Age	4 (2-4-6)
ICGH 120 Thai and ASEAN Cinema	4 (4-0-8)
ICGH 124 Life Drawing and Anatomy	4 (2-4-6)
ICGH 128 Internet Celebrity, Culture and the Media	4 (4-0-8)
ICGH 130 The Logic Lab: Crafting Coherent Arguments	2 (2-0-4)
ICGH 132 The Rise and Fall of Ancient Athens	2 (2-0-4)
ICGH 135 The Horror Film	2 (2-0-4)
ICGH 137 Apocalypse Now, or Never, or Maybe?	2 (2-0–4)
ICGH 139 Spirituality, Sustainability, Ecosystems	2 (2-0-4)
ICGH 141 SPQR—Glimpses of Rome	2 (2-0-4)
ICGH 145 Essentials to Photography, Skills and Practices	2 (2-0-4)
ICGH 146 Acting for Self-Discovery and Empathizing with Others	2 (2-0-4)
ICGH 147 Myth and the Masks of the Divine	2 (2-0-4)
ICGH 148 Quest for Global Justice: A Philosophical Inquiry	2 (2-0-4)
ICGL 101 Elementary German I	4 (4-0-8)
ICGL 102 Elementary German II	4 (4-0-8)
ICGL 103 Elementary German III	4 (4-0-8)
ICGL 111 Elementary Japanese I	4 (4-0-8)
ICGL 112 Elementary Japanese II	4 (4-0-8)
ICGL 113 Elementary Japanese III	4 (4-0-8)
ICGL 121 Elementary French I	4 (4-0-8)
ICGL 122 Elementary French II	4 (4-0-8)
ICGL 123 Elementary French III	4 (4-0-8)
ICGL 131 Elementary Chinese I	4 (4-0-8)
ICGL 132 Elementary Chinese II	4 (4-0-8)

ICGL 133 Elementary Chinese III	4 (4-0-8)
ICGL 141 Elementary Spanish I	4 (4-0-8)
ICGL 142 Elementary Spanish II	4 (4-0-8)
ICGL 143 Elementary Spanish III	4 (4-0-8)
ICGL 160 Introduction to Thai Language and Culture	4 (4-0-8)
ICGL 161 Elementary Thai I	4 (4-0-8)
ICGL 162 Elementary Thai II	4 (4-0-8)
ICGL 163 Elementary Thai III	4 (4-0-8)
ICGL 164 Thai Writing for Specific Purposes in Workplace *for native Thai students	2 (2-0-4)
ICGL 171 Diversities in Multilingual Societies	2 (2-0-4)
ICGL 172 Chinese Influence in Thai Society	2 (2-0-4)
ICGL 173 Introduction to Japanese Societies	2 (2-0-4)
ICGL 174 From Siesta to Fiesta: Introduction to Spanish and Latin American Culture	2 (2-0-4)
ICGL 201 Pre-Intermediate German I	4 (4-0-8)
ICGL 202 Pre-Intermediate German II	4 (4-0-8)
ICGL 203 Pre-Intermediate German III	4 (4-0-8)
ICGL 211 Pre-Intermediate Japanese I	4 (4-0-8)
ICGL 212 Pre-Intermediate Japanese II	4 (4-0-8)
ICGL 213 Pre-Intermediate Japanese III	4 (4-0-8)
ICGL 221 Pre-intermediate French I	4 (4-0-8)
ICGL 222 Pre-intermediate French II	4 (4-0-8)
ICGL 223 Pre-intermediate French III	4 (4-0-8)
ICGL 231 Pre-Intermediate Chinese I	4 (4-0-8)
ICGL 232 Pre-Intermediate Chinese II	4 (4-0-8)
ICGL 233 Pre-Intermediate Chinese III	4 (4-0-8)
ICGL 241 Pre-Intermediate Spanish I	4 (4-0-8)
ICGL 242 Pre-Intermediate Spanish II	4 (4-0-8)
ICGL 243 Pre-Intermediate Spanish III	4 (4-0-8)
ICGN 125 Games and Learning	2 (2-0-4)
ICGS 112 Geography of Human Activities	4 (4-0-8)
ICGS 128 Global Gastronomy and Cuisines	4 (4-0-8)
ICGS 131 Introduction to International Studies	4 (4-0-8)
ICGS 132 Career Preparation in a Globalized World	4 (4-0-8)
ICGS 133 Foundation of Mediterranean Cultures	4 (4-0-8)

ICGS 137 Witchcraft and Gender Representation	4 (4-0-8)
ICGS 143 Introduction to Air Transport and Tourism	4 (4-0-8)
ICGS 156 Fashion and Society	2 (2-0-4)
ICGS 157 Asian Religious Traditions	2 (2-0-4)
ICGS 159 The Self and Modern Media	2 (2-0-4)
ICGS 161 Skills in Dealing with People Across Cultures	2 (2-0-4)
ICGS 162 Arts, Culture and Tourism Development	2 (2-0-4)
ICGS 165 Tea Studies	2 (2-0-4)
ICGS 167 Coffee Studies	2 (2-0-4)
ICGS 168 Faith a Lifestyle	2 (2-0-4)
ICGS 180 Cafe Story and Slow food	2 (2-0-4)
ICGS 181 Cuisine and Culture	2 (2-0-4)
ICGS 182 Humor Horizons	2 (2-0-4)

- **Civic Literacy** **2 Credits**

ICGH 126 Behavioral Ethics: Why Good People Do Bad Things	2 (2-0-4)
ICGH 129 Searching for Meaning	2 (2-0-4)
ICGH 133 Socrates, His Predecessors and Successors	2 (2-0-4)
ICGH 134 Digital Media Literacy: Skills for 21st Century Learning	2 (2-0-4)
ICGH 138 The Philosophies of Asia	2 (2-0-4)
ICGH 140 Ethics and Evolution	2 (2-0-4)
ICGH 149 Law, Technology, and Society	2 (2-0-4)
ICGH 150 Global Perspectives on Free Expression in the Digital Age	2 (2-0-4)
ICGN 131 Digital Search Literacy	2 (2-0-4)
ICGN 132 Digital Security and Privacy	2 (2-0-4)
ICGN 144 Environmental Ethics	2 (2-0-4)
ICGN 145 Food Integrity and Food Fraud: When a Food Product Is Not What It Seems	2 (2-0-4)
ICGS 134 Is Democracy Good?	4 (4-0-8)
ICGS 136 Social and Health Issues in Thailand	4 (3-2-7)
ICGS 140 Fake News, Censorship and the Politics of Truth	4 (4-0-8)
ICGS 147 Women in Leadership	4 (4-0-8)
ICGS 158 Contemporary Issues in Thailand	2 (2-0-4)
ICGS 160 Self and Society	2 (2-0-4)
ICGS 163 Popular Media and Conflicts	2 (2-0-4)

ICGS 166 Power and Politics	2 (2-0-4)
ICGS 170 Civic Action in Thailand	2 (2-0-4)
ICGS 183 Media and Community	2 (2-0-4)

- **Finance & Management Literacy** **2 Credits**

ICGB 102 Navigating the Market Landscape	2 (2-0-4)
ICGB 103 Decoding Economic News	2 (2-0-4)
ICGB 104 Entrepreneurship in a Disruptive Environment	2 (2-0-4)
ICGB 105 Personal Finance Literacy	2 (2-0-4)
ICGB 106 The Business of Fashion	2 (2-0-4)
ICGB 107 Tourism Management Perspectives	2 (2-0-4)
ICGB 109 Business Event Essentials	2 (2-0-4)
ICGB 110 Management Styles of Effective Leaders	2 (2-0-4)
ICGB 111 Leadership in a Global Society	2 (2-0-4)
ICGB 112 The Art of Pricing	2 (2-0-4)
ICGB 113 Crisis Management in Service Businesses	2 (2-0-4)
ICGB 114 Cultural Strategies for Success: Unveiling Eastern Business Dynamics	2 (2-0-4)
ICGB 115 Money: Deciphering Currencies of Value	2 (2-0-4)
ICGB 116 Managing Self and Working with Others	2 (2-0-4)
ICGH 101 Biotechnology: from Science to Business	4 (4-0-8)
ICGS 102 Business Sustainability and the Global Climate Change	4 (4-0-8)
ICGS 135 Entrepreneurial Accounting	4 (4-0-8)
ICGS 153 Social Media Management for Service Sector	2 (2-0-4)
ICGS 174 The Art of Leadership in Practice: Inspiration	2 (2-0-4)
ICGS 184 Healthy Habits, Happy Shoppers: Exploring Health Literacy in Consumer Decisions	2 (2-0-4)
ICLL 101 Professional Development	2 (2-0-4)

General Education Elective Courses 4-8 Credits

Students need to take remaining courses in any GE category to fulfill their 30 credits requirement of GE: 4 credits for students whose English Communication track are placed into ‘FE track’ or ‘GC Track’ and 8 credits for students whose English Communication track are placed into ‘GC2 Track’. Partial credits of GE course that exceed the GE requirements cannot be counted towards Free Electives.

Specific Courses — no less than 109 Credits

Core Courses — 30 credits

ICBI 105 Molecules to Living Cells	4 (2-4-6)
ICCH 101 General Chemistry I	4 (4-0-8)
ICCH 102 General Chemistry II	4 (4-0-8)
ICCH 103 Integrated Laboratory in Chemistry	2 (0-4-2)
ICCH 221 Organic Chemistry I	4 (4-0-8)
ICMA 106 Calculus I	4 (4-0-8)
ICMA 151 Statistics for Science I	4 (4-0-8)
ICPY 101 Physics I	4 (4-0-8)

Major Required Courses — 63 Credits

ICFS 113 Essence of Food Science and Technology	4 (3-2-7)
ICFS 215 Human Nutrition	4 (4-0-8)
ICFS 216 General Biochemistry for Food Science and Technology	2 (2-0-4)
ICFS 217 Physical Chemistry for Food Science and Technology	2 (2-0-4)
ICFS 231 General Microbiology	4 (3-2-7)
ICFS 314 Food Analysis	4 (3-2-7)
ICFS 317 Food Chemistry	4 (3-2-7)
ICFS 324 Food Ingredients Functionality and Quality	4 (3-2-7)
ICFS 333 Food Microbiology	4 (4-0-8)
ICFS 334 Food Microbiology Laboratory	2 (0-4-2)
ICFS 341 Food Processing	4 (3-2-7)
ICFS 342 Food Storage and Shelf-life Extension	4 (3-2-7)
ICFS 344 Smart and Green Agro-Industry	2 (2-0-4)
ICFS 351 Food Engineering Principles	2 (2-0-4)
ICFS 352 Unit Operations in Food Engineering	3 (3-0-6)
ICFS 362 Food Safety and Sanitation	4 (4-0-8)
ICFS 367 Quality Assurance in Food Processing	4 (4-0-8)
ICFS 368 Regulatory Compliance in Food Industry	2 (2-0-4)
ICFS 392 Scientific research in food innovation	2 (2-0-4)
ICFS 491 Seminar in Food Science and Technology	2 (2-0-4)

Experiential Learning Courses	8 Credits
• **Track A**	
ICFS 451 Internship in Food Science and Technology	4 (0-12-4)
ICFS 498 Senior Project in Food Science and Technology I	1 (0-2-1)
ICFS 499 Senior Project in Food Science and Technology II	3 (0-6-3)
• **Track B**	
ICFS 451 Internship in Food Science and Technology	4 (0-12-4)
ICFS 466 Entrepreneurial and Innovative Project in Food Science and Technology	4 (0-8-4)
• **Track C**	
ICFS 465 Experiential Learning Internship	8 (0-40-8)

Major Elective Courses	at least 8 Credits
ICBI 407 Occupational Health and Safety	4 (4-0-8)
ICBI 420 Entrepreneurship and Innovation in Science	4 (4-0-8)
ICFS 114 Marketing of Food Product and Services	2 (2-0-4)
ICFS 115 Operations Management in Food Business	2 (2-0-4)
ICFS 116 Food for Specialised Diets	4 (3-2-7)
ICFS 117 Food Product and Process Design	4 (4-0-8)
ICFS 118 Food Safety and Sanitation Management	4 (4-0-8)
ICFS 119 Quality System in Food Processing	4 (4-0-8)
ICFS 120 Science of Thai Culinary Arts	4 (3-2-7)
ICFS 121 Food Product Innovation	4 (4-0-8)
ICFS 122 Trends in Food Science and Technology	2 (2-0-4)
ICFS 171 Discovering Culinary Techniques	4 (2-4-6)
ICFS 172 World Cuisine	4 (2-4-6)
ICFS 366 Consultancy and Auditing in Food Quality and Safety Management	4 (4-0-8)
ICFS 374 Experimental Design in Food Product Development	2 (1-2-3)
ICFS 412 Product Development for Food and Food Service Industry	4 (3-2-7)
ICFS 418 Fruits and Vegetables Technology	4 (3-2-7)
ICFS 422 Dairy Product Technology	4 (3-2-7)
ICFS 423 Beverage Technology	4 (3-2-7)
ICFS 424 Fat and Oil Technology	4 (3-2-7)

ICFS 426 Bakery Product Technology	4 (3-2-7)
ICFS 427 Confectionery and Chocolate Product Technology	4 (3-2-7)
ICFS 432 Sensory Evaluation of Food Products	4 (3-2-7)
ICFS 437 Application of Modern Biotechnology to Food Products	4 (3-2-7)
ICFS 438 Cereal and Starch Technology	4 (3-2-7)
ICFS 452 Food Packaging	4 (3-2-7)
ICFS 463 Field Trip	2 (0-6-2)
ICFS 471 Trends and Novel Techniques of World Foods and Cuisines	4 (3-2-7)
ICFS 473 Special topic in Food Science and Technology	4 (4-0-8)

I-Design Electives 20 Credits

The purpose of the I-Design electives is to promote multidisciplinary learning. Students are encouraged to explore courses offered by diverse disciplines across MUIC, Mahidol University, and partner institutions. The I-Design electives can be satisfied upon the completion of the following course categories:

1. **Minor courses** offered by any program in **MUIC**
2. **Certificate courses** offered by any program in **MUIC**
3. **Any major courses** offered by any program in **MUIC**
4. **Any major courses** offered in **Mahidol University** (including undergraduate and graduate level courses). Courses must be approved by the student's advisor.
5. **Any major courses** offered at **partner institutions** (who have MOU with Mahidol University and/or MUIC). Courses must be approved by the student's advisor.

Free Electives 8 Credits

Students can take any courses offered by MUIC / Mahidol University or any major courses offered by the partner institutions (with MOU) as free elective courses with the approval from the advisor.

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Physics

Degree Offered:

Bachelor of Science (Physics)

B.Sc. (Physics)

Program Goal :

The Physics program is designed to create a learning environment that combines theoretical understanding, critical thinking, effective communication, ethical conduct, and hands-on experience equipped with quantitative skills. Graduates will be ready to positively contribute to scientific advancements and have characteristic desired for MU graduates.

Program Objectives :

To produce graduates who are able to-:

1. Demonstrate a strong foundational knowledge in main branches of physics: classical mechanics, quantum mechanics, electromagnetism, and thermodynamics/statistical mechanics.
2. Demonstrate critical thinking skills to analyze and identify applicable methodology for solving complex problems in physics across diverse disciplines.
3. Use appropriate methodology (mathematical techniques, programming, ICT, and/or laboratory techniques) to solve complex problems
4. Uphold a strong sense of ethical conduct and professionalism.
5) Communicate and collaborate scientific concepts with clarity and precision to both peers and non-experts.
6) Engage in lifelong learning practices and continuously develop one’s academic potential to be an internationally competent and responsible physicist

Curriculum Structure

Courses	Credit
Foundation Courses	Non-credit
General Education	No less than 30
Core Courses	42
Major Required Courses	46
Major Elective Courses	8
I-Design Elective Courses	No less than 20
Free Elective Courses	No less than 8
TOTAL	**No less than 154**

COURSE LIST

Foundation Courses — Non-credit

ICMA 100 Foundation Mathematics	0 (4-0-0)
ICMA 101 Precalculus	0 (4-0-0)
ICME 101 Foundation English: Communication Skills	0 (4-0-0)

Note I:

- For B.B.A. students, students whose Mathematics placement is below ICMB 151 Business Mathematics are required to take ICMA 100 Foundation Mathematics and pass the course with the grade of "S" before moving to ICMB 151 Business Mathematics.
- For B.Sc. and B.Eng. students, students whose Mathematics placement is below ICMA 106 Calculus I and/or ICMA 151 Statistics for Science I are required to take ICMA 101 Precalculus and pass the course with the grade of "S" before moving to ICMA 106 Calculus I and/or ICMA 151 Statistics for Science I.
- For B.A.Sc. students, students whose Mathematics placement is below ICCT 101 Mathematics for Creative Technology I are required to take ICMA 101 Precalculus and pass the course with the grade of "S" before moving to ICCT 101 Mathematics for Creative Technology I.

Note II:

- Based on their achievement on the essay portion of the MUIC entrance exam, students whose English placement is below ICGC 104 English Studies I: The Writer's Toolkit will be placed into the "FE Track". These students will be required to take ICME 101 Foundation English: Communication

Skills and pass the course with the grade of "S" before moving to ICGC 104 English Studies I: The Writer's Toolkit.

General Education 30 Credits

General Education Group	GC2 Track*	FE and GC Track*
1. English Communication	10	14
2. GE Literacies	12	12
- MU Literacy	2	2
- Health Literacy	2	2
- Science and Environmental Literacy	2	2
- Intercultural and Global Awareness Literacy	2	2
- Civic Literacy	2	2
- Finance and Management Literacy	2	2
3. GE Electives	8	4
TOTAL	**30**	**30**

** Students will be placed into specific tracks based on their achievement in the essay portion of the MUIC entrance exam.*

English Communication 10 – 14 Credits

ICGC 104 English Studies I: The Writer's Toolkit	4 (4-0-8)
ICGC 105 English Studies II: The Writer's Voice	4 (4-0-8)
ICGC 106 English Studies III: Public Speaking	4 (4-0-8)
ICGC 221 English Studies IV: The World of English - Global Realities	2 (2-0-4)
ICGC 222 English Studies IV: The World of English - Literary Analysis	2 (2-0-4)
ICGC 223 English Studies IV: The World of English - Creative Writing	2 (2-0-4)
ICGC 224 English Studies IV: The World of English - Advanced Oral Communication	2 (2-0-4)
ICGC 226 English Studies IV: The World of English - Literature Into Film	2 (2-0-4)
ICGC 228 English Studies IV: The World of English - Language and Culture	2 (2-0-4)
ICGC 230 English Studies IV: The World of English - First and Second Language Acquisition	2 (2-0-4)
ICGC 231 English Studies IV: The World of English – Poetry	2 (2-0-4)
ICGC 232 English Studies IV: The World of English - The Short Story and the Novel	2 (2-0-4)
ICGC 233 English Studies IV: The World of English – Drama	2 (2-0-4)
ICGC 234 English Studies IV: The World of English - Literary Non-fiction	2 (2-0-4)

ICGC 235 English Studies IV: The World of English - Writing for Research	2 (2-0-4)

Note I: Based on their achievement on the essay portion of the MUIC entrance exam, students will be placed into 3 following tracks: **'FE Track'**, **'GC Track'** and **'GC2 Track'**.

- **'FE Track'** – Students who are placed into 'FE Track' will be required to take ICME 101 (a non-credit course) and complete 14 credits in English Communication: ICGC 104, ICGC 105, ICGC 106 in order, and finally, any 200+ level English courses.
- **'GC Track'** – Students who are placed into 'GC Track' will be required to complete 14 credits in English Communication: ICGC 104, ICGC 105, ICGC 106 in order, and finally, any 200+ level English courses.
- **'GC2 Track'** – Students who are placed into 'GC2 Track' will be required to complete 10 credits in English Communication: ICGC 105, ICGC 106 in order, and finally, any 200+ level English courses.

GE Literacies — 12 Credits

Note I: Students must complete courses in the following six categories: MU Literacy, Health Literacy, Science & Environment Literacy, Intercultural & Global Awareness Literacy, and Finance & Management Literacy. Each category requires a minimum of 2 credits.

Note II: If a student selects a 4-credit course to fulfill a 2-credit literacy requirement, the excess 2 credits cannot be allocated or applied toward GE Elective or Free Elective credits. Instead, these excess credits will be entirely allocated to the literacy for which they were originally intended.

- **MU Literacy** — **2 Credits**

ICGB 101 Project Management for Impacts	2 (2-0-4)
ICGB 108 Event for Good	2 (2-0-4)
ICGN 139 Scientific Inquiry and the Community	2 (2-0-4)
ICGS 169 Learning by Doing	2 (2-0-4)
ICGS 171 Digital Campaign for Gender Issues	2 (2-0-4)
ICGS 172 Service Learning - Making Change	4 (4-0-8)
ICGS 173 Service Learning - Campaigning for a Cause	4 (4-0-8)
ICGS 175 Social Innovation and Sustainability	2 (2-0-4)

ICGS 176 Sustainable Cooking	2 (2-0-4)
ICGS 177 Social Innovation: Empowering Sustainable Communities	2 (2-0-4)
ICGT 107 Innovation: Inside Out	2 (2-0-4)

- **Health Literacy** **2 Credits**

ICGH 136 Sound & Soul: A Journey of Music, Emotion, and Well-being	2 (2-0-4)
ICGH 143 Flowers and Fragrances for Health	2 (2-0-4)
ICGN 135 Personal Health and Well-being	2 (2-0-4)
ICGP 101 American Flag Football	1 (0-2-1)
ICGP 102 Badminton	1 (0-2-1)
ICGP 103 Basketball	1 (0-2-1)
ICGP 104 Body Fitness	1 (0-2-1)
ICGP 105 Cycling	1 (0-2-1)
ICGP 106 Discover Dance	1 (0-2-1)
ICGP 107 Golf	1 (0-2-1)
ICGP 108 Mind and Body	1 (0-2-1)
ICGP 109 Selected Topics in Sports	1 (0-2-1)
ICGP 110 Self Defense (Striking)	1 (0-2-1)
ICGP 111 Self Defense (Grappling)	1 (0-2-1)
ICGP 112 Soccer	1 (0-2-1)
ICGP 113 Social Dance	1 (0-2-1)
ICGP 114 Swimming	1 (0-2-1)
ICGP 115 Tennis	1 (0-2-1)
ICGP 116 Volleyball	1 (0-2-1)
ICGP 118 Health and Wellness	2 (2-0-4)
ICGP 119 Mindful Food and Well-being	2 (2-0-4)
ICGP 120 Mind and Body: Navigating the Interplay of Brain, Behavior, and Well-being	2 (2-0-4)
ICGS 121 Abnormal Colleagues: how do I make this work?	4 (4-0-8)
ICGS 155 Pathway to Purpose: Life Design and Self-Exploration	4 (4-0-8)
ICGS 164 Positive Psychology	2 (2-0-4)
ICGS 178 Unmasking Human Behaviour: Exploring Psychological Truths about Behaviour	2 (2-0-4)
ICGS 179 Health and Society	2 (2-0-4)
ICLL 100 Self Development	2 (2-0-4)

- **Science & Environment Literacy** **2 Credits**

ICGH 131 Unraveling the Anthropocene: A Philosophical Critique of Earth's Shifts and Humanity's Roles 2 (2-0-4)
ICGH 142 Fantasy Literature’s Environmental Message 2 (2-0-4)
ICGH 144 A Candle in the Dark: How to Tell Fact from Fiction 2 (2-0-4)
ICGN 105 Ecology, Ecosystems and Socio-Economics in Southeast Asia 4 (3-2-7)
ICGN 107 The Chemistry of Everyday Life 4 (4-0-8)
ICGN 108 Essentials of Culinary Science for Food Business 4 (3-2-7)
ICGN 111 Physics for CEO 4 (4-0-8)
ICGN 113 Plants, People and Poisons 4 (4-0-8)
ICGN 114 The Scientific Approach and Society 4 (4-0-8)
ICGN 115 Human Evolution, Diversity and Health 4 (4-0-8)
ICGN 116 Understanding and Visualizing Data 4 (3-2-7)
ICGN 119 Computer Essentials 4 (4-0-8)
ICGN 123 The Earth’s Dynamic Structure 4 (3-2-7)
ICGN 124 Climate Change and Human Society 4 (3-2-7)
ICGN 126 Plant Society 2 (2-0-4)
ICGN 127 Practical Mathematics 2 (2-0-4)
ICGN 128 Climate Emergency, Biodiversity Crisis, and Humanity at Risk 2 (1-2-3)
ICGN 129 Programming for Problem Solving 4 (4-0-8)
ICGN 130 Cryptography: The Science of Making and Breaking Codes 2 (2-0-4)
ICGN 134 Introduction to Artificial Intelligence 2 (2-0-4)
ICGN 136 Creator Workshop 2 (2-0-4)
ICGN 137 Star Wanderer 2 (2-0-4)
ICGN 138 Cosmetics Chemistry 2 (2-0-4)
ICGN 140 Food Energy for Health 2 (2-0-4)
ICGN 141 Life in the Sea 2 (1-2-3)
ICGN 142 Energy and the Environment 2 (2-0-4)
ICGN 143 Gaia: Life on Earth 2 (1-2-3)
ICGT 101 Technology-Enhanced Learning: Harnessing AI & Digital Tools for Academic Success 2 (2-0-4)
ICGT 102 Digital Document Management 2 (2-0-4)
ICGT 103 Computational Thinking 2 (2-0-4)
ICGT 104 Tell a Great Story with Data 2 (2-0-4)
ICGT 105 No-Code Application Development 2 (2-0-4)

ICGT 106 Data and Spreadsheets	2 (2-0-4)
ICLL 102 Skills for a Digital World	2 (2-0-4)

- **Intercultural & Global Awareness Literacy** **2 Credits**

ICGH 107 Contemporary Art and Visual Culture	4 (4-0-8)
ICGH 109 Creative Thinking Through Art and Design	4 (2-4-6)
ICGH 110 Drawing as Visual Analysis	4 (2-4-6)
ICGH 115 Cinematic Language and Applications	4 (4-0-8)
ICGH 116 World Cinemas	4 (4-0-8)
ICGH 117 Drawing as Creative Expression	4 (2-4-6)
ICGH 118 Photography Visualizing in the Digital Age	4 (2-4-6)
ICGH 120 Thai and ASEAN Cinema	4 (4-0-8)
ICGH 124 Life Drawing and Anatomy	4 (2-4-6)
ICGH 128 Internet Celebrity, Culture and the Media	4 (4-0-8)
ICGH 130 The Logic Lab: Crafting Coherent Arguments	2 (2-0-4)
ICGH 132 The Rise and Fall of Ancient Athens	2 (2-0-4)
ICGH 135 The Horror Film	2 (2-0-4)
ICGH 137 Apocalypse Now, or Never, or Maybe?	2 (2-0–4)
ICGH 139 Spirituality, Sustainability, Ecosystems	2 (2-0-4)
ICGH 141 SPQR—Glimpses of Rome	2 (2-0-4)
ICGH 145 Essentials to Photography, Skills and Practices	2 (2-0-4)
ICGH 146 Acting for Self-Discovery and Empathizing with Others	2 (2-0-4)
ICGH 147 Myth and the Masks of the Divine	2 (2-0-4)
ICGH 148 Quest for Global Justice: A Philosophical Inquiry	2 (2-0-4)
ICGL 101 Elementary German I	4 (4-0-8)
ICGL 102 Elementary German II	4 (4-0-8)
ICGL 103 Elementary German III	4 (4-0-8)
ICGL 111 Elementary Japanese I	4 (4-0-8)
ICGL 112 Elementary Japanese II	4 (4-0-8)
ICGL 113 Elementary Japanese III	4 (4-0-8)
ICGL 121 Elementary French I	4 (4-0-8)
ICGL 122 Elementary French II	4 (4-0-8)
ICGL 123 Elementary French III	4 (4-0-8)
ICGL 131 Elementary Chinese I	4 (4-0-8)

ICGL 132 Elementary Chinese II	4 (4-0-8)
ICGL 133 Elementary Chinese III	4 (4-0-8)
ICGL 141 Elementary Spanish I	4 (4-0-8)
ICGL 142 Elementary Spanish II	4 (4-0-8)
ICGL 143 Elementary Spanish III	4 (4-0-8)
ICGL 160 Introduction to Thai Language and Culture	4 (4-0-8)
ICGL 161 Elementary Thai I	4 (4-0-8)
ICGL 162 Elementary Thai II	4 (4-0-8)
ICGL 163 Elementary Thai III	4 (4-0-8)
ICGL 164 Thai Writing for Specific Purposes in Workplace *for native Thai students	2 (2-0-4)
ICGL 171 Diversities in Multilingual Societies	2 (2-0-4)
ICGL 172 Chinese Influence in Thai Society	2 (2-0-4)
ICGL 173 Introduction to Japanese Societies	2 (2-0-4)
ICGL 174 From Siesta to Fiesta: Introduction to Spanish and Latin American Culture	2 (2-0-4)
ICGL 201 Pre-Intermediate German I	4 (4-0-8)
ICGL 202 Pre-Intermediate German II	4 (4-0-8)
ICGL 203 Pre-Intermediate German III	4 (4-0-8)
ICGL 211 Pre-Intermediate Japanese I	4 (4-0-8)
ICGL 212 Pre-Intermediate Japanese II	4 (4-0-8)
ICGL 213 Pre-Intermediate Japanese III	4 (4-0-8)
ICGL 221 Pre-intermediate French I	4 (4-0-8)
ICGL 222 Pre-intermediate French II	4 (4-0-8)
ICGL 223 Pre-intermediate French III	4 (4-0-8)
ICGL 231 Pre-Intermediate Chinese I	4 (4-0-8)
ICGL 232 Pre-Intermediate Chinese II	4 (4-0-8)
ICGL 233 Pre-Intermediate Chinese III	4 (4-0-8)
ICGL 241 Pre-Intermediate Spanish I	4 (4-0-8)
ICGL 242 Pre-Intermediate Spanish II	4 (4-0-8)
ICGL 243 Pre-Intermediate Spanish III	4 (4-0-8)
ICGN 125 Games and Learning	2 (2-0-4)
ICGS 112 Geography of Human Activities	4 (4-0-8)
ICGS 128 Global Gastronomy and Cuisines	4 (4-0-8)
ICGS 131 Introduction to International Studies	4 (4-0-8)
ICGS 132 Career Preparation in a Globalized World	4 (4-0-8)

ICGS 133 Foundation of Mediterranean Cultures	4 (4-0-8)
ICGS 137 Witchcraft and Gender Representation	4 (4-0-8)
ICGS 143 Introduction to Air Transport and Tourism	4 (4-0-8)
ICGS 156 Fashion and Society	2 (2-0-4)
ICGS 157 Asian Religious Traditions	2 (2-0-4)
ICGS 159 The Self and Modern Media	2 (2-0-4)
ICGS 161 Skills in Dealing with People Across Cultures	2 (2-0-4)
ICGS 162 Arts, Culture and Tourism Development	2 (2-0-4)
ICGS 165 Tea Studies	2 (2-0-4)
ICGS 167 Coffee Studies	2 (2-0-4)
ICGS 168 Faith a Lifestyle	2 (2-0-4)
ICGS 180 Cafe Story and Slow food	2 (2-0-4)
ICGS 181 Cuisine and Culture	2 (2-0-4)
ICGS 182 Humor Horizons	2 (2-0-4)

- **Civic Literacy** **2 Credits**

ICGH 126 Behavioral Ethics: Why Good People Do Bad Things	2 (2-0-4)
ICGH 129 Searching for Meaning	2 (2-0-4)
ICGH 133 Socrates, His Predecessors and Successors	2 (2-0-4)
ICGH 134 Digital Media Literacy: Skills for 21st Century Learning	2 (2-0-4)
ICGH 138 The Philosophies of Asia	2 (2-0-4)
ICGH 140 Ethics and Evolution	2 (2-0-4)
ICGH 149 Law, Technology, and Society	2 (2-0-4)
ICGH 150 Global Perspectives on Free Expression in the Digital Age	2 (2-0-4)
ICGN 131 Digital Search Literacy	2 (2-0-4)
ICGN 132 Digital Security and Privacy	2 (2-0-4)
ICGN 144 Environmental Ethics	2 (2-0-4)
ICGN 145 Food Integrity and Food Fraud: When a Food Product Is Not What It Seems	2 (2-0-4)
ICGS 134 Is Democracy Good?	4 (4-0-8)
ICGS 136 Social and Health Issues in Thailand	4 (3-2-7)
ICGS 140 Fake News, Censorship and the Politics of Truth	4 (4-0-8)
ICGS 147 Women in Leadership	4 (4-0-8)
ICGS 158 Contemporary Issues in Thailand	2 (2-0-4)
ICGS 160 Self and Society	2 (2-0-4)

ICGS 163 Popular Media and Conflicts	2 (2-0-4)
ICGS 166 Power and Politics	2 (2-0-4)
ICGS 170 Civic Action in Thailand	2 (2-0-4)
ICGS 183 Media and Community	2 (2-0-4)

- **Finance & Management Literacy** **2 Credits**

ICGB 102 Navigating the Market Landscape	2 (2-0-4)
ICGB 103 Decoding Economic News	2 (2-0-4)
ICGB 104 Entrepreneurship in a Disruptive Environment	2 (2-0-4)
ICGB 105 Personal Finance Literacy	2 (2-0-4)
ICGB 106 The Business of Fashion	2 (2-0-4)
ICGB 107 Tourism Management Perspectives	2 (2-0-4)
ICGB 109 Business Event Essentials	2 (2-0-4)
ICGB 110 Management Styles of Effective Leaders	2 (2-0-4)
ICGB 111 Leadership in a Global Society	2 (2-0-4)
ICGB 112 The Art of Pricing	2 (2-0-4)
ICGB 113 Crisis Management in Service Businesses	2 (2-0-4)
ICGB 114 Cultural Strategies for Success: Unveiling Eastern Business Dynamics	2 (2-0-4)
ICGB 115 Money: Deciphering Currencies of Value	2 (2-0-4)
ICGB 116 Managing Self and Working with Others	2 (2-0-4)
ICGH 101 Biotechnology: from Science to Business	4 (4-0-8)
ICGS 102 Business Sustainability and the Global Climate Change	4 (4-0-8)
ICGS 135 Entrepreneurial Accounting	4 (4-0-8)
ICGS 153 Social Media Management for Service Sector	2 (2-0-4)
ICGS 174 The Art of Leadership in Practice: Inspiration	2 (2-0-4)
ICGS 184 Healthy Habits, Happy Shoppers: Exploring Health Literacy in Consumer Decisions	2 (2-0-4)
ICLL 101 Professional Development	2 (2-0-4)

General Education Elective Courses 4-8 Credits

Students need to take remaining courses in any GE category to fulfill their 30 credits requirement of GE: 4 credits for students whose English Communication track are placed into ‘FE track’ or ‘GC Track’ and 8 credits for students whose English Communication track are placed into ‘GC2 Track’. Partial credits of GE course that exceed the GE requirements cannot be counted towards Free Electives.

Specific Courses — no less than 96 Credits

Core Courses — 42 Credits

ICBI 105 Molecules to Living Cells	4 (2-4-6)
ICBI 106 Organisms to Ecosystems	2 (2-0-4)
ICCH 101 General Chemistry I	4 (4-0-8)
ICCH 102 General Chemistry II	4 (4-0-8)
ICCH 103 Integrated Laboratory in Chemistry	2 (0-4-2)
ICCS 102 Coding for All	4 (4-0-8)
ICCS 111 Programming and Abstractions	4 (4-0-8)
ICMA 106 Calculus I	4 (4-0-8)
ICMA 218 Multivariable Calculus	4 (4-0-8)
ICPY 101 Physics I	4 (4-0-8)
ICPY 102 Physics II	4 (4-0-8)
ICPY 105 Integrated Laboratory in Physics I	2 (0-4-2)

Major Required Courses — 46 Credits

ICPY 251 Mechanics I	4 (4-0-8)
ICPY 291 Introductory Electromagnetism	4 (4-0-8)
ICPY 309 Scientific Research and Presentation	4 (4-0-8)
ICPY 334 Numerical Methods	4 (4-0-8)
ICPY 342 Integrated Laboratory in Physics II	2 (0-4-2)
ICPY 343 Integrated Laboratory in Physics III	2 (0-4-2)
ICPY 351 Mechanics II	4 (4-0-8)
ICPY 361 Quantum Mechanics I	4 (4-0-8)
ICPY 391 Electrodynamics and Optics	4 (4-0-8)
ICPY 441 Senior Project in Physics	6 (0-12-6)
ICPY 452 Statistical Mechanics	4 (4-0-8)
ICPY 461 Quantum Mechanics II	4 (4-0-8)

Major Elective Courses	at least 8 Credits
ICCS 206 Discrete Mathematics	4 (4-0-8)
ICCS 209 Data Structures	4 (4-0-8)
ICMA 213 Calculus II	4 (4-0-8)
ICMA 240 Linear Algebra I	4 (4-0-8)
ICMA 241 Linear Algebra II	4 (4-0-8)
ICMA 323 Partial Differential Equations	4 (4-0-8)
ICMA 335 Complex Variables	4 (4-0-8)
ICMA 346 Optimization	4 (4-0-8)
ICMA 410 Stochastic Processes	4 (4-0-8)
ICMA 424 Abstract Algebra	4 (4-0-8)
ICMA 425 Differential Geometry	4 (4-0-8)
ICPY 271 Mathematical Methods in Physics	4 (4-0-8)
ICPY 355 Special Topics in Physics I	4 (4-0-8)
ICPY 356 Special Topics in Physics II	4 (4-0-8)
ICPY 357 Special Topics in Laboratory Physics I	4 (3-2-7)
ICPY 371 Thermal Physics	4 (4-0-8)
ICPY 455 Special Topics in Physics III	4 (4-0-8)
ICPY 456 Special Topics in Physics IV	4 (4-0-8)
ICPY 457 Special Topics in Laboratory Physics II	4 (3-2-7)
ICPY 471 Atomic and Molecular Physics	4 (4-0-8)
ICPY 472 Solid State Physics	4 (4-0-8)
ICPY 473 Nuclear Physics	4 (4-0-8)
ICPY 474 Astrophysics	4 (4-0-8)
ICPY 475 Plasma Physics	4 (4-0-8)
ICPY 484 Cosmology	4 (4-0-8)
ICPY 486 Observational Astronomy	4 (4-0-8)
ICPY 487 Data Analysis in Astronomy	4 (4-0-8)
ICPY 488 Special Topics in Astronomy	4 (4-0-8)
ICPY 490 Computational Physics	4 (4-0-8)
ICPY 492 Electronics	4 (4-0-8)
ICPY 496 Biophysics	4 (4-0-8)

I-Design Electives 20 Credits

The purpose of the I-Design electives is to promote multidisciplinary learning. Students are encouraged to explore courses offered by diverse disciplines across MUIC, Mahidol University, and partner institutions. The I-Design electives can be satisfied upon the completion of the following course categories:

1. **Minor courses** offered by any program in **MUIC**
2. **Certificate courses** offered by any program in **MUIC**
3. **Any major courses** offered by any program in **MUIC**
4. **Any major courses** offered in **Mahidol University** (including undergraduate and graduate level courses). Courses must be approved by the student's advisor.
5. **Any major courses** offered at **partner institutions** (who have MOU with Mahidol University and/or MUIC). Courses must be approved by the student's advisor.

Free Electives 8 Credits

Students can take any courses offered by MUIC / Mahidol University or any major courses offered by the partner institutions (with MOU) as free elective courses with the approval from the advisor.

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TOURISM AND HOSPITALITY

Travel and Service Business Entrepreneurship

Degree Offered:

Bachelor of Management (Travel and Service Business Entrepreneurship)

B.M. (Travel and Service Business Entrepreneurship)

Program Goal :

The program aims to cultivate graduates with a comprehensive skill set and knowledge base in key domains relating to Travel and Service Business Entrepreneurship. We aim to empower graduates with a versatile skill set that promotes both field-specific expertise and holistic personal development.

Program Objectives :

Our curriculum is designed to enhance TSB (Travel and Service Businesses) acumen, providing students with the skills and knowledge needed for sustainable growth in the TSB industry. Additionally, we focus on developing customer-centric service excellence, digital proficiency, and data-driven decision-making skills, all of which are essential for problem solving in today's rapidly evolving world. Our goal is to nurture students into global citizens who possess cultural sensitivity and a strong commitment to ethical principles, ensuring that they are capable and ethically-minded individuals ready to thrive in the competitive landscape of the TSB industry.

For **Knowledge**, graduates are expected to demonstrate the followings :

Students will demonstrate the ability to apply principles of business acumen, technology Integration (utilizing cutting-edge technology and software and digital marketing), global citizens and sustainability, by emphasizing sustainability principles and practice in TSB operations.

For **Skills**, graduates are expected to demonstrate the following :

- **Cognitive Skills:**

Within Business Acumen, students will have the ability to apply business principles effectively to formulate and implement strategic plans in Travel and Service Businesses (TSB). Students will be able to use technology and digital platforms for marketing, operations, and guest services in tourism and hospitality sectors.

- **Communication Skills:**

Students can demonstrate excellence in applying written and verbal communication skills to meet the diverse needs and preferences of stakeholders.

- **Collaboration Skills:**

Students can effectively collaborate within teams, in the roles of team players and team leader, and be sensitive in collaborating with diverse groups and cultures.

- **Affective Skills:**

Students will demonstrate a sense of global citizenship and responsible feelings in engaging in sustainability practices. Students will develop empathy and responsiveness to customer needs, which align with affective dimensions like attitudes and values towards service.

For Characters :

Our graduates embody a unique character shaped by a blend of professional expertise and personal development, necessary for Travel and Service Business. They possess TSB acumen for sustainable growth within the industry, customer-centric service, digital proficiency, and data-driven decision-making. These skills enable them to be lifelong learners who can handle complex challenges in today's dynamic environments and sustainability. Culturally sensitive and ethically-minded, our graduates are global citizens who are good at their professional roles and embody moral principles.

Curriculum Structure

Plan A: Regular Program – four years at MUIC

Courses	Credit
Foundation Courses	Non-credit
General Education	No less than 30
Core Courses	32
Major Required Courses	48
Major Elective Courses	12
Internship	16
I-Design Elective Courses	No less than 20
Free Elective Courses	No less than 8
TOTAL	**No less than 166**

Plan B: Dual Degree Program - two years at MUIC and two years at The Hong Kong Polytechnic University (PolyU)

Course Category	Plan A Regular (Credits)	Plan B Dual Degree								
		Hotel Management Specialism			Smart Tourism Specialism			Event & Experience M. Specialism		
		At MUIC	At PolyU		At MUIC	At PolyU		At MUIC	At PolyU	
		MUIC Trim. Credits	PolyU Semester Credits	Equiv. Trim. Credits	MUIC Trim. Credits	PolyU Semester Credits	Equiv. Trim. Credits	MUIC Trim. Credits	PolyU Semester Credits	Equiv. Trim. Credits
● Foundation Courses	**Non-Credits**	**Non-Credits**	**-**	**-**	**Non-Credits**	**-**	**-**	**Non-Credits**	**-**	**-**
● General Education (GE) Courses								**No less than 30 Credits**		
English Communication	14	14	-	-	14	-	-	14	-	-
MU Literacy	2	2	-	-	2	-		2	-	-
Health Literacy	2	2	-	-	2	-	-	2	-	-
Science and Environmental	2	2	-	-	2	-	-	2	-	-
Intercultural and Global Awareness	2	2	-	-	2	-	-	2	-	-
Civic literacy	2	2	-	-	2	-	-	2	-	-
Finance and Management Literacy	2	2	-	-	2	-	-	2	-	-
GE Electives	4	4	-	-	4	-	-	4	-	-
● Specific Courses	**136**	**60**	**57**	**74**	**60**	**57**	**74**	**60**	**57**	**74**
Core Courses	32	20	9	12	20	9	12	20	9	12
Major Required Courses	48	24	18	23	24	18	23	24	18	23
Major Elective Courses	12	8	3	4	8	3	4	8	3	4
Internship Courses	16	8	6	8	8	6	8	8	6	8
● I-Design Electives	**20**	**-**	**15**	**19**	**-**	**15**	**19**	**-**	**15**	**19**
● Free-Electives	**8**	**-**	**6**	**8**	**-**	**6**	**8**	**-**	**6**	**8**
● Additional Credits Required by PolyU	**-**	**-**	**39**	**49**	**-**	**36**	**45**	**-**	**-**	**-**
Total Credits	**166**	**90**	**96**	**123**	**90**	**93**	**117**	**90**	**93**	**117**
Total Trimester Credits	**166**	**-**	**-**	**213**	**-**	**-**	**207**	**-**	**-**	**207**

Notes - *Turning from the semester credit to the trimester credit by multiplying 1.25.*

- The number of subjects and credits of Plan B students follow the subjects and credits suggested in the study plan.

COURSE LIST

Foundation Courses	Non-credit
ICMA 100 Foundation Mathematics	0 (4-0-0)
ICMA 101 Precalculus	0 (4-0-0)
ICME 101 Foundation English: Communication Skills	0 (4-0-0)

Note I:

- For B.B.A. students, students whose Mathematics placement is below ICMB 151 Business Mathematics are required to take ICMA 100 Foundation Mathematics and pass the course with the grade of "S" before moving to ICMB 151 Business Mathematics.
- For B.Sc. and B.Eng. students, students whose Mathematics placement is below ICMA 106 Calculus I and/or ICMA 151 Statistics for Science I are required to take ICMA 101 Precalculus and pass the course with the grade of "S" before moving to ICMA 106 Calculus I and/or ICMA 151 Statistics for Science I.
- For B.A.Sc. students, students whose Mathematics placement is below ICCT 101 Mathematics for Creative Technology I are required to take ICMA 101 Precalculus and pass the course with the grade of “S” before moving to ICCT 101 Mathematics for Creative Technology I.

Note II:

- Based on their achievement on the essay portion of the MUIC entrance exam, students whose English placement is below ICGC 104 English Studies I: The Writer's Toolkit will be placed into the “FE Track”. These students will be required to take ICME 101 Foundation English: Communication Skills and pass the course with the grade of "S" before moving to ICGC 104 English Studies I: The Writer's Toolkit.

General Education 30 Credits

General Education Group	GC2 Track*	FE and GC Track*
1. English Communication	10	14
2. GE Literacies	12	12
- MU Literacy	2	2
- Health Literacy	2	2
- Science and Environmental Literacy	2	2
- Intercultural and Global Awareness Literacy	2	2
- Civic Literacy	2	2
- Finance and Management Literacy	2	2
3. GE Electives	8	4
Total	**30**	**30**

** Students will be placed into specific tracks based on their achievement in the essay portion of the MUIC entrance exam.*

English Communication 10 – 14 Credits

ICGC 104 English Studies I: The Writer's Toolkit	4 (4-0-8)
ICGC 105 English Studies II: The Writer's Voice	4 (4-0-8)
ICGC 106 English Studies III: Public Speaking	4 (4-0-8)
ICGC 221 English Studies IV: The World of English - Global Realities	2 (2-0-4)
ICGC 222 English Studies IV: The World of English - Literary Analysis	2 (2-0-4)
ICGC 223 English Studies IV: The World of English - Creative Writing	2 (2-0-4)
ICGC 224 English Studies IV: The World of English - Advanced Oral Communication	2 (2-0-4)
ICGC 226 English Studies IV: The World of English - Literature Into Film	2 (2-0-4)
ICGC 228 English Studies IV: The World of English - Language and Culture	2 (2-0-4)
ICGC 230 English Studies IV: The World of English - First and Second Language Acquisition	2 (2-0-4)
ICGC 231 English Studies IV: The World of English – Poetry	2 (2-0-4)
ICGC 232 English Studies IV: The World of English - The Short Story and the Novel	2 (2-0-4)
ICGC 233 English Studies IV: The World of English – Drama	2 (2-0-4)
ICGC 234 English Studies IV: The World of English - Literary Non-fiction	2 (2-0-4)
ICGC 235 English Studies IV: The World of English - Writing for Research	2 (2-0-4)

Note I: Based on their achievement on the essay portion of the MUIC entrance exam, students will be placed into 3 following tracks: **'FE Track'**, **'GC Track'** and **'GC2 Track'**.

- **'FE Track'** – Students who are placed into 'FE Track' will be required to take ICME 101 (a non-credit course) and complete 14 credits in English Communication: ICGC 104, ICGC 105, ICGC 106 in order, and finally, any 200+ level English courses.
- **'GC Track'** – Students who are placed into 'GC Track' will be required to complete 14 credits in English Communication: ICGC 104, ICGC 105, ICGC 106 in order, and finally, any 200+ level English courses.
- **'GC2 Track'** – Students who are placed into 'GC2 Track' will be required to complete 10 credits in English Communication: ICGC 105, ICGC 106 in order, and finally, any 200+ level English courses.

GE Literacies 12 Credits

Note I: Students must complete courses in the following six categories: MU Literacy, Health Literacy, Science & Environment Literacy, Intercultural & Global Awareness Literacy, and Finance & Management Literacy. Each category requires a minimum of 2 credits.

Note II: If a student selects a 4-credit course to fulfill a 2-credit literacy requirement, the excess 2 credits cannot be allocated or applied toward GE Elective or Free Elective credits. Instead, these excess credits will be entirely allocated to the literacy for which they were originally intended.

- **MU Literacy** **2 Credits**

ICGB 101 Project Management for Impacts	2 (2-0-4)
ICGB 108 Event for Good	2 (2-0-4)
ICGN 139 Scientific Inquiry and the Community	2 (2-0-4)
ICGS 169 Learning by Doing	2 (2-0-4)
ICGS 171 Digital Campaign for Gender Issues	2 (2-0-4)
ICGS 172 Service Learning - Making Change	4 (4-0-8)
ICGS 173 Service Learning - Campaigning for a Cause	4 (4-0-8)
ICGS 175 Social Innovation and Sustainability	2 (2-0-4)
ICGS 176 Sustainable Cooking	2 (2-0-4)
ICGS 177 Social Innovation: Empowering Sustainable Communities	2 (2-0-4)
ICGT 107 Innovation: Inside Out	2 (2-0-4)

• **Health Literacy**	**2 Credits**
ICGH 136 Sound & Soul: A Journey of Music, Emotion, and Well-being	2 (2-0-4)
ICGH 143 Flowers and Fragrances for Health	2 (2-0-4)
ICGN 135 Personal Health and Well-being	2 (2-0-4)
ICGP 101 American Flag Football	1 (0-2-1)
ICGP 102 Badminton	1 (0-2-1)
ICGP 103 Basketball	1 (0-2-1)
ICGP 104 Body Fitness	1 (0-2-1)
ICGP 105 Cycling	1 (0-2-1)
ICGP 106 Discover Dance	1 (0-2-1)
ICGP 107 Golf	1 (0-2-1)
ICGP 108 Mind and Body	1 (0-2-1)
ICGP 109 Selected Topics in Sports	1 (0-2-1)
ICGP 110 Self Defense (Striking)	1 (0-2-1)
ICGP 111 Self Defense (Grappling)	1 (0-2-1)
ICGP 112 Soccer	1 (0-2-1)
ICGP 113 Social Dance	1 (0-2-1)
ICGP 114 Swimming	1 (0-2-1)
ICGP 115 Tennis	1 (0-2-1)
ICGP 116 Volleyball	1 (0-2-1)
ICGP 118 Health and Wellness	2 (2-0-4)
ICGP 119 Mindful Food and Well-being	2 (2-0-4)
ICGP 120 Mind and Body: Navigating the Interplay of Brain, Behavior, and Well-being	2 (2-0-4)
ICGS 121 Abnormal Colleagues: how do I make this work?	4 (4-0-8)
ICGS 155 Pathway to Purpose: Life Design and Self-Exploration	4 (4-0-8)
ICGS 164 Positive Psychology	2 (2-0-4)
ICGS 178 Unmasking Human Behaviour: Exploring Psychological Truths about	2 (2-0-4)
Behaviour ICGS 179 Health and Society	2 (2-0-4)
ICLL 100 Self Development	2 (2-0-4)

- **Science & Environment Literacy** **2 Credits**

ICGH 131 Unraveling the Anthropocene: A Philosophical Critique of Earth's Shifts and Humanity's Roles	2 (2-0-4)
ICGH 142 Fantasy Literature’s Environmental Message	2 (2-0-4)
ICGH 144 A Candle in the Dark: How to Tell Fact from Fiction	2 (2-0-4)
ICGN 105 Ecology, Ecosystems and Socio-Economics in Southeast Asia	4 (3-2-7)
ICGN 107 The Chemistry of Everyday Life	4 (4-0-8)
ICGN 108 Essentials of Culinary Science for Food Business	4 (3-2-7)
ICGN 111 Physics for CEO	4 (4-0-8)
ICGN 113 Plants, People and Poisons	4 (4-0-8)
ICGN 114 The Scientific Approach and Society	4 (4-0-8)
ICGN 115 Human Evolution, Diversity and Health	4 (4-0-8)
ICGN 116 Understanding and Visualizing Data	4 (3-2-7)
ICGN 119 Computer Essentials	4 (4-0-8)
ICGN 123 The Earth’s Dynamic Structure	4 (3-2-7)
ICGN 124 Climate Change and Human Society	4 (3-2-7)
ICGN 126 Plant Society	2 (2-0-4)
ICGN 127 Practical Mathematics	2 (2-0-4)
ICGN 128 Climate Emergency, Biodiversity Crisis, and Humanity at Risk	2 (1-2-3)
ICGN 129 Programming for Problem Solving	4 (4-0-8)
ICGN 130 Cryptography: The Science of Making and Breaking Codes	2 (2-0-4)
ICGN 134 Introduction to Artificial Intelligence	2 (2-0-4)
ICGN 136 Creator Workshop	2 (2-0-4)
ICGN 137 Star Wanderer	2 (2-0-4)
ICGN 138 Cosmetics Chemistry	2 (2-0-4)
ICGN 140 Food Energy for Health	2 (2-0-4)
ICGN 141 Life in the Sea	2 (1-2-3)
ICGN 142 Energy and the Environment	2 (2-0-4)
ICGN 143 Gaia: Life on Earth	2 (1-2-3)
ICGT 101 Technology-Enhanced Learning: Harnessing AI & Digital Tools for Academic Success	2 (2-0-4)
ICGT 102 Digital Document Management	2 (2-0-4)
ICGT 103 Computational Thinking	2 (2-0-4)
ICGT 104 Tell a Great Story with Data	2 (2-0-4)
ICGT 105 No-Code Application Development	2 (2-0-4)
ICGT 106 Data and Spreadsheets	2 (2-0-4)

ICLL 102 Skills for a Digital World	2 (2-0-4)

- **Intercultural & Global Awareness Literacy** **2 Credits**

ICGH 107 Contemporary Art and Visual Culture	4 (4-0-8)
ICGH 109 Creative Thinking Through Art and Design	4 (2-4-6)
ICGH 110 Drawing as Visual Analysis	4 (2-4-6)
ICGH 115 Cinematic Language and Applications	4 (4-0-8)
ICGH 116 World Cinemas	4 (4-0-8)
ICGH 117 Drawing as Creative Expression	4 (2-4-6)
ICGH 118 Photography Visualizing in the Digital Age	4 (2-4-6)
ICGH 120 Thai and ASEAN Cinema	4 (4-0-8)
ICGH 124 Life Drawing and Anatomy	4 (2-4-6)
ICGH 128 Internet Celebrity, Culture and the Media	4 (4-0-8)
ICGH 130 The Logic Lab: Crafting Coherent Arguments	2 (2-0-4)
ICGH 132 The Rise and Fall of Ancient Athens	2 (2-0-4)
ICGH 135 The Horror Film	2 (2-0-4)
ICGH 137 Apocalypse Now, or Never, or Maybe?	2 (2-0–4)
ICGH 139 Spirituality, Sustainability, Ecosystems	2 (2-0-4)
ICGH 141 SPQR—Glimpses of Rome	2 (2-0-4)
ICGH 145 Essentials to Photography, Skills and Practices	2 (2-0-4)
ICGH 146 Acting for Self-Discovery and Empathizing with Others	2 (2-0-4)
ICGH 147 Myth and the Masks of the Divine	2 (2-0-4)
ICGH 148 Quest for Global Justice: A Philosophical Inquiry	2 (2-0-4)
ICGL 101 Elementary German I	4 (4-0-8)
ICGL 102 Elementary German II	4 (4-0-8)
ICGL 103 Elementary German III	4 (4-0-8)
ICGL 111 Elementary Japanese I	4 (4-0-8)
ICGL 112 Elementary Japanese II	4 (4-0-8)
ICGL 113 Elementary Japanese III	4 (4-0-8)
ICGL 121 Elementary French I	4 (4-0-8)
ICGL 122 Elementary French II	4 (4-0-8)
ICGL 123 Elementary French III	4 (4-0-8)
ICGL 131 Elementary Chinese I	4 (4-0-8)
ICGL 132 Elementary Chinese II	4 (4-0-8)

ICGL 133 Elementary Chinese III	4 (4-0-8)
ICGL 141 Elementary Spanish I	4 (4-0-8)
ICGL 142 Elementary Spanish II	4 (4-0-8)
ICGL 143 Elementary Spanish III	4 (4-0-8)
ICGL 160 Introduction to Thai Language and Culture	4 (4-0-8)
ICGL 161 Elementary Thai I	4 (4-0-8)
ICGL 162 Elementary Thai II	4 (4-0-8)
ICGL 163 Elementary Thai III	4 (4-0-8)
ICGL 164 Thai Writing for Specific Purposes in Workplace *for native Thai students	2 (2-0-4)
ICGL 171 Diversities in Multilingual Societies	2 (2-0-4)
ICGL 172 Chinese Influence in Thai Society	2 (2-0-4)
ICGL 173 Introduction to Japanese Societies	2 (2-0-4)
ICGL 174 From Siesta to Fiesta: Introduction to Spanish and Latin American Culture	2 (2-0-4)
ICGL 201 Pre-Intermediate German I	4 (4-0-8)
ICGL 202 Pre-Intermediate German II	4 (4-0-8)
ICGL 203 Pre-Intermediate German III	4 (4-0-8)
ICGL 211 Pre-Intermediate Japanese I	4 (4-0-8)
ICGL 212 Pre-Intermediate Japanese II	4 (4-0-8)
ICGL 213 Pre-Intermediate Japanese III	4 (4-0-8)
ICGL 221 Pre-intermediate French I	4 (4-0-8)
ICGL 222 Pre-intermediate French II	4 (4-0-8)
ICGL 223 Pre-intermediate French III	4 (4-0-8)
ICGL 231 Pre-Intermediate Chinese I	4 (4-0-8)
ICGL 232 Pre-Intermediate Chinese II	4 (4-0-8)
ICGL 233 Pre-Intermediate Chinese III	4 (4-0-8)
ICGL 241 Pre-Intermediate Spanish I	4 (4-0-8)
ICGL 242 Pre-Intermediate Spanish II	4 (4-0-8)
ICGL 243 Pre-Intermediate Spanish III	4 (4-0-8)
ICGN 125 Games and Learning	2 (2-0-4)
ICGS 112 Geography of Human Activities	4 (4-0-8)
ICGS 128 Global Gastronomy and Cuisines	4 (4-0-8)
ICGS 131 Introduction to International Studies	4 (4-0-8)
ICGS 132 Career Preparation in a Globalized World	4 (4-0-8)
ICGS 133 Foundation of Mediterranean Cultures	4 (4-0-8)

ICGS 137 Witchcraft and Gender Representation	4 (4-0-8)
ICGS 143 Introduction to Air Transport and Tourism	4 (4-0-8)
ICGS 156 Fashion and Society	2 (2-0-4)
ICGS 157 Asian Religious Traditions	2 (2-0-4)
ICGS 159 The Self and Modern Media	2 (2-0-4)
ICGS 161 Skills in Dealing with People Across Cultures	2 (2-0-4)
ICGS 162 Arts, Culture and Tourism Development	2 (2-0-4)
ICGS 165 Tea Studies	2 (2-0-4)
ICGS 167 Coffee Studies	2 (2-0-4)
ICGS 168 Faith a Lifestyle	2 (2-0-4)
ICGS 180 Cafe Story and Slow food	2 (2-0-4)
ICGS 181 Cuisine and Culture	2 (2-0-4)
ICGS 182 Humor Horizons	2 (2-0-4)

- **Civic Literacy** **2 Credits**

ICGH 126 Behavioral Ethics: Why Good People Do Bad Things	2 (2-0-4)
ICGH 129 Searching for Meaning	2 (2-0-4)
ICGH 133 Socrates, His Predecessors and Successors	2 (2-0-4)
ICGH 134 Digital Media Literacy: Skills for 21st Century Learning	2 (2-0-4)
ICGH 138 The Philosophies of Asia	2 (2-0-4)
ICGH 140 Ethics and Evolution	2 (2-0-4)
ICGH 149 Law, Technology, and Society	2 (2-0-4)
ICGH 150 Global Perspectives on Free Expression in the Digital Age	2 (2-0-4)
ICGN 131 Digital Search Literacy	2 (2-0-4)
ICGN 132 Digital Security and Privacy	2 (2-0-4)
ICGN 144 Environmental Ethics	2 (2-0-4)
ICGN 145 Food Integrity and Food Fraud: When a Food Product Is Not What It Seems	2 (2-0-4)
ICGS 134 Is Democracy Good?	4 (4-0-8)
ICGS 136 Social and Health Issues in Thailand	4 (3-2-7)
ICGS 140 Fake News, Censorship and the Politics of Truth	4 (4-0-8)
ICGS 147 Women in Leadership	4 (4-0-8)
ICGS 158 Contemporary Issues in Thailand	2 (2-0-4)
ICGS 160 Self and Society	2 (2-0-4)
ICGS 163 Popular Media and Conflicts	2 (2-0-4)

ICGS 166 Power and Politics	2 (2-0-4)
ICGS 170 Civic Action in Thailand	2 (2-0-4)
ICGS 183 Media and Community	2 (2-0-4)

- **Finance & Management Literacy** **2 Credits**

ICGB 102 Navigating the Market Landscape	2 (2-0-4)
ICGB 103 Decoding Economic News	2 (2-0-4)
ICGB 104 Entrepreneurship in a Disruptive Environment	2 (2-0-4)
ICGB 105 Personal Finance Literacy	2 (2-0-4)
ICGB 106 The Business of Fashion	2 (2-0-4)
ICGB 107 Tourism Management Perspectives	2 (2-0-4)
ICGB 109 Business Event Essentials	2 (2-0-4)
ICGB 110 Management Styles of Effective Leaders	2 (2-0-4)
ICGB 111 Leadership in a Global Society	2 (2-0-4)
ICGB 112 The Art of Pricing	2 (2-0-4)
ICGB 113 Crisis Management in Service Businesses	2 (2-0-4)
ICGB 114 Cultural Strategies for Success: Unveiling Eastern Business Dynamics	2 (2-0-4)
ICGB 115 Money: Deciphering Currencies of Value	2 (2-0-4)
ICGB 116 Managing Self and Working with Others	2 (2-0-4)
ICGH 101 Biotechnology: from Science to Business	4 (4-0-8)
ICGS 102 Business Sustainability and the Global Climate Change	4 (4-0-8)
ICGS 135 Entrepreneurial Accounting	4 (4-0-8)
ICGS 153 Social Media Management for Service Sector	2 (2-0-4)
ICGS 174 The Art of Leadership in Practice: Inspiration	2 (2-0-4)
ICGS 184 Healthy Habits, Happy Shoppers: Exploring Health Literacy in Consumer Decisions	2 (2-0-4)
ICLL 101 Professional Development	2 (2-0-4)

General Education Elective Courses 4-8 Credits

Students need to take remaining courses in any GE category to fulfill their 30 credits requirement of GE: 4 credits for students whose English Communication track are placed into ‘FE track’ or ‘GC Track’ and 8 credits for students whose English Communication track are placed into ‘GC2 Track’. Partial credits of GE course that exceed the GE requirements cannot be counted towards Free Electives.

Specific Courses — no less than 108 Credits

Core Courses — 32 Credits

ICTB 219 Introduction to Travel and Service Businesses	4 (4-0-8)
ICTB 202 Principles of Management	4 (4-0-8)
ICTB 203 Consumer Behavior for Travel and Service Businesses	4 (4-0-8)
ICTB 204 Business Communication	4 (4-0-8)
ICTB 301 People and Talent Management	4 (4-0-8)
ICTB 302 Business Laws for Travel and Service Businesses	4 (4-0-8)
ICTB 303 Digital Transformation for Travel and Service Businesses	4 (4-0-8)
ICTB 304 Service Management and Experience Design	4 (4-0-8)

Major Required Courses — 48 Credits

ICTB 212 Marketing for Travel and Service Businesses	4 (4-0-8)
ICTB 213 Economics for Travel and Service Businesses	4 (4-0-8)
ICTB 214 Accounting for Travel and Service Businesses	4 (4-0-8)
ICTB 216 Sustainable Development in Travel and Service Businesses	4 (4-0-8)
ICTB 217 Digital Marketing for Travel and Service Businesses	4 (4-0-8)
ICTB 218 Business Statistics and Data Management	4 (4-0-8)
ICTB 311 Finance for Travel and Service Business	4 (4-0-8)
ICTB 312 Strategic Management for Travel and Service Businesses	4 (4-0-8)
ICTB 313 Business Research for Travel and Service Businesses	4 (4-0-8)
ICTB 314 Revenue Management in Travel and Service Businesses	4 (4-0-8)
ICTB 315 Entrepreneurship and Business Plan Development	4 (4-0-8)
ICTB 316 Data Analytics for Travel and Service Businesses	4 (4-0-8)

Major Elective Courses — no less than 12 Credits

Students will choose to study **three** of the-**4-credit courses** from the **five** following elective modules:

- **Elective courses – Hotel Management Module**

ICTB 221 Room Division Operation Management	4 (4-0-8)
ICTB 222 Facility Management for Hotel Operations	4 (4-0-8)

ICTB 223 Hospitality Facilities Design	4 (3-2-7)
ICTB 224 Special Topics in Hotel Management	4 (4-0-8)
ICTB 324 Hotel Business Development and Management	4 (4-0-8)

- **Elective courses – Food & Restaurant Management Module**

ICTB 231 Culinary Operation Management	4 (3-2-7)
ICTB 232 Baking and Pastry Business	4 (3-2-7)
ICTB 233 Gastronomy Exploration and Food's Experiences	4 (4-0-8)
ICTB 234 Restaurant Marketing and Branding Strategies	4 (4-0-8)
ICTB 235 Special Topics in Food and Restaurant Management	4 (4-0-8)
ICTB 335 Restaurant Business Planning and Operations	4 (4-0-8)

- **Elective courses - Tourism Management Module**

ICTB 241 Travel Guide and Interpretation	4 (3-2-7)
ICTB 242 Tourism Package Management and Business	4 (3-2-7)
ICTB 243 Online Travel and Service Business	4 (4-0-8)
ICTB 244 Wine Studies and Wine Tourism	4 (3-2-7)
ICTB 245 Cultural Heritage Studies for Entrepreneurship	4 (4-0-8)
ICTB 246 Special Topics in Tourism Management	4 (4-0-8)

- **Elective courses - Event Management Module**

ICTB 251 Event Planning and Operation	4 (4-0-8)
ICTB 252 Event and Experience Design	4 (3-2-7)
ICTB 253 Event Business Stakeholders Engagement	4 (4-0-8)
ICTB 254 Leisure and Sport Event	4 (3-2-7)
ICTB 255 Special Topics in Event Management	4 (3-2-7)
ICTB 355 Creative Event Production	4 (3-2-7)

- **Elective courses – Health & Wellness Management Module**

ICTB 261 The Basics of Exercise Science and Wellness	4 (4-0-8)
ICTB 262 Principles and Practice of Sport management for Business	4 (4-0-8)
ICTB 263 Healthcare and Medical Business	4 (4-0-8)
ICTB 264 Special Topics in Health & Wellness Management	4 (4-0-8)
ICTB 364 Spa and Wellness Business	4 (4-0-8)

Internship Courses	16 credits
ICTB 292 Internship I	8 (0-24-8)
ICTB 492 Internship II	8 (0-24-8)

I-Design Electives 20 Credits

The purpose of the I-Design electives is to promote multidisciplinary learning. Students are encouraged to explore courses offered by diverse disciplines across MUIC, Mahidol University, and partner institutions. The I-Design electives can be satisfied upon the completion of the following course categories:

1. **Minor courses** offered by any program in **MUIC**
2. **Certificate courses** offered by any program in **MUIC**
3. **Any major courses** offered by any program in **MUIC**
4. **Any major courses** offered in **Mahidol University** (including undergraduate and graduate level courses). Courses must be approved by the student's advisor.
5. **Any major courses** offered at **partner institutions** (who have MOU with Mahidol University and/or MUIC). Courses must be approved by the student's advisor.

Free Electives no less than 8 Credits

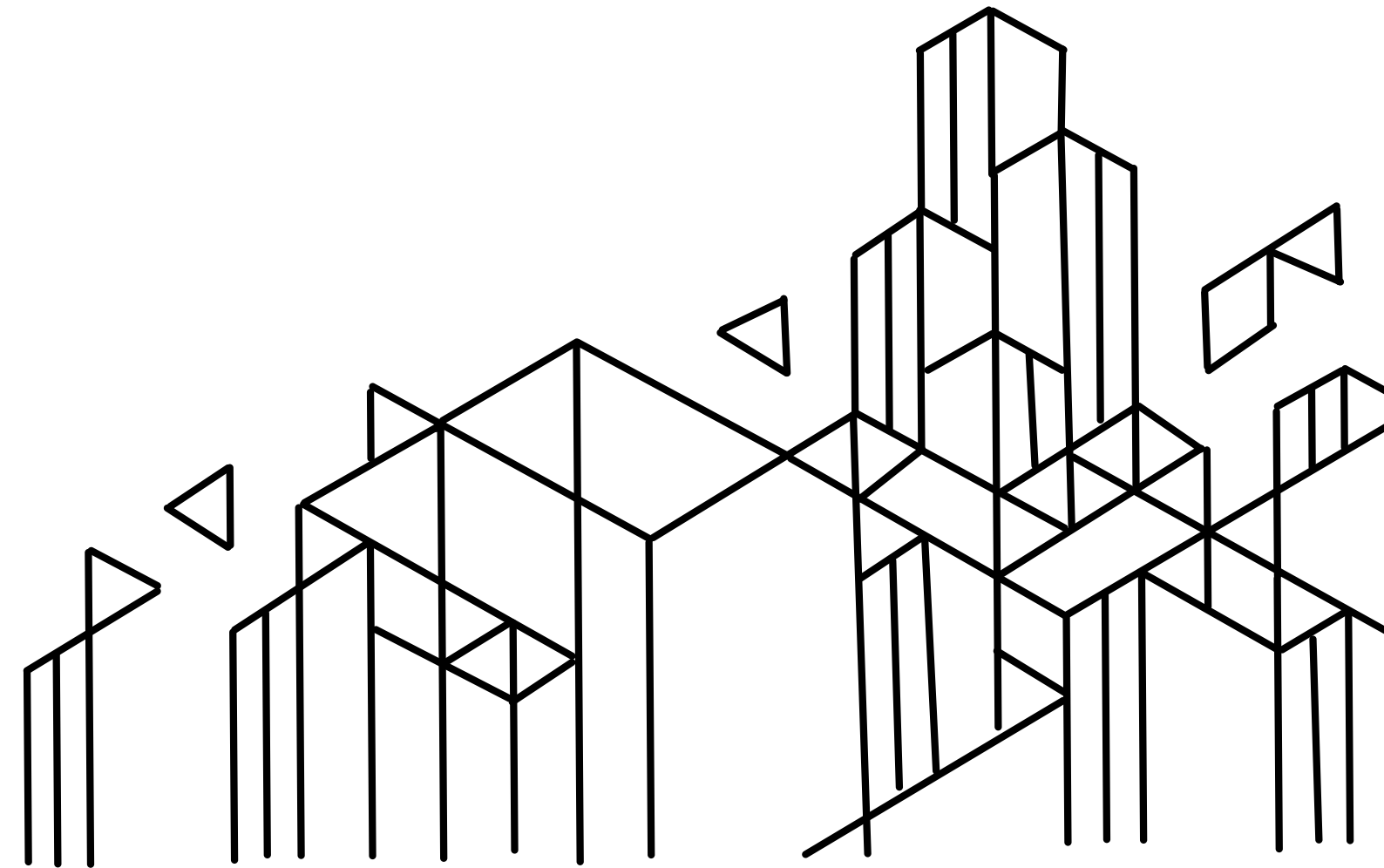
Students can take any courses offered by MUIC / Mahidol University or any major courses offered by the partner institutions (with MOU) as free elective courses with the approval from the advisor.

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COURSE

DESCRIPTIONS

2026 - 2027



EGCI

EGCI 113 Fundamental Computer Programming **3 (2-2-5)**

Prerequisites: None

Introduction to computer concepts, computer components, hardware and software, hardware and software interaction, and Electronic Data Processing (EDP) concepts; introduction to program design and implementation using a high-level language: types and expressions, iterative and conditional control statements, functions, Boolean logic, array

EGCI 201 Discrete Mathematics **4 (4-0-8)**

Prerequisites: EGCI 113 Fundamental Computer Programming

Basic set theory, mathematical reasoning, relations, functions, graphs, trees, an introduction to number theory

EGCI 202 Engineering Mathematics for Signal and Systems **4 (4-0-8)**

Prerequisites: ICMA 106 Calculus I

The basic complex analysis, probability and random variables, mathematics for linear systems; superposition, convolution, Laplace transform, Fourier analysis; discrete time Fourier transform, Z-transform, ordinary differential equations

EGCI 211 Advanced Computer Programming **3 (2-2-5)**

Prerequisites: EGCI 113 Fundamental Computer Programming

Programming techniques and concepts. Various techniques for Efficient Pointer; Basic Object Oriented Programming; Sorting; Programming, Software-Bug Prevention, Debugging, Testing, and Source-Code and version control; Scope/Lifespan of variables

EGCI 213 Programming Paradigms **4 (4-0-8)**

Prerequisites: EGCI 113 Fundamental Computer Programming

Introduction to programming paradigms and programming languages; fundamental programming concepts: data types, basic programming statements, functions, memory management; objectoriented programming, concurrent programming, event-driven programming

structures: trees, hash tables, graphs; sorting and searching algorithms; recursion, divide and conquer, dynamic programming, greedy algorithms; introduction to NP-completeness

EGCI 221 Data Structures and Algorithms **4 (4-0-8)**

Prerequisites: EGCI 113 Fundamental Computer Programming **and** EGCI 201 Discrete Mathematic

Analysis of algorithms; abstract data type; linear data structures: linked lists, stacks, queues; nonlinear data structures: trees, hash tables, graphs; sorting and searching algorithms; recursion, divide and conquer, dynamic programming, greedy algorithms; introduction to NP-completeness

EGCI 230 Electric Circuit Analysis **4 (4-0-8)**

Prerequisites: ICPY 102 Physics II

Circuit elements; Kirchhoff's laws; resistive circuits; node and mesh analysis; Thevenin and Norton theorems; inductor and capacitor, first–order and second order circuits; step responses; zero input and zero–state responses; DC transient and AC steady-state responses; elementary transfer functions; sinusoidal waveforms; phasor representations; impedance and admittance; sinusoidal steady-state analysis; power factor

EGCI 231 Digital Circuit Design **4 (4-0-8)**

Prerequisites: EGCI 113 Fundamental Computer Programming

Co-requisite: EGCI 233 Digital Circuit Design Lab

The digital Circuit Design, Basic Gates, Boolean Algebra, Combination Logic Circuit Design (e.g. Decoder, Encoder, Multiplexer, and Comparator circuits), Logic Minimization, Number Systems, Binary Codes, Flip-Flops and register, Counter Circuits, Synchronous and Asynchronous Circuit Design, A/D and D/A converters, Memory Organization

EGCI 232 Engineering Electronics **4 (3-2-7)**

Prerequisites: EGCI 230 Electric Circuit Analysis

Introduction to solid-state electronics as circuit elements, including diodes, bipolar transistor, rectifier circuits, Zener diodes regulators, power supplies, power amplification, MOSFETs, applications in operational amplifiers in various feedback configurations

EGCI 233 Digital Circuit Design Lab **1 (0-2-1)**

Prerequisites: EGCI 113 Fundamental Computer Programming

Co-requisite: EGCI 231 Digital Circuit Design

An introduction to the Digital Systems Lab, Basic Gates' Operations; Boolean Algebra; the Design of Adder and the Subtractor Circuits, Encoder and Decoder Circuits; Multiplexer and Demultiplexer Circuits, the Design of Sequential Circuits

EGCI 252 System Programming **4 (4-0-8)**

Prerequisites: EGCI 211 Advanced Computer Programming

System programming; low-level file input and output; process and thread management, process and thread concurrency, process and thread communication including signals, pipes, message queues, shared memory, mapped memory, semaphores

EGCI 305 Statistics for Research in Computer Engineering **4 (4-0-8)**

Prerequisites: ICMA 213 Calculus II

Descriptive statistics; the collection and presentation of data; elementary probability and normal distributions; the estimation of parameters; hypothesis testing; the analysis of variance; regression and correlation; design of experiments; the analysis of variance

EGCI 321 Database Systems **4 (4-0-8)**

Prerequisites: EGCI 211 Advanced Computer Programming

The entity-relationship model, the relational data model; logical and physical database design; data dependencies and normalization; data query language; the transaction, the crash recovery, the concurrency control, database security; NoSQL

EGCI 330 Microprocessor and Interfacing **4 (4-0-8)**

Prerequisites: EGCI 231 Digital Circuit Design

Introduction to microprocessor, microprocessor architecture and instruction set, addressing modes, assembly language, memory interfacing, interrupts and direct memory access (DMA), interfacing with I/O devices, microprocessor‘s interfacing programming and applications

EGCI 332 Embedded Systems **4 (4-0-8)**

Prerequisites: EGCI 330 Microprocessor and Interfacing

Embedded system designs and development processes; high-level language programming for embedded system applications; real-time operating system; DAC and ADC converters; sensors and signal conditioners; internet of things

EGCI 333 Computer Architecture **4 (4-0-8)**

Prerequisites: EGCI 231 Digital Circuit Design

Computer components; design of logic circuits; working of and designing register level components used in computer systems; data representation in computer systems; clock signal; datapath design; design of control

unit using microprogram (CISC architecture) and logic circuit (RISC architecture); work of computer of each architecture; performance enhancement; pipeline systems of computers; memory systems; principles and work of cache memory; input-output system design; fundamentals of serial and parallel communication; parallel processing architecture; fault tolerance

EGCI 340 Software Design **2 (2-0-4)**

Prerequisites: EGCI 211 Advanced Computer Programming

An introduction to software design paradigms; software design fundamentals; system and software requirements; software design tools, and computer aided for software design; business process modeling (BPM); user experience (UX) and user interface design

EGCI 341 Software Engineering **4 (4-0-8)**

Prerequisites: EGCI 340 Software Design

Software life cycle; need and specification; large-scale software development; scheduling, developing, constructing, testing and maintenance of software system; object-oriented analysis and design; software reuse; software architecture; microservices architecture; software project management; software cost estimation; case studies of software system in the market

EGCI 351 Operating Systems **4 (4-0-8)**

Prerequisites: EGCI 252 System Programming

Contemporary concepts of computer operating systems; Thread; CPU scheduling; definition and details of harmonizing cooperating process; system resources management; deadlock handling; main memory management and design; virtual memory management; auxiliary memory management; file systems; protection and security; introduction to distributed operating systems

EGCI 371 Computer Networks and Information Security **4 (4-0-8)**

Prerequisites: EGCI 221 Data Structures and Algorithms

An introduction to the data communication; OSI and TCP/IP model; the network architecture; wired and wireless networks; routing protocols, network protocols and applications; data security and integrity; network security devices; network and web security

EGCI 382 Special Topics in Computer Engineering (Course Title I) **4 (4-0-8)**

Prerequisites: None

Selected topics in current computer engineering technologies, which could be offered by the department or propose to be offered by other departments; the title of the topic indicated in the parenthesis part of the course title

EGCI 383 Special Topics in Computer Engineering (Course Title II) **4 (4-0-8)**

Prerequisites: None

Selected topics in current computer engineering technologies, which could be offered by the department or propose to be offered by other departments; the title of the topic indicated in the parenthesis part of the course title

EGCI 384 Special Topics in Computer Engineering (Course Title III) **4 (4-0-8)**

Prerequisites: None

Selected topics in current computer engineering technologies, which could be offered by the department or propose to be offered by other departments; the title of the topic indicated in the parenthesis part of the course title

EGCI 385 Special Topics in Computer Engineering (Course Title IV) **4 (4-0-8)**

Prerequisites: None

Selected topics in current computer engineering technologies, which could be offered by the department or propose to be offered by other departments; the title of the topic indicated in the parenthesis part of the course title

EGCI 386 Special Topics in Computer Engineering (Course Title V) **4 (4-0-8)**

Prerequisites: None

Selected topics in current computer engineering technologies, which could be offered by the department or propose to be offered by other departments; the title of the topic indicated in the parenthesis part of the course title

EGCI 394 Special Topics in Computer Engineering (Course Title VI) **4 (3-2-7)**

Prerequisites: None

Special topics in current computer engineering technologies, which could be offered by the department or propose to be offered by other departments; the title of the topic indicated in the parenthesis part of the course title

EGCI 395 Special Topics in Computer Engineering (Course Title VII) **4 (3-2-7)**

Prerequisites: None

Special topics in current computer engineering technologies, which could be offered by the department or propose to be offered by other departments; the title of the topic indicated in the parenthesis part of the course title

EGCI 396 Special Topics in Computer Engineering (Course Title VIII) **4 (3-2-7)**

Prerequisites: None

Special topics in current computer engineering technologies, which could be offered by the department or propose to be offered by other departments; the title of the topic indicated in the parenthesis part of the course title

EGCI 397 Special Topics in Computer Engineering (Course Title IX) **4 (3-2-7)**

Prerequisites: None

Special topics in current computer engineering technologies, which could be offered by the department or propose to be offered by other departments; the title of the topic indicated in the parenthesis part of the course title

EGCI 398 Special Topics in Computer Engineering (Course Title X) **4 (3-2-7)**

Prerequisites: None

Special topics in current computer engineering technologies, which could be offered by the department or propose to be offered by other departments; the title of the topic indicated in the parenthesis part of the course title

EGCI 406 Mechatronics **4 (3-2-7)**

Prerequisites: EGCI 332 Embedded Systems

Microcontroller; digital input/output; switches and LEDs; analog input/output; PWM signal; switching devices; relays; motors; H-bridge; serial communication; power supply; sensors; PCB design; feedback control

EGCI 407 Human-Robot Interaction (HRI) **4 (4-0-8)**

Prerequisites: EGCI 340 Software Design

The fundamentals of robotics business; a physical humanoid robot component; robot functionality; natural social interaction partners for human users; Human-Robot Interaction (HRI); the use of companion robots in different business application domains; development lifecycle of a robotics application

EGCI 419 Computer Engineering Internship **8 (0-40-8)**

Prerequisites: Must complete 60 EGCI credits before register for this course

Comprehensive, hands-on training experience over a full trimester or minimum 12 weeks in an industrial company or organization utilizing computer-related systems, computer control systems, or computer-based processing, emphasizing both technical proficiency and the development of essential communication and collaboration skills, engaging in real-world projects, contributing to the organization; working in teams; and writing an internship summary including the report of training outcomes

EGCI 425 Data Mining **4 (4-0-8)**

Prerequisites: EGCI 305 Statistics for Research in Computer Engineering

Knowledge discovery in databases and data warehouses; data preparation, data visualization, and data transformation; classification and ensembled classification, clustering; metrics and evaluation; effects of data mining, current technology and trend, applications of data mining

EGCI 427 Web Programming **4 (4-0-8)**

Prerequisites: EGCI 213 Programming Paradigms

Web application development; HTML; responsive web design; css; javascript; JSON; model-viewcontroller (MVC) development pattern; frontend development; backend development; full-stack framework; application interface (API) and web services; json web tokens (JWT); code deployment; virtualization

EGCI 428 Mobile Device Programming **4 (4-0-8)**

Prerequisites: EGCI 213 Programming Paradigms

Fundamental of the mobile device programming; concept of mobile device technology; basic mobile device programming; user-interface design; database connection; remote sensors controlling; mobile web services; developing a prototype for the mobile device application for with notification services

EGCI 429 Web Application Architecture **4 (4-0-8)**

Prerequisites: EGCI 341 Software Engineering

Fundamental concepts of web application development from a managerial perspective; markup language technology; fundamental principles of architecture, process, development and elements of web applications; web services application development; mobile web services

EGCI 451 Cloud Computing **4 (4-0-8)**

Prerequisites: EGCI 113 Fundamental Computer Programming

Fundamental concepts of cloud computing; Fundamental principles of cloud architecture, Web applications development on cloud, Web services on cloud, Service models for cloud computing, Virtualization technology for cloud computing, computing services, Cloud computing services

EGCI 452 System Engineering **4 (4-0-8)**

Prerequisites: EGCI 113 Fundamental Computer Programming

Introduction to Systems Engineering, Systems Thinking and Analysis, Requirements Engineering, System Architecture, System Design and Optimization, Risk Management, Verification and Validation, Project Management in Systems Engineering, System Integration, Emerging Trends in Systems Engineering, Ethical and Professional Considerations, Case Studies and Real-World Applications

EGCI 453 Open Source Software Engineering **4 (4-0-8)**

Prerequisites: EGCI 113 Fundamental Computer Programming

Introduction to Open Source, Version Control Systems, Open Source Development Methodologies, Collaborative Coding, Open Source Licensing, Toolchain for Open Source Development, Community Engagement, Installation and Deployment Best Practices, Security in Open Source Development, Practical Projects

EGCI 461 Artificial Intelligence **4 (4-0-8)**

Prerequisites: EGCI 221 Data Structures and Algorithms

The foundations of artificial intelligence, solving problems by searching, knowledge representation, the first-order logic, the inference in the first-order logic; the probabilistic reasoning systems; an introduction to Prolog, the natural language processing; machine learning techniques; model evaluation; deep learning

EGCI 463 Pattern Recognition **4 (4-0-8)**

Prerequisites: ICMA 213 Calculus II

Preprocessing for data recognition: features extraction, classification or linear techniques for recognition; Parametric and nonparametric techniques, Bayesian classifiers, methods, neural networks, hybrid method, learning techniques; Applications in pattern recognition

EGCI 466 Big Data Processing **4 (4-0-8)**

Prerequisites: EGCI 113 Fundamental Computer Programming

Theories and techniques for managing big data, big data storage, the distribution system for big data, relationship analysis for big data, big data visualization, trends and applications for big data

EGCI 467 Natural Language and Speech Processing **4 (4-0-8)**

Prerequisites: EGCI 202 Engineering Mathematics for Signal and System

Algorithms for the processing of linguistic information, computational properties of natural languages. morphological, syntactic, and semantic processing from a linguistic and an algorithmic perspective, modern quantitative techniques in NLP: using large corpora, statistical models for acquisition, and the representative systems

EGCI 470 Reverse Engineering **4 (4-0-8)**

Prerequisites: EGCI 371 Computer Networks and Information Security

Introduction to software reverse engineering; Process of software reverse engineering, Using of software reverse engineering tools; Software vulnerability analysis; Software architecture; Software reverse engineering protection; Software reverse engineering protection bypassing

EGCI 471 Blockchain **4 (4-0-8)**

Prerequisites: EGCI 371 Computer Networks and Information Security

Introduces the structure, components and working principles of blockchain, the development of technology based on blockchain systems, the use of tools to develop applications on blockchain systems, guidelines for analyzing the weaknesses of smart contracts on blockchain systems, and the development of smart contracts on blockchain systems safely

EGCI 474 Internetworking Technologies I **4 (3-2-7)**

Prerequisites: EGCI 113 Fundamental Computer Programming

Theoretical and practical aspects of routing and switching; including IP address design and assignment, virtual local area network (VLAN), inter VLAN routing, network redundancy, network availability and reliability, network security, wireless local area network (WLAN) and routing protocols; required laboratory work

EGCI 475 Internetworking Technologies II **4 (3-2-7)**

Prerequisites: EGCI 474 Internetworking Technologies I

Theoretical and practical aspects of advanced routing and switching technologies; including open shortest path first (OSPF) routing protocol, network design, network management, network troubleshooting, network security, access control list, network address translation, port address translation, virtual private network, internet protocol security, WAN technologies, quality of service, network virtualization and network automation; required laboratory work

EGCI 476 Cryptography and Computer Security **4 (4-0-8)**

Prerequisites: EGCI 201 Discrete Mathematics

An introduction to basic theory and techniques in cryptography; symmetric and asymmetric encryption; cryptanalysis techniques. security in computer network; security threats and vulnerabilities; authentication mechanisms; identification schemes; security in operating system and application; firewall; the intrusion detection system

EGCI 477 Penetration Testing and Prevention **4 (4-0-8)**

Prerequisites: EGCI 371 Computer Networks and Information Security

The process of penetration testing; collection and analysis of computer network vulnerabilities; tools for penetration testing; ethics of penetration testing processes; summarizing and reporting the result from the penetration testing; planning and designing of the prevention systems to protect the computer network form vulnerabilities

EGCI 478 Wireless Communication **4 (4-0-8)**

Prerequisites: EGCI 371 Computer Networks and Information Security

Wireless transmission systems; wireless channel; coding techniques; error control; satellite; cellular networks; mobile internet protocols and management; multiple-access techniques; wireless protocols; wireless local area networks (WLANs); and wireless mesh networks

EGCI 486 Image Processing **4 (4-0-8)**

Prerequisites: EGCI 113 Fundamental Computer Programming

Introduction to image processing, image fundamentals, image enhancement in the spatial domain, color image processing, image segmentation, morphological image processing, feature extraction and matching, image classification with machine learning and deep learning

EGCI 487 Computer Vision **4 (4-0-8)**

Prerequisites: EGCI 113 Fundamental Computer Programming

Introduction to computer vision, fundamentals of computer vision, edge detection, shape analysis, texture, object description, deep learning in computer vision, semantic segmentation, instance segmentation, motion and video analysis, object detection, and object tracking in video

EGCI 488 Metaverse **4 (4-0-8)**

Prerequisites: EGCI 113 Fundamental Computer Programming

Introduction to metaverse, color theory, programming for creating two-dimensional objects, designing and creating a two-dimensional game, programming for creating three dimensional objects, texture properties and elements, lighting and cameras, lighting and shading, designing and creating a metaverse, avatar and object control, and managing the user system in the metaverse

EGCI 491 Computer Engineering Seminar **1 (0-2-1)**

Prerequisites: EGCI 305 Statistics for Research in Computer Engineering

Developing oral and written communication skills; preparing students for training and cooperative education; a computer engineering or cooperative education proposal project; project approval; further research and implementation in the Computer Engineering Project course

EGCI 492 Computer Engineering Project **2 (0-4-2)**

Prerequisites: EGCI 491 Computer Engineering Seminar

The computer engineering project supervised by the advisory committee; a complete project report and an oral examination

EGCI 494 Fundamental of Digital Forensics **4 (4-0-8)**

Prerequisites: EGCI 371 Computer Networks and Information Security

An introduction to basic of digital forensics; the data collection and investigation from operating system such as Windows and Unix; the computer files system storage; digital forensic techniques and tools; collecting and analyzing the network traffic; cyber-attack analysis and investigation

EGCI 495 Regional Study Experience **1 (0-2-1)**

Prerequisites: Must complete 30 EGCI credits before register for this course

Visiting local or international companies in the fields related to computer and engineering technology in order to gain experience and adjust attitude from a perspective of a student into working experience perspective in order to prepare the students from transition from school and to make a preparation to work after graduation; grading as either 'S' or 'U'

EGCI 496 International Study Experience **2 (0-4-2)**

Prerequisites: Must complete 40 EGCI credits before register for this course

Visiting international companies or educational institutes aboard in the field related to computer and engineering technology; providing opportunity for students to broaden educational and cultural experience aboard; expanding their knowledge both theoretically and perceptive capacity; prepare for working in international companies or continuing their study; ; grading as either 'S' or 'U'

ICBE

ICBE 311 Economics of Competition **4 (4-0-8)**

Prerequisites: ICMB 253 Microeconomics

Competition and sustainability linkages at individual and market level; role of policy for competition and sustainability; market definition and market power; mergers and acquisitions; antitrust policies and regulations; firms' individual behaviour under different competition environments; pricing strategies; product differentiation; vertical relations and sustainable supply chains; data analysis in competition economics

ICBE 312 World Economy **4 (4-0-8)**

Prerequisites: ICMB 253 Microeconomics, ICMB 254 Macroeconomics

Interdependence among countries and its effects on economies; Gains and losses from trade; Pattern of free trade; Government restrictions on trade and the effects on production, rate of consumption, prices of goods and services, economic growth, and income distribution; The decline of national barriers and the rise

of non-tariff barriers and their underlying motivations; Pros and cons on joining trade blocs and of imposing trade sanctions; Labor and capital movements across countries, with the focus on Thailand; Balance of payments and international monetary system; The working of foreign exchange market and the reasons behind countries' choices of exchange rate regime; Thailand's managed floating exchange rate system; Cases of past and current financial crises; Analysis of success and failure of prominent international institutions

ICBE 313 Business Econometrics **4 (4-0-8)**

Prerequisites: ICMB 150 Introduction to Programming and Business Application, ICMB 152 Business Statistics

An introduction to the field of econometrics; simple regression analysis; multiple regression analysis; hypothesis testing, multicollinearity, heteroskedasticity; specification analysis and model selection; programming application for econometrics

ICBE 321 Game Theory for Business **4 (4-0-8)**

Prerequisites: ICMB 253 Microeconomics

Application of game theoretic models to strategic situations; static games; dynamic games; sequential games; the role complete and incomplete information; repeated interactions; behavioral games

ICBE 322 Economics of Sustainability **4 (4-0-8)**

Prerequisites: ICMB 253 Microeconomics, ICMB 254 Macroeconomics,
ICMB 351 Business Ethics and Sustainability

Concepts of sustainability; eco-environmental sustainability; externalities and market failures; value of environment for the economy; economics of natural resources; economics of international environmental problems; future generations' and ecosystems' moral standing as stakeholders; taxonomies and materiality; agency and governance; growth and environmental degradation; macroeconomic policies for sustainability; international trade and sustainability; circular economy and business models

ICBE 411 Economics of Innovation **4 (4-0-8)**

Prerequisites: ICMB 253 Microeconomics

Concept and types of innovations; innovation and sustainable development; human-centered approach for innovation; microeconomics of consumer behavior ; microeconomics of producer behavior; innovation and market dynamics; adoption of innovation; firm's innovation strategies; role of policy for innovation

ICBE 412 Economic Policy Analysis **4 (4-0-8)**

Prerequisites: ICMB 152 Business Statistics, ICBE 312 World Economy

Welfare economics theory; public goods; the distribution of income and wealth; public policy analysis; supply-side policy; monetary theory and policy; transmission of monetary policy; central bank operations; evolution of monetary institutions

ICBE 421 Data Analytics in Economics and Finance **4 (4-0-8)**

Prerequisites: ICMB 150 Introduction to Programming and Business Application,
ICMB 152 Business Statistics, 3rd year status

The theoretical principles of statistics with a focus on practical applications in economic and finance settings; data sampling and cleaning; descriptive statistics for data exploration; techniques of communicating the results; data transformations and dimensionality reduction; prediction-based machine learning tools, regression, classification, clustering; programming application for data analytics

ICBE 422 Time Series Analysis **4 (4-0-8)**

Prerequisites: ICMB 150 Introduction to Programming and Business Application,
ICMB 152 Business Statistics, ICBE 313 Business Econometrics

An introduction to time series analysis; autoregressive (AR) model; moving average (MA) model; autoregressive moving average (ARMA) model; trends; seasonality; ARCH model; GARCH model; VAR/VECM models; cointegration; forecasting; applications of time series methods to actual (financial) time series data using econometric software packages

ICBE 423 Special Topic in Business Economics **4 (4-0-8)**

Prerequisites:

A study of contemporary issues, industry trends, theories, and best practices in business economics in response to the changing business environment

ICBI

ICBI 105 Molecules to Living Cells **4 (2-4-6)**

Prerequisites:

Properties of life, classification, and scientific process; chemistry of life; cells and metabolism; genetics; molecular biology; practical exercises are included

ICBI 106 Organisms to Ecosystems **2 (2-0-4)**

Prerequisites:

The diversity of life; plant forms and functions; animal forms and functions; mechanism of evolution; ecology and behavior

ICBI 110 Quantitative Reasoning in Biological Sciences **4 (4-0-8)**

Prerequisites:

Essential mathematical and statistical concepts in biology; applications of quantitative reasoning in biological sciences; quantitative analysis, mathematical modeling of biological processes, data interpretation, and numerical-based problem-solving through real-world examples from biology, ecology, genetics, and other biological science disciplines

ICBI 207 Ethics for Bioscience **4 (4-0-8)**

Prerequisites: ICBI 105 Molecules to Living Cells

Ethical issues in research in various fields of biology; publications and plagiarism; experiments and research involving human volunteers and experimental animals; medical practices, the design of field and clinical trials

ICBI 213 Genetics **4 (4-0-8)**

Prerequisites: ICBI 105 Molecules to Living Cells

DNA as genetic material, Mendelian genetics, chromosomal basis of heredity, complex traits, evolutionary genetics, molecular genetics, formulation of genetic hypotheses

ICBI 214 General Microbiology **4 (4-0-8)**

Prerequisites: ICBI 105 Molecules to Living Cells

Structures, physiology and ecology of viruses, bacteria, protozoa and fungi especially bacteria, aspects of microbiology importance in health, sanitation, food processing and industry

ICBI 218 Cellular Systems **4 (4-0-8)**

Prerequisites: ICBI 105 Molecules to Living Cells

Structures and functions of cellular organelles, focusing on their roles within the broader context of cellular systems; analysis of key cellular activities, including metabolism, signal transduction, and the cell cycle; examination of how cells interact with each other and communicate with their environment; integration of

cellular components, organelle dynamics, intracellular transport, and the molecular mechanisms underlying cell-to-cell interactions; cellular homeostasis and adaptation to external stimuli

ICBI 219 Design Thinking in Biological Sciences **2 (2-0-4)**

Prerequisites: ICBI 105 Molecules to Living Cells

Principles and practices of design thinking as applied to biological sciences; creative problem-solving and innovation; structured approach to identifying, analyzing, and addressing complex biological challenges; stages of design thinking—empathize, define, ideate, prototype, and test; concepts to real-world biological problems

ICBI 232 Comparative Anatomy and Physiology of Animals and Plants **4 (3-2-7)**

Prerequisites: ICBI 106 Organisms to Ecosystems

Comparative anatomy and physiology of animals and plants; evolutionary adaptations and functional relationships across diverse taxa; structural and physiological similarities and differences in systems; practical exercises included

ICBI 253 Biological Statistics and Analytics **4 (4-0-8)**

Prerequisites: ICCS 102 Coding for All, ICMA 151 Statistics for Science I

Statistical software; descriptive statistics; data manipulation, data visualization; probability; distribution model; hypothesis testing; ANOVA; non-parametric statistics; correlation; simple linear regression; categorical data analysis; goodness of fit tests

ICBI 263 Practical Sustainability and Biodiversity **4 (2-4-6)**

Prerequisites: ICBI 106 Organisms to Ecosystems, ICMA 151 Statistics for Science I

Exploration of sustainability and biodiversity through hands-on fieldwork and research; review sustainability and biodiversity literature, develop research questions, and design investigations focused on real-world environmental challenges; assessing and conserving biodiversity across various ecosystems; sampling strategies; field work included

ICBI 271 General Microbiology Laboratory **2 (0-4-2)**

Prerequisites: ICBI 105 Molecules to Living Cells

Basic techniques in microbiological experiments; the microscopic examination of microbial cells and spores; simple staining; Gram staining; colony morphology; viable cells count; hemacytometer; cultivation on liquid and solid media; the bacterial identification using selective and differential media

ICBI 302 Mechanisms of Gene Expression **2 (0-4-2)**

Prerequisites: ICBI 213 Genetics

In-depth exploration of the molecular processes that govern gene expression in both prokaryotic and eukaryotic systems; bacterial transcription and its regulatory mechanisms; eukaryotic transcription and translation; mRNA maturation and processing; role of chromatin structure in regulating gene expression

ICBI 303 Basic Immunology **4 (4-0-8)**

Prerequisites: ICBI 214 General Microbiology

Current understanding of the cellular and molecular interactions in the inductions, expression, and regulation of the cellular and humeral immune responses; recent knowledge and applications concerning immunity to various microbial infections as well as antigen-antibody interactions; serodiagnosis and detection of cell-mediated immune response

ICBI 305 Human Anatomy I **4 (2-4-6)**

Prerequisites: ICBI 106 Organisms to Ecosystems

Human anatomy and function; laboratory exercises dissections of human cadavers: head, neck, back, anterior chest wall and upper limb

ICBI 306 Human Anatomy II **4 (2-4-6)**

Prerequisites: ICBI 106 Organisms to Ecosystems

Human anatomy and function; laboratory exercises dissections of human cadavers: thorax, abdomen, pelvis, perineum and lower limb

ICBI 307 Nutrition and Dietetics **4 (4-0-8)**

Prerequisites: ICCH 231 Biochemistry

Importance of food and nutrients for good health; significance of physiological, biochemical and sociological factors of nutritional requirements; practical application of food and nutrition to diet planning and implementation suited to vulnerable groups and individual therapeutic needs

ICBI 309 Pathobiology **4 (3-2-7)**

Prerequisites: ICBI 218 Cellular Systems

Pathophysiological mechanism of diseases; cell injury and cell death; inflammation and repair; bacterial, viral, fungal and parasitic infections; disturbances of minerals and pigments; disorders of immune response;

disturbance of body fluid and blood flow; fever and hypothermia; cellular differentiation and neoplasia; practical exercises included

ICBI 311 Human Physiology **4 (3-2-7)**

Prerequisites: ICBI 106 Organisms to Ecosystems

Function and control mechanisms of nervous, muscular, circulatory, respiratory, excretory, digestive, endocrine and reproductive systems; their interrelationships in homeostasis; demonstration and practical exercise included

ICBI 314 Genetics of Bacteria and Viruses **2 (2-0-4)**

Prerequisites: ICBI 214 General Microbiology

Principles of microbial genetics, including the organization, regulation, and evolution of bacterial and viral genomes; gene expression, genetic recombination, mutation, and horizontal gene transfer in bacteria, as well as the life cycles, genetic diversity, and evolution of viruses

ICBI 324 Introduction to Medical Toxicology **4 (4-0-8)**

Prerequisites: ICBI 218 Cellular Systems, ICCH 231 Biochemistry

The process of illness and disease pertaining to the human exposure to drugs, chemicals, gases and heavy metal in non-therapeutic situations, both accidental and intentional and the biotransformation of drugs and chemicals during these situations; basics of life support measures in poisoned patients, skin and gastric decontamination procedures; indications and mechanism of action of specific antidote; enhance elimination; management of chemical hazardous material incidents and mass casualty events involving toxic chemicals

ICBI 325 Special Topics in Bioinformatics and Molecular Genetics **4 (4-0-8)**

Prerequisites: ICBI 218 Cellular Systems, ICCH 231 Biochemistry

Exploration of specific topics in bioinformatics and molecular genetics and/or a specific sub discipline in bioinformatics; class/group discussion on peer-review articles

ICBI 328 Essential Pharmacology **4 (4-0-8)**

Prerequisites: ICBI 218 Cellular Systems, ICCH 231 Biochemistry

Basic knowledge regarding the use of drugs and chemicals to treat diseases; drug metabolism; mechanisms of drug actions in the body; indications, contraindications, and cautions in using drugs to treat diseases; adverse drug reactions; drug interactions; pharmacokinetics and pharmacodynamics; basics of how drugs

are used to treat diseases of the nervous system, respiratory system, cardiovascular system, and endocrine system integrated with basic knowledge in physiology, immunology, bacteriology, virology, biochemistry, molecular biology, metabolic and biotransformation both in normal and diseased states

ICBI 329 Animal and Plant Behavior **4 (4-0-8)**

Prerequisites: ICBI 106 Organisms to Ecosystems

Theories of animal and plant behavior from various biological disciplines, including ecology, evolution, physiology, neurobiology, and genetics; mechanisms of animal behavior and plant behavior; interactions between organisms

ICBI 332 Medical Microbiology **4 (4-0-8)**

Prerequisites: ICBI 214 General Microbiology

Nature and epidemiology of infectious disease and the role of microorganisms in health and disease; clinical effects of microbial infection on the human host; microorganisms commonly encountered by physician assistants in clinical practice

ICBI 334 Biological Research Methodology **4 (4-0-8)**

Prerequisites: ICBI 253 Biological Statistics and Analytics

Principles of scientific inquiry; methodologies employed in biological research; the scientific process, including hypothesis development, experimental design, and data collection and interpretation; critical analysis and the practical application of research techniques in biological sciences; critical reading and analysis of scientific literature; professional conduct at scientific conferences

ICBI 341 Neurobiology **4 (3-2-7)**

Prerequisites: ICBI 106 Organisms to Ecosystems

Developmental neurobiology, neuroanatomy, and neurophysiology; some clinical aspects as the results of neuropathological defects or lesions; practical exercises included

ICBI 342 Science of Ageing **2 (2-0-4)**

Prerequisites: ICBI 213 Genetics, ICCH 231 Biochemistry

Biological processes and mechanisms underlying aging in humans and other organism; aspects of aging, including the molecular, cellular, and physiological changes that occur over time; decline in function and the onset of age-related diseases; genetic and epigenetic regulation of aging, the role of cellular senescence,

oxidative stress, and mitochondrial dysfunction, and the impact of lifestyle and environmental factors on aging

ICBI 344 Environmental Science **4 (4-0-8)**

Prerequisites: ICBI 263 Practical Sustainability and Biodiversity

Ecological concepts related to the problems of pollution and their impact on agriculture and wildlife communities, natural resources, sustainable development and maintenance of clean environment

ICBI 350 Techniques in Molecular Science **4 (2-4-6)**

Prerequisites: ICBI 232 Biochemistry Laboratory

Comprehensive introduction to the fundamental techniques and tools used in molecular biology combining theoretical lectures with hands-on laboratory practices; DNA cloning, gel electrophoresis, polymerase chain reaction (PCR), and molecular sequence analysis; practical applications and in-depth discussions

ICBI 378 Bioinformatics **4 (4-0-8)**

Prerequisites: ICCS 102 Coding for All, ICBI 218 Cellular Systems

An introduction to computational approaches in biological systems; biological database; high throughput technologies in biology; the analysis of sequencing data including genomic, transcriptomics, and proteomics; phylogenetics, the analysis of protein structure

ICBI 379 Introduction to Systems and Structural Biology **4 (4-0-8)**

Prerequisites: ICBI 218 Cellular Systems, ICCH 231 Biochemistry

Holistic perspective for biological systems; interactions and regulatory networks; the principles of structural biology, including nucleic acid structure, protein structure and function, and macromolecule complex; the principles of techniques used in the study of structural biology; computational and statistical methods for analyzing biological data

ICBI 381 Evolutionary Biology **4 (4-0-8)**

Prerequisites: ICBI 106 Organisms to Ecosystems

Natural selection; molecular evolution; evolutionary genomics; species and speciation; taxonomy and phylogeny; macroevolution; evolution, coevolution and radiation; biogeography; evolutionary biology and ecology; evolutionary biology and conservation

ICBI 383 Systematic Biology and Biodiversity **2 (2-0-4)**

Prerequisites: ICBI 106 Organisms to Ecosystems

Theory and procedures of classical and modern systematic analysis in botanical or zoological systems, based on either morphological or molecular characters; introduction to phylogenetic construction and analysis; character construction and weighting; characters in molecular systematics; ways of evaluating the quality of systematic results in morphological and molecular data; the comparative method; cladistic biogeography; coevolution; species concepts; classification and the nomenclatorial codes

ICBI 385 Freshwater Ecology and Conservation **4 (4-0-8)**

Prerequisites: ICBI 106 Organisms to Ecosystems

Adaptations; behavior; diversity; physiology; ecological roles; trophic interactions; diversity and productivity; influence of catchment; human activities; significance of global climate changes; increasing competition for water resources; sustainable management; conservation measures

ICBI 386 Practical Freshwater Ecology and Conservation **2 (0-4-2)**

Prerequisites: ICBI 106 Organisms to Ecosystems

Laboratory procedures; field techniques; measuring abiotic conditions; surveying biotic communities; assessing trophic interactions; headwater streams; floodplains; standing waters; evaluating anthropogenic impacts; rehabilitation & restoration; water resource conservation

ICBI 387 Terrestrial Ecology and Conservation **4 (4-0-8)**

Prerequisites: ICBI 106 Organisms to Ecosystems

Adaptations; behaviour; diversity & productivity; physiology; ecological roles; trophic interactions; ecosystems and resources; land-use change; anthropogenic activities; sustainable management; significance of global climate change; conservation measures

ICBI 388 Practical Terrestrial Ecology and Conservation **2 (0-4-2)**

Prerequisites: ICBI 106 Organisms to Ecosystems

Laboratory and field procedures; experimental design; mapping habitats; measuring abiotic conditions; analysing biotic communities; diversity indices; similarity indices; biotic interactions; behaviour; evaluating anthropogenic impacts; a habitat reconstruction; conservation

ICBI 389 Infectious Disease Ecology **4 (4-0-8)**

Prerequisites: ICBI 214 General Microbiology, ICCH 231 Biochemistry

An ecological exploration of the changes in human biology, culture, and surrounding environments that have influenced patterns of health and disease; ecology and infectious disease (e.g., zoonotic and emerging), urbanization, global climate change, stratospheric ozone depletion and innovations in public health and medicine

ICBI 391 Health Psychology **4 (4-0-8)**

Prerequisites: ICCH 231 Biochemistry

Individual psychology and the ways it affects adjustment to illness; prevention of illness through health promotion

ICBI 403 Introduction to Tropical Medicine **4 (4-0-8)**

Prerequisites: ICBI 214 General Microbiology, ICCH 231 Biochemistry

Environmental factors in tropical countries facilitating endemic diseases; geographical distribution and transmission of commonly found diseases caused by microbes, protozoa, and helminthes with special reference to Southeast Asia; non-infectious diseases existing in the region such as nutritional disorders, food poisoning, snake and other venomous bites and stings; prevention of the tropical diseases

ICBI 407 Occupational Health and Safety **4 (4-0-8)**

Prerequisites: ICBI 208 Ethics for Bioscience **and** ICMA 252 Biological Statistics Laboratory

Environmental factors at work regarding workers' health and safety, such as air, water, food, chemical or biological materials handled in the production line, including waste and waste disposal; evaluation harmful effects of such factors for controlling them; prevention of dissatisfaction and risk assessment in the workplace

ICBI 410 Epidemiology **4 (4-0-8)**

Prerequisites: ICBI 253 Biological Statistics and Analytics

Prevalence of endemic health problems caused by infectious diseases or non-infectious disorders; diseases of Southeast Asia in comparison with those occur in tropical Africa and America; field studies included

ICBI 411 Psychopathology **4 (4-0-8)**

Prerequisites: ICCH 231 Biochemistry

An introduction / overview to the definition, assessment, and classification of abnormal behavior as well as historical approaches to the understanding and treatment of abnormal behavior; selected forms of psychopathology; major orientations; clinical assessment; psychotherapies and biological treatments; cross-cultural issues dealing with abnormality

ICBI 412 Biomedical parasitology **4 (3-2-7)**

Prerequisites: ICBI 214 General Microbiology

Biology, ecology, and physiology of parasites and their effects on human and animal health; cutting-edge research in control and diagnosis of parasitic infections; demonstration and laboratory exercises included

ICBI 415 Biotechnology **4 (4-0-8)**

Prerequisites: ICBI 214 General Microbiology, ICCH 231 Biochemistry

Technology and the applications of scientific principles in relation to animals, plants, microorganisms; production of cellular compounds in public health, agriculture and industry

ICBI 416 Community Health Innovation **4 (4-0-8)**

Prerequisites: ICBI 219 Design Thinking in Biological Sciences

Survey of community health status; primary health care concept; health system analysis and health manpower development; biodesign; needs identifications; product and/or process to address health problems; health innovations and prototyping

ICBI 417 Design Thinking in Health Innovation **4 (4-0-8)**

Prerequisites: ICBI 219 Design Thinking in Biological Sciences

Designing idea thinking ideas; customers' problems related to biodesigning solutions for healthcare and wellness models; the intellectual property; customers and customers' problem validation; the Customer Journey Map; the Stakeholder Map; the Lean Canvas; showcases with entrepreneurial experts

ICBI 418 Case Studies in Health Innovation **4 (4-0-8)**

Prerequisites: ICBI 219 Design Thinking in Biological Sciences

Case studies in health; problem identification; stakeholder and SWOT analyses; problem solving in health; knowledge transfer and innovative solutions in health; innovation gaps and alternative solutions; translation and commercialization of ideas

ICBI 419 Cutting-Edge Technology for Biodesign **4 (2-4-6)**

Prerequisites: ICBI 219 Design Thinking in Biological Sciences

Specific skills for bio innovation and prototype designs in health

ICBI 420 Entrepreneurship and Innovation in Science **4 (4-0-8)**

Prerequisites: ICBI 219 Design Thinking in Biological Sciences

Developing the entrepreneur mindset through life science and innovation; from academia to entrepreneur, current trends in biomedical industry; how to do a startup project; find opportunities and passion driving innovation; considering factors for successful entrepreneurship, including business plans, finding funds, regulatory requirements, market needs; ethics and professionalism; intellectual property and risks

ICBI 422 Insects Biology and Ecology **4 (3-2-7)**

Prerequisites: ICBI 106 Organisms to Ecosystems

Insect morphology, physiology, systematics, natural history, and relationships with human; field survey with laboratory exercises are included

ICBI 440 Marine Ecology and Conservation **4 (4-0-8)**

Prerequisites: ICBI 263 Practical Sustainability and Biodiversity

Adaptations; behaviour; diversity; physiology; ecological roles; marine ecosystems; marine resources; trophic interactions; human activities; sustainable management; significance of global climate change; coral reef bleaching; reef rehabilitation & restoration; mangrove deforestation & reforestation; conservation measures

ICBI 442 Practical Marine Ecology and Conservation **2 (0-4-2)**

Prerequisites: ICBI 263 Practical Sustainability and Biodiversity

Laboratory and field procedures; analyzing abiotic conditions; surveying biotic communities; assessing productivity; evaluating anthropogenic threats

ICBI 443 Fungal Ecology **4 (3-2-7)**

Prerequisites: ICBI 214 General Microbiology

Ecology of fungi and fungi-like microorganisms (slime molds and water molds); importance in food chains; nutrient recycling; morphology and physiology; nutrition and metabolism; growth and differentiation; reproduction and life cycles; classification; ecological roles; culture collection; advantages of fungi and fungal products

ICBI 461 Cell Technology **4 (3-2-7)**

Prerequisites: ICBI 218 Cellular Systems, ICCH 231 Biochemistry

The principle of cell culture; cell culture and aseptic techniques; cellular experiments including cell viability, cell migration, flow cytometry; stem cells; cells engineering; introduction to standard operation procedures in laboratory

ICBI 462 Advanced Cancer Biology **2 (2-0-4)**

Prerequisites: ICBI 218 Cellular Systems, ICCH 231 Biochemistry

Molecular basis of cancer; tumor microenvironment; cancer signaling pathways; cancer Immunology; cancer genomics and precision medicine; emerging cancer therapeutics

ICBI 463 From Ideas to Actions **4 (4-0-8)**

Prerequisites: ICBI 219 Design Thinking in Biological Sciences

Translate innovative ideas into practical actions within the field of biological sciences; turning research findings, creative concepts, and theoretical knowledge into tangible prototypes such as products or processes that address real-world biological and environmental challenges

ICBI 468 Scientific Writing **2 (2-0-4)**

Prerequisites: ICBI 334 Biological Research Methodology

Essential components of scientific communication, including scientific reports and presentations, grant proposals, review articles, and scientific posters; techniques in effective literature search, data presentation, and critical analysis of scientific literature; clear, concise, and accurate formal and informal writing that meet the standards of professional publications; publishing process, including submission, peer review, revision, and acceptance

ICBI 471 Special Topics in Biological Sciences A **4 (4-0-8)**

Prerequisites: ICBI 218 Cellular Systems, ICCH 231 Biochemistry

Experience and knowledge equivalent to 4-trimester credits from biological sciences and related courses taken at other qualified universities and institutions; subject to approval by the Program Director of Biological Sciences

ICBI 472 Special Topics in Biological Sciences B **4 (4-0-8)**

Prerequisites: ICBI 218 Cellular Systems, ICCH 231 Biochemistry

Experience and knowledge equivalent to 4-trimester credits from biological sciences and related courses taken at other qualified universities and institutions; subject to approval by the Program Director of Biological Sciences

ICBI 473 Special Topics in Biological Sciences C **4 (4-0-8)**

Prerequisites: ICBI 218 Cellular Systems, ICCH 231 Biochemistry

Experience and knowledge equivalent to 4-trimester credits from biological sciences and related courses taken at other qualified universities and institutions; subject to approval by the Program Director of Biological Sciences

ICBI 476 Undergraduate Research A **2 (0-10-0)**

Prerequisites: Approval by the Program Director of Biological Sciences

Part-time undergraduate research in biological sciences under supervision, involving no more than 10 hours per week

ICBI 477 Undergraduate Research B **4 (0-20-0)**

Prerequisites: Approval by the Program Director of Biological Sciences

Part-time undergraduate research in biological sciences under supervision, involving no more than 20 hours per week

ICBI 478 Undergraduate Research C **8 (0-40-0)**

Prerequisites: Approval by the Program Director of Biological Sciences

Full-time undergraduate research in biological sciences under supervision (i.e., 40 hours per week)

ICBI 480 Current Issues in Health and Wellness **2 (2-0-4)**

Prerequisites: ICCH 231 Biochemistry

Latest trends, challenges, and innovations in health sciences, with a focus on how biological research informs public health policies, practices, and personal well-being; lectures, case studies, guest speakers, and discussions; critical analysis of current health issues

ICBI 481 Current Issues in Biological Sciences A **2 (2-0-4)**

Prerequisites: ICCH 231 Biochemistry

Experience and knowledge equivalent to 2-trimester credits from biological sciences and related courses taken at other qualified universities and institutions; subject to approval by the Program Director of Biological Sciences

ICBI 492 Research Internship in Biological Sciences **8 (0-40-0)**

Prerequisites: ICBI 334 Biological Research Methodology

Internship specific to research, which learners can practice; integrating and applying the knowledge and skills to conduct an independent research project under the supervision

ICBI 493 Internship in the Industrial/Commercial and Applied Life Sciences **8 (0-40-0)**

Prerequisites: ICBI 334 Biological Research Methodology

Internship specific to industry, which learners can practice; integrating and applying the knowledge and skills to complete tasks under the supervision

ICCD

ICCD 110 Art History **4 (4-0-8)**

Prerequisites: None

An introduction to basic elements of visual literacy through the exploration of art history in a variety of cultural traditions, geographic locations, and the chronological periods; principles of design, form, and iconography; exploring the art of different societies and cultures

ICCD 111 Research & Conceptual Development **4 (2-4-6)**

Prerequisites: None

An investigation of a wide variety of research methods facilitating the creative practice; content-based assignments intended to challenge students' conceptual, critical, and communicative skills; encouragement of experimentation, exploration of self-developed concepts, and risk-taking to the formulation of ideas; reflective consideration of the various ways these concepts can be presented; communicating effectively with the target audience; producing engaging and informative creative projects

ICCD 113 Drawing Studio **4 (2-4-6)**

Prerequisites: None

An introduction to the visual language of drawing with an emphasis on depicting organic and geometric objects in space; exploring how the parts of the drawing relate to each other and to the composition as a whole; fundamental skills in mark-making using the traditional black-and-white media

ICCD 114 2 Dimensional Design & Color Theory **4 (2-4-6)**

Prerequisites: None

Foundations and principles of pictorial design; a focus on the concepts of the picture plane, figure/ground relationships, scale and proportional transformation, composition, a study of the additive and subtractive principles of color theory as they apply to the communication design process, and value; the development of a range of design vocabulary and repertoire of practical techniques; an introduction to formal design strategies

ICCD 115 3 Dimensional Design Principles **4 (2-4-6)**

Prerequisites: None

A project based class in which students are challenged to apply the principles of design to the creation of the three-dimensional compositions; both simple linear and planar construction materials will be used; an introduction to a variety of tools and techniques; stressing students' achievement in design development, production methods and presentations of the finished works

ICCD 116 Digital Images and Processes **4 (2-4-6)**

Prerequisites: None

A focus on digital photography, manipulation of photographic images, and the use of illustration software using a project approach; an emphasis on processes and ancillary operations related to the digital media

ICCD 120 Graphic Design History **4 (4-0-8)**

Prerequisites: None

A historical survey of graphic design, presenting the work from various perspectives: cultural and cross-cultural, historical and timeless; a focus on shaping visual sensibilities and broadening the palette of references essential to the process of design thinking

ICCD 211 Traditional Techniques Studio **4 (2-4-6)**

Prerequisites: ICCD 111 Research & Conceptual Development

An exploration of traditional techniques and methods relating to illustration, printmaking, and handmade books; an emphasis on developing skills related to hand-made images and forms while deepening an understanding of how mediums and techniques are related to the expression of content

ICCD 212 Photography for Design **4 (2-4-6)**

Prerequisites: ICCD 111 Research & Conceptual Development

Exploration of essential photography techniques and concepts in design, covering basic equipment use, editing software, and fundamentals of composition, lighting, and perspective for creating compelling visual narratives; emphasis on theoretical and practical aspects of photography as visual storytelling in branding, advertising, and editorial design

ICCD 213 Communication Design Studio & Print Production **4 (2-4-6)**

Prerequisites: ICCD 111 Research & Conceptual Development, ICCD 114 2 Dimensional Design & Color Theory

The communication design principles; communication design terminology; the design layout and concept; type, image and color; technology software for design, the current process and practice of the publication design including on and offline printing process (pre and post-production) with the understanding of design principles and techniques involved in the making of multiple-pages document

ICCD 214 Typography & Typeface Design **4 (2-4-6)**

Prerequisites: ICCD 114 2 Dimensional Design & Color Theory

The use of typography in communication design projects including design principles, process and practice, organizational skills and the formative aspects of typographic symbols and arrangement with the advanced study of typography, the analysis of the perceptual aspects of type, the exploration and clarification of typographic variables in designing typeface including the anatomy, specimen, technique, technology, and publication of typeface

ICCD 310 Environmental Graphic Design **4 (2-4-6)**

Prerequisites: ICCD 115 3 Dimensional Design Principles, ICCD 311 Integrated Branding

An introduction to professional design techniques, processes, and practices of Environmental Graphics Design (EGD) including the usage of design principles, various applications, technologies, and platforms

ICCD 311 Integrated Branding **4 (2-4-6)**

Prerequisites: ICCD 213 Communication Design Studio & Print Production

The advanced design systems for the corporate identity design and the identity design manual including all integrated brand materials and communication components; techniques, processes, design principles, and practices

ICCD 312 Advertising Campaign Design **4 (2-4-6)**

Prerequisites: ICCD 213 Communication Design Studio & Print Production

Advertising strategy; the creative design development; creative copywriting; idea and concept development; advertising mediums; advertising productions

ICCD 313 Data Visualization & Infographics **4 (2-4-6)**

Prerequisites: ICCD 114 2 Dimensional Design & Color Theory

Data visualization and infographics; data collection and analyzation; isotype; hierarchy; idea generation; design layouts; type, icon, pictogram, and symbol design, color and image; technology software for design

ICCD 314 Online Communication & Application **4 (2-4-6)**

Prerequisites: ICCD 213 Communication Design Studio & Print Production

The process and practice of online communication strategic planning including the communication content, structure, and navigation development along with the elements of users' experience with design and digital media principles; current techniques, applications, and platforms in designing application and online media and platform

ICCD 315 New Media Design **4 (2-4-6)**

Prerequisites: ICCD 116 Digital Images and Processes

The new media design process and practice with an understanding of design principles and design foundations for the new media with current technologies of various applications, techniques, and platforms for the motion graphic creation and production

ICCD 355 Professional Ethics & Communication Design Practicum **4 (2-4-6)**

Prerequisites: ICCD 311 Integrated Branding (Track 1)*, ICFA 233 Storytelling by Design (Track 2)*

Professional Practice; strategy planning and implementation; advanced creative solutions; client relationship; budget planning; teamwork development, collaborative workflow, and professional ethics in design career

ICCD 413 Thesis Research & Development **4 (4-0-8)**

Prerequisites: ICCD 355 Professional Ethics & Communication Design Practicum

An initiation to the process of concept development of the senior thesis project in both the written and visual forms; engagement in various forms of traditional and non-traditional research in order to identify the

thesis, and develop the parameters of the visual and written project; peer and the faculty support to engage students in the process of critical inquiry

ICCD 414 Thesis Design & Production **4 (2-4-6)**

Prerequisites: ICCD 413 Thesis Research & Development

Thesis design development and production; identified design solutions and execution techniques for designing thesis project; exercise design process, individual time management; technology and media implementation selections for the production

ICCD 415 Thesis Writing Seminar **4 (4-0-8)**

Prerequisites: ICCD 414 Thesis Design & Production

Co-requisite: ICCD 417 Exhibition Design

A focus on the production of the written senior thesis and the statement of intent for the senior thesis project; various strategies to lead students from research, through drafting and editing, to finished formal documents

ICCD 416 Portfolio Development **4 (4-0-8)**

Prerequisites: ICCD 355 Professional Ethics & Communication Design Practicum

Instruction and criticism toward the design of professional prints and digital formats portfolio for reviewing by prospective employers, clients or the graduate school admission committees including presentations and critical skills

ICCD 417 Exhibition Design **4 (2-4-6)**

Prerequisites: ICCD 414 Thesis Design & Production

Corequisite: ICCD 415 Thesis Writing Seminar

All facets of the production of exhibition of the senior thesis project required for graduation from the communication design major; an emphasis on skillfully and professionally presenting a consistent thematic body of work; details of presentation relating to publicity and display are determined and realized

ICCD 330 Campaign Development **4 (4-0-8)**

Prerequisites: ICCD 312 Advertising Campaign Design

Hands-on practice in advertising and marketing through projects and case studies, preparing students for industry roles

ICCD 331 Online Communication Strategic **4 (2-4-6)**

Prerequisites: ICCD 314 Online Communication & Application

The process and practice of online communication strategic planning including the communication content, structure, and navigation development along with the elements of users' experience with design and digital media principles; current techniques, applications, and platforms in designing basic digital promotional tools

ICCD 332 Interactive Design & Production **4 (2-4-6)**

Prerequisites: ICCD 315 New Media Design

Exploration of principles and techniques for creating engaging, tangible interactive experiences; focus on ideation, conceptualization, and production processes to develop immersive projects that integrate digital and physical elements

ICCD 333 Integrated Digital Media Design **4 (2-4-6)**

Prerequisites: ICCD 315 New Media Design

Integration of interactive digital media, including design and development of current digital media, lighting, stage design, and digital spaces; emphasis on blending digital tools to create contextually relevant content

ICCD 340 Cinematic Production **4 (2-4-6)**

Prerequisites: ICFA 233 Storytelling by Design, ICFA 336 Cinematic Language and Its Application

The application of storytelling principles to a structured narrative short film with an emphasis on character exploration to engage thematically driven film narratives; practical, hands-on short film pre-production, production, and post-production

ICCD 343 Animation Production **4 (2-4-6)**

Prerequisites: ICFA 233 Storytelling by Design, ICFA 336 Cinematic Language and Its Application

An introduction, practice and application to principles of animation, the practical creation, and the development process of animation production both in 2D and 3D formats: hand-drawn, stop motion and 3D technical proficiency with new media and animation software. Understanding of copyright and privacy issues in relation to content, audience and distribution of animation

ICCD 344 Character Design **4 (2-4-6)**

Prerequisites: ICFA 233 Storytelling by Design, ICFA 336 Cinematic Language and Its Application

A practice, application, and tools usage for designing and developing animation character for narratives; including familiarity of the understanding of narrative structure, the development, the construction, the making, and the production processes; technical proficiency with suitable media and software are reviewed

ICCD 345 Post-Production & Visual Effects **4 (2-4-6)**

Prerequisites: ICFA 233 Storytelling by Design, ICFA 336 Cinematic Language and Its Application

Applied practice of principles and techniques of advance post-production editing and VFX artistry, including layer-based compositing, CG integration and camera tracking

ICCD 360 Service Design **4 (2-4-6)**

Prerequisites: ICCD 311 Integrated Branding

Introduction to service design as a human-centered approach for creating innovative, effective services; focus on analyzing and optimizing service ecosystems through user research, journey mapping, and prototyping to design for both customer experiences and organizational processes

ICCD 361 Integrated Design for Well-being **4 (2-4-6)**

Prerequisites: ICCD 311 Integrated Branding

Application of human-centered design and design thinking to healthcare service innovation; exploration of real-world healthcare challenges through empathy, ideation, prototyping, and iteration, equipping students to create solutions that improve quality of life and system effectiveness

ICCD 362 Advance Visual Technique **4 (2-4-6)**

Prerequisites: ICCD 213 Communication Design & Print Production,
ICCD 313 Data Visualization & Infographics

In-depth study of visual design and communication principles, emphasizing visual thinking, research, and storytelling; concentration on advanced illustration techniques across digital, traditional, and mixed media

ICCD 363 Advance Illustration **4 (2-4-6)**

Prerequisites: ICCD 213 Communication Design & Print Production

Study of advance illustration process and production from start to finish with final artwork; projects requiring both advance traditional media and digital applications; focusing on creativity, concept development, and implementation, also advance craftsmanship and professionalism

ICCH

ICCH 100 Chemistry and Careers **1 (1-0-2)**

Prerequisites: None

Introduction to the diverse array of professional opportunities in the field of chemistry; Green chemistry and sustainability, different sectors that chemists work including academia, industry and government; educational and professional pathways including graduate school, internships and professional organizations; technical knowledge and skills for career development

ICCH 101 General Chemistry I **4 (4-0-8)**

Prerequisites: ICMA 100 Foundation Mathematics **or** ICMA101 Precalculus
or Placement in ICMA 106 Calculus I

Concepts of general chemistry; matters, atoms, compounds, reactions, gases, thermodynamics, electrons in atoms, periodic table, chemical bonding; intermolecular forces, and spontaneous changes

ICCH 102 General Chemistry II **4 (4-0-8)**

Prerequisites: ICCH 101 General Chemistry I

Comprehensive general concepts and principles of chemistry; solutions, equilibria, acids and bases, solubility, electrochemistry, chemical kinetics, chemistry of main-group and transition elements, coordination compound, nuclear chemistry and selected topics in chemistry

ICCH 103 Integrated Laboratory in Chemistry **2 (0-4-2)**

Prerequisites: ICCH 101 General Chemistry I **OR** MU LabPass (for Biological Sciences Students)

Laboratory practicals for general chemistry: measurements; stoichiochemistry; solids, liquids and solutions; gases; thermochemistry; equilibrium; acids, bases and buffers; electrochemistry; kinetics; chemical safety practice and regulations

ICCH 221 Organic Chemistry I **4 (4-0-8)**

Prerequisites: ICCH 102 General Chemistry II

Concepts and mechanistic considerations of organic chemistry; molecular structures and properties; methane and alkane chemistries; stereochemistry; acyclic compounds; alkyl halides; alkenes; conjugation and resonance; alcohols; ethers and epoxides; alkynes

ICCH 222 Organic Chemistry II **4 (4-0-8)**

Prerequisites: ICCH 221 Organic Chemistry I

Concepts of organic reactions through mechanistic approach; aromaticity and electrophilic aromatic substitution; spectroscopy and structure; aldehydes and ketones; carboxylic acids and derivatives; carbanions, amines, phenol and aryl halides; fats; carbohydrates; amino acids

ICCH 224 Organic Chemistry Laboratory **2 (0-4-2)**

Prerequisites: ICCH 103 Integrated Laboratory in Chemistry **and** ICCH 221 Organic Chemistry I

Fundamental organic laboratory techniques; recrystallization, refluxing, distillation, extraction, chromatography, spectroscopy; laboratory safety

ICCH 231 Biochemistry **4 (4-0-8)**

Prerequisites: ICBI 105 Molecules to Living Cells **and** ICCH 221 Organic Chemistry I

Corequisites: ICCH 232 Biochemistry Laboratory

Structure and function of biomolecules, including proteins, carbohydrates, lipids, and nucleic acids; enzyme kinetics and catalysis; metabolism; regulations at the cellular and molecular levels

ICCH 232 Biochemistry Laboratory **2 (0-4-2)**

Prerequisites: ICBI 105 Molecules to Living Cells **and** ICCH 221 Organic Chemistry I

Corequisites: ICCH 231 Biochemistry

Laboratory practicals in biochemistry; error and statistical analysis of experimental data; physical and chemical properties of biomolecules; spectroscopic methods; electrophoretic techniques; chromatographic separations; isolation and characterization of biological materials; enzyme kinetics

ICCH 261 Analytical Chemistry and Instrumental Analysis **4 (4-0-8)**

Prerequisites: ICCH 102 General Chemistry II **and** ICMA 151 Statistics for Science I

Corequisites: ICCH 262 Analytical Chemistry Laboratory

Errors and statistics in analytical process; calibration methods; principles and applications of chemical equilibria, electrochemistry, separation techniques and chromatography, atomic and molecular spectroscopy, and mass spectrometry in qualitative and quantitative chemical analysis; concepts of quality assurance

ICCH 262 Analytical Chemistry Laboratory **2 (0-4-2)**

Prerequisites: ICCH 103 Integrated Laboratory in Chemistry **and** ICCH 221 Organic Chemistry I

Corequisites: ICCH 261 Analytical Chemistry and Instrumental Analysis

Laboratory practicals involving classical and instrumental methods of chemical analysis, with statistical treatment of analytical data

ICCH 321 Chemical Spectroscopy **4 (4-0-8)**

Prerequisites: ICCH 222 Organic Chemistry II **and** ICCH 224 Organic Chemistry Laboratory

Exploration of theories and interpretative applications of spectroscopy to determine chemical molecular structures; absorption and emission spectroscopy; mass spectrometry; UV-Visible spectroscopy; infrared spectroscopy; proton and carbon-13 nuclear magnetic resonance; 1D and 2D-NMR

ICCH 322 Polymer Science and Technology **2 (2-0-4)**

Prerequisites: ICCH 222 Organic Chemistry II

Principles and synthesis of polymers; structure-property relationships of polymers; diverse applications of polymers across various industries

ICCH 363 Physical Chemistry A **4 (4-0-8)**

Prerequisites: ICCH 102 General Chemistry II **and** ICMA 106 Calculus I

Concepts of classical physical chemistry; electrochemical cells; kinetics; composite reaction mechanisms; behavior of gases; the first law of thermodynamics, the second and the third laws of thermodynamics; chemical equilibrium; phases and solutions; phase equilibria

ICCH 364 Physical Chemistry B **4 (4-0-8)**

Prerequisites: ICCH 363 Physical Chemistry A **and** ICMA 106 Calculus I

Concepts of modern physical chemistry; quantum mechanics; atomic structure and chemical bonding; computational and theoretical chemistry

ICCH 365 Physical Chemistry Laboratory **2 (0-4-2)**

Prerequisites: ICCH 262 Analytical Chemistry Laboratory **and** ICCH 363 Physical Chemistry A

Laboratory practicals for physical chemistry; thermodynamics laws and enthalpy; kinetics and rate laws; molecular spectroscopy; atomic absorption spectrometry; Raman spectrometry; mass spectrometry; electrochemistry

ICCH 391 Inorganic Chemistry A **4 (4-0-8)**

Prerequisites: ICCH 102 General Chemistry II

The structure of the atom, periodicity of the elements; molecular models and chemical forces, symmetry and group theory, molecular orbital theory, The structure of crystalline solids and acid-base theory in inorganic chemistry

ICCH 392 Inorganic Chemistry B **4 (4-0-8)**

Prerequisites: ICCH 391 Inorganic Chemistry A

Chemistry of the main group elements, chemistry of coordination compounds including structures and isomers, valence bond theory, crystal field theory, ligand field theory, electronic spectra, reactions and mechanisms and organometallic reactions and catalysis

ICCH 393 Inorganic Chemistry Laboratory **2 (0-4-2)**

Prerequisites: ICCH 392 Inorganic Chemistry B

Experiments related to the structure of crystalline solids, symmetry and point group, chemistry of the main group elements, chemistry of coordination compounds

ICCH 471 Chemical Unknown Detective **2 (0-4-2)**

Prerequisites: ICCH 262 Analytical Chemistry Laboratory

Selected techniques of substance identification and substance quantification; case studies or field study and laboratory practice

ICCH 472 Senior Project in Chemistry **4 (0-8-4)**

Prerequisites: ICCS 102 Coding for All **and** ICCH 471 Chemical Unknown Detective

A small research project in chemistry under the supervision of an advisor; designed for the chemistry major to be acquainted with the techniques, management and the implementation of a research project

ICCH 340 Current Topics in Chemistry A **4 (4-0-8)**

Prerequisites: ICCH 102 General Chemistry II

The frontier in analytical chemistry, applied chemistry or multidisciplinary chemistry

ICCH 341 Current Topics in Chemistry B **4 (4-0-8)**

Prerequisites: ICCH 102 General Chemistry II

The frontier in biochemistry, applied chemistry or multidisciplinary chemistry

ICCH 342 Current Topics in Chemistry C **4 (4-0-8)**

Prerequisites: ICCH 102 General Chemistry II

The frontier in inorganic chemistry, applied chemistry or multidisciplinary chemistry

ICCH 343 Current Topics in Chemistry D **4 (4-0-8)**

Prerequisites: ICCH 102 General Chemistry II

The frontier in organic chemistry, applied chemistry or multidisciplinary chemistry

ICCH 344 Current Topics in Chemistry E **4 (4-0-8)**

Prerequisites: ICCH 102 General Chemistry II

The frontier in physical chemistry, applied chemistry or multidisciplinary chemistry

ICCH 345 Special Topics in Chemistry A **2 (2-0-4)**

Prerequisites: ICCH 102 General Chemistry II

The frontier in analytical chemistry, applied chemistry or multidisciplinary chemistry

ICCH 346 Special Topics in Chemistry B **2 (2-0-4)**

Prerequisites: ICCH 102 General Chemistry II

The frontier in biochemistry, applied chemistry or multidisciplinary chemistry

ICCH 347 Special Topics in Chemistry C **2 (2-0-4)**

Prerequisites: ICCH 102 General Chemistry II

The frontier in inorganic chemistry, applied chemistry or multidisciplinary chemistry

ICCH 348 Special Topics in Chemistry D **2 (2-0-4)**

Prerequisites: ICCH 102 General Chemistry II

The frontier in organic chemistry, applied chemistry or multidisciplinary chemistry

ICCH 349 Special Topics in Chemistry E **2 (2-0-4)**

Prerequisites: ICCH 102 General Chemistry II

The frontier in physical chemistry, applied chemistry or multidisciplinary chemistry

ICCH 350 Contemporary Topics in Chemistry A **1 (1-0-2)**

Prerequisites: ICCH 102 General Chemistry II

The frontier in analytical chemistry, applied chemistry or multidisciplinary chemistry

ICCH 351 Contemporary Topics in Chemistry B **1 (1-0-2)**

Prerequisites: ICCH 102 General Chemistry II

The frontier in biochemistry, applied chemistry or multidisciplinary chemistry

ICCH 352 Contemporary Topics in Chemistry C **1 (1-0-2)**

Prerequisites: ICCH 102 General Chemistry II

The frontier in inorganic chemistry, applied chemistry or multidisciplinary chemistry

ICCH 353 Contemporary Topics in Chemistry D **1 (1-0-2)**

Prerequisites: ICCH 102 General Chemistry II

The frontier in organic chemistry, applied chemistry or multidisciplinary chemistry

ICCH 354 Contemporary Topics in Chemistry E **1 (1-0-2)**

Prerequisites: ICCH 102 General Chemistry II

The frontier in physical chemistry, applied chemistry or multidisciplinary chemistry

ICCH 355 Special Practice in Chemistry A **1 (0-2-1)**

Prerequisites: ICCH 103 Integrated Laboratory in Chemistry

The frontier laboratory techniques in analytical chemistry, applied chemistry or multidisciplinary chemistry

ICCH 356 Special Practice in Chemistry B **1 (0-2-1)**

Prerequisites: ICCH 103 Integrated Laboratory in Chemistry

The frontier laboratory techniques in biochemistry, applied chemistry or multidisciplinary chemistry

ICCH 357 Special Practice in Chemistry C **1 (0-2-1)**

Prerequisites: ICCH 103 Integrated Laboratory in Chemistry

The frontier laboratory techniques in inorganic chemistry, applied chemistry or multidisciplinary chemistry

ICCH 358 Special Practice in Chemistry D **1 (0-2-1)**

Prerequisites: ICCH 103 Integrated Laboratory in Chemistry

The frontier laboratory techniques in organic chemistry, applied chemistry or multidisciplinary chemistry

ICCH 359 Special Practice in Chemistry E **1 (0-2-1)**

Prerequisites: ICCH 103 Integrated Laboratory in Chemistry

The frontier laboratory techniques in physical chemistry, applied chemistry or multidisciplinary chemistry

ICCH 402 Undergraduate Thesis **6 (0-12-6)**

Prerequisites: lecturer permission

A research project in chemistry under the supervision of an advisor. The course is designed for the chemistry major to be acquainted with the techniques, management and the implementation of a research project.

ICCH 403 Field Study A **1 (0-3-1)**

Prerequisites: ICCH 100 Chemistry and Careers **and** ICCH 102 General Chemistry II

Field study on commercial operations in chemistry-related organizations

ICCH 404 Field Study B **1 (0-3-1)**

Prerequisites: ICCH 100 Chemistry and Careers **and** ICCH 102 General Chemistry II

Field study on fundamental research or public service in chemistry-related organizations

ICCH 407 Internship **8 (0-40-8)**

Prerequisites: lecturer permission

Practicing chemistry-related work in one trimester as an actual employee, accomplishing the work report and/or work presentation under the supervision of the work supervisor and/or academic supervisor

ICCH 408 Summer Internship **2 (0-40-8)**

Prerequisites: lecturer permission

Practicing chemistry-related work in one month (4 weeks) as an actual employee, accomplishing the work report and/or work presentation under the supervision of the work supervisor and/or academic supervisor

ICCH 451 Advanced Organic Chemistry **2 (2-0-4)**

Prerequisites: ICCH 222 Organic Chemistry II

Advanced concepts of organic chemistry with physical chemistry and mechanistic approaches and employing prior knowledge of organic chemistry to understand in detail advanced topics: stereochemistry; kinetics and equilibria thermodynamics; conformation and reactivity; molecular orbital theory and pericyclic reactions

ICCH 452 Materials Science **2 (2-0-4)**

Prerequisites: ICCH 102 General Chemistry II

Fundamental concepts of material science and engineering; structure, energetics, and bonding as well as principles of nuclear materials

ICCH 453 Computational Chemistry **2 (2-0-4)**

Prerequisites: ICCH 102 General Chemistry II **and** ICMA 106 Calculus I

Introduction to molecular modeling methods to study geometries, properties and reactivities of compounds; molecular mechanics, ab-initio methods, and density functional theory

ICCH 454 Biophysical Chemistry **2 (2-0-4)**

Prerequisites: ICCH 231 Biochemistry

Introduction to theory underlying biophysical methods; practical applications to contemporary research problems; fluorescence spectroscopy; single molecule methods

ICCH 455 Advanced Inorganic Chemistry **2 (2-0-4)**

Prerequisites: ICCH 391 Inorganic Chemistry A

The chemistry of the transition element and the role of the organometallic chemistry and catalysis

ICCH 456 Chemistry Innovation and Entrepreneurship **2 (2-0-4)**

Prerequisites: ICCH 100 Chemistry and Careers **and** ICCH 102 General Chemistry II

Case studies of chemistry-based startups; fundamentals of intellectual property and patents; market analysis for opportunities; ideation; prototyping and product development; business models; scaling up; pitching and presenting chemistry innovations; hands-on projects

ICCH 457 Advanced Analytical Chemistry **2 (2-0-4)**

Prerequisites: ICCH 261 Analytical Chemistry and Instrumental Analysis

In-depth theories and practical knowledge on modern analytical techniques; novel techniques development and applications on various samples

ICCH 458 Bioinorganic Chemistry **2 (2-0-4)**

Prerequisites: ICCH 391 Inorganic Chemistry A

Application of inorganic chemistry in biological systems; functions and chemistry of metals in biological systems

ICCH 459 Supramolecular Chemistry **2 (2-0-4)**

Prerequisites: ICCH 222 Organic Chemistry II

Fundamental principles of supramolecular chemistry; synthesis and characterization of supramolecular assemblies

ICCH 460 Petroleum and Petrochemical Industry **2 (2-0-4)**

Prerequisites: ICCH 222 Organic Chemistry II

Introduction to the science, technology and business aspects of extracting, refining, and utilizing petroleum and petrochemicals; environmental and societal implications of petroleum extractions; applications of petrochemical in various industries; challenges and opportunities facing the petroleum and petrochemical industry

ICCS

ICCS 102 Coding for All **4 (4-0-8)**

Prerequisites: None

Introduction to Python programming; basic syntax and data types; control structures; functions; basic data structures: lists, tuples, sets, dictionaries; strings and string operations; file handling; error handling and debugging; working with data from APIs; using external packages

ICCS 111 Programming and Abstractions **4 (4-0-8)**

Prerequisites: ICCS 102 Coding for All **or** placement test

Elements of object-oriented programming and the use of an integrated development environment; principles of object-oriented design and problem solving; objects and classes; abstraction and abstract

classes; encapsulation and information hiding; inheritance and polymorphism; composition and aggregation; iteration abstractions; abstract data types; recursion; unit testing

ICCS 121 System Skills and Low-level Programming **4 (4-0-8)**

Prerequisites: ICCS 102 Coding for All

Linux environment, including toolchain and scripting; version control e.g. Git; law and licenses; low level programming in C: syntax, semantics, and primitives; data types: array, functions, null terminated strings, and pointers; preprocessor and build tools; dynamic memory allocation; bit level representations of data, including two's complement, alignment, and non-integral data representation; machine-level programming, including x86 assembly, memory model, and basic machine architecture

ICCS 205 Numerical Computation **4 (4-0-8)**

Prerequisites: ICCS 102 Coding for All **and** ICMA 106 Calculus

Taylor's theorem; roots of equations; interpolation; numerical integration and derivative; solutions to systems of equations; Monte Carlo simulation; optimization

ICCS 206 Discrete Mathematics **4 (4-0-8)**

Prerequisites: ICMA 106 Calculus

Mathematical statements and logical deduction; proves and proof techniques including direct, contradiction, contrapositive, induction, and invariants; summation, asymptotics, and recurrences; counting: combinations, permutations, and basic counting techniques; discrete probability: finite probability space, events, conditional probability, independence, random variables, expectation, variance, covariance, discrete distributions; graphs: tree, tree traversal, undirected graphs, directed graphs, weighted graphs, Euler's tours, isomorphisms, spanning trees

ICCS 209 Data Structures **4 (4-0-8)**

Prerequisites: ICCS 111 Programming and Abstractions

Corequisites: ICCS 206 Discrete Mathematics

Sequential and parallel cost models; asymptotic analysis and implications; abstract data types and data structures, including sequences, ordered and unordered dictionaries, binary search trees, balanced binary search trees, disjoint sets, and priority queues; fundamental algorithms, including searching, sorting, and basic graph algorithms; algorithms design techniques, including inductive reasoning, divide and conquer, dynamic programming, and randomness; limits of computation

ICCS 225 Database Foundations **4 (4-0-8)**

Prerequisites: ICCS 121 System Skills and Low-level Programming; ICCS 209 Data Structures

Database design and ER models; relational models; relational algebra; concepts and syntax of SQL; storage and indexing; transactions; joins; distributed databases and replication; NoSQL; performance optimization

ICCS 227 Principles of Computer Systems and Architecture **4 (4-0-8)**

Prerequisites: ICCS 121 System Skills and Low-level Programming

Memory systems and memory management, including caches and virtual memory; exceptional control flows, including exceptions and processes, signals, and non-local jumps; networking and network programming, including socket API and principles behind the networking subsystem; processor architectures and implications to programmers: principles of pipelining and implementation, performance optimization; system-level I/O; concurrent programming, synchronization, and system-level parallel programming; secure coding practice

ICCS 261 Principles of Data Science **4 (4-0-8)**

Prerequisites: ICCS 102 Coding for All or ICCS 111 Programming and Abstractions;
ICMA 151 Statistics for Science I

Introduction to data science; data transformation and cleaning; visualization; exploratory data analysis; dimensionality reduction; principal component analysis; probability theory; sampling; hypothesis testing; modeling and estimation; basic machine learning methodology; regression; classification

ICCS 271 Interaction Design **4 (4-0-8)**

Prerequisites: ICCS 209 Data Structures

Requirement analyses, including non-functional and functional requirements; data gathering; software design and prototyping; principles of good design; the software life cycle; software development methodologies; quality assurance; cost modeling in software projects; roles and responsibilities in a software design team

ICCS 309 Scientific Research and Presentations **4 (4-0-8)**

Prerequisites: ICCS 261 Principles of Data Science; Junior standing

Scientific methods of discovery; developing a hypothesis, testing and interpreting of the results; proper format for presenting papers in public and in a scientific forum; practical sessions and participation in scientific seminars

ICCS 311 Functional and Parallel Programming **4 (4-0-8)**

Prerequisites: ICCS 209 Data Structures

Functional evaluation and operational semantics; recursive functions, cost analysis, and proofs by induction; datatypes, pattern-matching, and structural recursion/induction; higher-order functions and currying; laziness and streams; cost semantics and parallel cost models such as work and span; theoretical efficiency and basic scheduling; parallelism, including parallel decomposition, tree parallelism, and vector parallelism; shared-memory parallel programming, including OpenMP, fork/join parallelism; standard parallel primitives and algorithms, including prefix scan, map, reduce, and sorting

ICCS 312 Algorithms and Tractability **4 (4-0-8)**

Prerequisites: ICCS 209 Data Structures

Asymptotic analysis (big-O, big-Omega, big-Theta, little-o, little-omega); recurrences; algorithmic strategies, including divide and conquer, greedy, inductive design, and dynamic programming; probabilistic analysis and randomized algorithms; graphs and graph algorithms, including traversal, minimum-spanning tree, shortest paths, network flow; amortized analysis; reduction, tractability, and basic complexity classes; NP-completeness, classic NP-complete problems, and techniques for coping with hard problems

ICCS 315 Applied Algorithms **4 (4-0-8)**

Prerequisites: ICCS 312 Algorithms and Tractability

Selection of topics from the following: hashing in various contexts, including Bloom filters, load balancing, document similarity, and data streaming; dimensionality reduction and nearest-neighbor searching; locality-sensitive algorithms; string algorithms; coding and error correction; and current research in the relevant areas

ICCS 320 Computer Networks **4 (4-0-8)**

Prerequisites: ICCS 227 Principles of Computer Systems and Architecture

Network architecture, layering, and protocols; networked applications; socket programming; reliable data delivery, including flow control; routing and forwarding; local Area Networks; resource Allocation, including congestion control, CDN; mobility; network security

ICCS 322 Operating Systems Design and Implementation **4 (4-0-8)**

Prerequisites: ICCS 227 Principles of Computer Systems and Architecture

Roles and importance of operating systems; overall structure of an operating systems; concept of process and process management; threads; synchronization and mechanisms; CPU scheduling; deadlock; virtual memory and memory management; protection and access control; security and threats

ICCS 323 IoT Electronics **4 (4-0-8)**

Prerequisites: ICCS 121 System Skills and Low-level Programming; ICPY 102 Physics II

Electronic Components; circuit design and analysis; analog circuit; microcontroller programming; networking and data communication; IoT architecture and middleware; cloud-based computing

ICCS 324 Computer Architecture **4 (4-0-8)**

Prerequisites: ICCS 227 Principles of Computer Systems and Architecture

Instruction Set Architecture (ISA); translation from a high-level language to hardware operations; processor design; pipelining; branch prediction, caching; memory subsystem; memory hierarchy; locality; virtual memory; memory management unit; programming paradigms

ICCS 340 Web Application Development **4 (4-0-8)**

Prerequisites: ICCS 209 Data Structures

Protocols for web-based application; HTML; DOM; CSS; JavaScript; authentication; authorization; single-page application development; multi-pages application development; client-side validation; server-side validation; MVC and related design patterns; web services; micro services; deployment; security issues

ICCS 361 Data Mining **4 (4-0-8)**

Prerequisites: ICCS 209 Data Structures; ICCS 261 Principles of Data Science

Overview of data mining and its applications; software stack for data mining; acquiring data from web-scraping and data APIs; structured, semi-structured, unstructured data; data cleansing and manipulation; dimensionality reduction; exploratory data analysis and visualization; large-scale data platforms including HDFS; machine learning algorithms for large data sets; recommendation systems; natural language processing and its applications

ICCS 362 Data Engineering **4 (4-0-8)**

Prerequisites: ICCS 225 Database Foundations; ICCS 261 Principles of Data Science

Overview of data engineering; data modeling and database systems; data ingestion and extraction; data transformation and cleaning; data pipelines and workflow orchestration; data storage and retrieval technologies; streaming and real-time processing; scalability and performance optimization; security and compliance

ICCS 370 Software System Construction **4 (4-0-8)**

Prerequisites: ICCS 209 Data Structures

Modern development tools, including development environments, build tools, test automation, debugger; profiling and performance tuning; software verification; software testing; UML diagrams; design patterns; system architectures; entity design and conceptual modeling; source code refactoring; secure coding practice; roles and responsibilities in a software development team

ICCS 371 Scalable Systems **4 (4-0-8)**

Prerequisites: ICCS 311 Functional and Parallel Programming; ICCS 370 Software System Construction

Challenges in constructing scalable distributed systems; system models and architectural patterns; networking and operating system support; RPC and middleware; binding and naming; synchronization; naming and directory services; distributed transaction processing; data replication; scalable databases

ICCS 372 Software Engineering **4 (4-0-8)**

Prerequisites: ICCS 370 Software System Construction

Requirements analysis, including non-functional and functional requirements; data gathering; design and prototyping; principles of good design; the software life cycle; software-development methodologies; quality assurance; cost modeling in software projects

ICCS 373 Cloud Computing **4 (4-0-8)**

Prerequisites: ICCS 225 Database Foundations

Roles of cloud computing in modern software system development; benefits and risks of cloud computing; using cloud for compute, storage, and networking; cloud service models, and cloud deployment models

ICCS 402 Senior Project in Computer Science I **4 (0-8-4)**

Prerequisites: ICCS 309 Scientific Research and Presentations; ICCS 312 Algorithms and Tractability

Initiation of a research or development project in computer science or related fields under the supervision of an advisor; conducting preliminary research into the problem to identify a proper scope and research questions; the design and measurements of the research/development project proposed in the prerequisite course under supervision of the advisor; delivery of a written report and an oral presentation of the senior project proposal

ICCS 403 Senior Project in Computer Science II **4 (0-8-4)**

Prerequisites: ICCS 402 Senior Project in Computer Science I

Conducting an actual investigation/experiment that has been designed in the prerequisite course; analyzing gathered data to address the proposed research thesis; delivery of a written report and an oral presentation of the work in all three senior project courses as a whole

ICCS 404 Computer Graphics and Augmented Reality **4 (4-0-8)**

Prerequisites: ICCS 209 Data Structures; ICMA 240 Linear Algebra I

Representation and manipulation of graphical data; two-dimensional and three-dimensional transformations; curves; surfaces; projection; illumination and shading models; raster and vector graphic I/O devices; augmented reality technologies; basic object and location tracking; representation of augmented reality content

ICCS 412 Topics in Theory I **4 (4-0-8)**

Prerequisites: ICCS 312 Algorithms and Tractability

Topic(s) from areas of theoretical computer science, including data structures, algorithms, and complexity theory, chosen according to current research and industrial trends

ICCS 413 Topics in Theory II **4 (4-0-8)**

Prerequisites: ICCS 312 Algorithms and Tractability

Topic(s) from areas of theoretical computer science, including data structures, algorithms, and complexity theory, chosen according to current research and industrial trends

ICCS 414 Topics in Theory III **4 (4-0-8)**

Prerequisites: ICCS 312 Algorithms and Tractability

Topic(s) from areas of theoretical computer science, including data structures, algorithms, and complexity theory, chosen according to current research and industrial trends

ICCS 418 Computer System Security **4 (4-0-8)**

Prerequisites: ICCS 227 Principles of Computer Systems and Architecture

Security trends; information security and risk managements; access control, security architecture and design; physical and environmental security; telecommunications and network security; cryptography; business continuity and disaster recovery; legal/regulation compliance and investigations; application security; operation security; practical workshops of basic firewall appliance, DMZ and IPS

ICCS 423 Topics in Systems I **4 (4-0-8)**

Prerequisites: ICCS 227 Principles of Computer Systems and Architecture

Topic(s) from areas of systems in computer science chosen according to current research and industrial trends

ICCS 424 Topics in Systems II **4 (4-0-8)**

Prerequisites: ICCS 227 Principles of Computer Systems and Architecture

Topic(s) from areas of systems in computer science chosen according to current research and industrial trends

ICCS 425 Topics in Systems III **4 (4-0-8)**

Prerequisites: ICCS 227 Principles of Computer Systems and Architecture

Topic(s) from areas of systems in computer science chosen according to current research and industrial trends

ICCS 431 Cooperative and Work integrated Education Seminar **2 (2-0-4)**

Prerequisites: Completed at least 96 credits

Working as an actual employee under guidance of course coordinator and supervisors for at least 12 continuous weeks

ICCS 432 Cooperative and Work integrated Education I **3 (0-40-8)**

Prerequisites: ICCS 431 Cooperative and Work integrated Education Seminar

Working as an actual employee under guidance of course coordinator and supervisors for at least 12 continuous weeks

ICCS 433 Cooperative and Work integrated Education II **3 (0-40-8)**

Prerequisites: ICCS 432 Cooperative and Work integrated Education I

Working as an actual employee from previous trimester under guidance of course coordinator and supervisors for at least 4 continuous weeks

ICCS 445 E-Commerce Innovation and Technology Management **4 (4-0-8)**

Prerequisites: ICCS 271 Interaction Design; ICCS 370 Software System Construction

History of e-commerce, real and virtual networks, supply-side versus demand-side scale economies, business models Integration of technology and business within the fast-changing e-commerce landscape. Contemporary e-commerce platforms, emphasizing the technical aspects such as platform architecture, AI-based personalization, and security measures Key business strategies required for digital transformation Seamless omnichannel experiences Development of ecommerce ventures Creation deployment and management cutting-edge e-commerce solutions that meet the needs of today's digital marketplace

ICCS 448 Mobile Application Programming **4 (4-0-8)**

Prerequisites: ICCS 271 Interaction Design; ICCS 370 Software System Construction

Mobile application platforms; cross-platform framework; native application development; singleview and multi-view application development; database for mobile application, local files and media; connecting to web-services: JSON, XML; working with sensors and GPS; UI design for multiple screen sizes; publishing mobile application

ICCS 461 Machine Learning **4 (4-0-8)**

Prerequisites: ICCS 261 Principles of Data Science; ICCS 205 Numerical Computation

Probability and maximum likelihood estimate; k-nearest neighbor methods; decision tree and basic information theory; regressions; ensemble learning algorithms including bagging, boosting and random forest; support vector machines; perceptron and neural networks; deep learning; unsupervised learning; semi-supervised learning; PAC learning and VC dimension

ICCS 462 Deep Learning **4 (4-0-8)**

Prerequisites: ICCS 261 Principles of Data Science; ICMA 218 Multivariable Calculus

Fundamentals of neural networks; shallow and deep networks; gradient and loss functions; model training and evaluation; regularization; convolutional networks; image generation models; sequence models; transformer models; large language models

ICCS 463 Special Topics in Machine Learning I **4 (4-0-8)**

Prerequisites: ICCS 205 Numerical Computation; ICCS 261 Principles of Data Science

Topic(s) from areas of Machine Learning chosen according to current research and industrial trends

ICCS 464 Special Topics in Machine Learning II **4 (4-0-8)**

Prerequisites: ICCS 205 Numerical Computation; ICCS 261 Principles of Data Science

Topic(s) from areas of Machine Learning chosen according to current research and industrial trends

ICCS 465 Special Topics in Machine Learning III **4 (4-0-8)**

Prerequisites: ICCS 205 Numerical Computation; ICCS 261 Principles of Data Science

Topic(s) from areas of Machine Learning chosen according to current research and industrial trends

ICCS 471 Topics in Software Technology I **4 (4-0-8)**

Prerequisites: ICCS 271 Interaction Design

Topic(s) from areas of Software Technology chosen according to current research and industrial trends

ICCS 472 Topics in Software Technology II **4 (4-0-8)**

Prerequisites: ICCS 271 Interaction Design

Topic(s) from areas of Software Technology chosen according to current research and industrial trends

ICCS 473 Topics in Software Technology III **4 (4-0-8)**

Prerequisites: ICCS 271 Interaction Design

Topic(s) from areas of Software Technology chosen according to current research and industrial trends

ICCS 491 Topics in Computer Science I **4 (4-0-8)**

Prerequisites: ICCS 209 Data Structures

Topic(s) from areas of computer science chosen according to current research and industrial trends

ICCS 492 Topics in Computer Science II **4 (4-0-8)**

Prerequisites: ICCS 209 Data Structures

Topic(s) from areas of computer science chosen according to current research and industrial trends

ICCT

ICCT 111 Introduction to Programming for Creative Technology **4 (4-0-8)**

Prerequisites: None

Procedural program constructs and idioms such as sequencing, conditional selection, iteration, and functional abstraction; computational representation and manipulation of forms such as point, line, shape, and color; constructs and patterns for working with static, dynamic, and interactive forms

ICCT 201 Professional Ethics **2 (2-0-4)**

Prerequisites: None

Ethical principles in creative technology; moral reasoning and decision-making in professional contexts; ethical dilemmas in art, design, and technology; intellectual property, copyright, and fair use; privacy, data ethics, and responsible innovation; diversity, inclusion, and cultural sensitivity; professional integrity, accountability, and ethical leadership skills

ICCT 441 Capstone Project for Creative Technology **6 (0-12-6)**

Prerequisites: ITCT 302 Interactive Multimedia and Game Development Technology,
ICCD 360 Service Design

A small research project in creative technology under the supervision of an advisor; proposal and final presentations as a requirement to complete this course

ICCT 444 Internship **8 (0-40-8)**

Prerequisites: ITCT 302 Interactive Multimedia and Game Development Technology,
ICCD 360 Service Design

Hands-on industry experience in creative technology; practical skills in art, design, media, and technology; development of problem-solving, teamwork, and communication skills; supervised internships in dynamic work environments; preparation for careers in creative industries

ICCT 445 Cooperative and Work integrated Education **6 (0-40-8)**

Prerequisites: ICCS 431 Cooperative and Work Integrated Education Seminar

Working as an actual employee under guidance of course coordinator and supervisors for at least 12 continuous weeks

ICCT 446 Extended Internship for Professional Growth **4 (0-12-2)**

Prerequisites: ICCT444 Internship or ICCT 445 Cooperative and Work integrated Education

Advanced industry experience for professional growth; hands-on practice in creative technology fields; deeper application of theoretical knowledge to complex projects; exposure to industry trends, innovation, and emerging technologies

ICFA

ICFA 232 Moving Images by Design **4 (2-4-6)**

Prerequisites: None

An introduction to the international design world; focus on experiential learning; exposure to international designers; professional design culture and challenges including cultural heritage and contemporary design practice; design terminology; applications of eco-friendly and sustainable design; new and innovative technologies and current design trends; digital, interactive, and online platforms

ICFA 233 Storytelling by Design **4 (4-0-8)**

Prerequisites: None

An introduction, practice and an application of storytelling languages and structured craft approach; including the art of storytelling, elements and structure of a story, narrative techniques, story development in multiple film and media-related platforms; the creative application to any of the following screenwriting, short films, television, and/or design related outcomes, such as campaigns, posters, adverts, applications, products, etc.

ICFA 240 Current Issues in Communication Design **4 (4-0-8)**

Prerequisites: None

Seminar for advanced students focusing on topical exploration of issues, questions or challenges facing Communication Design Professionals. Including topics such as the relationship between contemporary design trends and study/preservation of cultural heritage; opportunities and applications of green design; new technologies; user experience/interface, etc.

ICFA 241 Study Trips: Regional **2 (0-4-2)**

Prerequisites: None

A focus on experiential learning for a relatively short duration; a concentration on a particular location in Thailand or in Asia-Pacific in regards to cultural and historical aspects; exposure to designers in the region and to design trends in that locale

ICFA 242 Study Trips: International **2 (0-4-2)**

Prerequisites: None

A focus on experiential learning; concentration on a particular location abroad in regards to cultural and historical aspects; exposure to designers in other countries and to design trends in that locale

ICFA 334 Animation Principles and Production **4 (2-4-6)**

Prerequisites: None

An introduction, practice and application to the 12 principles of animation; including familiarity with key principles of design and animation and an understanding of simple narrative structure; practical creative experience in the development and construction processes of animation production: hand-drawn and stop motion techniques; technical proficiency with media and animation software. Understanding of copyright and privacy issues in relation to content, audience and distribution of animation

ICFA 335 Character and Concept Design **4 (2-4-6)**

Prerequisites: None

An introduction, practice and application to the fundamental tools for designing and developing concepts and character for narratives; including familiarity with key principles of design, aesthetics and basic understanding of simple narrative structure; understand the development and construction processes; technical proficiency with suitable media and software processes for designing concept and character bible for various media platforms and audiences

ICFA 336 Cinematic Languages and Its Application **4 (4-0-8)**

Prerequisites: None

An introduction, practice and an application of languages to critical thinking and analysis; examine key film languages and textual examples, including narrative theories; genre, film theories; an analysis of key film texts; the development of skills in research, writing and analytical thinking; applied knowledge to creative works. The presentation of original ideas and reflection on craft approach

ICFA 337 Thai and ASEAN Cinema **4 (4-0-8)**

Prerequisites: None

An introduction, practice and an application of languages to critical thinking and analysis of Thai and ASEAN film texts; examine key film languages and textual examples, including narrative theories; genre, film theories; an analysis of key film texts; the development of skills in research, writing and analytical thinking

ICFA 338 Short Film Production **4 (2-4-6)**

Prerequisites: None

An introduction, practice and an application of short film languages and structured craft approach; including narrative storytelling, filmmaking techniques, and production practices, hands-on film pre-production, production and post; short film, research, analysis, presentation

ICFA 339 Film Genre and Gender **4 (4-0-8)**

Prerequisites: None

The critical thinking and analysis practice of reading and decoding genre film texts; examine key film languages and textual examples to discuss issues of gender and gender representation, including genre theories; gender theories and film feminism; an analysis of key film texts; the development of skills in research, writing and analytical thinking

ICFA 346 International Design Language and Culture **4 (4-0-8)**

Prerequisites: None

An introduction to the international design world; focus on experiential learning; exposure to international designers; professional design culture and challenges including cultural heritage and contemporary design practice; design terminology; applications of eco-friendly and sustainable design; new and innovative technologies and current design trends; digital, interactive, and online platforms

ICFA 356 Internship **4 (0-40-0)**

Prerequisites: ICCD 310 Environmental Graphic Design, ICCD 311 Integrated Branding, ICCD 312 Advertising Campaign Design

Professional working knowledge and process; practice professional conduct and responsibility in the workplace; time management; organizing work flow; relations with co-worker; future career goal

ICFA 357 Package Design **4 (2-4-6)**

Prerequisites: ICCD 115 3 Dimensional Design

3-D form; package functioning; packaging patterns; research for marketing; materials usage and development; printing process for packaging; technology software for design

ICFA 358 Illustration **4 (2-4-6)**

Prerequisites: None

Studying of basic illustration process from production of thumbnails to finished artwork; projects requiring response to brief given; the use of both traditional media and digital applications; fostering of creativity and concept development; emphasis on visual research skills, craftsmanship, and professionalism

ICFA 359 Gamification **4 (2-4-6)**

Prerequisites: None

Exploration of communication design's role in games and toys, from tabletop games to video games, including character design and designer's toys; emphasis on game mechanics, world-building, and character psychology to highlight communication design's impact on targeted issues and audiences

ICFS

ICFS 113 Essence of Food Science and Technology **4 (3-2-7)**

Prerequisites: None

The fundamental concept and scope of food science and technology as well as its contribution to the food sectors, the relationship between the science of food and the well-being of humans; fundamental concepts of properties of common food components; basic principles of large scale and small scale food production and its quality factors; practical sessions included

ICFS 114 Marketing of Food Product and Services **2 (2-0-4)**

Prerequisites: None

Principles of marketing with an emphasis on food product; market research and analysis, consumer behaviour and marketing strategies; basic economic principles, marketing analytical tools, trends in processed food and food service industries

ICFS 115 Operations Management in Food Business **2 (2-0-4)**

Prerequisites: None

The main factors affecting the performance in the food industry, matching of supply and demand, eliminating inefficiencies, increasing productivity and utility, cost control including the return on investment (ROI) and the cost of goods sold (COGS) calculation

ICFS 116 Food for Specialised Diets **4 (3-2-7)**

Prerequisites: None

Explore the principles and techniques to create foods that meet the needs of individuals with specialised dietary preference or requirement such as gluten-free, low-sodium, vegetarian and vegan, etc. with practical exercises included

ICFS 117 Food Product and Process Design **4 (4-0-8)**

Prerequisites: None

Food processing; design new food product processing; evaluation of the new product characteristics to target consumers

ICFS 118 Food Safety and Sanitation Management **4 (4-0-8)**

Prerequisites: None

Basic knowledge of food safety and sanitation including foodborne illness, elements of safe food, personal hygiene, hygienic food handling; food safety and sanitation approaches

ICFS 119 Quality System in Food Processing **4 (4-0-8)**

Prerequisites: None

Food quality and safety system standards; principles and guides for food quality and safety management system auditing; case study from the past experience of professional consultants and auditors

ICFS 120 Science of Thai Culinary Arts **4 (3-2-7)**

Prerequisites: None

Scientific aspects of common ingredients, taste and flavours of Thai cuisine; scientific explanation behind local wisdoms of techniques in Thai cuisine; health benefit potentials of Thai cuisines; laboratory sessions on techniques of Thai cuisine processing for dishes such as stir-fried, steamed, spicy salads, curry, and desserts

ICFS 121 Food Product Innovation **4 (4-0-8)**

Prerequisites: None

Agrifood system innovation; innovation in food product development including novel products, product improvements, functional ingredients, and functional foods; innovation in food industry processing such as technologies and packaging; innovation in the cooking sector in regards to molecular gastronomy and science-based cooking

ICFS 122 Trends in Food Science and Technology **2 (2-0-4)**

Prerequisites: None

Emerging trends in food science and technology, their potential and application in food production. Insights into how these advancements can address challenges in food industry

ICFS 171 Discovering Culinary Techniques **4 (2-4-6)**

Prerequisites: None

Principles of mise en place (preparation before cooking), proper culinary terminology; developing standardized recipes, practical sessions on basic cooking method both with dry heat and moist heat; developing knife skills, the proper use of ingredients

ICFS 172 World Cuisine **4 (2-4-6)**

Prerequisites: None

Global history of food, geographical and cultural influences on major food ingredients, global influences on contemporary cuisines, practical exercise on dishes preparations of classical, Western, Eastern, Mediterranean, and Oriental cuisines; identifying some culinary trends; fusion cuisine

ICFS 215 Human Nutrition **4 (4-0-8)**

Prerequisites: ICFS 216 General Biochemistry for Food Science and Technology

Elements of human nutrition including vitamins, minerals, micronutrients, and antioxidants including sources, metabolism, and functions in the human body; nutritive values of foods; requirements for human health, nutraceuticals, and functional foods and their effects on human health beyond basic nutrition

ICFS 216 General Biochemistry for Food Science and Technology **2 (2-0-4)**

Prerequisites: ICCH 101 General Chemistry I

The principles of biochemical aspects of foods, topics including structure and function of biomolecules with emphasis on water, carbohydrates, proteins, nucleic acids, lipids and enzymes, metabolism and bioenergetics

ICFS 217 Physical Chemistry for Food Science and Technology **2 (2-0-4)**

Prerequisites: ICCH 101 General Chemistry I

The principles of physicochemical aspects of foods, topics including thermodynamics, thermal and mass transfer and physicochemical properties

ICFS 231 General Microbiology **4 (3-2-7)**

Prerequisites: ICBI 105 Molecules to Living Cells

Basic knowledge related to structure, physiology and ecology of microorganisms such as viruses, bacteria, and fungi, aspects of microbiology importance in food science and technology; practical exercises

ICFS 314 Food Analysis **4 (3-2-7)**

Prerequisites: ICCH 103 Integrated Laboratory in Chemistry

Principles of chemical and instrumental methods for the qualitative and quantitative analysis of food components and additives, chemical and instrumentals methods, practical exercises included

ICFS 317 Food Chemistry **4 (3-2-7)**

Prerequisites: ICFS 113 Essence of Food Science and Technology,
ICCH 102 General Chemistry II, ICCH 221 Organic Chemistry I

Chemical and physical properties of water, proteins, lipids, carbohydrates, vitamins, and minerals; their interactions and functional roles in foods; practical exercises included

ICFS 324 Food Ingredients Functionality and Quality **4 (3-2-7)**

Prerequisites: ICFS 317 Food Chemistry

Chemistry and functionality of food components and ingredients; changes taking place during the processing and storage; their impact on food quality; challenges of food ingredients utilization in food industries; practical exercises included

ICFS 333 Food Microbiology **4 (4-0-8)**

Prerequisites: ICFS 231 General Microbiology

Sources of microorganisms; factors affecting the growth of microorganisms in food; important pathogenic microorganisms in food; spoilage microorganisms; control and inactivation of pathogenic and spoilage microorganisms in foods; effect of food processing on microorganisms and control; beneficial microorganisms in food; food fermentation and preservation

ICFS 334 Food Microbiology Laboratory **2 (0-4-2)**

Prerequisites: ICFS 333 Food Microbiology

Basic microbiological techniques and standard plate counts; microscopic examination of yeast, mold, and bacteria; the enumeration of microorganisms in foods; most probable number method; the detection and identification of important foodborne pathogens and spoilage microorganisms in foods; inactivation of pathogens in foods; food fermentation and beneficial microorganisms; sanitary practices; microbial standards and regulations; practical exercises included

ICFS 341 Food Processing **4 (3-2-7)**

Prerequisites: ICFS 113 Essence of Food Science and Technology **and**
ICFS 217 Physical Chemistry for Food Science and Technology

Fundamentals of the food processing industry; thermal processing and the preservation of food materials by blanching, pasteurization, sterilization, evaporation, dehydration, emerging technology; processing factors influencing quality; practical exercises included

ICFS 342 Food Storage and Shelflife Extension **4 (3-2-7)**

Prerequisites: ICFS 113 Essence of Food Science and Technology **and**
ICFS 217 Physical Chemistry for Food Science and Technology

Fundamentals of food preservation; raw material preparations; non-thermal methods, refrigeration, freezing, chemical preservations, including various packaging materials; practical exercises included

ICFS 344 Smart and Green Agro-Industry **2 (2-0-4)**

Prerequisites: ICFS 341 Food Processing

Concepts of smart agriculture for high-quality raw materials, environmentally-friendly manufacturing technologies; fundamentals of plant design, clean technology, sources and uses of water, agroindustry waste management; biological treatment methods

ICFS 351 Food Engineering Principles **2 (2-0-4)**

Prerequisites: ICMA 106 Calculus I

Principles of various unit operations used in food processing and the manufacturing industry; topics covered include units, dimensions, fluid properties, fluid flow, rheology, energy loss in flow, velocity and pressure measurement, and unit operations such as pumps, mixing, and mechanical separation as applied to food processing and manufacturing operations

ICFS 352 Unit Operations in Food Engineering **3 (3-0-6)**

Prerequisites: ICFS 351 Food Engineering Principles

Unit operations in food engineering, major unit operations used in food processing and manufacturing industry such as dryer, heat exchanger, evaporation, gas absorption; the effects of input and operational parameters on performance and food quality; thermal processing, mass transfer, heat transfer, psychrometrics

ICFS 362 Food Safety and Sanitation **4 (4-0-8)**

Prerequisites: ICFS 231 General Microbiology

Principles of food safety and food plant sanitation; hazards and sources, Good Manufacturing Practices (GMPs), Sanitation Standard Operating Procedures (SSOPs), Hazard Analysis Critical Control Point (HACCP); hygienic design of equipment and facilities, cleaning and sanitization, pest control, personal hygiene, hygienic food handling

ICFS 366 Consultancy and Auditing in Food Quality and Safety Management **4 (4-0-8)**

Prerequisites: None

Basic knowledge in consultation; food quality and safety system standards; principles and guides for food quality and safety system auditor in line with ISO 19011; case study from the past experience of professional consultants and auditors; ethics in conducting consultancy and auditing as per the food safety management system

ICFS 367 Quality Assurance in Food Processing **4 (4-0-8)**

Prerequisites: ICFS 341 Food Processing

Quality control and management programs in food processing; quality assurance program and documentation system; statistical process control in food industry; ingredient specification and supplier quality program; quality assurance auditing; risk and traceability management

ICFS 368 Regulatory Compliance in Food Industry **2 (2-0-4)**

Prerequisites: ICFS 317 Food Chemistry

Food law and standards, and food regulations in Thailand; international food regulations; labeling of food products; regulation of irradiated foods, biotechnology and genetically modified foods, dietary supplements, functional foods, nutraceuticals, and novel foods

ICFS 374 Experimental Design in Food Product Development **2 (1-2-3)**

Prerequisites: ICMA 151 Statistics for Science I

The fundamental concept of experimental design for food product development: randomisation, replication, blocking; Experimental designs for various stages of food product development: formulation optimisation, sensory evaluation; Common statistical analysis for food product development: T-Test, ANOVA, response surface methodology, etc. with practical exercises

ICFS 392 Scientific Research in Food Innovation **2 (2-0-4)**

Prerequisites: ICFS 317 Food Chemistry **or** ICFS 341 Food Processing **or** ICFS 333 Food Microbiology

Creating scientific research topic in food innovation; literature search for scientific information; experimental design; scientific methods; data analysis and interpretation of scientific research on food and food innovation

ICFS 412 Product Development for Food and Food Service Industry **4 (3-2-7)**

Prerequisites: ICFS 317 Food Chemistry, ICFS 341 Food Processing

Principles and steps used in a new product-developing process, formulation, level of new product, product cycle, types of product development and related techniques, sensory evaluation techniques of food products, product development for food service; practical exercises included

ICFS 418 Fruits and Vegetables Technology **4 (3-2-7)**

Prerequisites: ICFS 317 Food Chemistry, ICFS 341 Food Processing

Characteristics, composition, and the nutritional importance of fruit and vegetables; post-harvest handling and changes and in the product quality; preservations and processing technologies applied to fruits and vegetables; the production of fresh and manufactured food products and ingredients from fruits and vegetables; the by-products utilization and waste management of fruit and vegetables processing; practical exercises included

ICFS 422 Dairy Product Technology **4 (3-2-7)**

Prerequisites: ICFS 317 Food Chemistry, ICFS 341 Food Processing

The composition and properties of milk, physical and chemical changes occurring in milk during processing and storage, milk processing i.e. fluid milk; fermented products, concentrated and dried dairy products, butter, cream frozen dairy desserts; milk microbiology and microbial transformations of milk, food safety aspects, functional health benefits; practical exercises included

ICFS 423 Beverage Technology **4 (3-2-7)**

Prerequisites: ICFS 317 Food Chemistry, ICFS 341 Food Processing

Characteristics and production technology of non-alcoholic and alcoholic beverages such as soft drinks, fruit juices, teas, coffee, and alcoholic beverages; ingredient selection and formulation; manufacturing processes, quality control, packaging, sensory evaluation, and market trends; practical exercises included

ICFS 424 Fat and Oil Technology **4 (3-2-7)**

Prerequisites: ICFS 317 Food Chemistry, ICFS 341 Food Processing

Processing and technologies of edible fats and oils; physical and chemical properties of both raw materials and finished products such as salad dressing, margarines, butters and other types of fat and oil product; quality, safety, and nutritional aspects of fat and oil products; practical exercises included

ICFS 426 Bakery Product Technology **4 (3-2-7)**

Prerequisites: ICFS 317 Food Chemistry, ICFS 341 Food Processing

Properties and chemistry of flour, ingredients technology and selection, the science of mixing and baking; functional bakery products, sensory attributes of bakery products, packaging and shelf-life extension of finished products; practical exercises for skill development in bread, cake, and pastry making and formulation balance and adjustment

ICFS 427 Confectionery and Chocolate Product Technology **4 (3-2-7)**

Prerequisites: ICFS 317 Food Chemistry, ICFS 341 Food Processing

Types of confectioneries, sugar and corn syrup chemistry, common ingredients in sugar-based confectionery and their properties in candy-making, candy processing technology, types of sugar-based confectioneries: crystalline and non-crystalline candies, aerated confection; cocoa beans processing, chocolate-based confectionery, chocolate processing, tempering, panning and shell moulding, chocolate properties; Practical sessions included

ICFS 432 Sensory Evaluation of Food Products **4 (3-2-7)**

Prerequisites: ICFS 317 Food Chemistry

Sensory evaluation theories and practices through descriptive analysis; analytical instrumental methods of sensory evaluation and correlation with consumer sensory evaluation; anatomy and physiology of sensory systems (sight, taste, smell, touch, and hearing); physiological and psychological factors affecting performance on sensory tests; practical exercises included

ICFS 437 Application of Modern Biotechnology to Food Products **4 (3-2-7)**

Prerequisites: ICFS 231 General Microbiology

Potential benefits and risks of biotechnology in foods; GMOs, GM foods and food security; current use, research, and development of foods produced through modern biotechnology; practical exercises included

ICFS 438 Cereal and Starch Technology **4 (3-2-7)**

Prerequisites: ICFS 317 Food Chemistry

Fundamental structure, chemistry, functional properties of cereal and starches; cereal and starch based human food products; their utilization in applications of healthy and functional foods; practical exercises included

ICFS 451 Internship in Food Science and Technology **4 (0-12-4)**

Prerequisites: ICFS 341 Food Processing

Industrial work-internship programs in the food manufacturing industry, the industrial internship programs focusing on the actual work and on-the-job training at production line, process control, quality control of process and product, laboratory work; chemical, physical, microbiological analysis

ICFS 452 Food Packaging **4 (3-2-7)**

Prerequisites: ICFS 342 Food Storage and Shelf-life Extension

Materials, systems, and applications of food packaging materials and methods; properties, fabrication, and functions of metal, glass, paper, and plastic packaging; sanitation of packaging materials; forming, filling, joining, and enclosure operations and related equipment for packaging systems and equipment; selected topics for food packaging applications including aseptic packaging, food-package interactions, sealing integrity, handling of packages, and modified atmospheric packaging; practical exercises included

ICFS 463 Field Trip **2 (0-6-2)**

Prerequisites: ICFS 341 Food Processing

Visits and industrial plant studies of food manufacturing industry or related organizations

ICFS 465 Experiential Learning Internship **8 (0-24-0)**

Prerequisites: ICFS 341 Food processing

Work-based experience for 14 weeks with specific goals needed to achieve, with academic supervision and assessment from both faculty and industry supervisors

ICFS 466 Entrepreneurial and Innovative Project in Food Science and Technology **4 (0-8-4)**

Prerequisites: ICFS 451 Internship in Food Science and Technology

Small research project to identify, develop, and implement innovative solutions to contemporary challenges in the food industry and foster entrepreneurial skills under the supervision of project advisor and food sector partner

ICFS 471 Trends and Novel Techniques of World Foods and Cuisines **4 (3-2-7)**

Prerequisites: ICFS 317 Food Chemistry

The latest trends in world food and cuisine, future food and cuisine, and innovative techniques from various world cuisines; role of technology in modern food and cuisine; practical sessions

ICFS 473 Special Topic in Food Science and Technology **4 (4-0-8)**

Prerequisites: ICFS 317 Food Chemistry **or** ICFS 341 Food Processing **or** ICFS 333 Food Microbiology

Exploration of contemporary and emerging issues in food science and technology of the selected topics and their importance and application in food industry and food science and technology field

ICFS 491 Seminar in Food Science and Technology **2 (2-0-4)**

Prerequisites: ICFS 314 Food Analysis

Senior student presentations, discussions of research, and reviews of topics of current interest; staff and invited speakers from Mahidol University and other universities or the food processing industry

ICFS 498 Senior Project in Food Science and Technology I **1 (0-2-1)**

Prerequisites: ICFS 451 Internship in Food Science and Technology

Study and research in food science and technology at the Bachelor's degree level, experimental design, research proposal writing

ICFS 499 Senior Project in Food Science and Technology II **3 (0-6-3)**

Prerequisites: ICFS 498 Senior Project in Food Science and Technology I

Small research projects in food science and technology or related fields under the supervision of a research advisor

ICGB

ICGB 101 Project Management for Impacts **2 (2-0-4)**

Prerequisites: None

Develop self-awareness as a MAHIDOL person; application of the university's motto, philosophy, and core values to benefit the community; the application of the Project Management Bodies of Knowledge (PMBOK) and skills; the management of social service projects; Social impact assessments aligning with Sustainable Development Goals (SDGs) and other frameworks

ICGB 102 Navigating the Market Landscape **2 (2-0-4)**

Prerequisites: None

Exploration of the dynamic interplay between consumer behavior and firm strategy across industries, guided by the supply-demand framework; practical insights into market dynamics, tool navigation through diverse market landscapes (degree of competition, digital economy, sharing economy), and impact on key stakeholders

ICGB 103 Decoding Economic News **2 (2-0-4)**

Prerequisites: None

Uncovering of economic news mysteries, deciphering of the big picture, and exploration of how economic forces shape our world through key macroeconomic indicators and the aggregate supply-aggregate demand framework; acquisition of practical skills for analyzing current economic events with clarity and insight, empowering navigation of global economic complexities with confidence

ICGB 104 Entrepreneurship in a Disruptive Environment **2 (2-0-4)**

Prerequisites: None

Understand how entrepreneurs create new businesses, capture new markets, and enhance organizational effectiveness so the economy could benefit. Applying disruptive innovation due to new technologies and innovation to deal with the disruptive changes as the new generation entrepreneurs

ICGB 105 Personal Finance Literacy **2 (2-0-4)**

Prerequisites: None

Personal finance literacy includes: financial planning process, life goals and financial goals, tax preparation, consumer credits, investment and retirement planning, investment fundamentals, its techniques and investment assets, making loan and debt decisions, life and property insurance, and estate planning

ICGB 106 The Business of Fashion **2 (2-0-4)**

Prerequisites: None

The fashion world, categorisation of fashion, glossary of fashion, fashion trend interpretation, fashion and creativity, brand image, understanding customers: national culture influences the choice of fashion, understanding customers: motivations for buying fashion, total shopping experiences, extension of the fashion business, consumerism

ICGB 107 Tourism Management Perspectives **2 (2-0-4)**

Prerequisites: None

Overview of the tourism industry and its significance, factors shapping the future of tourism and hospitality, opportunities and challenges of tourism development in Thailand, tourism supply chains, key stakeholders and their roles in the tourism ecosystems, and innovative and promising practices in sustainable tourism development

ICGB 108 Event for Good **2 (2-0-4)**

Prerequisites: None

Develop self-awareness as a MAHIDOL person; application of the university's motto, philosophy, and core values to benefit the community; exploration of various methods and strategies for organizing events that drive positive impact for communities; organizing an event focusing on community engagement, fundraising, or others with a focus on social outcomes or community focused objective

ICGB 109 Business Event Essentials **2 (2-0-4)**

Prerequisites: None

Event as a global strategic and management tool; introduce different types of business events to achieve various objectives including Meetings, Incentive Travels, Conventions, Exhibitions and Special Events; Event strategies

ICGB 110 Management Styles of Effective Leaders **2 (2-0-4)**

Prerequisites: None

Overview of management; evolution of Management theories and thoughts; changing environment of organizations, social responsibility, organizational culture and change

ICGB 111 Leadership in a Global Society **2 (2-0-4)**

Prerequisites: None

Concepts and practices for leadership development; developing leadership skills and challenges of change in a global society; the need, vision, initiation for change, teamwork and collaboration

ICGB 112 The Art of Pricing **2 (2-0-4)**

Prerequisites: None

Rationales and conditions required for sellers to apply different prices to different groups, in order to maximize profits; benefits of first-, second-, and third-degree price discrimination; examples of the use of consumers' demographics and characteristics in buyers' classification; evaluation of certain complex pricing namely, bundling and versioning; which are invented by sellers as a means to price discriminate; assessment of pros and cons of algorithm pricing; the cost of profit maximizing strategy particularly buyers' perception and fairness

ICGB 113 Crisis Management in Service Businesses **2 (2-0-4)**

Prerequisites: None

Basics of crisis management, crisis preparedness and risk management, methods of analysis and prognosis, strategic measures of crisis management applied in service businesses, crisis planning and organizational measures applied in service businesses, crisis communication

ICGB 114 Cultural Strategies for Success: Unveiling Eastern Business Dynamics **2 (2-0-4)**

Prerequisites: None

Introduce theories (change theories, cultural theories) and frameworks governing Eastern societies in the context of business; Eastern cultural practices and behaviors shaping strategies in competitive markets; Complexities of Asia's diverse business environment; Comparative analysis of strategies and behaviors

ICGB 115 Money: Deciphering Currencies of Value **2 (2-0-4)**

Prerequisites: None

Navigating the intricate realm where money transcends tangible forms, from paper bills to digital transactions; unveiling the essence and construction of value inherent in these mediums, exploring their societal significance and evolving role in contemporary economies

ICGB 116 Managing Self and Working with Others **2 (2-0-4)**

Prerequisites: None

Personal goal setting, personality models and profiling, self awareness and management, social awareness and interaction, techniques in working with others through the lens of diversity, equity, and inclusion, conflict resolution, people management, personal development plan

ICGC

ICGC 104 English Studies I: The Writer's Toolkit **4 (4-0-8)**

Prerequisites: Placement Writing Test

An introduction to the academic writing process through the development of the writer's voice through sentencing, structure, and rhetorical devices; focus on strategies for using and integrating researched sources; methods to compose well-structured essays based on themes relevant to the world today

ICGC 105 English Studies II: The Writer's Voice **4 (4-0-8)**

Prerequisites: Placement Writing Test **or** ICGC 104 English Studies I: The Writer's Toolkit

The integration of skills in academic research and writing to analyze and create persuasive compositions; techniques to identify strengths and weaknesses in argument; development of students' knowledge and preconceptions of global issues through a progressive series of essays and journal assignments

ICGC 106 English Studies III: Public Speaking **4 (4-0-8)**

Prerequisites: ICGC 105 English Studies II: The Writer's Voice

Fundamentals of key skills for confident and effective public speaking through a series of prepared and unprepared speeches; introduction and application of techniques to inform/persuadeaudiences; utilization of the Writer's Toolkit (English Studies I) and the Writer's Voice (English Studies II) to create and deliver speeches to a professional standard

ICGC 221 English Studies IV: The World of English - Global Realities **2 (2-0-4)**

Prerequisites: ICGC 106 English Studies III: Public Speaking

An exploration and a critical analysis of key texts on poetry, literature, and legislative documents in order to understand the complexity and challenges of the world we live in; themes encouraging students to consider values, human rights and government; class discussions, journal writing, and presentation activities to demonstrate how students can contribute to the betterment of society

ICGC 222 English Studies IV: The World of English - Literary Analysis **2 (2-0-4)**

Prerequisites: ICGC 106 English Studies III: Public Speaking

A review of literary works from selected literary genres; an exploration of how literature informs our perceptions of the world by way of analytical and critical thinking; utilising scaffolding of strategies for students to understand the function of a variety of literary forms

ICGC 223 English Studies IV: The World of English - Creative Writing **2 (2-0-4)**

Prerequisites: ICGC 106 English Studies III: Public Speaking

An examination of fiction, poetry, drama, and media production through readings, speeches, and films; comparisons of writing in different genres; creation of a work of publishable quality by means of the consideration of audience and genre

ICGC 224 English Studies IV: The World of English - Advanced Oral Communication **2 (2-0-4)**

Prerequisites: ICGC 106 English Studies III: Public Speaking

Theories of persuasion, non-verbal techniques, and voice control for advanced presenters; strategies to develop high levels of voice control and expressions; activities including debates, presentations, and occasional speeches; the development of students' abilities to express themselves confidently in a variety of academic and professional environments through impromptu and prepared speeches

ICGC 226 English Studies IV: The World of English - Literature Into Film **2 (2-0-4)**

Prerequisites: ICGC 106 English Studies III: Public Speaking

An examination of the technical aspects of translating literature into film; an exploration of the interplay between literature and films through an analysis of literary works in their film versions; an exploration of the challenges merging both mediums

ICGC 228 English Studies IV: The World of English - Language and Culture 2 (2-0-4)

Prerequisites: ICGC 106 English Studies III: Public Speaking

An examination of the interplay between language and culture; a critical exploration of the global spread of the English language with a focus on the English culture coming out of the Global South

ICGC 230 English Studies IV: The World of English - First and Second Language Acquisition 2 (2-0-4)

Prerequisites: ICGC 106 English Studies III: Public Speaking

An exploration of how children develop their first language; comparing and contrasting of the second language development; theories of language development from behaviorism to more recent cognitive and functional approaches; the implications and applications of theories

ICGC 231 English Studies IV: The World of English – Poetry 2 (2-0-4)

Prerequisites: ICGC 106 English Studies III: Public Speaking

An in-depth study of poetry, including metrics, forms, themes, ethnic voices, throughout history; an evaluation of poetry from different genres through discussions, workshops and research

ICGC 232 English Studies IV: The World of English - The Short Story and the Novel 2 (2-0-4)

Prerequisites: ICGC 106 English Studies III: Public Speaking

A study of elements of fictions in short stories and novels through class workshops on characters, dialogue, plot and atmosphere; class discussions to analyze the effect of historical and social developments on selected themes

ICGC 233 English Studies IV: The World of English – Drama 2 (2-0-4)

Prerequisites: ICGC 106 English Studies III: Public Speaking

An exploration of ways to understand and appreciate drama by reading, watching, and analyzing theatrical performances; fundamentals of theatrical production and stage performance

ICGC 234 English Studies IV: The World of English - Literary Non-fiction 2 (2-0-4)

Prerequisites: ICGC 106 English Studies III: Public Speaking

An exploration of literary nonfiction, a flourishing genre of writing a step away from academic work; reading of compelling, informative, and insightful but also entertaining, imaginative, and risky nonfiction work; overview of various techniques utilized within this field of writing and media; analysis and response to a variety of texts

ICGC 235 English Studies IV: The World of English - Writing for Research **2 (2-0-4)**

Prerequisites: ICGC 106 English Studies III: Public Speaking

A student-centric approach to developing research writing skills; an overview of the conventions of the world of research with an emphasis on academic honesty and academic style; use of sample papers to provide students with models to prepare effective abstracts, literature reviews, research paper outlines and short academic articles

ICGH

ICGH 101 Biotechnology: from Science to Business **4 (4-0-8)**

Prerequisites: None

Biotechnology, bioethics, and the law, biotechnology and the regulatory framework, genetic testing, patenting life, biobanks and modern genomics research, genetically modified organisms, human and animal testing; bioterrorism, biological weapons laws, bio-prospecting, pharmaceutical pricing, the future of the human beings and post-humanism

ICGH 107 Contemporary Art and Visual Culture **4 (4-0-8)**

Prerequisites: None

Focusing on current issues in society as reflected in the new media utilized in art today; an analysis of images and group discussions regarding social and historical contexts of contemporary art; creative thinking skills; effects of globalization on the visual world; connections between global and local issues; an investigation of broader social and cultural matters such as ideology, gender, race, and ethnicity

ICGH 109 Creative Thinking Through Art and Design **4 (2-4-6)**

Prerequisites: None

Combining hands-on studio experiences with demonstrations, lectures and discussions; developing creativity and gaining confidence in communicating one's own unique vision; exploring a variety of art and design mediums; understanding the elements of the visual language; implementing the creative process and creative thinking to develop individual solutions to open-ended problems

ICGH 110 Drawing as Visual Analysis **4 (2-4-6)**

Prerequisites: None

Developing creativity and cognitive learning skills; utilizing visual communication, design and art principles; mark making; observation, analysis, record, representational plant and still life forms; practice, application,

techniques for conventional pencil drawing tools: shape, form, perspective, lines, shading, value, negative space, texture, composition; observation; scientific illustration, realistic representational observation

ICGH 115 Cinematic Language and Applications **4 (4-0-8)**

Prerequisites: None

An introduction, practice and an application of languages to critical thinking and analysis; examining key film languages and textual examples, including narrative theories; genre, film theories; an analysis of key film texts; the development of skills in research, writing and analytical thinking; applied knowledge to creative works; the presentation of original ideas and reflection on the craft approach

ICGH 116 World Cinemas **4 (4-0-8)**

Prerequisites: None

An introduction, practice and an application of languages to critical thinking and analysis of key world cinema texts; principal critical methods and theoretical debates of film theory; theoretical perspectives including structuralism, semiology, Marxism, feminism, psychoanalysis, poststructuralism, and cultural studies; questions of narrative and narration, realism, formalism, modernism, postmodernism, postcolonialism, gender, sexuality, and ideology

ICGH 117 Drawing as Creative Expression **4 (2-4-6)**

Prerequisites: None

Develop creativity and cognitive learning; utilize visual communication, design and art principles; experience multiple tools, techniques, medium, experimental mark making; research, analysis, observation, gesture, principles and elements of design and composition; examine, analyze, observe and reinterpret the human figure, plant and still life forms; research, interpret, evaluate, analyses contemporary artists; personal evaluation; personal expression

ICGH 118 Photography Visualizing in the Digital Age **4 (2-4-6)**

Prerequisites: None

Basic skills and aesthetic principles of photography, how the camera works, types of cameras and digital image capture, techniques in taking pictures, in camera editing, specialized forms of photography, simple editing adjustments, the aesthetics of picture taking

ICGH 120 Thai and ASEAN Cinema **4 (4-0-8)**

Prerequisites: None

An introduction, practice and an application of languages to critical thinking and analysis of Thai and ASEAN film texts; examine key film languages and textual examples, including narrative theories; genre, film theories; an analysis of key film texts; the development of skills in research, writing and analytical thinking

ICGH 124 Life Drawing and Anatomy **4 (2-4-6)**

Prerequisites: None

An introduction, practice and application of observation drawing to record the human form; including key principles of composition, gesture and observation drawing techniques and design skills for static, gesture and motion poses; understanding record and identifying the anatomical make-up of the human form in muscles and skeletons; technical proficiency with suitable media for observation drawing; studio practice; hand-drawing from observations

ICGH 126 Behavioral Ethics: Why Good People Do Bad Things **2 (2-0-4)**

Prerequisites: None

Foundations of behavioral ethics, assumptions of ethical decision making, process of ethical decision making, cognitive errors in ethical decision making: incrementalism, self-serving bias, tangible and abstract, loss aversion, framing, and overconfidence, social and organizational pressures in ethical decision making, situational factors in ethical decision making

ICGH 128 Internet Celebrity, Culture and the Media **4 (4-0-8)**

Prerequisites: None

An examination of the Internet Celebrity phenomenon and the emerging online culture; focusing on the circulation of social media texts and images associated with the Internet Celebrity; i.e. bloggers, influencers, content creators, the construction of their practices, self-branding techniques, emphasizing on the discourse of labour, the impacts, the influences of cultural trends, and the ethical issues; encouraging students to draw on an online creative work in contemporary media culture

ICGH 129 Searching for Meaning **2 (2-0-4)**

Prerequisites: None

Starting from Socrates' quest for wisdom as described in the Apology, and the difficulties he encountered as a consequence, leading up to his trial and death sentence; connecting the Apology to Plato's Allegory of the Cave, and the dialectical method of ascent towards the truth; wondering whether Marcus Aurelius

may qualify as a philosopher-kind, and exploring the connections with Stoicism as taught by Epictetus; reflecting on Montaigne's contemplations of death; connecting such ancient models to strains of thought in Thoreau and Emerson, Schopenhauer and Nietzsche, Freud and William James, Albert Camus and Viktor Frankl

ICGH 130 The Logic Lab: Crafting Coherent Arguments **2 (2-0-4)**

Prerequisites: None

Introducing comprehensively formal and symbolic logic, by focusing primarily on categorical logic and truth functions, fundamental principles of logical reasoning with the goal of gaining a solid understanding of analyzing basic arguments, translating propositions, and evaluating truth-values

ICGH 131 Unraveling the Anthropocene: A Philosophical Critique of Earth's Shifts and Humanity's Roles 2 (2-0-4)

Prerequisites: None

Exploring the Anthropocene through the lens of philosophy of science and technology, scrutinizing the profound transformations on our planet and within societies; analyzing scientific advancements and technological innovations' roles in propelling this epochal shift, delving into the intricate interplay between human agency and environmental consequences; challenging conventional paradigms of development and progress through critical analysis, interrogating underlying assumptions that led to this critical juncture

ICGH 132 The Rise and Fall of Ancient Athens **2 (2-0-4)**

Prerequisites: None

Inquiring into the historical, philosophical and social circumstances involving the establishment, rapid growth, and eventual demise of the city state of Athens in the Archaic and Classical Periods of Ancient Greece

ICGH 133 Socrates, His Predecessors and Successors **2 (2-0-4)**

Prerequisites: None

Surveying the major philosophical movements in Ancient Greece, including the Presocratics, Socrates, Plato and Aristotle, and the various Hellenistic schools, by focusing on themes related to knowledge, truth, art, psychology, justice and the good life, and considering their relevance to life today

ICGH 134 Digital Media Literacy: Skills for 21st Century Learning **2 (2-0-4)**

Prerequisites: None

Integration of media literacy, media production, and media ethics; accessing, analyzing, evaluating, questioning, and producing media texts; social, cultural, and political implications of media; representations in media; media as political economy; media aesthetics; media and influence; audiences negotiating meaning

ICGH 135 The Horror Film **2 (2-0-4)**

Prerequisites: None

Investigating the horror film as one of the earliest and most notable cinematic genres, by considering its historical development with examples from both Western and International cinema and by examining the most iconic themes of horror across the ages

ICGH 136 Sound & Soul: A Journey of Music, Emotion, and Well-being **2 (2-0-4)**

Prerequisites: None

Discovering how music can guide emotional states, fostering relaxation, motivation, and creativity; exploring how music interacts with our emotions and sound's power in emotional expression and regulation; extending to the cultural influences that shape our perceptions of beauty in music as well as discussing techniques for incorporating music into our lives to cultivate emotional wellbeing and navigating different genres and styles for a richer experience of ourselves and our environment

ICGH 137 Apocalypse Now, or Never, or Maybe? **2 (2–0–4)**

Prerequisites: None

Pondering the changes of the past two hundred years, especially when it comes to life expectancy, health, and standards of living, and examining in this light the evidence we have for thinking that we are living on the brink of disaster; considering the psychological dimension to our dissatisfactions; discussing the major demographical changes we are currently undergoing; exploring questions around resource shortages, and food supplies; reflecting on our energy needs and realistic ways of meeting them, as well as the uses, dangers, and fears around artificial materials like plastics; exploring the complex questions we face around global warming

ICGH 138 The Philosophies of Asia **2 (2-0-4)**

Prerequisites: None

Exploring the major schools in Asian Philosophy, including Buddhism, Hinduism, Confucianism, Taoism, Jainism, among others, through a survey of foundational concepts and themes and an analysis of the implications that they have on ethics and culture as well as contemporary political, economic and legal frameworks

ICGH 139 Spirituality, Sustainability, Ecosystems **2 (2-0-4)**

Prerequisites: None

Spirituality's Sustainability Implications for Ecosystems: Bio-diversity, eco-justice, environmental ethics, environmental justice, faiths, spirituality, religious diversity, social equity, social justice, ecosystems, ecosystemic balance, (non-)anthropocentrism

ICGH 140 Ethics and Evolution **2 (2-0-4)**

Prerequisites: None

Scrutinizing the relationship between the theory of natural selection and ethics, through an examination of the implications of Darwinian evolution on the status of moral claims, the significance of our evolutionary history on moral theory and practice, and the relevance of these intersections on the development of morally justifiable policies and individual decision-making

ICGH 141 SPQR—Glimpses of Rome **2 (2-0-4)**

Prerequisites: None

Imagining Rome as it came to be in its “golden age” under the emperors Trajan and Hadrian; reflecting on slavery in Rome, the meaning of bread and games, charioteers and gladiators; contemplating the ways of traditional Roman religion; returning to the founding of the city, to understand how it all began; surveying the end of Roman monarchy and the conflicts between the social classes (Secession of the Plebs); examining Rome’s wars with invading Gauls and with the Carthaginians; reviewing the Roman constitution in its heyday, as described by Polybius; tracing the descent into social turmoil and civil war from the Gracchi brothers to the permanent dictatorship of Julius Caesar; sketching out the transition to the principate under Augustus and the Roman imperial period

ICGH 142 Fantasy Literature's Environmental Message **2 (2-0-4)**

Prerequisites: None

An overview of the science of ecology; fiction analysis; an overview of the fantasy fiction subgenre; close reading of fantasy novels and short stories to recognize ecological realities and environmental messages; applying through personal reflection, through activities that promote the health of the environment, and through creative work

ICGH 143 Flowers and Fragrances for Health **2 (2-0-4)**

Prerequisites: None

Introduction to the scientific and cultural aspects of floral fragrances for health benefits; exploring sustainable perfume industry and traditional essential oil extraction for medicinal purposes; significance of flowers in human society; floral composition, floral aesthetics, aromatherapy and how these relate to human mental and physical health

ICGH 144 A Candle in the Dark: How to Tell Fact from Fiction **2 (2-0-4)**

Prerequisites: None

Rationalism and the scientific method; scientific awareness for decision-making; science vs. pseudoscience; supernaturalism and creationism; charlatanism and quackery; magical thinking and superstitions; conspiracy theories and fake news; fact-checking and logical fallacies

ICGH 145 Essentials to Photography, Skills and Practices **2 (2-0-4)**

Prerequisites: None

An introduction to major genres of photography including documentary, art, journalism, portraiture, still life, fashion, and landscape; exploring the ethics of publishing photography on the World Wide Web, emphasizing creative collaboration, problem-solving in engaging with real-world issues and communities, utilising the photographic abilities and visual storytelling narratives to contribute positively to society and promoting sustainable practices and social change

ICGH 146 Acting for Self-Discovery and Empathizing with Others **2 (2-0-4)**

Prerequisites: None

Exploring basic acting principles; leading to self-discovery, and empathy with others; studying breathing, body, voice, movement, mind; understanding strength, weakness, fear in oneself; approaching cognitive empathy, emotional empathy, compassion, sympathy through role play, scenework so as to understand

others who are different; fostering authentic connection with self, relationships with others , and how to live in the world of various identities and beings

ICGH 147 Myth and the Masks of the Divine **2 (2-0-4)**

Prerequisites: None

Delving into the ancient Greek mythology as it has come down to us through Hesiod and Homer, and by many more recent retellings, as well as the Nordic tradition codified in the Eddas; reflecting upon the meaning and relevance of such tales about gods and heroes through classic commentaries by Thomas Carlisle, James George Frazer, Joseph Campbell, and other more recent thinkers

ICGH 148 Quest for Global Justice: A Philosophical Inquiry **2 (2-0-4)**

Prerequisites: None

Embarking on a philosophical journey, delving into the question: Is global justice possible? Engaging in critical analysis with an eye on case studies by examining the structural barriers and systemic inequalities that hinder the realization of global justice; through the lens of political theory and moral philosophy, confronting pressing questions about power dynamics, distribution of resources, and cultural diversity

ICGH 149 Law, Technology, and Society **2 (2-0-4)**

Prerequisites: None

Foundations of the relationship between law, technology, and societal values, how laws evolve with technological innovation, the ethical considerations at play, and the role of law in shaping and responding to societal changes. Current and emerging issues in technology law, including intellectual property, privacy, cybersecurity, and regulation of AI

ICGH 150 Global Perspectives on Free Expression in the Digital Age **2 (2-0-4)**

Prerequisites: None

Delving into the intricate dimensions of free expression on a global scale, particularly in the digital realm, tracing the evolution of free speech and contemplating its philosophical foundations and historical context. Examining pivotal case studies and real-world examples, exploring the complexities of free expression, from its role in fostering democracy to its challenges in relation to the notion of Human Rights and navigating a contemporary culture of feeling 'offended'

ICGL

ICGL 101 Elementary German I **4 (4-0-8)**

Prerequisites: Placement Test

Greetings, introducing oneself or others, German alphabet and phonemes, personal information, numbers from 1 – 100 and price quotations, expressing wishes, telling the time and making appointments, quality of items, measurements; verb forms, pronouns, sentence structure, gender of nouns, accusative case and plural forms, negation

ICGL 102 Elementary German II **4 (4-0-8)**

Prerequisites: Placement Test **or** ICGL 101 Elementary German I

Ordering and paying for meals in a restaurant, preferences of food and drinks, giving and asking for directions, reading a map, preferences of work conditions, job advertisements; essay writing, yes/no questions, imperative forms, compound verbs, preposition with dative case, modal verbs I, German sentence bracket

ICGL 103 Elementary German III **4 (4-0-8)**

Prerequisites: Placement Test **or** ICGL 102 Elementary German II

Health advice and problems, healthy and unhealthy lifestyles, events and accidents, travel reports, curriculum vitae (CV); possessive articles in nominative, accusative and dative case, perfect tense, connectors, modal verbs II

ICGL 111 Elementary Japanese I **4 (4-0-8)**

Prerequisites: Placement Test

Hiragana and Katakana characters; fundamentals of basic Japanese grammar (noun-ending sentences, particles, demonstratives, verb-ending sentences, non-past and past tenses); scaffolding of basic vocabulary; basic communication about personal topics (self and others); description of Japan; designing written products in the target language; expressing existence, preferences, and agreement; comparing cultures

ICGL 112 Elementary Japanese II **4 (4-0-8)**

Prerequisites: Placement Test **or** ICGL 111 Elementary Japanese I

Kanji characters (approximately 50); fundamentals of basic Japanese grammar concepts (particles, verbs of giving and receiving, na-adjective-ending sentences, i-adjectives-ending sentences, nonpast and past tenses, and classifiers); scaffolding of basic vocabulary; basic communication about daily life topics; designing written products in the target language; expressing simply points of view, describing people and daily life activities; comparing cultures

ICGL 113 Elementary Japanese III **4 (4-0-8)**

Prerequisites: Placement Test **or** ICGL 112 Elementary Japanese II

Kanji characters (approximately 50); fundamentals of basic Japanese grammar concepts (verb conjugation (masu-form, te-form, nai-form, and dictionary form), and related sentence patterns; polite style of speech, and plain style of speech, particles); scaffolding of basic vocabulary; basic communication about various topics; designing written products in the target language; expressing points of view, describing people and various activities; comparing cultures

ICGL 121 Elementary French I **4 (4-0-8)**

Prerequisites: Placement Test

Fundamentals of basic French grammar (pronouns, present tense conjugation, gender/number, adjectives, prepositions); scaffolding of basic vocabulary; basic communication about personal topics (self and others); identifying and describing French speaking countries; designing written products in the target language; expressing existence, preferences and agreement; comparing cultures

ICGL 122 Elementary French II **4 (4-0-8)**

Prerequisites: Placement Test **or** ICGL 121 Elementary French I

Fundamentals of basic French grammar (present and future tense, adjective gender, place & agreement, more complex prepositions, more complex questions); scaffolding of simple vocabulary; simple communication about daily life topics (in France and in their country); designing written products in the target language; expressing simply point of view, describing people and daily life activities; comparing cultures

ICGL 123 Elementary French III **4 (4-0-8)**

Prerequisites: Placement Test **or** ICGL 122 Elementary French II

Fundamentals of more complex French grammar (present and future tense, adjective gender, place & agreement, more complex prepositions, questions and past tense notions); scaffolding of more complex vocabulary; longer communication about daily life topics (in France and in their country); designing written products in the target language; expressing point of view, describing people and daily life activities; comparing cultures

ICGL 131 Elementary Chinese I **4 (4-0-8)**

Prerequisites: Placement Test

The Chinese phonetic system (Pinyin); the Chinese basic writing system (Stroke order); Chinese characters (approximately 100); fundamentals of basic Chinese grammar (interrogative pronouns, the 的 particle, yes/no questions with 吗, demonstrative pronouns, classifiers, adverbs 也, 都); scaffolding of basic vocabulary; basic communication about personal topics (self and others); describing China; designing written products in the target language; expressing existence, preferences and agreement; comparing cultures 都)

ICGL 132 Elementary Chinese II **4 (4-0-8)**

Prerequisites: Placement Test **or** ICGL 131 Elementary Chinese I

The Chinese phonetic system (Pinyin); the Chinese writing system; Chinese characters (approximately 100); fundamental Chinese grammar concepts (interrogative pronouns, classifiers, the "的" particle, "的" phrases, adverbials, continuous action sentence structures and reduplication of verbs); scaffolding of basic vocabulary; basic communication about daily life topics; designing written products in the target language; expressing simply points of view, describing people and daily life activities; comparing cultures

ICGL 133 Elementary Chinese III **4 (4-0-8)**

Prerequisites: Placement Test **or** ICGL 132 Elementary Chinese II

The Chinese phonetics (Pinyin); Chinese characters (approximately 150) ; Fundamentals of basic Chinese grammar concepts (interrogative pronouns, modal verbs, complex sentences, the modal particle "le" (了), complements of state, complements of result, complements of duration); scaffolding of basic vocabulary; basic communication about various topics; designing written products in the target language; expressing points of view; telling directions; describing oneself and other people's abilities; comparing cultures

ICGL 141 Elementary Spanish I **4 (4-0-8)**

Prerequisites: Placement Test

Fundamentals of basic Spanish grammar (pronouns, present tense conjugation, gender/number, adjectives, prepositions); scaffolding of basic vocabulary; basic communication about personal topics (self and others); identifying and describing Spanish speaking countries; designing written products in the target language; expressing existence, preferences and agreement; comparing cultures

ICGL 142 Elementary Spanish II **4 (4-0-8)**

Prerequisites: Placement Test **or** ICGL 141 Elementary Spanish I

Fundamentals of basic Spanish grammar (pronouns, present tense conjugation, reflexive verbs, gender/number, adjectives, prepositions); scaffolding of basic vocabulary; basic communication about personal topics (self and others); identifying and describing Spanish speaking countries; designing written products in the target language; expressing existence, preferences and agreement; talking about daily habits

ICGL 143 Elementary Spanish III **4 (4-0-8)**

Prerequisites: Placement Test **or** ICGL 142 Elementary Spanish II

Towns, quarters and cities; directions; past experiences; present perfect tense, past tense indefinido; verbs ser, estar and hay; vocabulary of places; time markers for past tense; verbs empezar a+ infinitive; verbs ir / irse

ICGL 160 Introduction to Thai Language and Culture **4 (4-0-8)**

Prerequisites: None

Fundamental vocabularies and structures for various communicative situations in everyday use and introduce basic aspects of Thai culture

ICGL 161 Elementary Thai I **4 (4-0-8)**

Prerequisites: Placement Test

Listening and speaking skills on the following topics: introducing oneself one's friend and family, basic food and drink ordering, places, directions, transportation, buying tickets, clothing items, colours, and sizes, bargaining, counting and using classifiers, reading and writing Thai consonants, vowels placed after, before, above, and below the consonants, Thai numbers, live and dead syllables

ICGL 162 Elementary Thai II **4 (4-0-8)**

Prerequisites: Placement Test **or** ICGL 161 Elementary Thai I

Listening and speaking skills on the following topics: one's schedule, making appointments, favorite leisure activities, ordering food, drinks and desserts with special requests, presentation of one's plan for activities during school break, continuation of Elementary Thai I in reading and writing skills, consonant clusters, tone marks, words with special spelling rules, reading short paragraphs

ICGL 163 Elementary Thai III **4 (4-0-8)**

Prerequisites: Placement Test **or** ICGL 162 Elementary Thai II

Listening and speaking skills on the following topics: going to see the doctor, looking for a house for rent, seasons, travel and festivals

ICGL 164 Thai Writing for Specific Purposes in Workplace *for native Thai students **2 (2-0-4)**

Prerequisites: None

Thai writing for specific workplace purposes: blend of theoretical insights and practical exercises; composing emails, reports, proposals, and business documents; proficiency in clear, coherent, precise Thai communication

ICGL 171 Diversities in Multilingual Societies **2 (2-0-4)**

Prerequisites: None

Multilingual societies; Cultural diversities; Cross-cultural communication; Chinese-, German-, French-, Japanese, and Spanish-speaking cultures; Chinese-, German-, French-, Japanese, and Spanish languages; Cultural conflicts; Cultural gaps; Cultural shocks; Cultural discoveries; Cultural awareness; Cultural harmonies

ICGL 172 Chinese Influence in Thai Society **2 (2-0-4)**

Prerequisites: None

Cultural Exchange, Cultural Awareness; Overview of Chinese Ethnicity and community in Thailand: Exploring the historical, cultural, economic, and political dimensions of Chinese influence in Thailand; Examining Chinese immigration waves have shaped Thai identity, language, cuisine, and religious practices

ICGL 173 Introduction to Japanese Societies **2 (2-0-4)**

Prerequisites: None

Japanese societies; Cultural diversities; Ethnic minorities; Gender gaps; Discriminations against minorities; Gender role expectations; Aging populations; Japanese universities; Japanese school systems; Working in Japan; Working with Japanese people; Living in Japan; Punctuality

ICGL 174 From Siesta to Fiesta: Introduction to Spanish and Latin American Culture 2 (2-0-4)

Prerequisites: None

Introduction to Hispanic cultures: Spain, Mexico, Central America, South America, Caribbean; main cultural features; magic and colors of lands and people; cultural varieties; Spanish and indigenous languages; cultural legacy

ICGL 201 Pre-Intermediate German I 4 (4-0-8)

Prerequisites: Placement Test **or** ICGL 103 Elementary German III

Clothing and accessory, appearance, shopping for clothes and accessory family members, present and past families, statistics, festivities and culture, dates, presents; comparative forms of adjectives, modal verbs past tense, dependent clauses (cause and condition), personal pronouns, accusative and dative cases

ICGL 202 Pre-Intermediate German II 4 (4-0-8)

Prerequisites: Placement Test **or** ICGL 201 Pre-Intermediate German I

Media usage and Internet-shopping, advertisement, expressing surprise, meeting someone for the first time, country and city life, cultural capitals in Europe; direct and indirect questions, adjective without article, relative clause and pronoun, modal verb in simple past, sub-clause with als

ICGL 203 Pre-Intermediate German III 4 (4-0-8)

Prerequisites: Placement Test **or** ICGL 202 Pre-Intermediate German II

Professional biographies, job announcements, festivities and customs, emotions, movie synopsis, products and inventions; reasons with weil and denn, nominalization, preposition with dative, subclause with wenn and um zu, passive voice

ICGL 211 Pre-Intermediate Japanese I 4 (4-0-8)

Prerequisites: Placement Test **or** ICGL 113 Elementary Japanese III

Kanji characters (approximately 50); fundamentals of basic Japanese grammar concepts (verb conjugation (masu-form, te-form, nai-form, and dictionary form), and related sentence patterns; polite style of speech, and plain style of speech, particles); scaffolding of basic vocabulary; basic communication about various topics; design of written products in the target language; expressing points of view, describing people and various activities; comparing cultures

ICGL 212 Pre-Intermediate Japanese II **4 (4-0-8)**

Prerequisites: Placement Test **or** ICGL 211 Pre-Intermediate Japanese I

50 Kanji characters; explaining the state of things; describing necessary things to do in advance as preparations for the future; expressing own intentions, plans, and schedule; expressing own guess and inference; asking someone to take a message or conveying a message; stating standards or norms, when one explains the manner of doing a certain action or work; explaining a condition in which a certain action is performed; stating everyday habitual actions

ICGL 213 Pre-Intermediate Japanese III **4 (4-0-8)**

Prerequisites: Placement Test **or** ICGL 212 Pre-Intermediate Japanese II

50 Kanji characters; expressing judgments under certain conditions; stating a purpose or an aim; describing changes in human ability and conditions; describing an action performed by a third person, or an action when one feels annoyed or troubled, using passive verbs; expressing something with the most important information emphasized; describing natural phenomena, happenings, and events, together with their causes; clearly telling what speakers consider as questions, by using a question with an interrogative as a component of a sentence; using appropriate expressions for giving and receiving of things and actions, depending on the relationship between the giver and the receiver, in terms of social status; telling usage, evaluation, necessary time, expense, etc.

ICGL 221 Pre-intermediate French I **4 (4-0-8)**

Prerequisites: Placement Test **or** ICGL 123 Elementary French III

Developing further knowledge of French grammar at the pre-intermediate level (present, past and future, more complex interrogative sentence, negative sentence, comparative and pronouns); scaffolding of more complex vocabulary; more complex and longer communication about personal needs, solving simple problems; interacting in predictable context topics in French; designing written products in the target language; expressing points of view, giving simple advices and interacting in daily life activities; comparing cultures

ICGL 222 Pre-intermediate French II **4 (4-0-8)**

Prerequisites: Placement Test **or** ICGL 221 Pre-Intermediate French I

Extending further knowledge of French grammar at the pre-intermediate level (hypotheses and conditions, future, conditional, pronouns, direct and indirect speech, imperative and gerundive); scaffolding of more complex vocabulary; longer communication about solving problems and expressing feelings; commenting on attitudes and justifying actions in predictable context topics in French; comparing cultures

ICGL 223 Pre-intermediate French III **4 (4-0-8)**

Prerequisites: Placement Test **or** ICGL 222 Pre-Intermediate French II

Developing further knowledge of French grammar at the pre-intermediate level (comparative, complex interrogative sentence, gerundive, subjunctive present in regular and irregular forms, passive voice); scaffolding of more complex vocabulary; longer communication about personal feelings, wishes and hopes; complaining and talking about difficulties, suggesting solutions; comparing cultures

ICGL 231 Pre-Intermediate Chinese I **4 (4-0-8)**

Prerequisites: Placement Test **or** ICGL 133 Elementary Chinese III

Chinese characters (approximately 300); identifying pre-intermediate level Chinese grammar concepts (complements of duration, expressing approximate numbers, comparative sentences, complements of quantity, exclamatory sentences); developing listening, speaking, reading and writing skills through an integrated approach; communication about various topics; comparing two cities in various aspects; comparing the seasons in China and Thailand; activities and festivals in each season; organizing a trip

ICGL 232 Pre-Intermediate Chinese II **4 (4-0-8)**

Prerequisites: Placement Test **or** ICGL 231 Pre-Intermediate Chinese I

Chinese characters (approximately 300); identifying pre-intermediate level Chinese grammar concepts (past experiences, complements of frequency, the structure of **是**.....**的**, reduplication of adjectives, S-P phrases, complements of result II, simple passive sentences); developing listening, speaking, reading and writing skills through an integrated approach communication about various topics; sports or entertainment; expressing unlucky stories; describing appearance and clothes; Chinese style weddings (1)

ICGL 233 Pre-Intermediate Chinese III **4 (4-0-8)**

Prerequisites: Placement Test **or** ICGL 232 Pre-Intermediate Chinese II

Chinese characters (approximately 300); identifying pre-intermediate level Chinese grammar concepts (continuous actions or states, Chinese style weddings, Chinese construction quadrangles, existence emergence sentences,"**把**"sentence I, ,"**把**"sentence II, "**被**"sentence, adverb "**又** ") ; developing listening, speaking, reading and writing skills through an integrated approach; communication about various topics; travelling by airplane; Beijing Opera performances; outdoor activities; reunions with old friends

ICGL 241 Pre-Intermediate Spanish I **4 (4-0-8)**

Prerequisites: Placement Test **or** ICGL 143 Elementary Spanish III

Habits; pronominal verbs; porque/para; furniture and parts of the house; appearance; family, irregular verbs in present tense; present progressive

ICGL 242 Pre-Intermediate Spanish II **4 (4-0-8)**

Prerequisites: Placement Test **or** ICGL 241 Pre-Intermediate Spanish I

Leisure activities; intentions and projects; pain, discomfort and symptoms; parts of the body; vocabulary of food; ir a+ infinitive; present perfect; differences between ser and estar; personal pronouns for objects; verb gustar

ICGL 243 Pre-Intermediate Spanish III **4 (4-0-8)**

Prerequisites: Placement Test **or** ICGL 242 Pre-Intermediate Spanish II

Past habits, customs and circumstances; past and present actions; advice, instructions (imperative); future situations and actions, conditions, hypotheses; past experience; imperfect verb tense; indefinido verb tense; present perfect verb tense; contrast of past tenses

ICGN

ICGN 105 Ecology, Ecosystems and Socio-Economics in Southeast Asia **4 (3-2-7)**

Prerequisites: None

Human impacts on Southeast Asian ecology; human impacts on Southeast Asian's biodiversity and natural resources; fundamental ecological and resource management principles; current sustainable development issues; sustainable development practices for Southeast Asia

ICGN 107 The Chemistry of Everyday Life **4 (4-0-8)**

Prerequisites: None

Portable electronics; the air we breathe; radiation from the sun; climate change; energy from combustion; energy from alternative sources; water; polymers and plastics; nutrition; health and medicine; genes and life

ICGN 108 Essentials of Culinary Science for Food Business **4 (3-2-7)**

Prerequisites: None

Changes during preparation, heating, and storage of raw materials and of finished products, foodservice and commercial packaged food industries; chemical, sensory, and nutritional natures of food, food safety concepts, changing trends and interests, legal requirements of food establishment

ICGN 111 Physics for CEO **4 (4-0-8)**

Prerequisites: None

Basic concepts of physics impacting individuals and society on a daily basis: physical quantities, Newtonian mechanics and dynamics, energy and heat, electricity and magnetism, light and sound, and the electromagnetic spectrum

ICGN 113 Plants, People and Poisons **4 (4-0-8)**

Prerequisites: None

The plant world; the way plants grow and reproduce; modern technologies used for improving agricultural methods; the basics of plant biology; the distinctions among major groups of plants; the social implications of plant use and abuse

ICGN 114 The Scientific Approach and Society **4 (4-0-8)**

Prerequisites: None

Scientific literacy; the process of science discovery; verification, its limitation, and the influence in various disciplines; human and animal research ethics; the critical analysis of current scientific articles; the life cycle of scientific knowledge; modeling in science

ICGN 115 Human Evolution, Diversity and Health **4 (4-0-8)**

Prerequisites: None

Changing modern society; human ability; human body; human distinctiveness; human diversity; human evolution; human health; human origins; primate diversity; scientific advancements

ICGN 116 Understanding and Visualizing Data **4 (3-2-7)**

Prerequisites: None

An introduction to data analytics; roles and examples of the data-driven decision making; technology landscape; data kinds and types; data sources and collection techniques; data storage and standard formats; data processing workflow; summary from data; different types of visualization; data visualization tools

ICGN 119 Computer Essentials **4 (4-0-8)**

Prerequisites: None

Developing the digital literacy relating to the computer literacy and the information literacy; the computer hardware and its general functions; the operating systems; software packages and their daily use; computer security; the ethical use of the intellectual property

ICGN 123 The Earth's Dynamic Structure **4 (3-2-7)**

Prerequisites: None

Introducing fundamental concepts and applying general geology at the beginning level; basic concepts of physical geology, emphasizing on surficial and deep earth processes, including minerals; rocks and their formations, crustal deformation, plate tectonics; weathering and erosion, formation of landscapes, geological resources and environmental geology

ICGN 124 Climate Change and Human Society **4 (3-2-7)**

Prerequisites: None

Human activities and the global climate; consequences for human society; consequences for the essential life support systems; perspectives on human health and diseases; adapting to global climate change; mitigating global climate change; an optional field visit included

ICGN 125 Games and Learning **2 (2-0-4)**

Prerequisites: None

History of games, combinatorial games, games of chance, game theory

ICGN 126 Plant Society **2 (2-0-4)**

Prerequisites: None

People interacting with the plant and fungal worlds; differences among cultures and the indigenous uses of medicinal, textile and food plants; the benefits, problems and social implications of their use; hands-on experiences with techniques and methods used by field scientists

ICGN 127 Practical Mathematics **2 (2-0-4)**

Prerequisites: None

Fibonacci numbers and the golden ratio, voting and election, data interpretation, probability, cryptography, financial mathematics

ICGN 128 Climate Emergency, Biodiversity Crisis, and Humanity at Risk **2 (1-2-3)**

Prerequisites: None

Anthropogenic activities; biodiversity crisis; biodiversity loss; biological diversity; climate change; climate crisis; climate emergency; ecosystem functions; harmful and unsustainable practices; humanity at risk; mitigation and adaptation; threats, impacts and consequences

ICGN 129 Programming for Problem Solving **4 (4-0-8)**

Prerequisites: None

Influence and impact of computer science on everyday life and society; the problem-solving process in programming: abstraction, problem decomposition, algorithms; programming basic; privacy, ethical, and legal issues related to the software development

ICGN 130 Cryptography: The Science of Making and Breaking Codes **2 (2-0-4)**

Prerequisites: None

Classical cryptography; cryptosystems; the shift cipher, the substitution cipher, the Hill cipher, the permutation cipher, the stream ciphers; the RSA encryption; cryptanalysis

ICGN 131 Digital Search Literacy **2 (2-0-4)**

Prerequisites: None

The Information literacy relating to search term, the evaluation of the internet site and the quality of data; use of information; the ethical use of the intellectual property; the use of computer platforms; software, online services

ICGN 132 Digital Security and Privacy **2 (2-0-4)**

Prerequisites: None

Privacy rights of data and safeguarding personal information by the protection organizations, anonymizing of data, computer security relating to computer platforms, network, internet and smart devices; password managements and shortcomings, authentication factors and technology

ICGN 134 Introduction to Artificial Intelligence **2 (2-0-4)**

Prerequisites: None

The artificial intelligence terminology; machine learning types and techniques; guidelines for building the machine learning model; neural networks; an evaluation in the AI system; the real-world artificial intelligence; the future trends of the artificial intelligence; dangers and threats of the artificial intelligence

ICGN 135 Personal Health and Well being **2 (2-0-4)**

Prerequisites: None

Understanding the health as a continuous process and can be changed at any time depending on the choices we make; exploring the current challenges facing young people of today; evaluating on how they affect health and healthful behavior; what individuals can do to navigate these challenges to arrive at their goals for the future

ICGN 136 Creator Workshop **2 (2-0-4)**

Prerequisites: None

Sustainable energy usage and responsible production, Design thinking and problem-solving with 3D designing and fabrication, Finite Element Analysis, Community engagement via I-fix-it project to restore broken appliances obtained from communities

ICGN 137 Star Wanderer **2 (2-0-4)**

Prerequisites: None

Basic ideas of sky observations since the ancient time of humanity; motion of the sky; cycles of the Sun and Moon; development of tools used in sky observations; the progress of human understanding of the universe; the impact of the scientific method on astronomical observation; the Earth & Moon; the Solar System; the lifecycle of stars; the Milky way; modern sky survey

ICGN 138 Cosmetics Chemistry **2 (2-0-4)**

Prerequisites: None

Chemistry of cosmetics products; basic science behind cosmetics and aesthetic medical procedures; basic biochemistry of human skins; basic function of aesthetic medical equipment such as HIFU, IPL, Lasers, and RF

ICGN 139 Scientific Inquiry and the Community **2 (2-0-4)**

Prerequisites: None

Develop self-awareness as a MAHIDOL person; application of the university's motto, philosophy, and core values to benefit the community; applying process of science discovery to authentic issues in the local community through observation or experiment; collaborate with peers in findings; summarizing and reporting to local stakeholders

ICGN 140 Food Energy for Health **2 (2-0-4)**

Prerequisites: None

Basic chemistry and functions of energy yielding nutrients; Understand food labels and portion sizes. Estimate daily energy from food; Balance energy intake and expenditure

ICGN 141 Life in the Sea **2 (1-2-3)**

Prerequisites: None

Fundamental structures and functions of marine and freshwater life; cell to underwater ecosystem levels of organization; underwater life processes for energy, nutrients, reproduction, growth and development; evolution and biodiversity of underwater life; marine and freshwater biomes; current health and environmental issues under SDG 14 life in the sea; field trip included

ICGN 142 Energy and the Environment **2 (2-0-4)**

Prerequisites: None

Various forms of energy and their conversion processes, fossil fuels and renewable energy sources, Environmental consequences associated with each energy source, Energy efficiency and conservation, Future energy technologies

ICGN 143 Gaia: Life on Earth **2 (1-2-3)**

Prerequisites: None

Fundamental structures and functions of life; cell to biosphere levels of organization; life processes for energy, nutrients, reproduction, growth and development, evolution and biodiversity; service learning and field trip opportunities to participate in mitigating current environmental, health or development issues through life science-based solutions

ICGN 144 Environmental Ethics **2 (2-0-4)**

Prerequisites: None

Foundations of Environmental Values, Anthropocentrism vs Ecocentrism, Deep Ecology, Eco-Feminism, Land Ethics, Energy Ethics, Wilderness vs Built Environments, Radical Environmentalism and its Societal, Economic and Policy Implications

ICGN 145 Food Integrity and Food Fraud: When a Food Product Is Not What It Seems **2 (2-0-4)**

Prerequisites: None

Understand the food integrity matrix, recognise common types of fraudulence in food products, their factors and effects on public health and society, prevention, ethical responsibilities and roles of food business and consumers in the food system with food integrity

ICGP

ICGP 101 American Flag Football **1 (0-2-1)**

Prerequisites: None

A ball based sport course emphasizing techniques, non-contact game play, including dodging, throwing, and catching and development of teamwork management, communication, and terminology

ICGP 102 Badminton **1 (0-2-1)**

Prerequisites: None

A racket based sport course stressing technique, strategies, grip, serving, positioning and movement, game play in both singles and doubles

ICGP 103 Basketball **1 (0-2-1)**

Prerequisites: None

A ball based sport course emphasizing attentiveness, dribbling, passing, shooting, rebounding, ball control, game play, and development of game strategies

ICGP 104 Body Fitness **1 (0-2-1)**

Prerequisites: None

A comprehensive course in one or more exercise techniques: strength/resistance, cardio, plyometric, stretching, high-intensity interval training, and calisthenics; to maintain health and wellness

ICGP 105 Cycling **1 (0-2-1)**

Prerequisites: None

A course designed on cycling instruction for safety, fitness, riding techniques, posture, communication, knowledge of equipment and hazards, for recreational and commuter cycling

ICGP 106 Discover Dance **1 (0-2-1)**

Prerequisites: None

A dance based course of current forms and techniques in one or more categories: African/Jazz, Worldwide Dances/Latin Dances, Professional Performance Dance, Modern Dance, Hip-hop/Funk

ICGP 107 Golf **1 (0-2-1)**

Prerequisites: None

A club based game course designed on developing correct grip, stance, posture, swing, and knowledge of equipment, rules, regulations, and etiquette

ICGP 108 Mind and Body **1 (0-2-1)**

Prerequisites: None

A course stressing meditation postures, techniques, movement, and breathing to achieve positive mental State

ICGP 109 Selected Topics in Sports **1 (0-2-1)**

Prerequisites: None

Learning concepts, rules and strategies through planned and structured movements by way of sport or activity to enhance a healthy lifestyle

ICGP 110 Self Defense (Striking) **1 (0-2-1)**

Prerequisites: None

External martial arts (striking) course emphasizing hard physical impact and exertion, muscular strength and tension, maximizing speed and power, through body coordination

ICGP 111 Self Defense (Grappling) **1 (0-2-1)**

Prerequisites: None

Internal martial arts (grappling) course stressing timing, awareness, precision, and techniques, using body leverage for throws, take downs, pins, and submissions

ICGP 112 Soccer **1 (0-2-1)**

Prerequisites: None

A ball based sport course stressing alertness, ball control, including dribbling, passing, trapping, shooting, ball movement, game play, and development of strategies through drills and competitive play

ICGP 113 Social Dance **1 (0-2-1)**

Prerequisites: None

A dance based social sport or activity course of choreographed movements, styles and regulations from International Ballroom (Standard) and International Latin dances

ICGP 114 Swimming **1 (0-2-1)**

Prerequisites: None

A water based sport course stressing swimming techniques, breathing, and knowledge of buoyancy, propulsion, and water safety

ICGP 115 Tennis **1 (0-2-1)**

Prerequisites: None

A racket based sport course of techniques, strategy, grip, serve, game play, ball tracking, timing, shot control, through drills, live ball hitting sessions, and competition

ICGP 116 Volleyball **1 (0-2-1)**

Prerequisites: None

A ball sport course emphasizing passing, setting, serving, developing strategies, positions, game play, teamwork management, and communication

ICGP 118 Health and Wellness **2 (2-0-4)**

Prerequisites: None

Wellness design for a lifelong healthy lifestyle; basic principles of achieving physical, emotional, intellectual, environmental, social and spiritual well being

ICGP 119 Mindful Food and Well-being **2 (2-0-4)**

Prerequisites: None

Explore food and culinary trends, food choices, and the concept of mindful food and eating; fundamental relationships between food and well-being; food products and services for consumers in various demographics; food products and food service features that emphasise the concept of mindful food and eating

ICGP 120 Mind and Body: Navigating the Interplay of Brain, Behavior, and Wellbeing **2 (2-0-4)**

Prerequisites: None

The relationship between psychology and health; the influence of psychological factors on physical well-being; Exploration of how brain, thoughts, emotions, and behaviours impact overall health outcomes; Current knowledge in sleep, gut-brain connection on health and well-being; The integration of theory, research, and practical applications of psychological principles to promote health and wellness

ICGS

ICGS 102 Business Sustainability and the Global Climate Change **4 (4-0-8)**

Prerequisites: None

Study on the role of business in the society; the basic concept of sustainability; global governance; sustainable development; social inequalities and social inclusion; environment sustainability; climate change; climate change mitigation; climate change adaptation; green marketing; business sustainability

ICGS 112 Geography of Human Activities **4 (4-0-8)**

Prerequisites: None

Global Learning Initiative class; a systematic study of patterns and processes of geography; understanding human perceptions of surroundings and alterations of the earth's surface; diversity of cultures, beliefs, and ways of life; establishing global unity and harmony; recognition of equality and respect between persons in diverse regional geographical settings; raising awareness of one's own humanity and human responsibilities; the interrelationship between humans and the spaces they create; human activity as interdisciplinary by nature; the physical and socially created environment people live in; human interactions shaping the human understanding of the environment; the utility of resources; phenomena on the earth's surface relating to human actions; concepts and geographical methodologies; examination of social organizations and environmental consequences; a broad dynamic domain reflecting such developments and issues as social bias, discrimination, and stereotyping in the contemporary world; associating a critical geographical perspective on the past, present and future achievement of the social world

ICGS 121 Abnormal Colleagues: how do I make this work? **4 (4-0-8)**

Prerequisites: None

The stigma of psychological issues; the fear of the workplace gossips and job security; an avoidance of getting treatment and counseling; a recognition of various disorders and devising strategies to effectively communicate and work with people; improving the workplace productivity and relationships

ICGS 128 Global Gastronomy and Cuisines **4 (4-0-8)**

Prerequisites: None

Understanding the interconnection between gastronomy, culture, society, and local and global food systems; highlighting the global food production and consumption trends; examining diverse cultures through the food and food preparation; emphasis on multicultural context in cooking practices; understanding the current trend in various healthy diets and cuisines

ICGS 131 Introduction to International Studies **4 (4-0-8)**

Prerequisites: None

The field of international studies; interdisciplinary approaches; economic globalization; the Bretton Woods system and neoliberalism; political globalization; the United Nations system, the International Court of Justice, and Human Rights; cultural globalization; migration diaspora and transnationalism; the internet and global media; development; modernization and dependency; Global North and Global South; traditional and human security; food; health; energy; environment

ICGS 132 Career Preparation in a Globalized World **4 (4-0-8)**

Prerequisites: None

Trends in national, regional and international job markets; self-assessment on career options; career plan creation; principles in business communication; job search process and tools; resume, cover letters; interview preparation and simulation; dimensions of culture

ICGS 133 Foundation of Mediterranean Cultures **4 (4-0-8)**

Prerequisites: None

The Mediterranean as a source of Western culture; Egypt and the Fertile Crescent; Mohammed and the Muslim World; the Promised Land: Moses' Israel; Jesus and the birth of Christianity; Greek history and civilization; Ancient Italy; arts in Florence and Venice; Modern Italy history; Italian food; the World of Fashion in modern Italy; Italian film; Italian music

ICGS 134 Is Democracy Good? **4 (4-0-8)**

Prerequisites: None

Democracy as a political system and a 'normal' form of governance throughout the world, especially since the transitional Third Wave of democratization ending in the 1990's; democracy as a highly contested term; forms of governance; contestations in Thailand; arguments of Thai Style Democracy; defining democracy; different forms of democracy; local perception of democracy; critical debate on the merits of democracy; functionality; theoretical and in pragmatic situations; qualitative and quantitative analysis; democratic performance

ICGS 135 Entrepreneurial Accounting **4 (4-0-8)**

Prerequisites: None

Fundamental accounting concepts; financial statements for small enterprises; financial statement analysis; cost-volume-profit analysis; management decision making; business taxation

ICGS 136 Social and Health Issues in Thailand **4 (3-2-7)**

Prerequisites: None

Social and health issues in Thailand; experiential learning approach; site visits to various government and non-governmental organizations; small groups work; identification of issues and characterize the factors affecting the issues; prioritization of the urgency of the issues and determination of the possible solutions; proposing action plans addressing the issues

ICGS 137 Witchcraft and Gender Representation **4 (4-0-8)**

Prerequisites: None

The term "witch" used to suppress women: accusations of witchcraft to eliminate strong, assertive women; accusations of demonic or magic sources demeaning to women; European, American and African use of witch accusations to stifle women; other forms of oppression of women: the Chinese foot binding, the Indian Suttee, the African genital mutilation; the meaning of gender; gender vs sex; marginalization of

women in patriarchal societies; women's rights in the contemporary world; differing concepts of women's rights; global and national enforcement of women's rights; organizations concerned with gender and women's issues: UN, ILO, etc; an application of gender rights to other genders like LGBTQ

ICGS 140 Fake News, Censorship and the Politics of Truth **4 (4-0-8)**

Prerequisites: None

Internet and hyper news flows; patterns of information consumption; knowledge of information authenticity; socio-political effects of 'fake news'; impacts and methods of data collection; censorship and contested 'digital space', fact-checking, source evaluation and trust-building online; social power of algorithms, quantification and profiling; citizens journalism and the traditional media

ICGS 143 Introduction to Air Transport and Tourism **4 (4-0-8)**

Prerequisites: None

Basic overview and knowledge of air transport, travel and tourism and the interconnections amongst these elements; the history of air transportation, both airlines and airports; the role of air transport for today's travellers and tourists; relationship between airport and airline, airport business model, airline business model, the nature of air travellers, the nature of demands, air transport journey and experience, passengers/tourist decision makings on air travel, current global issues (e.g., economic, environmental and ethics) of the air transport and tourism

ICGS 147 Women in Leadership **4 (4-0-8)**

Prerequisites: None

Prominent female leaders around the world from the past to present; cross-cultural challenges female leaders encounter; heroines and women warriors in folklores and myths; the perception and sins of matriarchal societies; political roles and suffragette movements around the world; the Modern Girl and consumerism; women's rights movement, glass-ceiling and female career advancement, female attributes and leadership qualities

ICGS 153 Social Media Management for Service Sector **2 (2-0-4)**

Prerequisites: None

Introduction to digital business transformation in service sector, social consumers and social communities, social media landscape and ecosystem; social media strategy for service sector; digital tools for social media management; social commerce; social media analytical tools and measurement

ICGS 155 Pathway to Purpose: Life Design and Self-Exploration **4 (4-0-8)**

Prerequisites: None

Assessment of personal strengths, weaknesses, and areas for improvement; individual values, beliefs, and life goals; goal setting; self-awareness and emotional intelligence; life design

ICGS 156 Fashion and Society **2 (2-0-4)**

Prerequisites: None

What is fashion, History of fashion since the 20th Century, Fashion reflects its temporal and spatial context, fashion and culture, sub-cultural fashion (street fashion), Fashion and Art development, Fashion as an art form, Fashion and business, Fast fashion, Fashion victims

ICGS 157 Asian Religious Traditions **2 (2-0-4)**

Prerequisites: None

Overview of major religious traditions in Asia, including Hinduism, Buddhism, Sikhism, Taoism, Confucianism, and Shintoism; Historical evolution of Asian religious traditions; Significance of rituals, symbols, and sacred texts; Key philosophical and ethical concepts such as karma, dharma, nirvana, and the Tao

ICGS 158 Contemporary Issues in Thailand **2 (2-0-4)**

Prerequisites: None

Prevailing ideological issues; contemporary political economy; legal affairs and the judicial system; religious institutions; provincial politics; land rights and other community movements, education and reform; environmental groups; media affairs

ICGS 159 The Self and Modern Media **2 (2-0-4)**

Prerequisites: None

A sociological approach to understanding the disintegration of old social structures and reintegration based on contemporary technology and social media; the new non-geographical communities and the lack of norms; development of a global culture; the role of media and advertising in the new global culture; the generational theory of culture and constructionist theory or reality; the new global self

ICGS 160 Self and Society **2 (2-0-4)**

Prerequisites: None

A sociological approach to understanding the nature of societies, cultures and institutions; the development

of the self through the socialization process from Social Interactionist and Critical Theory perspectives; cultural norms and geographical influence on culture: social class and gender structures; the influence of individualism and non-conformity in society

ICGS 161 Skills in Dealing with People Across Cultures **2 (2-0-4)**

Prerequisites: None

Development of skills in dealing with people across cultures through a psychological approach, covering identity formation and conflict, values and communication across culture, culture and tourism, work motivation, and culture in educational institutions

ICGS 162 Arts, Culture and Tourism Development **2 (2-0-4)**

Prerequisites: None

Artistic categories and roles of arts in society, community arts activities and events - processes and outcomes, arts-led urban regeneration, current trends in cultural tourism, online travel platform, creative tourism and designing visitor experiences

ICGS 163 Popular Media and Conflicts **2 (2-0-4)**

Prerequisites: None

The role of popular media during the war-time and conflicts; the evolution of media and its employment by the state; printed propaganda; the age of radio and its political agenda; newsreels during the wartime; televised wars and public opinions; the emergence of social movement caused by the popular media

ICGS 164 Positive Psychology **2 (2-0-4)**

Prerequisites: None

A practical introduction to the study of human flourishing and well-being; help students thrive using Positive Psychology principles including the PERMA model of well-being; develop a greater understanding of positive emotions, engagement and flow, positive relationships, meaning and achievement; individual application of research findings via well-being project

ICGS 165 Tea Studies **2 (2-0-4)**

Prerequisites: None

What is tea, main tea varieties, main tea types, climatic condition for sustainable growth of tea, important tea growing countries and regions, tea processing, tea and health, tea evaluation, tea utensils and preparation, tea and food paring

ICGS 166 Power and Politics **2 (2-0-4)**

Prerequisites: None

The understanding of politics and political systems of the current world; interactions and connections of different ideas; systems of thought and conflict in contemporary society; analysis of political phenomenon. To collect information, organize information, organize in groups, analyze information, present clearly and concisely on political phenomenon, state typology, political taxonomy, ideological persuasion, voting systems and outcomes

ICGS 167 Coffee Studies **2 (2-0-4)**

Prerequisites: None

Coffee, an introduction; The journey of Coffee - a journey of love, tears, sweats and blood; Three waves of coffee; Terroir of coffee; Main and sub-varieties of coffee; The world of coffee; Coffee drinking culture, coffee cupping; From harvesting to shipment; From roasting to brewing; Coffee and health; Ethical and environmental issues

ICGS 168 Faith a Lifestyle **2 (2-0-4)**

Prerequisites: None

Faith, spirituality, and interaction in the modern world, spirituality and its economy, spirituality and faith marketing, modern forms of spirituality, spirituality, pop culture, and the soft power

ICGS 169 Learning by Doing **2 (2-0-4)**

Prerequisites: None

Develop self-awareness as a MAHIDOL person; application of the university's motto, philosophy, and core values to benefit the community; social work, ethical principles and values in social work, roles and settings in social work practice, collaborative approaches in social work, SDGs and their interconnectedness, analyzing global challenges addressed by the SDGs, partnerships with local communities for SDG initiatives

ICGS 170 Civic Action in Thailand **2 (2-0-4)**

Prerequisites: None

Local community organisations and institutions; effective social media and other promotional campaigns on behalf of independent social organisations; funding drives on behalf of independent social organisations; project planning and development

ICGS 171 Digital Campaign for Gender Issues **2 (2-0-4)**

Prerequisites: None

Develop self-awareness as a MAHIDOL person; application of the university's motto, philosophy, and core values to benefit the community; gender inequalities and gender-based violence in society; gender activistism & technologies; working with local communities to raise awareness of gender violence and abuse; use of social media to condemn violent acts; raising awareness of human rights & equality; organizing collaborative work and discovering creative solution to gender issues; use of social media to offer solutions to the needs of the community

ICGS 172 Service Learning - Making Change **4 (4-0-8)**

Prerequisites: None

Develop self-awareness as a MAHIDOL person; application of the university's motto, philosophy, and core values to benefit the community; exploring the nature of change and resistance in human society and across several disciplines such as philosophy, psychology, political science, sociology, and business; reviewing case studies about how change is initiated, implemented, resisted, and achieved; challenging students through projects to identify a need for change, and to devise a plan and implement it

ICGS 173 Service Learning - Campaigning for a Cause **4 (4-0-8)**

Prerequisites: None

Develop self-awareness as a MAHIDOL person; application of the university's motto, philosophy, and core values to benefit the community; research, analyse, evaluate, present and produce media campaigns for selected community / Non-Governmental Organizations / Charitable Organization(s)

ICGS 174 The Art of Leadership in Practice: Inspiration **2 (2-0-4)**

Prerequisites: None

Virtue ethics and practical philosophy; driving change through personal development and action directives; managing ethical leadership goals and challenges; climbing Mount Impossible and the power to change the world; what is and what can be in the context of SDGs; finding inspiration and inspiring others; inspirational leaders in History and fiction

ICGS 175 Social Innovation and Sustainability **2 (2-0-4)**

Prerequisites: None

Develop self-awareness as a MAHIDOL person; application of the university's motto, philosophy, and core values to benefit the community; exploring social innovation and sustainability principles, focusing on

sustainable ecosystems, ethical decision-making, effective communication, and collaboration. Engaging in project-based learning to address global challenges, promoting responsible citizenship and leadership skills. Applying the 4Cs of 21st-century education: Critical thinking, Communication, Collaboration, and Creativity. Analyzing ethical theories and frameworks, such as utilitarianism and deontological ethics, for moral decision-making. Utilizing communication theories and models, like the Shannon-Weaver model and Monroe's Motivated Sequence, for clear and persuasive communication. Highlighting team dynamics and conflict resolution for effective collaboration. Encouraging creative problem-solving aligned with the Sustainable Development Goals (SDGs). Preparing purposeful presentations and working as cohesive team members for sustainable development

ICGS 176 Sustainable Cooking **2 (2-0-4)**

Prerequisites: None

Develop self-awareness as a MAHIDOL person; application of the university's motto, philosophy, and core values to benefit the community; student-led community projects promoting importance of sustainability in the food system; sustainable food choices and cooking; fundamental science in cooking; collaborative work to identify sustainable issues in culinary food production; students design creative solutions aligning with needs of the community; promote sustainable cooking and food consumption

ICGS 177 Social Innovation: Empowering Sustainable Communities **2 (2-0-4)**

Prerequisites: None

Develop self-awareness as a MAHIDOL person; application of the university's motto, philosophy, and core values to benefit the community; exploring the dynamics of social change through innovation, based on frameworks like Asset-Based Community Development and the Social Capital theory, focusing on ethical decision-making, human rights, and community empowerment. Engaging with local communities to co-create sustainable solutions using Participatory Action Research, fostering responsible citizenship and ethical leadership. Integrating critical thinking and communication to address social challenges, promoting collaboration and creativity in line with the Sustainable Development Goals (SDGs)

ICGS 178 Unmasking Human Behaviour: Exploring Psychological Truths about Behaviour **2 (2-0-4)**

Prerequisites: None

Introduction to the psychological principles and the importance of evidence-based thinking; Examination of current research on memory, perception, personality, mental illness, stereotype, prejudice, and social behaviour to debunk common myths and misconceptions about human behaviour

ICGS 179 Health and Society **2 (2-0-4)**

Prerequisites: None

Exploring the concept of health across the historical periods; history of disease and origins of medicine; epidemics in the ancient societies; social welfare and the state; contemporary epidemics and the impact on society, state, and people, WHO and the role in the promotion of health

ICGS 180 Cafe Story and Slow food **2 (2-0-4)**

Prerequisites: None

Café concept: historically integral coffeehouse in café culture and social/economic position; slow food in sustainability business concept, specialty food and beverage evolution, new business trends

ICGS 181 Cuisine and Culture **2 (2-0-4)**

Prerequisites: None

Exploration of how food shapes and is shaped by culture, Food as a cultural symbol, Historical evolution of culinary practices, Spices in cultural identity and economy, Food in celebrations and rituals, Festival foods around the world, Food Ethics and Sustainability, The phenomenon of culinary fusion and its impact on traditional cuisines, The Language of Food, Religious and cultural influences on dietary practices, The Art of Dining Etiquette, Food in Literature and Film, The Future of Food, Culinary Tourism

ICGS 182 Humor Horizons **2 (2-0-4)**

Prerequisites: None

Introduction to Cultural Humor; Language and Wordplay; Stereotypes and Satire; Historical Perspectives; Regional Comedy Traditions; Social Commentary Jokes; Comedy in Film and TV; Cross-Cultural Comedy Challenges; Humor and Identity; Humor in Business; The Future of Cultural Humor

ICGS 183 Media and Community **2 (2-0-4)**

Prerequisites: None

Application of media practices and techniques used as a means for empowerment and communication supporting community and social change; Application of assessment practices to support community goals and development; Application of project-based learning in a real community

ICGS 184 Healthy Habits, Happy Shoppers: Exploring Health Literacy in Consumer Decisions 2 (2-0-4)

Prerequisites: None

Exploration of the impact of health literacy on shopping behavior; coverage of health literacy principles, consumer psychology, and marketing's role; learning through stimulus case studies to promote informed consumer choices

ICGT

ICGT 101 Technology-Enhanced Learning: Harnessing AI & Digital Tools for Academic Success 2 (2-0-4)

Prerequisites: None

AI principles and educational impacts, Technology-enhanced creative learning methods, Ethical use and bias awareness in AI applications, Educational technology tool exploration, AI-driven content analysis techniques, AI tool selection and evaluation, Critical assessment of AI-generated materials, Learning personalization with technology

ICGT 102 Digital Document Management 2 (2-0-4)

Prerequisites: None

Demonstrate formatting and applying consistent styles in a variety of online platforms; preparing and including digital content; construct file management systems for organizing, storing, and searching materials through metadata; Integrating data from spreadsheets, database to create reports

ICGT 103 Computational Thinking 2 (2-0-4)

Prerequisites: None

Solving problems in a systematic manner; breaking down a problem into a manageable size; extracting the most important elements of the problem; identifying recurring behaviors in the problem; developing solutions; articulating solutions in a way that is simple yet accurate enough for a computer or even a human to follow

ICGT 104 Tell a Great Story with Data 2 (2-0-4)

Prerequisites: None

Influence decision with compelling narratives constructed from data; the power of storytelling; determining the purpose; understanding the audience; planning plotlines; creating narrative structures; developing the data story; ethical considerations in data storytelling

ICGT 105 No-Code Application Development **2 (2-0-4)**

Prerequisites: None

Creating software applications without needing to write code; common features of no-code platforms; strategies for choosing no-code platforms; basics of user-friendly interface design, workflow logic, and data storage; using templates and plugins to simplify the development, testing and revising applications; online resources and support communities for further learning outside the classroom

ICGT 106 Data and Spreadsheets **2 (2-0-4)**

Prerequisites: None

Demonstrating proficiency in using lists, function, formulas, filters; importing and transforming socio-economic and/or science-related data from the internet or other databases; providing information to other programs through embedded or link objects; illustrating findings through charts, map charts, conditional formatting, and sparklines

ICGT 107 Innovation: Inside Out **2 (2-0-4)**

Prerequisites: None

Develop self-awareness as a MAHIDOL person; application of the university's motto, philosophy, and core values to benefit the community; community-based projects course incorporating fundamentals of design thinking; empathy-building techniques; user-centered problem statements formulation; innovative solutions, design thinking tools; concept-to-prototype

ICIC

ICIC 101 Elementary German I - Language and Culture **4 (4-0-8)**

Prerequisites: Placement test

Greetings, introducing oneself or others, German alphabet and phonemes, personal information, numbers from 1 – 100 and price quotations, expressing wishes, telling the time and making appointments, quality of items, measurements; verb forms, pronouns, sentence structure, gender of nouns, accusative case and plural forms, negation

ICIC 102 Elementary German II - Language and Culture **4 (4-0-8)**

Prerequisites: ICIC 101 Elementary German I - Language and Culture

Ordering and paying for meals in a restaurant, preferences of food and drinks, giving and asking for directions, reading a map, preferences of work conditions, job advertisements; essay writing, yes/no questions, imperative forms, compound verbs, preposition with dative case, modal verbs I, German sentence bracket

ICIC 103 Elementary German III - Language and Culture **4 (4-0-8)**

Prerequisites: ICIC 102 Elementary German II - Language and Culture

Health advice and problems, healthy and unhealthy lifestyles, events and accidents, travel reports, curriculum vitae (CV); possessive articles in nominative, accusative and dative case, perfect tense, connectors, modal verbs II

ICIC 111 Elementary Japanese I - Language and Culture **4 (4-0-8)**

Prerequisites: Placement test

Hiragana and Katakana characters; fundamentals of basic Japanese grammar (noun-ending sentences, particles, demonstratives, verb-ending sentences, non-past and past tenses); scaffolding of basic vocabulary; basic communication about personal topics (self and others); description of Japan; designing written products in the target language; expressing existence, preferences, and agreement; comparing cultures

ICIC 112 Elementary Japanese II - Language and Culture **4 (4-0-8)**

Prerequisites: ICIC 111 Elementary Japanese I - Language and Culture

Kanji characters (approximately 50); fundamentals of basic Japanese grammar concepts (particles, verbs of giving and receiving, na-adjective-ending sentences, i-adjectives-ending sentences, non-past and past tenses, and classifiers); scaffolding of basic vocabulary; basic communication about daily life topics; designing written products in the target language; expressing simply points of view, describing people and daily life activities; comparing cultures

ICIC 113 Elementary Japanese III - Language and Culture **4 (4-0-8)**

Prerequisites: ICIC 112 Elementary Japanese II - Language and Culture

Kanji characters (approximately 50); fundamentals of basic Japanese grammar concepts (verb conjugation (masu-form, te-form, nai-form, and dictionary form), and related sentence patterns; polite style of speech, and plain style of speech, particles); scaffolding of basic vocabulary; basic communication about various topics; designing written products in the target language; expressing points of view, describing people and various activities; comparing cultures

ICIC 121 Elementary French I - Language and Culture **4 (4-0-8)**

Prerequisites: Placement test

Fundamentals of basic French grammar (pronouns, present tense conjugation, gender/number, adjectives, prepositions); scaffolding of basic vocabulary; basic communication about personal topics (self and others);

identifying and describing French speaking countries; designing written products in the target language; expressing existence, preferences and agreement; comparing cultures

ICIC 122 Elementary French II - Language and Culture **4 (4-0-8)**

Prerequisites: ICIC 121 Elementary French I - Language and Culture

Fundamentals of basic French grammar (present and future tense, adjective gender, place & agreement, more complex prepositions, more complex questions); scaffolding of simple vocabulary; simple communication about daily life topics (in France and in their country); designing written products in the target language; expressing simply point of view, describing people and daily life activities; comparing cultures

ICIC 123 Elementary French III - Language and Culture **4 (4-0-8)**

Prerequisites: ICIC 122 Elementary French II - Language and Culture

Fundamentals of more complex French grammar (present and future tense, adjective gender, place & agreement, more complex prepositions, questions and past tense notions); scaffolding of more complex vocabulary; longer communication about daily life topics (in France and in their country); designing written products in the target language; expressing point of view, describing people and daily life activities; comparing cultures

ICIC 131 Elementary Chinese I - Language and Culture **4 (4-0-8)**

Prerequisites: Placement test

The Chinese phonetic system (Pinyin); the Chinese basic writing system (Stroke order); Chinese characters (approximately 100); fundamentals of basic Chinese grammar (interrogative pronouns, the **的** particle, yes/no questions with 吗, demonstrative pronouns, classifiers, adverbs **也**, **都**); scaffolding of basic vocabulary; basic communication about personal topics (self and others); describing China; designing written products in the target language; expressing existence, preferences and agreement; comparing cultures

ICIC 132 Elementary Chinese II - Language and Culture **4 (4-0-8)**

Prerequisites: ICIC 131 Elementary Chinese I - Language and Culture

The Chinese phonetic system (Pinyin); the Chinese writing system; Chinese characters (approximately 100); fundamental Chinese grammar concepts (interrogative pronouns, classifiers, the "**的**" particle, "**的**" phrases, adverbials, continuous action sentence structures and reduplication of verbs); scaffolding of basic vocabulary; basic communication about daily life topics; designing written products in the target language; expressing simply points of view, describing people and daily life activities; comparing cultures

ICIC 133 Elementary Chinese III - Language and Culture **4 (4-0-8)**

Prerequisites: ICIC 132 Elementary Chinese II - Language and Culture

Chinese phonetics (Pinyin); Chinese characters (approximately 150) ; Fundamentals of basic Chinese grammar concepts (interrogative pronouns, modal verbs, complex sentences, the modal particle “le” (了), complements of state, complements of result, complements of duration); scaffolding of basic vocabulary; basic communication about various topics; designing written products in the target language; expressing points of view; telling directions; describing oneself and other people’s abilities; comparing cultures

ICIC 141 Elementary Spanish I - Language and Culture **4 (4-0-8)**

Prerequisites: Placement test

Fundamentals of basic Spanish grammar (pronouns, present tense conjugation, gender/number, adjectives, prepositions); scaffolding of basic vocabulary; basic communication about personal topics (self and others); identifying and describing Spanish speaking countries; designing written products in the target language; expressing existence, preferences and agreement; comparing cultures

ICIC 142 Elementary Spanish II - Language and Culture **4 (4-0-8)**

Prerequisites: ICIC 141 Elementary Spanish I - Language and Culture

Fundamentals of basic Spanish grammar (pronouns, present tense conjugation, reflexive verbs, gender/number, adjectives, prepositions); scaffolding of basic vocabulary; basic communication about personal topics (self and others); identifying and describing Spanish speaking countries; designing written products in the target language; expressing existence, preferences and agreement; talking about daily habits

ICIC 143 Elementary Spanish III - Language and Culture **4 (4-0-8)**

Prerequisites: ICIC 142 Elementary Spanish II - Language and Culture

Towns, quarters and cities; directions; past experiences; present perfect tense, past tense indefinido; verbs ser, estar and hay; vocabulary of places; time markers for past tense; verbs empezar a+ infinitive; verbs ir / irse

ICIC 201 Pre-Intermediate German I - Language and Culture **4 (4-0-8)**

Prerequisites: ICIC 103 Elementary German III - Language and Culture

Clothing and accessory, appearance, shopping for clothes and accessory family members, present and past families, statistics, festivities and culture, dates, presents; comparative forms of adjectives, modal verbs past tense, dependent clauses (cause and condition), personal pronouns, accusative and dative cases

ICIC 202 Pre-Intermediate German II - Language and Culture **4 (4-0-8)**

Prerequisites: ICIC 201 Pre-Intermediate German I - Language and Culture

Media usage and Internet-shopping, advertisement, expressing surprise, meeting someone for the first time, country and city life, cultural capitals in Europe; direct and indirect questions, adjective without article, relative clause and pronoun, modal verb in simple past, sub-clause with als

ICIC 203 Pre-Intermediate German III - Language and Culture **4 (4-0-8)**

Prerequisites: ICIC 202 Pre-Intermediate German II - Language and Culture

Professional biographies, job announcements, festivities and customs, emotions, movie synopsis, products and inventions; reasons with weil and denn, nominalization, preposition with dative, sub-clause with wenn and um zu, passive voice

ICIC 211 Pre-Intermediate Japanese I - Language and Culture **4 (4-0-8)**

Prerequisites: ICIC 113 Elementary Japanese III - Language and Culture

Kanji characters (approximately 50); fundamentals of basic Japanese grammar concepts (verb conjugation (masu-form, te-form, nai-form, and dictionary form), and related sentence patterns; polite style of speech, and plain style of speech, particles); scaffolding of basic vocabulary; basic communication about various topics; design of written products in the target language; expressing points of view, describing people and various activities; comparing cultures

ICIC 212 Pre-Intermediate Japanese II - Language and Culture **4 (4-0-8)**

Prerequisites: ICIC 211 Pre-Intermediate Japanese I - Language and Culture

50 Kanji characters; explaining the state of things; describing necessary things to do in advance as preparations for the future; expressing own intentions, plans, and schedule; expressing own guess and inference; asking someone to take a message or conveying a message; stating standards or norms, when one explains the manner of doing a certain action or work; explaining a condition in which a certain action is performed; stating everyday habitual actions

ICIC 213 Pre-Intermediate Japanese III - Language and Culture **4 (4-0-8)**

Prerequisites: ICIC 212 Pre-Intermediate Japanese II - Language and Culture

50 Kanji characters; expressing judgments under certain conditions; stating a purpose or an aim; describing changes in human ability and conditions; describing an action performed by a third person, or an action when one feels annoyed or troubled, using passive verbs; expressing something with the most important information emphasized; describing natural phenomena, happenings, and events, together with their causes; clearly telling what speakers consider as questions, by using a question with an interrogative as a component of a sentence; using appropriate expressions for giving and receiving of things and actions, depending on the relationship between the giver and the receiver, in terms of social status; telling usage, evaluation, necessary time, expense, etc.

ICIC 221 Pre-Intermediate French I - Language and Culture **4 (4-0-8)**

Prerequisites: ICIC 123 Elementary French III - Language and Culture

Developing further knowledge of French grammar at the pre-intermediate level (present, past and future, more complex interrogative sentence, negative sentence, comparative and pronouns); scaffolding of more complex vocabulary; more complex and longer communication about personal needs, solving simple problems; interacting in predictable context topics in French; designing written products in the target language; expressing points of view, giving simple advices and interacting in daily life activities; comparing cultures

ICIC 222 Pre-Intermediate French II - Language and Culture **4 (4-0-8)**

Prerequisites: ICIC 221 Pre-Intermediate French I - Language and Culture

Extending further knowledge of French grammar at the pre-intermediate level (hypotheses and conditions, future, conditional, pronouns, direct and indirect speech, imperative and gerundive); scaffolding of more complex vocabulary; longer communication about solving problems and expressing feelings; commenting on attitudes and justifying actions in predictable context topics in French; comparing cultures

ICIC 223 Pre-Intermediate French III - Language and Culture **4 (4-0-8)**

Prerequisites: ICIC 222 Pre-Intermediate French II - Language and Culture

Developing further knowledge of French grammar at the pre-intermediate level (comparative, complex interrogative sentence, gerundive, subjunctive present in regular and irregular forms, passive voice); scaffolding of more complex vocabulary; longer communication about personal feelings, wishes and hopes; complaining and talking about difficulties, suggesting solutions; comparing cultures

ICIC 231 Pre-Intermediate Chinese I - Language and Culture **4 (4-0-8)**

Prerequisites: ICIC 133 Elementary Chinese III - Language and Culture

Chinese characters (approximately 300); identifying pre-intermediate level Chinese grammar concepts (complements of duration, expressing approximate numbers, comparative sentences, complements of quantity, exclamatory sentences); developing listening, speaking, reading and writing skills through an integrated approach; communication about various topics; comparing two cities in various aspects; comparing the seasons in China and Thailand; activities and festivals in each season; organizing a trip

ICIC 232 Pre-Intermediate Chinese II - Language and Culture **4 (4-0-8)**

Prerequisites: ICIC 231 Pre-Intermediate Chinese I - Language and Culture

Chinese characters (approximately 300); identifying pre-intermediate level Chinese grammar concepts (past experiences, complements of frequency, the structure of **是**.....**的**, reduplication of adjectives, S-P phrases, complements of result II, simple passive sentences); developing listening, speaking, reading and writing skills through an integrated approach communication about various topics; sports or entertainment; expressing unlucky stories; describing appearance and clothes; Chinese style weddings (1)

ICIC 233 Pre-Intermediate Chinese III - Language and Culture **4 (4-0-8)**

Prerequisites: ICIC 232 Pre-Intermediate Chinese II - Language and Culture

Chinese characters (approximately 300); identifying pre-intermediate level Chinese grammar concepts (continuous actions or states, Chinese style weddings, Chinese construction quadrangles, existence emergence sentences,"**把**"sentence I, ,"**把**"sentence II, "**被**"sentence, adverb "**又**") ; developing listening, speaking, reading and writing skills through an integrated approach; communication about various topics; travelling by airplane; Beijing Opera performances; outdoor activities; reunions with old friends

ICIC 241 Pre-Intermediate Spanish I - Language and Culture **4 (4-0-8)**

Prerequisites: ICIC 143 Elementary Spanish III - Language and Culture

Habits; pronominal verbs; porque/para; furniture and parts of the house; appearance; family, irregular verbs in present tense; present progressive

ICIC 242 Pre-Intermediate Spanish II - Language and Culture **4 (4-0-8)**

Prerequisites: ICIC 241 Pre-Intermediate Spanish I - Language and Culture

Leisure activities; intentions and projects; pain, discomfort and symptoms; parts of the body; vocabulary of food; ir a+ infinitive; present perfect; differences between ser and estar; personal pronouns for objects; verb gustar

ICIC 243 Pre-Intermediate Spanish III - Language and Culture **4 (4-0-8)**

Prerequisites: ICIC 242 Pre-Intermediate Spanish II - Language and Culture

Past habits, customs and circumstances; past and present actions; advice, instructions (imperative); future situations and actions, conditions, hypotheses; past experience; imperfect verb tense; indefinido verb tense; present perfect verb tense; contrast of past tenses

ICIC 251 Contemporary Southeast Asia: Cultural Studies **4 (4-0-8)**

Prerequisites: None

An introduction to Southeast Asia (SEA) and its extraordinary diversity through the humanities, the arts and social sciences; emphasis on the intellectual and practical challenges linked to modernization and development; a study of the ways SEA-member states cope with the social, cultural, economic, political and religious issues brought about by globalization

ICIC 252 Formal Reasoning: Human and Artificial **4 (4-0-8)**

Prerequisites: None

Logic and reasoning itself as a field of study; topics including formalization of propositions, arguments, proofs, puzzles, and predicates; logic as indispensable to understanding human language and thought; logic as a foundation for the language of animals and computers as well as artificial intelligence

ICIC 253 Value Studies **4 (4-0-8)**

Prerequisites: None

An introduction to value theory from a philosophical, sociological and economic perspective focusing on the interplay between value and culture; exposure to a wide array of theoretical approaches to the problematic relationship between the descriptive and the normative; considered as an introduction to Ethics, Philosophy and Economics Concentration

ICIC 254 History of Ideas I **4 (4-0-8)**

Prerequisites: None

An introduction and examination of the basic ideas having shaped individuals and societies; broadly conceived; a two-part course organized around four central themes: ethics, knowledge, power and society, and culture and difference; themes treated independently but considered as intersecting, historically and cross-culturally; readings drawn from a wide range of sources both East and West

ICIC 255 History of Ideas II **4 (4-0-8)**

Prerequisites: ICIC 254 History of Ideas I

An introduction and examination of the basic ideas having shaped individuals and societies; broadly conceived; a two-part course organized around four central themes: ethics, knowledge, power and society, and culture and difference; themes treated independently but considered as intersecting, historically and cross-culturally; readings drawn from a wide range of sources both East and West

ICIC 256 Ethics and Media **4 (4-0-8)**

Prerequisites: None

An introduction to the ethical issues and decisions editors face in covering and providing the news to the public; an examination of regulated and unregulated news from four different sources, including government, corporate, and privately owned, and public media outlets, as well as the various formats including print, broadcast, and digital (Internet and social media)

ICIC 257 The Evolutionary Origins of Language and Culture **4 (4-0-8)**

Prerequisites: None

An examination of the evolution of language and culture from the early hominids to modern man; a review of scientific research showing that both language and culture are evolutionary adaptations central to the success of the evolution of human beings

ICIC 258 Language: The Human Essence **4 (4-0-8)**

Prerequisites: None

A presentation of the primary areas of study in linguistics, including theoretical, biological, structural, psychological, social, and historical aspects of language; a focus on some of the greatest questions within the field of linguistics, such as 'What is language?', 'How does language work in the brain?', 'How does language operate as a system?', 'How does language develop?', 'How does language function in society'?, or 'How does language change over time?'; topics including the nature of human language, grammatical aspects of language, the psychology of language, and language and society

ICIC 259 Intercultural Communication **4 (4-0-8)**

Prerequisites: None

A survey of cultural dimensions making up one's cultural identity; an exploration of cultural dynamics enabling or inhibiting communication

ICIC 301 Intermediate German I - Language and Culture **4 (4-0-8)**

Prerequisites: ICIC 203 Pre-Intermediate German III - Language and Culture

Time, German history, problems in everyday life, advice, men and women, gender issues, vicissitude of work; nominalization with zum, past tense of irregular verbs, subjunctive II, modal verb können, müssen, sollen, adjective after articles

ICIC 302 Intermediate German II - Language and Culture **4 (4-0-8)**

Prerequisites: ICIC 301 Intermediate German I - Language and Culture

School and education, climate, environment, behavior and manner, conflicts; subjunctive II of werden, haben, sein, future tense, wegen + Genitive case, correlative conjunctions, sub-clause with obwohl, past perfect tense

ICIC 303 Intermediate German III - Language and Culture **4 (4-0-8)**

Prerequisites: ICIC 302 Intermediate German II - Language and Culture

Generations, narration of events, family relations, literary texts, migration to and from Germany, Europe; possessive article with Genitive, sub-clause, passive voice, question pronouns, verbs with prepositions

ICIC 311 Intermediate Japanese I - Language and Culture **4 (4-0-8)**

Prerequisites: ICIC 213 Pre-Intermediate Japanese III - Language and Culture

50 Kanji characters; telling a supposition based on the appearance of a thing, person and scene; expressing that the degree of an action or a state is excessive; describing the easiness or difficulty in handling or doing something; expressing feelings of surprise, disappointment or dissatisfaction when an expected consequence did not follow; describing how to cope with a situation or its consequence under a hypothetical situation; telling an action, stressing a certain point in time during the course of the action; expressing that one is convinced and certain of what he/she states; giving compulsion and permission; seeking permission politely; understanding Japanese views on relationships based on seniority, social status and insider/outsider relationships; understanding the entire system of all respectful expressions and humble expressions

ICIC 312 Intermediate Japanese II - Language and Culture **4 (4-0-8)**

Prerequisites: ICIC 311 Intermediate Japanese I - Language and Culture

50 Kanji characters; explaining cultural aspects; discussing natural disasters; comparing education systems; understanding and presenting graphs and charts; talking about health

ICIC 313 Intermediate Japanese III - Language and Culture **4 (4-0-8)**

Prerequisites: ICIC 312 Intermediate Japanese II - Language and Culture

50 Kanji characters; reporting about inventions; discussing issues related to natural environments; understanding cultural differences; discussing social issues

ICIC 321 Intermediate French I - Language and Culture **4 (4-0-8)**

Prerequisites: ICIC 223 Pre-Intermediate French III - Language and Culture

Fundamentals of more complex French grammar; developing further skills to understand French more complex grammar concepts (future and conditional mood, past tenses: imparfait, passé composé, plus-que parfait, imperative mood; negative patterns, prepositions of time, adjective gender, place & agreement, more complex sentences); scaffolding of more complex vocabulary; longer communication about daily life topics (in France and in their country); designing written products in the target language; expressing points of view, advising people, describing people and daily life activities; talking about family and recounting personal memories; comparing cultures

ICIC 322 Intermediate French II - Language and Culture **4 (4-0-8)**

Prerequisites: ICIC 321 Intermediate French I - Language and Culture

Fundamentals of more complex French grammar; developing further skills to understand French more complex grammar concepts (indicating origin and duration of and action with prepositions to express moments and duration (1), gerundive forms, purpose clauses, opposition and concession words, the passive voice, relative pronouns, the subjunctive mood); scaffolding of more complex vocabulary; longer communication about daily life topics (in France and in their country); designing written products in the target language; expressing points of view, advising people; describing people and daily life activities; talking about family and recounting personal memories; comparing cultures

ICIC 323 Intermediate French III - Language and Culture **4 (4-0-8)**

Prerequisites: ICIC 322 Intermediate French II - Language and Culture

Developing further knowledge of the grammar; developing further knowledge of vocabulary leading students to the intermediate level of proficiency; developing listening, speaking, reading and writing skills through an integrated approach; producing oral and short paragraph-text; writing email and letters asking information; reading and commenting on short newspapers or website articles; comparing cultures

ICIC 331 Intermediate Chinese I - Language and Culture **4 (4-0-8)**

Prerequisites: ICIC 233 Pre-Intermediate Chinese III - Language and Culture

Chinese characters (approximately 300) ; intermediate level Chinese grammar concepts (the flexible use of interrogative pronouns, complex sentences without connectives, complements of state(2), rhetorical questions, emphasizing affirmation, double negatives, conjunctions: 连...**也，都，** phrases: **一边...,一边...,** **先...,再...,然后...,最后...**). ; scaffolding of advanced vocabulary; communication about various topics; designing written products in the target language; expressing feelings of sorrow and grievance; planning a trip; ordering dishes; Chinese food culture; comparing cultures

ICIC 332 Intermediate Chinese II - Language and Culture **4 (4-0-8)**

Prerequisites: ICIC 331 Intermediate Chinese I - Language and Culture

Chinese characters (approximately 300) ; Chinese grammar concepts (the limitedness in amount or degree **一点儿也不/没**, an adverbial phrase suggesting of an exaggeration in tone简直, usage of **至于**to bring in another topic, usage of "verb+ **了** " as a complement of result to indicate completion of an act or accommodation of something, usage of "**一**+verb" in indicating an outcome result or a conclusion); scaffolding of vocabulary; communication about various topics; designing written products in the target language; expressing one's ideals and reasons; cultural conflicts; comparing cultures

ICIC 333 Intermediate Chinese III - Language and Culture **4 (4-0-8)**

Prerequisites: ICIC 332 Intermediate Chinese II - Language and Culture

Chinese characters (approximately 300) ; Chinese grammar concepts (complex sentence structures: 总而**言之,哪怕, 好在, 反而, 一...就是**; expressing necessity and obligation by using 总得; adverbials **甚至** , **却**, 曾经, **到底**,**下**, **不管...都/也**); scaffolding of vocabulary; communication about various topics; designing written products in the target language; interviewing a certain group of people according to a specific topic; expressing one's anger and dissatisfaction; persuading people; expressing a clear definition of a certain value; presenting a certain product

ICIC 341 Intermediate Spanish I - Language and Culture **4 (4-0-8)**

Prerequisites: ICIC 243 Pre-Intermediate Spanish III - Language and Culture

Elements of intermediate grammar and vocabulary related to specialized contexts; discussions on specific topics; expressing opinions and asking for clarification in such context; reading a wider variety of long texts, and writing extended letters or narrative

ICIC 342 Intermediate Spanish II - Language and Culture **4 (4-0-8)**

Prerequisites: ICIC 341 Intermediate Spanish I - Language and Culture

Expressing desire, complaints and necessity; telling anecdotes; expressing cause and effect; expressing interests and feelings; present subjunctive; talking about personal relationships; disagreement in formal and informal situations; easing a disagreement; describing specifications and how something works

ICIC 343 Intermediate Spanish III - Language and Culture **4 (4-0-8)**

Prerequisites: ICIC 342 Intermediate Spanish II - Language and Culture

Making hypotheses and conjectures; relating mysterious incidents; writing a news article; referring to a news article and commenting on it; giving advice; evoking imaginary situations; expressing an opinion about actions and behaviors; expressing opinions and desire; narrating events in the past; future tense; using subjunctive present; past tenses; passive voice; mass media vocabulary

ICIC 351 Thinking the Other **4 (4-0-8)**

Prerequisites: ICIC 259 Intercultural Communication **or** PD approval

An exploration of the notion of alterity from Antiquity to the colonial period focusing on the Age of Exploration; the idea of 'otherness' throughout history, conflicts between cultures, the debate about race; a variety of discourses revealing perspectives and attitudes towards other cultures during periods of conquests, including the Greco-Roman, Christian and Islamic, Mongol, as well as European phases of expansion, culminating in the encounters between dominant and indigenous cultures during voyages of discovery

ICIC 353 Comparative Literature and Civilization **4 (4-0-8)**

Prerequisites: ICIC 259 Intercultural Communication **or** PD approval

An introduction to seminal texts and writings representing cultural and intellectual thought that has informed who we are and our respective orientations to the world; excerpts from writers and thinkers such as Valmiki, Shakespeare, Machiavelli, Swift, Dostoevsky, Kawabata and Rushdie

ICIC 354 Women and Gender Studies **4 (4-0-8)**

Prerequisites: ICIC 259 Intercultural Communication **or** PD approval

An understanding of the psychology of gender, production of gendered bodies, identities, the invention of sexuality and race in modernity; an in-depth analysis of the social construction of gender, its cultural productions and representation; feminist, masculinist and queer theories; a probe into LGBTQIA issues in

Thailand and worldwide throwing light onto the stark realities of gender inequality; the study of objectification theory providing a better understanding of female sexual objectification and the representation of gender in media; the overt and covert discrimination women face in society as well as the various forms of violence against women prevalent in society; the role of gender and the status of women in different religions; the imagery and symbolism in the definition of women, women and political power, diversity among women: gender, race and class

ICIC 355 Judgment and Decision Making **4 (4-0-8)**

Prerequisites: ICIC 254 History of Ideas I **or** PD approval

A discussion on the decision-making theories and the characteristic of human judgments in normative, psychological and sociological terms; highlighting the problematic interplay between business practices and ethical thought with regard to the notion of rationality

ICIC 356 Ethics and Politics **4 (4-0-8)**

Prerequisites: ICIC 254 History of Ideas I **or** PD approval

Ideas of political philosophy based on some classical texts and contemporary approaches; focusing on general questions of ethics through the lens of justice; discussions of ethical questions regarding how persons ought to be governed/or if they ought to be governed at all (the justification of the authority of the state), the relationship of freedom and autonomy, and exploring the nature of a fair state, a good ruler and a just international order; concepts learned tested in light of current political, ecological and economic issues

ICIC 357 Philosophy of Economics **4 (4-0-8)**

Prerequisites: ICIC 254 History of Ideas I **or** PD approval

A survey of conceptual and methodological issues raised in modern economics including choice, rationality and irrationality, the fact/value distinction, realism and antirealism, the relationship between microeconomics and macroeconomics, prediction, causality and policymaking, pricing and utility; case studies involving the application to economic problems

ICIC 358 Behavioral Economics **4 (4-0-8)**

Prerequisites: ICIC 254 History of Ideas I **or** PD approval

An examination of the intersection of psychology, neuroscience and economic thought; incorporating contemporary ideas of human behavior in the context of economic systems as an effort to overcome the absence of factors affecting human judgment in classical economics; a complement to classical economic

theory and a demonstration on how economic theory can be adapted to work in government decision-making and company organization

ICIC 361 Literature and Poetry in Western Culture **4 (4-0-8)**

Prerequisites: ICIC 259 Intercultural Communication **or** PD approval

An introduction to the origins and genres of European/Western literature in order to trace the growth of ideas about the nature of mankind's ethical and political life from ancient Greek texts through medieval epics and shifts imposed by scientific ideas and progress to the birth of the novel; understanding the process of re-conceptualizing ancient concepts throughout Western literature as vital for the creation of cultural heritage of the modern world and as tools for change as well

ICIC 362 Literature and Poetry in Eastern Culture **4 (4-0-8)**

Prerequisites: ICIC 259 Intercultural Communication **or** PD approval

An introduction to selected representative texts and genres of Eastern literature that shaped the civilization of Asia; starting with the earliest written record in Indian, Chinese and Japanese literature to their metamorphosis in modern times; readings range from philosophical texts to literature of the court, poetry, drama and epics with attention to their historical and cultural backdrops; an exploration of how traditional values persist, change or become points of resistance in a complicated globalized world

ICIC 363 Introduction to Eastern and Western Art **4 (4-0-8)**

Prerequisites: ICIC 259 Intercultural Communication **or** PD approval

An introduction to the reading of a work of art as well as to learning and using specialized vocabulary to articulate the aesthetic experience; appreciating the personal, social, political, and cultural meanings and significance of the visual arts; understanding the universality of the human experience expressed in a variety of art mediums as well as examination of the reasons for creating art; an introduction to an educated analysis and interpretations of artworks from a variety of cultural and artistic traditions

ICIC 364 Literary Theory and Criticism **4 (4-0-8)**

Prerequisites: ICIC 259 Intercultural Communication **or** PD approval

A survey of developments in literary theory from the twentieth century to the present, from Formalism and New Criticism through to Post-colonial and Feminist Criticism and Gender Studies; a knowledge of a number of theoretical perspectives to enable students to evaluate and comment on literary works from a number of genres and cultural contexts

ICIC 365 Diasporic Literature **4 (4-0-8)**

Prerequisites: ICIC 259 Intercultural Communication **or** PD approval

An introduction to various diasporic texts dealing with migration and displacement; an exploration of the nuances of the terms 'immigrant', 'exile' and 'refugee' and also the differences and similarities between diaspora and related concepts such as race, nation and cultural identity; learning about the complexities of adaptation or resistance to new cultures, the different stages of adjusting and adapting to the culture of a host country; culture transfer; hybridity and biculturalism

ICIC 366 Popular Culture **4 (4-0-8)**

Prerequisites: ICIC 259 Intercultural Communication **or** PD approval

An introduction to a variety of analytical and critical strategies for reading, viewing, and understanding trends in popular mainstream culture; honing critical thinking skills by using popular culture texts in books, television, film, and new media; looking at a variety popular texts and analyzing what current trends and anxieties these texts represent and market to consumers

ICIC 367 Narratives, Nations, and Nationalism **4 (4-0-8)**

Prerequisites: ICIC 259 Intercultural Communication **or** PD approval

A survey of how grand narratives are created, used, and propagated; a critical analysis of how the stories of a nation foster feelings of nationalism, patriotism, and xenophobia

ICIC 368 Language, Power and Culture **4 (4-0-8)**

Prerequisites: ICIC 259 Intercultural Communication **or** PD approval

An exploration of some contributions made to the understanding of language by social sciences, in particular: Anthropology, Sociology and Cultural Psychology; providing insights on a range of themes related to language (and in particular to English); an exploration of the cultural dimensions of language and its role in 'socially constructing' lived reality, i.e. written vs. spoken word; inherent power discourses in language (focusing on English in the past, present and future); and the connection between language and national identity

ICIC 369 Humanity Today: Between Science and Fiction **4 (4-0-8)**

Prerequisites: ICIC 259 Intercultural Communication **or** PD approval

An analysis of the increasing symbiosis between science and fiction; an exploration of questions concerning human existence at the heart of science fiction storytelling; science fiction as a form of storytelling using a sense of wonder at reality, the same wonder that scientific exploration engenders; a combination of

lectures, group work, films, novels and short stories covering a wide range of topics such as artificial intelligence, genetic engineering, space exploration, robotics, and transhumanism

ICIC 370 The Story of English **4 (4-0-8)**

Prerequisites: ICIC 259 Intercultural Communication **or** PD approval

The development of English traced from its origins; demonstration through texts, film, and media of the growth and spread of English; an introduction to methods of understanding a variety of linguistic progressions in the language

ICIC 371 Minds and Machines **4 (4-0-8)**

Prerequisites: ICIC 254 History of Ideas I **or** PD approval

An overview of central issues in the philosophy of mind and their application to technological innovation and ethics; issues to be discussed include: What is thought? Is the mind immaterial, is it equivalent to the brain or neither? Does an account of thought also explain consciousness, emotion and/or self-knowledge? Is there reason to suppose that machines could not eventually think, feel, emote, reflect or behave morally? What can artificial intelligence tell us about who and what we are?; readings derived from both historical and contemporary sources

ICIC 372 From Modernism to Postmodernism **4 (4-0-8)**

Prerequisites: ICIC 254 History of Ideas I **or** PD approval

An introduction to the philosophical and cultural movement of modernism and postmodernism; tracing the roots of modernism to the European Enlightenment and discussing the earliest criticism to the 'Age of Reason'; understanding attempts by contemporary critics who reconceptualized a number of concepts such as subjectivity, progress, empiricism and the rule of law; a discussion on how their efforts lead to a major shift in the way discourse, ideas and cultural developments are treated in the 20th century

ICIC 373 Reason and Passion: The Philosophy of Emotion **4 (4-0-8)**

Prerequisites: ICIC 254 History of Ideas I **or** PD approval

An exploration of philosophical and psychological accounts of emotion; topics including the nature of emotion, its relationship to reason, its influence on thought, judgment and action, and its role in the evaluation of oneself and others; using readings from both historical and contemporary sources

ICIC 374 Philosophy and Religion **4 (4-0-8)**

Prerequisites: ICIC 254 History of Ideas I **or** PD approval

A thoroughgoing study of the ways that philosophy and religion interact; a critical analysis of their effects on human social organization and how we conceive the world we live in; focusing on historical and contemporary schools of philosophy and religion in both Eastern and Western contexts

ICIC 375 Behavior, Ethics and Technology **4 (4-0-8)**

Prerequisites: ICIC 254 History of Ideas I **or** PD approval

An analysis of the contemporary interplay between science, technology and ethics with a focus on key questions related to autonomy, deliberation and responsibility; eyeing on both modern bioscience and the technological transformation of daily life in analyzing an increasingly dynamic notion of human nature and addressing groundbreaking insights into the functioning of human motivation

ICIC 376 Information, Knowledge, Representation **4 (4-0-8)**

Prerequisites: ICIC 254 History of Ideas I **or** PD approval

A survey of theoretical principles and practical tools regarding the nature of systematic knowledge, its variation, processing and communication; scrutinizing selected problems in epistemology and ontology on the backdrop of developments in symbol theory, cognitive science and Artificial Intelligence

ICIC 377 The Market and the Environment **4 (4-0-8)**

Prerequisites: ICIC 254 History of Ideas I **or** PD approval

An inquiry into the relationship between the economy and the environment, with a focus on whether the principles of the free market are necessarily detrimental to or whether they can sustain and protect the natural world. Some areas to be explored include transportation and oil, garbage and recycling, sensible power-generation, carbon-trading schemes, water and sewage, agriculture and livestock, and the challenges of global warming

ICIC 378 Ancient Myths, Gods and Heroes **4 (4-0-8)**

Prerequisites: ICIC 254 History of Ideas I **or** PD approval

An exploration through mythology of Ancient Greek cosmology, the generations of and conflicts between the gods, the characteristics of the Olympians, and the emerging prominence of a world of humans and heroes. Works from Homer, Hesiod and Greek playwrights will be considered and compared with Ancient Roman sources and those of other mythological traditions

ICIC 379 The Philosophy of Science and Technology **4 (4-0-8)**

Prerequisites: ICIC 254 History of Ideas I **or** PD approval

An investigation into the foundation, methods, results and impact of science and technology on human life and thought. Topics may include the confirmation and falsification of theories, the nature of explanation, empirical equivalence and under-determination, realism vs. antirealism, and the distinction between science and pseudo-science as well as its relationship to religion

ICIC 380 Postcolonialism **4 (4-0-8)**

Prerequisites: ICIC 259 Intercultural Communication **or** PD approval

An introduction to the study and appreciation of post-colonial literature; utilizing literature, music and film to help students develop the ability to understand influences in new ways; an evaluation through a combination of mock trials, debates, plays, presentations, reading notes and essays

ICIC 381 Selected Topics in Literary and Cultural Studies **4 (4-0-8)**

Prerequisites: ICIC 259 Intercultural Communication **or** PD approval

An exploration of unique areas of research that are emerging in literary and cultural studies today; developing insights into sub-disciplinary specialization; investigating discrete areas of cultural inquiry in their relationship to other disciplines; carrying out critical interventions in subfields of literary and cultural studies

ICIC 382 Translation and Interpretation in the Digital Era **4 (4-0-8)**

Prerequisites: Any foreign language course at Intermediate II level (ICIC 302, ICIC 312, ICIC 322, ICIC 332, ICIC342) **or** placement test

A practical approach to the work of translators and interpreters nowadays; translating and interpreting into and out of English; Applying AI software onto translation assignments; implementing CAT tools & Post-Machine Translation Editing; creating a shorthand system for consecutive interpretation; developing basic skills for simultaneous (conference) interpretation

ICIC 401 Advanced German I – Language and Culture **4 (4-0-8)**

Prerequisites: ICIC 303 Intermediate German III - Language and Culture

Analyzing and making use of linguistic, historical, social and cultural perspectives evolving over time in Germany and the German-speaking world; developing and demonstrating an understanding of ideas and current issues of global significance through a large variety of activities in related topics at the advanced German language proficiency level

ICIC 402 Advanced German II - Language and Culture **4 (4-0-8)**

Prerequisites: ICIC 401 Advanced German I – Language and Culture

Developing linguistic and cultural abilities to conduct communication exchanges in German language at the advanced level in today's workplace; acquiring a range of soft skills to communicate effectively in professional environments; developing a knowledge of job markets, career paths and opportunities for German language speakers

ICIC 411 Advanced Japanese I – Language and Culture **4 (4-0-8)**

Prerequisites: ICIC 313 Intermediate Japanese III - Language and Culture

Analyzing and making use of linguistic, historical, social and cultural perspectives evolving over time in Japan and the Japanese-speaking communities; developing and demonstrating an understanding of ideas and current issues of global significance through a large variety of activities in related topics at the advanced Japanese language proficiency level

ICIC 412 Advanced Japanese II - Language and Culture **4 (4-0-8)**

Prerequisites: ICIC 411 Advanced Japanese I – Language and Culture

Developing linguistic and cultural abilities to conduct communication exchanges in Japanese language at the advanced level in today's workplace; acquiring a range of soft skills to communicate effectively in professional environments; developing a knowledge of job markets, career paths and opportunities for Japanese language speakers

ICIC 421 Advanced French I – Language and Culture **4 (4-0-8)**

Prerequisites: ICIC 323 Intermediate French III - Language and Culture

Analyzing and making use of linguistic, historical, social and cultural perspectives evolving over time in France and the French-speaking world; developing and demonstrating an understanding of ideas and current issues of global significance through a large variety of activities in related topics at the advanced French language proficiency level

ICIC 422 Advanced French II - Language and Culture **4 (4-0-8)**

Prerequisites: ICIC 421 Advanced French I – Language and Culture

Developing linguistic and cultural abilities to conduct communication exchanges in French language at advanced level in today's workplace; acquiring a range of soft skills to communicate effectively in professional environments; developing a knowledge of job markets, career paths and opportunities for French language speakers

ICIC 431 Advanced Chinese I – Language and Culture **4 (4-0-8)**

Prerequisites: ICIC 333 Intermediate Chinese III - Language and Culture

Analyzing and making use of linguistic, historical, social and cultural perspectives evolving over time in China and the Chinese-speaking world; developing and demonstrating an understanding of ideas and current issues of global significance through a large variety of activities in related topics at the advanced Chinese language proficiency level

ICIC 432 Advanced Chinese II - Language and Culture **4 (4-0-8)**

Prerequisites: ICIC 431 Advanced Chinese I – Language and Culture

Developing linguistic and cultural abilities to conduct communication exchanges in Chinese language at the advanced level in today's workplace; acquiring a range of soft skills to communicate effectively in professional environments; developing a knowledge of job markets, career paths and opportunities for Chinese language speakers

ICIC 441 Advanced Spanish I – Language and Culture **4 (4-0-8)**

Prerequisites: ICIC 343 Intermediate Spanish III - Language and Culture

Analyzing and making use of linguistic, historical, social and cultural perspectives evolving over time in Spain and the Spanish-speaking world; developing and demonstrating an understanding of ideas and current issues of global significance through a large variety of activities in related topics at the advanced Spanish language proficiency level

ICIC 442 Advanced Spanish II - Language and Culture **4 (4-0-8)**

Prerequisites: ICIC 441 Advanced Spanish II - Language and Culture

Developing linguistic and cultural abilities to conduct communication exchanges in Spanish language at the advanced level in today's workplace; acquiring a range of soft skills to communicate effectively in professional environments; developing a knowledge of job markets, career paths and opportunities for Spanish language speakers

ICIC 451 Senior Writing Seminar **4 (4-0-8)**

Prerequisites: To be taken in the final year of the program

Corequisite: ICIC 452 Independent Project in Humanities and Languages

A process course on academic writing; a series of workshops and seminars supplementing senior year major tasks

ICIC 452 Independent Project in Humanities and Languages **4 (4-0-8)**

Prerequisites: To be taken in the final year of the program

Corequisite: ICIC 451 Senior Writing Seminar

An independent development and application of assimilated knowledge after having completed a number of courses pertaining to a particular subject area; an extension of knowledge in a particular subject area under the guidance of a faculty member; identifying, critically evaluating, and using relevant texts and materials to construct a researched academic major paper and/or compile a portfolio of original works (such as critical essays) aiming at a publishable standard within the relevant academic discourse; a "capstone" to previous studies and transition to graduate studies

ICIC 453 Research Seminar **4 (4-0-8)**

Prerequisites: ICIC 254 History of Ideas I or PD approval

A rigorous review and application of academic rationales and research principles; providing step-by-step guidance for an efficient approach to research and academic writing; utilizing a hands-on method; requiring students to work independently on areas of their own interest which they will discuss and present to the entire seminar

ICIC 454 Internship **8 (0-40-8)**

Prerequisites: To be taken in the final year of the program

Providing practical experience relevant to the major program's outcomes, influenced by a liberal arts approach, and helping students build industry contacts, gain experience, and explore new applications of their skills

ICIR

ICIR 101 Approaches to International Relations and Global Affairs **4 (4-0-8)**

Prerequisites: None

The principles and practice of international relations, with particular reference to the modern world; the bases of international power and interstate competition; inequalities among states, including domination and colonialism; war and conflict resolution among great powers; the role of trade, defense policies, and control over scarce resources; the involvement of non-state players, including international organizations and special interest groups; international issues concerning the treatment of minority groups, human rights, the use of the environment, international crime, and terrorism

ICIR 102 Approaches to Comparative Politics and Systems **4 (4-0-8)**

Prerequisites: None

Various forms of political systems, both in theory, principle, and practice; political systems in stateless societies, traditional kingdoms and empires, absolutist states, democracies, and modern "authoritarian" and militaristic states; various forms of representation, the party-political systems, elections, and decision-making; the working of the executive, legislative, and judicial aspects of government and their interrelationships

ICIR 201 The Formation of the Modern World : From the Industrial Revolution to High Imperialism **4 (4-0-8)**

Prerequisites: None

Selected aspects of world history from c.1763 to 1914; the Industrial Revolutions and the growth of the world economy; the American and French Revolutions; Latin American independence and development; political developments in Europe and the United States: representative government, the abolition of slavery, nationalism, socialism, women's rights; imperialism and responses to it; the emergence of Japan; wars and warfare; social, scientific, medical and technological development; primary sources analysis

ICIR 202 Globalization and the International Order in the Twentieth Century : From the First World War to 9/11 **4 (4-0-8)**

Prerequisites: ICIR 201 The Formation of the Modern World: From the Industrial Revolution to High Imperialism

A short introduction to selected aspects of world history since World War I; the USA and the USSR as superpowers; the Cold War; the UN system; decolonialization and the 'Third World'; major regional powers; the Soviet collapse and its repercussions; regional conflicts in the Middle East, South Asia, and the Balkans; economic, technological and scientific developments; the great consumer boom; OPEC and oil prices; the World Bank and IMF; the EU and other economic regionalisms; world poverty; new political movements: Civil Rights, feminism, radical Islam; Ethnic conflicts and nationalism

ICIR 203 Foundations of Political Thought **4 (4-0-8)**

Prerequisites: None

A historical survey of the major paradigms in the social sciences (history, political science, economics, sociology, anthropology, geography, psychology) during the twentieth century; concepts and paradigms of political thought

ICIR 204 Perspectives on International Relations **4 (4-0-8)**

Prerequisites: None

Theories of international relations; sovereignty; globalization and change; security; realism; anarchism; liberalism; neoliberal institutionalism; Marxism; constructivism; post-structuralism; critical approaches to international relations

ICIR 211 Globalization and Social Change **4 (4-0-8)**

Prerequisites: None

The global structures and transformations of the late twentieth century; the global economy, food supply, population, disease, environment, resources, and pollution; communications; geopolitics, national states, regional, and international organizations; minorities; the role of women; warfare and terrorism; migration and refugees, crime, culture; global structures and transformations in the world

ICIR 212 Social Institutions of the Modern World **4 (4-0-8)**

Prerequisites: None

Basic social institutions in comparative global perspective; socialization, marriage and the family; education and knowledge; religion and culture; media and communication; government and administration; politics and power; multi-institutional politics approaches in sociology

ICIR 213 Conflict, War and Peace Studies **4 (4-0-8)**

Prerequisites: None

The impact of war upon society and the state; social and political consequences of war; the mobilization of society in times of war; the status of human rights and freedom in times and places of war, politics and war; patterns of military organization, the possible social and political role of the military; major approaches to conflict, war and peace in comparative global perspectives

ICIR 214 Perspectives on Thailand **4 (4-0-8)**

Prerequisites: None

Traditional Thai culture, social structure and hierarchy; interpersonal relations; kreng jai; family; the role of Buddhism and animism; folk traditions (birth, life, marriage, death, etc.); the modern period; the impact of Chinese, Western and Japanese culture; business culture; the rural-urban division; major approaches to perspectives on Thailand in international relations

ICIR 215 Thai Foreign Policy **4 (4-0-8)**

Prerequisites: None

The influence of geopolitics on Thailand's foreign policy; pre-modern interstate relations and concepts in Southeast Asia and their continuing influence; Siam's relations with the Western imperial powers in the Colonial Period; the evolution of Thailand's foreign policy and relations during the First and Second World Wars; Thailand's foreign policy during the Cold War, especially its relations with the USA, the formulation and effects of current Thai policies regarding ASEAN, the UN, APEC, and other regional and international organisations; the evolution and impacts of current Thai bilateral relations with China, the Koreas, Japan, and India; formulation, evolution, and results of Thai foreign policy from the mid-nineteenth century to the present day; with a particular focus on analysing the decision-making process in a selected case study

ICIR 216 Religious Movements and Diversity in Asia **4 (4-0-8)**

Prerequisites: None

Religious diversity in Asia; types of religious movements and cults; genders and the changing religious traditions; the importance of religious movements and diversity in Asia based on selected case studies

ICIR 217 Culture and Power **4 (4-0-8)**

Prerequisites: None

Discussing, analyzing and comparing dimensions and categories of 'power'; the dynamics of open and hidden forms of power at the global, state, national, community, and personal level; origins and limitations of coercive power in stateless societies; hierarchy and surveillance; domination and resistance; impacts of "culture and personality" to contrasting mindsets and modalities of political leadership; legal cultures and inscriptions of power; politics of cross-cultural dialogue; civilizationalism and cultural nationalization; local vs. global culture; and the troubled relationship between cultural relativism and universal Human Rights

ICIR 218 Authoritarian Populism **4 (4-0-8)**

Prerequisites: None

Rapid rise of authoritarian populism and attendant forces; emergence of challenging new dynamics in established Western democracies and less established democracies across Asia and Latin America (e.g., United States, United Kingdom, Thailand, Venezuela, Turkey, the Philippines, Brazil); unstable political orders; reversal of democratization; exploration of contributing factors to authoritarian populist rise; implications of authoritarian populist expansion; strategies for resistance and reversal of authoritarian populist trends

ICIR 219 Genders and Sexual Diversity in the Globalized World **4 (4-0-8)**

Prerequisites: None

Explaining the diversity of genders and sexualities in the globalized world; discussing the feminist approaches to international relations; feminist research in international relations; feminist theories; examining challenges and pressures among the marginalized gender groups; movements for LGBTQ rights; LGBTQ advocacy and international affairs; exploring genders and humanitarian crises; sexual and gender-based violence in wars and conflicts

ICIR 221 International Political Economy **4 (4-0-8)**

Prerequisites: None

The historical development of a world political society and the structures of international diplomacy; war and peace-making between the Great Powers; The Concert of Europe; The League of Nations; the United Nations and the Cold War; International agreements, treaties, and organizations; the principles of international law and the international political economy; the historical development towards a peaceful world order

ICIR 222 International Organizations **4 (4-0-8)**

Prerequisites: None

The development of international organizations since the 19th century; their nature, function, and purpose; contemporary global and regional international organizations (the United Nations, ILO, WTO, and the IMF; the EU, ASEAN, NAFTA, APEC, etc.); their effectiveness and future; international organizations from a comparative perspective

ICIR 223 Democracy as a Political System **4 (4-0-8)**

Prerequisites: None

Historical developments; the principles, practices, and processes of democracy; essential elements; criticisms, strengths, and weaknesses; alternative systems; social and cultural prerequisites for democracy; possible future developments; the historical development, principles and practices of democracy

ICIR 224 Security and Conflict in a Global Perspective **4 (4-0-8)**

Prerequisites: None

Recent developments of warfare with particular reference to the contemporary world; the development of armed forces and innovations in weaponry, tactics and strategy; social and economic costs of warfare; combat and combatants; provisioning and planning; the use of reporting and propaganda in support of

warfare; the industrialization of war and the rise of “New Wars”; types of warfare and security challenges in the contemporary world

ICIR 225 Global Media, Social Change and International Relations **4 (4-0-8)**

Prerequisites: None

The development of the media as a global socializing force; the creation of a global market place; the information age; the power of the media in society and politics; the new global media culture; global opinions and discursive politics in shaping debates and policies

ICIR 226 The History and Concept of Diplomacy **4 (4-0-8)**

Prerequisites: None

The uses of diplomacy and negotiation in resolving political and commercial disputes; the role and status of diplomats and negotiators; the question of political versus commercial issues; state-to-state relations; business-to-state relations; international business-state relations; conflict generation and diplomatic model solutions; the conceptual foundations in understanding diplomacy

ICIR 227 Approaches to Culture and Society **4 (4-0-8)**

Prerequisites: None

Culture in the modern world; the study of symbol; how culture is defined and created; modernity, post-modernity, and techno culture; dominant and minority cultural forms; gender, sexuality and ethnicity; globalism and post-colonialism; the culture of everyday life; theoretical approaches to culture and society

ICIR 228 Europe and the ‘West’ in the Contemporary World **4 (4-0-8)**

Prerequisites: None

The current situation in Europe; economic developments and trend; the growth and strength of the EU; the relations between Eastern and Western Europe; ethnicity, separatism, and conflict in Western Europe and the Balkans; Cyprus and the relationship between Greece and Turkey; immigration; Brexit

ICIR 229 Environment and Natural Resources in Global Affairs **4 (4-0-8)**

Prerequisites: None

The availability, distribution and uses of the world’s resources: food, water, land, soil, minerals, energy, fisheries, etc; resource depletion and optimal usage; public policies, international agreements and business needs as related to the production, distribution and exchange of resources; relevant technological and scientific developments; future prospects; the environment and its impact on international relations

ICIR 231 Imperial Legacies in Asia **4 (4-0-8)**

Prerequisites: None

A concise history of the region from the beginning of the modern colonial period through to independence; liberalism, nationalism, communism, democratization and globalization

ICIR 232 Tradition and Modernity Asia **4 (4-0-8)**

Prerequisites: None

The concept of tradition and modernity in comparative and conceptual perspective; tradition and modernity in Asia; heritage, identity and ideology; invented traditions and multiple modernities; traditional polities and modern nation states; authority and hierarchy, representation and participation; modern cities and traditional villages in Asia; religious traditions and modern change; traditions of sustainability versus capitalist modernity; tradition, culture and commodification

ICIR 235 Strategic Networks in Asia-Pacific **4 (4-0-8)**

Prerequisites: None

An overview of the contemporary East Asian scene based on comparative politics and international relations theory; issues of territorial conflicts; cross-straits relations; North-Korea/Six Party talks and East Asian Security architecture; economic models and limits of the developmental state; social issues (demographics, youth, old people); environmental issues; and the state of democracy/democratization in East Asia and the Asia-Pacific; historical and contemporary issues of significance in the Asia-Pacific region

ICIR 237 International Economic Relations **4 (4-0-8)**

Prerequisites: None

Examining the International economic relations before and after World War II; Globalization and the evolution of International economic relations; monetary arrangements and how the money market works; international trade policies; international movement of factor of production: capital and labor; transnational corporations; international economic integrations; international financial institutions

ICIR 238 Politics and Identity in Cold War Europe, 1945-1991 **4 (4-0-8)**

Prerequisites: None

A political and economic history of Europe since 1945; the devastation of World War II; Marshall Aid and economic recovery; the impact of the Cold War; the early development of the European Economic Community; the foreign policies of Britain, France, and Germany; the loss of empire. Internal political, social

and economic developments in the major European countries; immigration; the situation in Eastern Europe; the collapse of communism and its consequences; the European Union; the contemporary situation and future prospects

ICIR 239 Nations and Nationalisms **4 (4-0-8)**

Prerequisites: None

Introducing the concepts of nation, race and identity; language, religion, race and culture; theories of ethnicity, identity, politics and ethno-genesis; processes of nation-building in selected countries; theories on different types of nationalisms; the emergence of minorities and majorities within states; processes of displacement, migrations and diasporas; the impact of this mobility on the resilience of the state and the economy; political and cultural aspects of ethno-religious and ethno-linguistic nationalisms; selected secessionist, separatist or federalist nationalist movement

ICIR 241 International Relations of South Asia: From Imperialism to the Modern World **4 (4-0-8)**

Prerequisites: None

The conflict and cooperation between two nuclear states (India and Pakistan); inter-country relations, power interventions; political, military, and economic conflict and cooperation. Religions, diversity, and conflicts; the rise of European influence; the British raj; social and economic transformations; movements of religious reform and protest; the independence movement; economic and political developments since 1947; understanding, analyzing and assessing the importance of the Indian Sub-Continent

ICIR 242 Geopolitics and Geoeconomics **4 (4-0-8)**

Prerequisites: None

How political clout at the international level is distributed, accumulated and diminished in accordance with indicators of powers; military strength; population; human capital; natural resources; investment; industries; manufacturing; finance. International influence as measured and changes due to international and national factors; geopolitical and geoeconomic trends

ICIR 243 US Foreign Policy: 1945 – present **4 (4-0-8)**

Prerequisites: None

US foreign policy, international affairs (20th-21st century), post-WWII national security state, Cold War rivalry, Western alliance leadership, Communist bloc, decolonization (Global South), Cold War US power projection, post-bi-polarity, isolationism, interventionism, US-Soviet relations, post-Cold War, War on Terror, US-China relations

ICIR 244 Sustainable Development: Politics and Practice **4 (4-0-8)**

Prerequisites: None

Politics and concept of sustainability; United Nations' SDGs; green growth vs. degrowth, doughnut economics, sustainability and the risk society; tensions between global sustainable development agendas and national politics; "smart" technologies and the sustainability discourse; digital inequalities and approaches to closing the digital divides; nudging and disciplinary power within sustainable development practices; local and indigenous empowerment, digital social movements and their contribution to sustainable development

ICIR 301 Research Methods **4 (4-0-8)**

Prerequisites: None

An introduction to the scientific method and its use in social science research; an examination of research methods, data collection, survey techniques, and hypothesis formation and testing; disciplinary research methods in international relations

ICIR 302 ASEAN and Southeast Asian Regionalism **4 (4-0-8)**

Prerequisites: None

Southeast Asia in the context of global politics in the period since World War II; the impact of the Cold War and its ending; the international relations of the Southeast Asian states; ASEAN regionalism

ICIR 303 Transnational Movements and Migration **4 (4-0-8)**

Prerequisites: None

The development of organized labour following the Industrial Revolution; social changes induced by industrialism; factory conditions and reform; early labour movement; consolidation of trade unionism in Britain; labour and union movements in Continental Europe; labour movements in the USA and the British Dominions up to World War I and II; labour movements worldwide from 1914 to the present day; issues of the trade union organization, power and influence in the modern world and migration; impacts and responses of international organizations and states

ICIR 304 Transnational Crime **4 (4-0-8)**

Prerequisites: None

The scope of transnational crime; international agencies and institutions involved in interdiction efforts; interdiction procedures and jurisdictions; controlling smuggling and piracy; investigation of international

financial crimes such as fraud, tax evasion and money laundering; human trafficking networks; the international drug trade; intellectual property rights regimes and violations; cybercrime; terrorism; crimes against humanity; effects of transnational criminal networks; responses by state and non-state actors

ICIR 305 Conflict Resolution **4 (4-0-8)**

Prerequisites: None

Origins and methods of conflict resolution; typologies and historical trends of conflict and violence; conflict prevention and containment; negotiation and international agreements; cessation of hostilities and durable standards for the implementation of conflict settlements; terrorism, justice, and the rule of law; modern warfare dynamics and ways to counter internecine conflict cycles

ICIR 306 Intelligence, Data and Surveillance **4 (4-0-8)**

Prerequisites: None

Intelligence gathering and whistleblowers; cyberwarfare; artificial intelligence and international competition; autonomous weapons and the future of war; surveillance and privacy; surveillance states; surveillance capitalism; surveillance technology and biometrics; surveillance and everyday life

ICIR 307 The United Nations and Contemporary World Politics **4 (4-0-8)**

Prerequisites: None

Exploring the birth of the United Nations and its historical circumstances from its beginning since 1945; the impact of the Second World War and international Order; lessons learned from the League of Nations; key UN functions; the organization structure; main bodies and agencies; roles of UN Security Council and the status of the five permanent members; General Secretary; Economic and Social Council; International Court of Justice; Peace Keeping Forces; roles of specialized agencies; challenges the UN faces in the contemporary world politics; strengths and weaknesses of the UN's role

ICIR 308 Political Islam **4 (4-0-8)**

Prerequisites: None

Discussing, analyzing and evaluating the foundations and history of political Islam; the rise of Islamic fundamentalism in the contemporary world; Islam and the West; Islam in SEA; Islamic modernity; Islamic law and politics; Islamic economics; Islamism and fundamentalism; religious transnationalism; Islamic geostrategies; Islamic globalism, jihadist internationalism and 'the caliphate'

ICIR 309 Public Diplomacy and Nation Branding **4 (4-0-8)**

Prerequisites: None

Public Diplomacy a cross-section of international communication and diplomacy; a new paradigm of international relations; practice of diplomacy; unlike traditional diplomacy; multifaceted international communications by individual citizens; NGO's; governmental agents; agencies. Public Diplomacy focuses on the strategies, techniques, practices; influencing public attitudes and opinions; Nation and/or State Branding as an emerging field which is multidisciplinary in nature; modern management; marketing; public administration; to differentiate themselves and compete in a globalized world and marketplace

ICIR 311 Foreign Policy Analysis **4 (4-0-8)**

Prerequisites: None

The foreign policy of the United States; the Soviet Union; Russia and China other powers since 1945; objectives and realities; relations between these powers; the foreign policy role played by the Western European powers, Japan and India; comparative foreign policies

ICIR 312 International Law and International Relations **4 (4-0-8)**

Prerequisites: None

The nature, development, and current status of international law; the legal personality of states and other entities under the international law; recognition; territory; jurisdiction and immunity; treaties; state responsibilities; the settlement of disputes and the use of force; laws of the sea, air and space; environmental law; human rights; international legal institutions; enforcement of international law; key concepts of international law in an international relations context

ICIR 313 Human Rights and International Relations **4 (4-0-8)**

Prerequisites: None

The concept of human rights in philosophical, historical, and legal perspective; human rights in contemporary international law; international conventions and the United Nations; individual rights; war crimes; the protection of minorities; economic, and cultural rights; human rights from an interdisciplinary perspective

ICIR 314 International Development Studies **4 (4-0-8)**

Prerequisites: None

Concepts of political and economic development; policies, structures and patterns of change; production and investment priorities; the consequences of economic transformation in poor countries; contrasting

results in Asia, Africa, and Latin America; urbanization and urban-rural relations; social and economic stratification; problems and challenges relating to commerce, travel and the communication revolutions; international development and its impacts

ICIR 321 Political Risk, Business and International Relations **4 (4-0-8)**

Prerequisites: None

How political power, interests, values, local culture, systems, technology create risks for international business; political risk in developed countries; implications for non-western companies overseas; how to anticipate, manage and mitigate political risks

ICIR 322 The Politics and Economics of Non-Governmental Organizations **4 (4-0-8)**

Prerequisites: None

The history and development of Non-Governmental Organizations at the national and international levels, the identification of social issues: slavery, women's and minority rights, civilians and the injured in wartime, refugees, civil rights, environmental issues, global political and economic movements; the relation of NGOs with the state and international organizations; the politics, organization and finance of NGOs; NGOs in relationship with business

ICIR 323 The Practice of Diplomacy **4 (4-0-8)**

Prerequisites: None

The uses of diplomacy; negotiation; conflict resolution; political and commercial disputes; describing the role; function; methods of diplomats and negotiators in international relationships; methods to identify problems and develop innovative solutions

ICIR 324 Society and Technology in the Modern World **4 (4-0-8)**

Prerequisites: None

The social impact of science and technology up to c. 1900; the early 20th century: transportation, the technology of warfare, the 'New Physics' of Einstein and Bohr; developments since World War II; computers; satellite communications; the Internet; genetic engineering; and medical advances; impacts of new media in international affairs

ICIR 325 Migration, Diasporas and the Politics of Space **4 (4-0-8)**

Prerequisites: None

Reasons; contexts of migration historically; preservation; transformations of traditional cultures and identities in alien land; enclave communities and host societies; generational differences in culture amongst migrants; the image of homeland; the cultural impact of the movement of peoples

ICIR 326 Contemporary China: Global, Regional, and Local Perspectives **4 (4-0-8)**

Prerequisites: None

Contemporary politics, economy, society and culture in the People's Republic of China, Hong Kong and Taiwan; international relations in a Chinese perspective; China's impact on the region and world

ICIR 327 Ethnicity and Representation in International Affairs **4 (4-0-8)**

Prerequisites: None

The concept of ethnicity; ethnic labeling and identity; the concept of race; minority groups, wider society, and the state; acceptance, prejudice and discrimination; economic, political, and sociocultural aspects of ethnicity; ethnic conflicts; ethnic cleansing and genocide; the relationship of ethnicity and the state in international affairs

ICIR 328 Citizenship and Transnationalism **4 (4-0-8)**

Prerequisites: None

Examination of the changing conception of citizenship in the context of transnational capitalism and corporate power; neoliberalism and the depoliticisation of civic life; consumer citizenship; transnational corporations as development and political actors; corporations and intergovernmental international organisations; national and transnational identities; Zygmunt Bauman's liquid identities; state sovereignty in the context of transnationalism; transnational social movements; resistance and anti-transnational social movements

ICIR 331 Religion and Politics in the Contemporary World **4 (4-0-8)**

Prerequisites: None

Religion and society; types of religious organizations and movements and their social role and impact; secularization and counter-secularization; religion; politics; and the state; case studies on the contemporary role of religion in selected societies

ICIR 332 Comparative Regionalism **4 (4-0-8)**

Prerequisites: None

Theoretical viewpoints on regionalism; major regional organizations; foundations, purposes, functions and institutional designs; methods of interaction in a global perspective

ICIR 333 Politics of Memory in Asia **4 (4-0-8)**

Prerequisites: None

How and why social actors use the past to act in the present and the future; major approaches to the study of history, memory and identity; case studies in the Asian region; individual and collective memories; narratives; landscapes; institutions; popular culture; major concepts of memory

ICIR 334 Terrorism, Counterterrorism and Political Violence **4 (4-0-8)**

Prerequisites: None

A brief historical survey of terrorism; theories of terrorism; a critical examination of political theory regarding the rights and wrongs of revolt and terrorism; the relationship of the modern state with terrorism and societies; terrorism in the contemporary world

ICIR 341 Current Issues in International Relations and Global Affairs **4 (4-0-8)**

Prerequisites: None

Selected topics of contemporary relevance for International Relations and Global Affairs: recent developments in World politics

ICIR 342 Current Issues in Asia **4 (4-0-8)**

Prerequisites: None

Selected topics of contemporary relevance for International Relations and Global Affairs: recent developments in Asia

ICIR 343 The Creative Job Search **4 (4-0-8)**

Prerequisites: None

How to find a job, create a CV, personal branding; prepare, perform effectively for interviews; explains how to evaluate the application experience; methods and means to find jobs in a competitive marketplace

ICIR 401 Internship **8 (0-40-8)**

Prerequisites: Have completed all required and major elective requirements in the International Relations and Global Affairs program

An internship to increase practical experiences relevant to students' concentration in working at various organizations such as non-governmental organizations, international organizations, research organizations, educational organizations, or private organizations

ICIR 402 Senior Thesis 8 (0-40-8)

Prerequisites: Have completed all required and major elective requirements in the International Relations and Global Affairs program

The opportunity; of carrying out empirical research projects under the close supervision.; to demonstrate initiative, creativity, systematic problem-solving, persistence, attention to detail; students will prepare a thesis proposal in consultation with their prospective supervisor

ICLL

ICLL 100 Self Development **2 (2-0-4)**

Prerequisites: None

Life skills for 21st century workplace through learning or training activities in various topics including creativity, growth mindset, leadership, and emotional intelligence or other selected personal development activities approved by the academic advisor and Curriculum Administrative Committee

ICLL 101 Professional Development **2 (2-0-4)**

Prerequisites: None

Professional skills for 21st century workplace through learning or training activities in various topics including innovation management, start-up business, agile workplace or other selected professional development activities approved by the academic advisor and Curriculum Administrative Committee

ICLL 102 Skills for a Digital World **2 (2-0-4)**

Prerequisites: None

Twenty-first century skills for digital economy through learning or training activities in various topics including e-Commerce, Blockchain technology, and data science, or other selected activities approved by the academic advisor and Curriculum Administrative Committee

ICMA

ICMA 100 Foundation Mathematics **0 (4-0-0)**

Prerequisites: Placement test

Expressions and equations; linear functions; polynomials and nonlinear functions; radical and rational functions; the data analysis

ICMA 101 Precalculus **0 (4-0-0)**

Prerequisites: Placement test

Functions and graphs; polynomial functions; rational functions; exponential functions; logarithmic functions; trigonometry; unit circle; trigonometric identities; complex numbers

ICMA 106 Calculus I **4 (4-0-8)**

Prerequisites: Placement test or ICMA 101 Precalculus

Limits and continuity; differentiation and its techniques; derivatives of algebraic, logarithmic, exponential, and trigonometric functions; graph sketching; applications of the derivatives; antiderivative and integration; area under a curve and between curves

ICMA 151 Statistics for Science I **4 (4-0-8)**

Prerequisites: Placement test **or** ICMA 101 Precalculus

Statistical ideas and concepts; probability, conditional probability; distribution functions; expected value; estimators, good estimators; hypothesis testing

ICMA 120 Mathematical Foundations and Proof Techniques **4 (4-0-8)**

Prerequisites: Placement test **or** ICMA 101 Precalculus

Introduction to logic and proof techniques, set theory, real number system, functions and relations, basic number theory, algebraic structures

ICMA 213 Calculus II **4 (4-0-8)**

Prerequisites: ICMA 106 Calculus I

Techniques of integration; improper integrals; indeterminate forms; applications of integration; sequences and series; power series; Taylor and Maclaurin series

ICMA 214 Ordinary Differential Equations **4 (4-0-8)**

Prerequisites: ICMA 213 Calculus II

First-order differential equations, linear differential equations of higher order, series solutions, systems of linear differential equations, applications to physics, engineering, and other fields

ICMA 218 Multivariable Calculus **4 (4-0-8)**

Prerequisites: ICMA 106 Calculus I

Functions of several variables, vectors and 3D analytic geometry, partial derivatives, directional derivatives, the chain rule, tangent planes and normal lines, optimization, Lagrange multipliers, multiple integrals in various coordinate systems, line integrals, Green's theorem, surface integrals

ICMA 240 Linear Algebra I **4 (4-0-8)**

Prerequisites: Placement test **or** ICMA 101 Precalculus

Systems of linear equations, matrix algebra, determinants, vector spaces, linear transformations, eigenvalues and eigenvectors, diagonalization, applications

ICMA 241 Linear Algebra II **4 (4-0-8)**

Prerequisites: ICMA 240 Linear Algebra I

Inner product spaces, symmetric matrices and quadratic forms, numerical methods, singular value decomposition, applications

ICMA 242 Discrete Mathematics **4 (4-0-8)**

Prerequisites: None

Basic logic, set theory, relations, functions, integers, counting technique, algorithms, methods of proof, Boolean algebra, topics from graph theory, tree, modeling computation

ICMA 253 Statistics for Science II **4 (4-0-8)**

Prerequisites: ICMA 151 Statistics for Science I

Two-sample problems, analysis of variance (ANOVA), chi-squared tests, correlation matrix, regression analysis, nonparametric methods

ICMA 313 Number Theory and Cryptography **4 (4-0-8)**

Prerequisites: ICMA 120 Mathematical Foundations and Proof Techniques

Divisibility; prime numbers; congruences; Chinese remainder theorem; quadratic reciprocity; Diophantine equations; arithmetic functions; public-key cryptography; RSA algorithm; elliptic curve cryptography; digital signatures; applications in computer security

ICMA 316 Graph Theory **4 (4-0-8)**

Prerequisites: ICMA 242 Discrete Mathematics **or** ICCS 206 Discrete Mathematics

Fundamental concepts of graphs; adjacency and incidence; paths, cycles, and subgraphs; trees and forests; matching and covering problems; vertex and edge connectivity; graph traversals; planar graphs and duality; graph coloring: vertex coloring, edge coloring, and chromatic polynomials; introduction to random graphs; applications in computer science and network analysis

ICMA 319 Combinatorics **4 (4-0-8)**

Prerequisites: ICMA 242 Discrete Mathematics **or** ICCS 206 Discrete Mathematics

Basic counting principles; permutations and combinations; binomial coefficients; inclusion-exclusion principle; generating functions; recurrence relations; Ramsey theory; design theory; extremal set theory; probabilistic methods in combinatorics; applications in computer science and statistics

ICMA 321 Game Theory **4 (4-0-8)**

Prerequisites: ICMA 240 Linear Algebra I

Strategic decision-making, two-person zero-sum games, mixed strategies, Nash equilibrium, nonzero-sum games, cooperative games, bargaining, repeated games, evolutionary game theory, applications to economics, politics, and biology

ICMA 322 Advanced Calculus **4 (4-0-8)**

Prerequisites: ICMA 120 Mathematical Foundations and Proof Techniques

The real number system, sequences of real numbers, limits and continuity of functions, differentiation, Riemann integration

ICMA 323 Partial Differential Equations **4 (4-0-8)**

Prerequisites: ICMA 218 Multivariable Calculus, ICMA 214 Ordinary Differential Equations

First-order PDEs; classification of second-order PDEs; separation of variables; Fourier series and transforms; heat equation; wave equation; Laplace equation; method of characteristics; Green's functions

ICMA 335 Complex Variables **4 (4-0-8)**

Prerequisites: ICMA 213 Calculus II, ICMA 218 Multivariable Calculus

Complex numbers; analytic functions; Cauchy-Riemann equations; elementary functions; complex integration; Cauchy's theorem; Cauchy's integral formula; Taylor and Laurent series; residues; applications

ICMA 338 Numerical Methods **4 (4-0-8)**

Prerequisites: ICCS 102 Coding for All, ICMA 106 Calculus I, and ICMA 213 Calculus II

Introduction to the use of computers to solve scientific problems, numerical solution of nonlinear equations, linear algebra systems, the interpolation and approximation of functions, differentiation and integration, and differential equations

ICMA 344 Time Series Analysis **4 (4-0-8)**

Prerequisites: ICMA 151 Statistics for Science I

Basic principles of representing time series in both the time and frequency domains; Box and Jenkins technique of fitting data to autoregressive moving average models in the time domain; model construction; evaluation and forecasting; analysis of time domain and digital filtering; methods of estimating and interpreting the spectrum

ICMA 346 Optimization **4 (4-0-8)**

Prerequisites: ICMA 240 Linear Algebra I

Linear programming; simplex method; duality theory; sensitivity analysis; integer programming; dynamic programming; applications in economics, engineering, and data science

ICMA 350 Probability **4 (4-0-8)**

Prerequisites: ICMA 213 Calculus II, ICMA 218 Multivariable Calculus

Sample spaces; basic axioms of probability; conditional probability and independence, random variables, expectation and moment-generating functions, discrete and continuous distributions, central limit theorem

ICMA 353 Actuarial Mathematics I **4 (4-0-8)**

Prerequisites: ICMA 106 Calculus I

Time value of money; annuities; loans; bonds; general cash flows; portfolios; asset liability management; reserving; valuation; pricing; asset/liability management; investment income; capital budgeting; valuing contingent cash flows

ICMA 354 Actuarial Mathematics II **4 (4-0-8)**

Prerequisites: ICMA 151 Statistics for Science I, ICMA 350 Probability

Stochastic processes; survival models; probability distributions; statistical estimation; insurance claim modeling; generalized linear models (GLMs); model diagnostics

ICMA 356 Decision Analysis **4 (4-0-8)**

Prerequisites: ICMA 151 Statistics for Science I **or** ICMA 152 Business Statistics

Decision models; expected monetary values; decision flow diagrams; probability assessment; optimization techniques; perfect information; opportunity losses; uncertain payoffs; biased measurements; utility theory; judgmental probability; normal form of analysis; economics of sampling; risk sharing

ICMA 393 Special Topics in Applied Mathematics I **4 (4-0-8)**

Prerequisites: Permission of instructor

Topics of current interest in statistics

ICMA 395 Special Topics in Applied Mathematics II **4 (4-0-8)**

Prerequisites: Permission of instructor

Topics of current interest in optimization

ICMA 410 Stochastic Processes **4 (4-0-8)**

Prerequisites: ICMA 151 Statistics for Science I, ICMA 240 Linear Algebra I

Introductory stochastic processes; expectation; conditional expectation and variance; discrete Markov chains; transition probabilities; Chapman-Kolmogorov equations; stationary distributions; exponential distribution and the Poisson process; continuous-time Markov chains

ICMA 412 Heuristic Optimization **4 (4-0-8)**

Prerequisites: ICMA 151 Statistics for Science I

Basic difficulties in problem solving; need for heuristic optimization; basic concepts: representation, optima, neighborhood; exhaustive search and local search methods; greedy algorithms; simulated annealing; tabu search; genetic algorithms; evolutionary algorithms; particle swarm optimization; ant colony optimization; multi-objective optimization; constraint handling techniques; applications in scheduling, routing, and design problems

ICMA 424 Abstract Algebra **4 (4-0-8)**

Prerequisites: ICMA 120 Mathematical Foundations and Proof Techniques

Groups; subgroups; cyclic groups; permutation groups; cosets; normal subgroups; quotient groups; group homomorphisms; rings; integral domains; ideals; quotient rings; ring homomorphisms; polynomial rings; fields

ICMA 425 Differential Geometry **4 (4-0-8)**

Prerequisites: ICMA 218 Multivariable Calculus, ICMA 240 Linear Algebra I

Curves in Euclidean space; Frenet frames; curvature and torsion; surfaces in Euclidean space; first and second fundamental forms; principal curvatures; Gaussian and mean curvatures; geodesics; Gauss-Bonnet theorem; introduction to Riemannian geometry

ICMA 432 Multivariate Analysis **4 (4-0-8)**

Prerequisites: ICMA 151 Statistics for Science I

Multivariate normal distribution; multiple and partial correlation; Wishart distribution; Hotelling's T distribution; multivariate analysis of variance; discriminant analysis; factor analysis

ICMA 435 Regression Analysis **4 (4-0-8)**

Prerequisites: ICMA 151 Statistics for Science I

Simple and multiple regression, diagnostics, model selection, models with categorical variables

ICMA 445 Seminar in Applied Mathematics **2 (2-0-4)**

Prerequisites: Permission of instructor

Student presentations and discussions of research; review of topics of interest

ICMA 447 Research Project in Applied Mathematics A **3 (0-6-3)**

Prerequisites: Permission of instructor

Small research project in mathematics or related fields under the supervision of an advisor; literature review; research proposal; preliminary results

ICMA 448 Research Project in Applied Mathematics B **3 (0-6-3)**

Prerequisites: ICMA 447 Research Project in Applied Mathematics

A Small research project in mathematics or related fields under the supervision of an advisor; detailed analysis; main results

ICMA 450 Mathematical Modeling **4 (4-0-8)**

Prerequisites: ICMA 213 Calculus II

Construction and analysis of mathematical models; deterministic and stochastic models; difference equations; differential equations; dynamical systems; optimization models; probabilistic models; simulation; applications in biology, physics, economics, and engineering

ICMA 452 Mathematical Finance and Derivatives **4 (4-0-8)**

Prerequisites: ICMA 350 Probability

Financial derivatives; options pricing; binomial model; Black-Scholes model; introduction to stochastic calculus; applications of Itô's lemma; portfolio optimization; risk management

ICMA 484 Special Topics in Applied Mathematics III **4 (4-0-8)**

Prerequisites: Permission of instructor

Topics of current interest in mathematical analysis

ICMA 485 Special Topics in Applied Mathematics IV **4 (4-0-8)**

Prerequisites: Permission of instructor

Topics of current interest in algebra and number theory

ICMA 486 Special Topics in Applied Mathematics V **4 (4-0-8)**

Prerequisites: Permission of instructor

Topics of current interest in geometry

ICMA 487 Special Topics in Applied Mathematics VI **4 (4-0-8)**

Prerequisites: Permission of instructor

Topics of current interest in combinatorics

ICMB

ICMB 150 Introduction to Programming and Business Applications **2 (2-0-4)**

Prerequisites: None

Introductory course to programming concepts and processes in incorporating related technologies from various platforms to build business applications; mechanisms in computer programming, such as variables, objects, operators, flow control, loops, functions, and data processing; using application programming

interfaces (API); business applications that integrate with various platforms for information collection, information sharing, and information processing for businesses

ICMB 151 Business Mathematics **2 (2-0-4)**

Prerequisites: None

Review of algebra; logarithmic and exponential functions; matrix algebra; differential calculus; integral calculus; unconstrained optimization; constrained optimization with equality constraint (Lagrangean method)

ICMB 152 Business Statistics **4 (4-0-8)**

Prerequisites: ICMB 151 Business Mathematics

Introduction to theories and applications of statistics in business using computer software. Descriptive statistical measures of discrete and continuous probability distributions. Inferential statistical analyses through sampling distributions, point and interval estimations, and hypothesis testing. Basic of analysis of variance and linear regression

ICMB 253 Microeconomics **4 (4-0-8)**

Prerequisites: ICMB 151 Business Mathematics

An introduction to microeconomics principles; economic scarcity; opportunity cost; demand and supply; elasticity; consumer surplus; producer surplus; consumer behavior; producer behavior; welfare analysis; production costs; pricing theory; market structure

ICMB 254 Macroeconomics **4 (4-0-8)**

Prerequisites: ICMB 151 Business Mathematics

Data of macroeconomics; the Gross Domestic Product (GDP); the Consumer Price Index (CPI), multiplier; unemployment; inflation; money market, interest rate; fiscal and monetary policies; ISLM Model; AS-AD Model; international trade, exchange rate

ICMB 255 Management of Business Information **4 (4-0-8)**

Prerequisites: None

Management of business data and models, connecting, cleaning, and preparing data; Building data models, financial models, scenario manager, goal seek, data tables and data analysis expressions (DAX); Analyzing data using pivot tables, power pivot, calculated columns and calculated measures; Visualization of data using sparklines, slicers, visualizations, dashboards and storyboards

ICMB 256 Principles of Financial Accounting **4 (4-0-8)**

Prerequisites: None

An introductory accounting course to understand the impact of business transactions on organizations; Knowledge of basic accounting principles and techniques; The ability to use and provide the variety of information to stakeholder including developing, presenting, understanding financial accounting information, analyzing results and making decisions

ICMB 257 Business Finance for Entrepreneurs **4 (4-0-8)**

Prerequisites: ICMB 256 Principles of Financial Accounting

An overview of the principles and practices of business finance including time value of money, the valuation of financial assets, capital budgeting techniques, risk and return calculations, methodologies for determining the cost of capital, an estimation and forecasting of cash flows, and the project evaluation

ICMB 258 Business Communication **4 (4-0-8)**

Prerequisites: None

Introduction to Business Communication; Principles of Effective Communication; Application of Communication Principles in Business Analysis; Written Communication in Formal and Informal Settings; Oral Communication Skills; Understanding Communication Processes in Business; Practical Business Writing Assignments; Business Presentation Skills; Professional Development Topics: Career Planning, Networking, Job Searching; Resume Preparation Techniques; Job Application Strategies; Interviewing Techniques

ICMB 259 Principles of Marketing **4 (4-0-8)**

Prerequisites: None

Marketing concepts, the role of marketing in organization, creating-communicating-delivering-exchanging product and services that having value to customers and the society; customer needs and wants, consumer decision making process, marketing information and research, market segmentation-targeting-positioning, product development and life cycle management; pricing, channel management, marketing communication, customer relationship management

ICMB 260 Management and Organizational Behavior **4 (4-0-8)**

Prerequisites: None

A study on the role of manger in an organization, emphasis on the understanding of behavioral and administrative theories and concepts needed to succeed in the modern organization. Topics includes

organization structure, organizational changes, motivations, leadership, managing work and team, effective communication, principal conflict resolution management and environment, social and governance (ESG) for business sustainability growth

ICMB 261 Human Resources Management **4 (4-0-8)**

Prerequisites: None

Disruptive change in work and employment, managing human resources strategically, ethical and social responsibility of HRM, people analytics and HR metrics, strategic workforce planning, job and workplace design, recruiting and selecting talents, assessing and improving employee performance, training and employee development, compensating human resources, enhancing employee relations, separating and retaining employees

ICMB 262 International Business Management **4 (4-0-8)**

Prerequisites: ICMB 260 Management and Organizational Behavior

An examination of International business operations, organization structure, finance and accounting systems, taxation systems, marketing strategy, culture differences, global trade, capital markets and economic growth, the impact of regional trading blocs, corporate global competitiveness, and global strategies

ICMB 350 Business Law **4 (4-0-8)**

Prerequisites: None

Introduction to Laws; Distinction between Law, Morality and Religion in different jurisdictions; Digital Laws; Contract Law; Company and Partnership Laws; Agency Laws and Employment Laws; Intellectual Property Laws; Resources and IT tools; Case studies to be applied in the business context for sustainable practices

ICMB 351 Business Ethics and Sustainability **4 (4-0-8)**

Prerequisites: ICMB 260 Management and Organizational Behavior, ICMB 350 Business Law

An understanding, analysis of ethical concepts, and the implications of ethics in business decisions under different social and other business-related environments, an application of ethical principles to ethical issues within the organization and the external environment

ICMB 352 Management Science **4 (4-0-8)**

Prerequisites: ICMB 152 Business Statistics, ICMB 255 Management of Business Information

An application of quantitative analysis techniques, linear programming, network models, decision analysis, business simulation

ICMB 353 Operations Management **4 (4-0-8)**

Prerequisites: ICMB 152 Business Statistics, ICMB 255 Management of Business Information

Modern concepts, models and tools for planning, organizing, staffing, leading and controlling the production, distributing of goods and services

ICMB 371 Consumer Insights – A Qualitative Approach **4 (4-0-8)**

Prerequisites: ICMB 259 Principles of Marketing

Importance of consumer insights; psychological aspects of consumer behavior; the role of qualitative approach in discovering insights; qualitative research procedures; qualitative data collection methods, focus group discussion, in-depth interview, observation, projective techniques; data collection and fieldwork; data coding; qualitative data analysis methods; interpreting insights; turning insights into marketing ideas

ICMB 450 Strategic Management **4 (4-0-8)**

Prerequisites: completed at least 124 credits

A study of strategic management; fundamental element of the organizational management strategy; process and frameworks of strategic management; an examination of both internal and external environment; competitive advantage; an identification of organization's mission, objective, policies and business strategy; foundation of a strategic analysis including the industry and company analysis; strategy formulation and implementation

ICMB 451 Practical Business Training – Off Campus **8 (0-40-8)**

Prerequisites: completed at least 124 credits

An internship program in off-campus organizations providing practical business experience for MUIC students; applications of business knowledge and skills learned in class; a summative evaluation of students' teamwork, analytical thinking skills, innovativeness, ethics and sustainability, and management knowledge and skills

ICMB 452 Innovation, Entrepreneurship and New Business Development **8 (8-0-16)**

Prerequisites: completed at least 124 credits

Study of entrepreneurial business strategy and innovation; development of business plan; new business ideas generation; prototype development; new business model; vision and mission; organizational plan; marketing plan; human resource plan; financial plan, risk management plan; action plan

ICMC

ICMC 102 Man and the Arts for Media and Communication **4 (4-0-8)**

Prerequisites: None

Studying the dynamic relationship of man, arts and society with focusing on the function of communication; theories on aesthetics being used to analyze various kinds of the media, such as visual arts, performing arts and music, to interpret the content, subject matter and value of the works of arts

ICMC 104 Audio Communication **4 (4-0-8)**

Prerequisites: None

Learning to use sound to complement images in the process of communication; exploring meanings and feelings experienced by audiences in reaction to sound in various media; and employing the audio equipment to specific purposes and conditions

ICMC 108 Visual Culture and Sociology **4 (4-0-8)**

Prerequisites: None

An investigation of historical and contemporary forms of visual communication: from painting, architecture, graffiti, photography, graphic design or video to contemporary consumer life, popular culture, subculture, mass media, commercial communication and advertising; examining the critical philosophies shaping visual communication, and various frameworks for the interpretation and evaluation of visual images they constantly consume

ICMC 112 Media and Culture in the Digital Age **4 (4-0-8)**

Prerequisites: None

Developing clear and engaging content about media-culture interactions in digital age; introducing media convergence strategies and their societal impact; examining contemporary digital media trends; practicing initial analysis of media convergence implementations; creating content reflecting cultural identities and meanings; exploring audience engagement in converged media environments

ICMC 113 Introduction to Communication and Collaboration **4 (4-0-8)**

Prerequisites: None

Introducing foundational concepts of effective collaboration in media contexts; exploring and practicing techniques for team communication; identifying and leveraging individual strengths in media project teams; recognizing and adapting to changes in media environments; applying basic collaborative skills to media-

related tasks; examining and developing strategies for personal growth in evolving media landscapes; implementing introductory teamwork principles in simple media projects

ICMC 114 Writing for Interactive and Digital Media **4 (4-0-8)**

Prerequisites: None

Introducing strategic writing for interactive digital platforms; developing communication skills for peer collaboration and understanding; adapting writing techniques to meet industry standards; creating engaging content for diverse mass audiences; exploring storytelling methods for various digital formats; integrating multimedia elements to enhance written content; applying ethical principles in digital communication; incorporating current digital trends and interactive elements for audience engagement

ICMC 201 Media and Communication Regulations and Ethics **4 (4-0-8)**

Prerequisites: None

Studying of free speech as a fundamental platform; covering both local and international ethics, professionalism, laws, and governmental regulations; data privacy; legal issues; case studies of morals and responsibilities associated with mass communication and media practitioners

ICMC 202 Media and Culture Theory **4 (4-0-8)**

Prerequisites: ICMC 112 Media and Culture in the Digital Age

An analysis of the nature of human communication: physical, psychological, linguistic and sociological in the interpersonal communication, small group communication or mass communication; core theoretical framework of subject: interaction between communication and society, culture, social groupings, and mental processing

ICMC 203 Popular Entertainment **4 (4-0-8)**

Prerequisites: None

An investigation of the overall concept of the popular entertainment (live shows e.g. theatres, circuses, carnivals; and recorded media e.g. TV and films as art forms containing symbolic contextual references to culture, history, society and ideology); using a rotating series of topics to explore concepts by applying the interdisciplinary approach comprising the fields of history, anthropology, sociology, humanity and political science

ICMC 204 Research Methods and Basic Statistics in Communication and Cultural Studies 4 (4-0-8)

Prerequisites: ICMC 112 Media and Culture in the Digital Age

An introduction to the media and communication research; using the interdisciplinary approach such as social science and humanity to solve research problems empirically; topics including asking the 'right' questions, procedures in conducting research, basic principles of research, random sampling, the questionnaire design, the experimental research design, and the content and research data analysis

ICMC 208 Transmedia Storytelling 4 (4-0-8)

Prerequisites: ICMC 102 Man and Arts for Media and Communication

Participating in a storytelling experience to design, create and share stories across multiple media platforms for entertainment, informational or social development purposes; writing and creating stories in various forms of media products accessible through multiple media entry points; creating the brand of media product creators through the storytelling

ICMC 209 Creativity and Digital Communication 4 (4-0-8)

Prerequisites: ICMC 113 Introduction to Communication and Collaboration

Exploring the links and boundaries of creativity and digital communication and their usages; understanding how the digital world has changed the way we communicate and how creativity can maximize the effectiveness of digital communications; examining the digital communication in the near and mid future

ICMC 210 Basic Acting 4 (2-4-6)

Prerequisites: None

Practice-based learning on becoming a complete human being, accepting the truth of self and truthfulness to the soul; understanding acting as a presentation of 'truth' through the development of the body relaxation and control, vocal training, trust and sensory awareness, improvisation and imagination; practicing the script interpretation, character development and acting approaches for performers; realistic acting scripts used for final acting presentation

ICMC 217 Media Psychology 4 (4-0-8)

Prerequisites: None

The multidisciplinary course drawing from sensory narrative and cognitive psychology, motivation and learning theories, neuroscience, and advertising and marketing; analyzing the psychological impact of the media content and presentation (traditional sources of sight and sound, new interactive, digital media);

including understanding human behavior through working with the media application, the impact of the media on individuals and society, and its use for social and political purposes

ICMC 218 Journalism in the Transmedia Age **4 (4-0-8)**

Prerequisites: None

Foundation of journalism and platform to the study of communication, news, integrated digital journalism and the media; exploring their definitions, revolution, boundaries and principles with an emphasis on procedures, structures and formats in both traditional and new media, their convergence and transformation

ICMC 219 Writing for Convergence Journalism and Media **4 (4-0-8)**

Prerequisites: None

Understanding the principles and practice of converged journalism/media; an introduction to various narrative forms across converged multimedia platforms; analysing of audience interaction and consumption of convergence journalism and media; obtaining skills in the data search and factual verification for news/feature delivery; presenting collected information with clarity; creation of integrated, insightful, cohesive media-proficient media/journalistic writing

ICMC 220 Mass Media and Public Policy: Thailand, ASEAN and the World **4 (4-0-8)**

Prerequisites: None

An examination of the crucial role of the mass media in the formation of the public policy especially on the information distribution and media's incentives affecting different types of groups in society; data privacy issues; and the transformation of the modern platform of the mass media through various socio-political policies; an analysis of various case studies on the interrelationship between the mass media and public policies in the local, ASEAN and global spheres

ICMC 223 Southeast Asian Creative Content Analysis: from Ethno-Historiography Perspectives 4 (4-0-8)

Prerequisites: ICMC 208 Transmedia Storytelling

An introduction to the creative content analysis of Southeast Asian regional communities from ethno-historiography, anthropology and humanity perspectives; understanding the 'originality' and 'authenticity' of ASEAN contents; studying various forms of the region's creative contents (prose and poems, performance and music, paintings and artifacts, and media forms)

ICMC 227 New Media Content Creation **4 (2-4-6)**

Prerequisites: None

A series of teacher / student-led workshops involving both practice-and research-oriented initiatives exploring the broadcast media convergence / remediation between traditional and new media methods; exploring how the internet platforms brought revolutionary changes in styles, formats, themes and ethics; preparing skill sets ready for the future career in journalism

ICMC 229 Digital Media Production **4 (2-4-6)**

Prerequisites: ICMC 209 Creativity and Digital Communication

Equipping the students with the key skills needed to produce a short digital media video production with their own creative voices and visual style; introducing the process of 'short form' production, covering key elements in pre-production, production and post-production processes, focusing on treatments, visualizing a story, storyboarding, camera, lighting, audio / sound, directing, digital editing, color grading etc.; enabling students to explore both artistic expression, and visual thinking, with the technical skills needed (digital equipment and software tools) through hands-on practice; discussing concepts, theories and substantive developments associated with the media, related to the audience, commission and 'brief'

ICMC 230 Literature for Content Creation **4 (4-0-8)**

Prerequisites: None

An introduction to works of various literary genres; of hybrid multimedia electronic / digital literature; surveying the rise of technologies and the rapid increase of the content creation; investigating how literary texts have been transformed into media products; recognizing the different perspectives, approaches and methods in the media adaptation of literature; comparing such products with the original literary works; exploring possibilities of certain literary pieces for the content creation

ICMC 232 Branded Storytelling **4 (4-0-8)**

Prerequisites: ICMC 208 Transmedia Storytelling

Using a narrative of storytelling to connect brands to the targeted customers/audiences, focusing on the establishment of the driving force and value the brand stands for; communicating through storytelling elements i.e. characters, setting, conflict, rising action, climax and resolutions in order to captivate audiences

ICMC 233 Social Media Strategies, Execution and Trends **4 (4-0-8)**

Prerequisites: ICMC 208 Transmedia Storytelling

Providing students with the understanding and opportunity to create a full social media strategy in the theoretical portion of the course; affording students to begin combining together the other skills they have learned in other courses into a consolidated strategy; examining current and new trends in the social media; the students running a campaign that they have devised in the theoretical portion

ICMC 234 Integrated Marketing Communication **4 (4-0-8)**

Prerequisites: ICMC 208 Transmedia Storytelling

Understanding the principle of diverse aspects in the integration of business and marketing in the IMC for the entertainment industry; including the organizational culture, 4 Ps i.e. product, price, place and promotion, advertising, direct marketing, online marketing and PR etc.; case studies on various media products; preparing students for skill sets needed for their future careers

ICMC 235 Strategic Communication **4 (4-0-8)**

Prerequisites: ICMC 208 Transmedia Storytelling

Recalling principles of strategic communication in the digital landscape; identifying theories, tools, and techniques for effective communication strategies; listing key elements of digital platforms for strategic communication; recognizing the integration of traditional principles with digital media trends; naming essential skills for navigating online communication complexities; outlining methods for managing digital campaigns; identifying approaches to influence public perception and behavior; stating techniques for implementing media convergence strategies; listing industry standard communication practices; recognizing methods for creating engaging content for mass audiences; identifying approaches to adapt self-development goals for media changes

ICMC 236 Media Production Essentials **4 (2-4-6)**

Prerequisites: None

Introducing basics of digital production in today's digital media; learning through project-based approach; covering digital content creation from pre-production, production, post-production; filming, creating digital media content across platforms like YouTube, TikTok

ICMC 237 Influencer Communication, Strategies and Practices **4 (4-0-8)**

Prerequisites: None

Examining influencer marketing in today's digital landscape; exploring industry trends, communication strategies, social media practices; focusing on planning, executing, evaluating influencer marketing campaigns; discovering impactful content creation, brand collaborations, monetization practices; driving brand awareness, audience engagement across various social media platforms

ICMC 238 Foundations of Organizational Communication **4 (4-0-8)**

Prerequisites: None

Delving into communication's centrality in organizational functioning, culture; exploring communication practices within organizations; investigating influence on culture, leadership success, change management, team collaboration; studying theories, models, practical approaches; understanding how effective communication enhances efficiency, shapes culture, drives change

ICMC 239 Pitching and Presenting for Success **4 (4-0-8)**

Prerequisites: None

Reducing nervousness, improving delivery; analyzing audience needs; selecting optimal presentation approaches; employing templates for swift setup; organizing persuasive, informational content; enhancing voice, body language; optimizing visual aid use; focusing on audience-centric benefits; efficiently planning, preparing, organizing, delivering briefings; constructing, presenting detailed briefings; addressing audience queries

ICMC 240 Storytelling for Content Creation **4 (4-0-8)**

Prerequisites: None

Recalling fundamental techniques for effective storytelling across media platforms; identifying theoretical frameworks for content creation and audience engagement; recognizing methods for narrative development and multimedia integration; listing strategies for crafting compelling content for diverse platforms and audiences; naming data analytics tools to enhance communication strategies; recognizing industry standards for media content creation; stating goals for enhancing media knowledge and skills

ICMC 241 Pre-Production Mastery: Directing Focus **4 (4-0-8)**

Prerequisites: ICMC 209 Creativity and Digital Communication

Recalling core elements of pre-production for aspiring film directors; identifying techniques for script analysis, storyboarding, and scheduling; listing casting processes and criteria for effective pre-production;

recognizing methods to align pre-production with director's vision; naming collaborative techniques for working with production teams; identifying approaches to manage logistical challenges in film production; stating industry standards for pre-production communication; outlining goals for enhancing pre-production knowledge and skills

ICMC 242 Directing Fictional Film: The Art of Digital Storycraft **4 (2-4-6)**

Prerequisites: None

Developing techniques for shaping digital films through script interpretation; constructing approaches for effective direction of actors in fictional narratives; designing strategies for efficient scene management and visual storytelling in digital filmmaking; creating emotionally engaging and visually compelling stories for digital platforms; producing digital films that integrate ethical considerations in fictional narratives; formulating methods to craft professional-quality digital media with artistic merit; generating content that engages mass audiences through innovative digital storytelling techniques

ICMC 243 Persuasion and Negotiation **4 (4-0-8)**

Prerequisites: None

Understanding modern communication processes and developing skills in persuasion and negotiation while designing and evaluating persuasive messages and content by applying theories and research to influence beliefs attitudes and behaviors through exploring value-based negotiation strategies and analyzing motivation in micro meso and macro contexts with an emphasis on ethical persuasion and negotiation

ICMC 308 Theatre Production I **4 (2-4-6)**

Prerequisites: None

Introducing fundamental stagecraft, technical production principles; combining theoretical study, hands-on experience; exploring set design, lighting, sound, costume, prop construction; emphasizing skill development, technique mastery for successful production execution, from concept to performance;

ICMC 309 Theatre Management I **4 (2-4-6)**

Prerequisites: None

Exploring principles, practices of managing theatrical productions, venues; combining theoretical study, hands-on experience; covering production planning, budgeting, marketing, box office management, front-of-house operations; emphasizing skills, knowledge development for overseeing logistical, administrative aspects of successful theatre production;

ICMC 310 Theatre Production II **4 (2-4-6)**

Prerequisites: None

Advancing intricacies of stagecraft, technical production; honing skills in set, lighting, sound, costume design, prop construction through advanced practical projects, real-world production opportunities; emphasizing technical expertise refinement, problem-solving, collaboration in creative teams to realize theatrical visions on stage;

ICMC 313 Film Screen Writing **4 (4-0-8)**

Prerequisites: ICMC 114 Writing for Interactive and Digital Media

Focusing on standard elements of a film: theme, plot, character, and dialogue; covering writing a short film script and Act I of an original feature film script (professional format) and outlining of Act II and Act III

ICMC 316 Advertisement & Copywriting **4 (4-0-8)**

Prerequisites: ICMC 114 Writing for Interactive and Digital Media

Recalling fundamental principles and practices of copywriting in advertising; identifying effective communication techniques for various marketing platforms; recognizing creative processes for crafting persuasive messages across media; listing skills required for developing clear and engaging advertising content; naming ethical considerations in advertising and copywriting practices; stating methods for creating impactful advertising messages; identifying approaches to design media convergence strategies in advertising; recognizing techniques for effective peer communication in collaborative advertising projects

ICMC 317 Journalistic Writing **4 (4-0-8)**

Prerequisites: ICMC 114 Writing for Interactive and Digital Media

Recalling principles of journalistic writing for print, online, digital, and broadcast media; identifying techniques for researching, interviewing, and reporting in journalism; recognizing strategies for effective storytelling and user-generated content in journalism; listing approaches for developing clear, concise, and engaging narratives in various journalistic styles; naming ethical considerations in news writing, feature writing, and investigative reporting; stating methods for creating professional-quality journalistic content for diverse media outlets; identifying approaches to design media convergence strategies in modern journalism; recognizing techniques for engaging mass audiences through various forms of journalistic writing

ICMC 325 Acting I: the Fundamentals **4 (2-4-6)**

Prerequisites: ICMC 210 Basic Acting

The instruction and practice relating to realistic and naturalistic acting; hands-on practice covers the realistic acting approach, character interpretation, objective, conflict, actor's emotional memory, improvisation, emphasizing on Stanislavsky's acting system and Strasberg's method

ICMC 326 Acting II: Advanced Acting **4 (2-4-6)**

Prerequisites: ICMC 325 Acting I: the Fundamentals

A study of various non-realistic styles of acting (absurd, comedy, Greek and Shakespeare, and musical); including the advanced acting training and master class in acting techniques (mask performance training, commedia dell' arte and clowning)

ICMC 327 Acting for TV and Film **4 (2-4-6)**

Prerequisites: ICMC 325 Acting I: the Fundamentals

The practice-based class on acting for the camera; training on acting with subtlety and composure among the film crew, at real shooting locations and under time constraints; training on working with different camera angles and re-shooting the same lines; principle scripts to use for acting including various masterpiece film scripts

ICMC 328 Design for Video and Film **4 (2-4-6)**

Prerequisites: None

Creating creative digital content designs for video and film; developing character-building techniques for digital media; producing basic content for digital platforms like YouTube; formulating ethical approaches in digital content creation; constructing collaborative workflows for video and film projects

ICMC 329 Design for Live Performances **4 (2-4-6)**

Prerequisites: None

Creating engaging visual designs for live performances and theatre; producing captivating live shows with effective storytelling techniques; developing strategies for technical aspects of live performance production; formulating ethical approaches in live performance design; constructing collaborative workflows for live show execution

ICMC 330 Design for Immersive Experience **4 (2-4-6)**

Prerequisites: None

Creating multi-sensory environments for immersive experiences; developing storytelling techniques for alternate realities; producing interactive content using VR, AR, and MR technologies; formulating ethical approaches in immersive experience design; constructing collaborative workflows for immersive projects

ICMC 333 Directing I: Directing the Actors **4 (2-4-6)**

Prerequisites: ICMC 210 Basic Acting

Studying on director work methodology with actors to activate and create 'truthful' characters for theatres, films and TV dramas; emphasising on the collaboration process in the director-actor working relationship (communication, coaching, script interpretation, an analysis of actor's weaknesses and strengths in acting, and solving acting problems with actors)

ICMC 334 Directing II: Directing for Recorded Media **4 (2-4-6)**

Prerequisites: ICMC 333 Directing I: Directing the Actors

Understanding the underlying principles behind shooting and working with cameras and applying them in different circumstances; content including knowledge in operating sound and lighting kit, and its creative possibilities; emphasising on a powerful system of the single camera blocking and the language of camera work and its narration of the story

ICMC 335 Directing Live Performance **4 (2-4-6)**

Prerequisites: ICMC 333 Directing I: Directing the Actors

Creating professional-quality live performances; producing engaging content for diverse live events; designing effective rehearsal and performance strategies; constructing creative directorial visions; formulating techniques to leverage strengths of actors and teams

ICMC 336 AI For Storytelling **4 (4-0-8)**

Prerequisites: None

Identifying AI tools and techniques for storytelling enhancement; recognizing the intersection of AI and narrative development; listing AI-driven content creation methods; recalling AI applications in storytelling across various media; identifying ethical implications of AI in storytelling; recognizing future trends in AI-driven narrative creation

ICMC 337 AI For Design and Brand Identity **4 (4-0-8)**

Prerequisites: None

Identifying AI tools for design and brand identity; recognizing AI applications in graphic design; recalling AI-driven analytics for brand performance; describing AI applications in logo design; identifying ethical implications in AI-driven design

ICMC 338 AI For Media Creation **4 (4-0-8)**

Prerequisites: None

Identifying AI technologies for media creation; recognizing AI applications in video production; recalling AI's role in enhancing creative workflows; describing AI's impact on content generation; identifying ethical considerations in AI-driven media creation

ICMC 342 Film Criticism **4 (4-0-8)**

Prerequisites: None

Theory and practice of film criticism; covering the study of the development of criticism theories, their significance and impact on the film industry and audiences' development; practicing writing criticism for film through the study of international masterpieces of written film criticism

ICMC 347 Cinema: Beyond the New Waves **4 (4-0-8)**

Prerequisites: None

Acquainting the students with the principal critical methods and theoretical debates in film studies; examining theoretical perspectives including structuralism, semiology, Marxism, feminism, psychoanalysis, Post-structuralism, Queer Theory, intercultural film, and cultural studies; narrative and narration, realism, formalism, modernism, postmodernism, post-colonialism, gender, sexuality, and ideology

ICMC 348 Art Direction & Production Design **4 (2-4-6)**

Prerequisites: None

Producing short films in collaborative settings; creating comprehensive production plans; designing innovative visual concepts; constructing effective production workflows; generating solutions for filmmaking challenges

ICMC 349 Cinematic Lighting and Film Production Sound **4 (2-4-6)**

Prerequisites: None

Developing techniques for cinematic lighting design; producing emotion-evoking sound for character development; designing lighting setups for film production; constructing sound recording strategies; creating advanced microphone techniques

ICMC 350 Short Film Creation **4 (2-4-6)**

Prerequisites: None

Producing short films in collaborative settings; creating comprehensive production plans; designing innovative visual concepts; constructing effective production workflows; generating solutions for filmmaking challenges

ICMC 354 Movement and Human Body **4 (2-4-6)**

Prerequisites: None

A practice-based class on the exploration of the relationship between the movement, self, culture and environment; designing to enhance students' personal presence, self-discovery, expressiveness, power and flexibility; learning how to free and relax the body, improvise and design movements characterizing other beings (characters, animated figures and animals)

ICMC 355 Choreography I **4 (2-4-6)**

Prerequisites: ICMC 354 Movement and Human Body

Art and techniques of designing sequences of the movement narrating stories and carrying meanings of ideas and emotions through the dance language

ICMC 356 Choreography II **4 (2-4-6)**

Prerequisites: ICMC 355 Choreography I

The advanced level of art and techniques of designing sequences of movement narrating the stories and carrying meanings of ideas and emotions through the dance language

ICMC 357 Post-Production I **4 (2-4-6)**

Prerequisites: None

A series of lectures and teacher/student-led workshops and briefs involving both practice and research-led initiatives; exploring key concepts, movements and styles within film studies and the montage theory directly related to the film post-production, editing, creative color grading, and the use of sound

ICMC 358 Post-production II **4 (2-4-6)**

Prerequisites: ICMC 357 Post-Production I

The advanced level of lectures and workshops involving both practice and research-led initiatives; exploring key concepts, movements and styles within film studies and the montage theory directly related to the film post-production, editing, creative color grading, and the uses of sound

ICMC 359 Post-Production III **4 (2-4-6)**

Prerequisites: ICMC 358 Post-Production II

Creating professional-quality audio content with artistic merit; developing advanced sound theory and recording techniques; designing innovative micing strategies; generating engaging audio content for mass audiences; constructing complex sound mixing projects using DAWs

ICMC 368 Cinematography I **4 (2-4-6)**

Prerequisites: None

Developing fundamental principles of cinematography and visual language; constructing visual interpretations of film scripts; designing lighting setups for various cinematic atmospheres; formulating on-set safety protocols and collaborative practices; creating practical, studio-based cinematography projects

ICMC 369 Cinematography II **4 (2-4-6)**

Prerequisites: ICMC 368 Cinematography I

Creating advanced cinematographic techniques across film genres; designing in-depth script visualizations and shot designs; developing professional camera movement and operation skills; constructing cinematic looks using optics and color theory; formulating ethical approaches in cinematographic choices

ICMC 375 Art of Persuasion **4 (4-0-8)**

Prerequisites: None

Understanding the workings of the modern communication process and learning how to effectively persuade; design and evaluate persuasive messages and content; examining persuasion theories and research to influence and change beliefs, attitudes, and behaviors; investigating and analysing how to apply motivation in various contexts (micro, meso, macro); persuasion ethics

ICMC 376 Targeted Audience Analysis **4 (4-0-8)**

Prerequisites: ICMC 234 Integrated Marketing Communication

Providing a framework to analyze, segment, target and validate a specific or general audience using the communication media; covering both the objective and subjective ends of the spectrum for considering different ways to reach and elicit a desired response from an audience; examining the entire communication chain from the audience's perspective

ICMC 377 Film & Media Planning, Funding & Administrating **4 (4-0-8)**

Prerequisites: None

An instruction on media marketing and sales, budgeting consideration and planning; investigating the sponsorship management, identifying target markets, sales and presentation tools, and techniques; researching and developing a film or media project, applying storytelling techniques; examining the script selection, director / crew recruitment, actor negotiations, pitching investors, director / producer collaboration, publicity, and distribution; understanding local and international market; analyzing international media festivals and marketing opportunities

ICMC 378 Entertainment Management **4 (4-0-8)**

Prerequisites: None

Identifying fundamentals of digital entrepreneurship and business models; recognizing ethical considerations in digital media ventures; recalling strategies for digital content engagement and marketing; listing key elements of successful social media business models; identifying trends in digital media for self-development goals

ICMC 379 Media Creator (S/L, Livestream) **4 (4-0-8)**

Prerequisites: None

Identifying key elements of media creator entrepreneurship; recognizing effective content creation strategies for short/long-form video and livestreams; recalling audience engagement techniques in digital media; listing monetization and branding strategies for media creators; identifying growth strategies for media creator ventures

ICMC 380 Media Creator Business and Social Commerce **4 (4-0-8)**

Prerequisites: None

Identifying digital content creation and monetization strategies; recognizing social commerce business models and platforms; recalling audience engagement and analytics techniques; listing advertising and ecommerce integration methods; identifying industry standards for content creation across various media

ICMC 381 Field Study in Media and Communication **4 (4-0-8)**

Prerequisites: None

Local or international field study focusing on expanding knowledge in the field of entertainment media and communication

ICMC 382 Independent Study in Media and Communication **4 (4-0-8)**

Prerequisites: None

Independent study tailored to fit individual interests in a specific area of the entertainment media and communication

ICMC 383 Seminar in Media and Communication **4 (4-0-8)**

Prerequisites: None

Understanding issues relating to media and communication through discussions, debates and intellectual interrogation; lectures and presentations by guest speakers on some specific issues related to the theme set for each class

ICMC 386 Event Management for Media and Communication **4 (4-0-8)**

Prerequisites: None

Instruction and practice on key elements in setting up and managing an event: fundraising and sponsorship, finance and budget management, public relations and advertisement, ticketing, documentation, producing contents and manpower management etc.

ICMC 389 Special Effects Make-up for Television and Film **4 (4-0-8)**

Prerequisites: None

Introduction to special effects make-up: developing and creating imaginative characters with unique features; creating realistic injuries and marks

ICMC 390 Documentary Photography/Still Images in a Moving World **4 (2-4-6)**

Prerequisites: None

An introduction to the documentary photography genre; examining the work of diverse celebrated documentary photographers as well as the philosophies and politics underpinning the documentary tradition; promoting the storytelling power of the still image and collaboration with participants and audiences are within an ethical context; to achieve layered and insightful storytelling that communicating an important contemporary social issue

ICMC 392 Experimental Film **4 (4-0-8)**

Prerequisites: None

Through lectures, project tutorials and project workshops, experiencing and learning about many aspects of Experimental Film, Avant-Garde Film, Video Art, and Abstract Film such as History and Early Forms: Dadaists, Futurists, Surrealists; 1930s and 1940s: British Avant Garde and American Mythologies; Arts, Technologies and experiments: 1950s-60s; Expanded Cinema; Structuralist Film; Video Art into the 80s and 90s; and Chinese Experimental Media and Video Art in China

ICMC 393 Theatre Production and Management **4 (4-0-8)**

Prerequisites: None

Instruction and practice on key elements in a theatre production (stage management, lighting design and control, setting design and construction etc.)

ICMC 394 Art Photography **4 (2-4-6)**

Prerequisites: None

Acting as a catalyst for the student to search inwardly and discover the inherent artist, present in each of us; encouraging students to draw on profound personal thoughts and employing them for the expression and "creation"; emphasizing on the importance of students' perseverance, passion and creative growth throughout the course; offering a platform from which the photographer can grow and evolve as a photographic artist

ICMC 395 Video on demand (Factual Digital Media Approach: Researching, Creating, Communication) **4 (4-0-8)**

Prerequisites: None

Exploring fundamentals of researching, crafting, communicating factual content in digital media; focusing on Video on Demand (VOD) platforms; creating compelling narratives for contemporary digital audiences; covering audience engagement techniques, content planning methodologies; adapting storytelling strategies

for engaging, resonant factual content on VOD platforms

ICMC 396 Digital Storytelling Through Podcasting **4 (2-4-6)**

Prerequisites: None

Exploring podcasting, focusing on the art, craft of creating compelling audio stories for the digital age; emphasizing understanding audience engagement strategies, developing unique podcasting voice; gaining hands-on experience, theoretical study; mastering creation of captivating, resonant podcasts for today's digital landscape

ICMC 397 Live Streaming Production: Techniques and Strategies **4 (2-4-6)**

Prerequisites: None

Exploring techniques, strategies for engaging live-streamed content creation; delving into livestreaming production intricacies; covering equipment setup, audio, video quality optimization, live event planning, audience interaction, platform-specific considerations; combining theoretical study, hands-on practice; learning to plan, produce, execute captivating live streams; emphasizing storytelling for live broadcasts, managing live production technical aspects, adapting content for various streaming platforms

ICMC 398 Professional Internship in the Media and Communication **8 (0-40-8)**

Prerequisites: ICMC 209 Creativity and Digital Communication **or** ICMC 234 Integrated Marketing Communication

Internship in professional companies and agencies, concluding with a report submission and internship host evaluation to summarize the internship experience in the professional context of the media and communication; preparing students for future career options i.e. start up, corporate

ICMC 411 Media and Communication Thesis I: Research and Preparation **4 (0-8-4)**

Prerequisites:

- ICMC 326 Acting II: Advanced Acting (for those who wish to be actors on thesis projects), **or**
- ICMC 334 Directing II: Directing for Recorded Media (for those who wish to be directors on thesis projects), **or**
- ICMC 359 Post-Production III (for those who wish to be editors on thesis projects) **or**
- ICMC 369 Cinematography II (for those who wish to be cinematographer on thesis projects), **or**
- ICMC 376 Targeted Audience Analysis (for those who wish to do IMC on thesis projects), **or**
- ICMC 377 Film and Media Planning, Funding and Administering (for those who wish to be producers on thesis projects)

An integration of knowledge, skills, and techniques acquired throughout the course of study in developing and researching an entertainment media and communication project proposal and planning for approval e.g. film, theatre or digital media productions, drama series, variety programs or documentaries, journalistic projects, media campaigns, and academic research projects

ICMC 412 Media and Communication Thesis II: Producing, Execution and Operation **4 (0-8-4)**

Prerequisites: ICMC 411 Media and Communication Thesis I: Research and Preparation

The execution, operation, producing and creating thesis projects

ICMC 413 Media and Communication Thesis Exhibition **2 (0-4-2)**

Prerequisites: ICMC 412 Media and Communication Thesis II: Producing, Execution and Operation

Screening, staging, presenting project to public audiences and completion of the Thesis Project Book

ICME

ICME 101 Foundation English: Communication Skills **0 (4-0-0)**

Prerequisites: Placement test

A remedial course preparing students to use communicative and academic English at a level suitable for entering the English Studies I: The Writer's Toolkit course

ICMF

ICMF 331 Financial Management **4 (4-0-8)**

Prerequisites: ICMB 257 Business Finance for Entrepreneurs

Goals of financial management; financial markets and yields; the concept of corporate governance in financial management; corporate valuation models; methods in financial statement analysis; working capital management; long-term financial planning and forecasting; capital structure theories and implications; distributions to shareholders

ICMF 332 Financial Markets **4 (4-0-8)**

Prerequisites: ICMB 257 Business Finance for Entrepreneurs

A study of financial markets focusing on international financial systems, market-institution links, financial instrument dynamics, and regulatory frameworks; Fundamental knowledge of financial instruments including bonds, equities, foreign exchanges, commodities, derivatives, and cryptocurrencies; The role of interest rate in the global monetary system; Financial institutions and central bank structures; Application

of financial formulas or models to quantitatively and qualitatively evaluate financial markets and instruments

ICMF 333 Investment Analysis and Portfolio Management **4 (4-0-8)**

Prerequisites: ICMF 331 Financial Management **and** ICMF 332 Financial Markets

An overview of investment-related concepts, including types of asset classes, asset allocation, and risk and return analysis; portfolio construction techniques; theories and practical application of mutual funds and exchange-traded funds (ETFs) in investment portfolios; investment strategies

ICMF 334 Risk Management and Derivatives **4 (4-0-8)**

Prerequisites: ICMF 331 Financial Management **and** ICMF 332 Financial Markets

An introduction to risk management process under COSO framework; fundamental knowledge of derivative instruments including futures, options, and forward; quantitatively and qualitatively analyzing risks for the corporate; controlling risks with appropriate hedging techniques

ICMF 341 Intermediate Accounting I **4 (4-0-8)**

Prerequisites: ICMB 257 Business Finance for Entrepreneurs

A study of revenue recognition principles; measuring and reporting of cash, receivables, inventories, property, plant, and equipment, and intangible assets with emphasis on both accounting theory and practice and the development of professional judgment and critical thinking skills

ICMF 342 Intermediate Accounting II **4 (4-0-8)**

Prerequisites: ICMB 257 Business Finance for Entrepreneurs

An in-depth study of accounting theory, concepts and practices particularly in the areas of liabilities and shareholders' equity; analysis of accounting changes and estimates; computation of earnings per share (EPS)

ICMF 343 Business Taxation **4 (4-0-8)**

Prerequisites: ICMB 257 Business Finance for Entrepreneurs

Personal income tax for small businesses; corporate income tax; value- added tax; withholding tax; tax accounting; tax-related accounts on financial statements; tax planning

ICMF 344 Cost Analysis for Business Decisions **4 (4-0-8)**

Prerequisites: ICMB 257 Business Finance for Entrepreneurs

Cost concepts and terminology; cost behavior analysis; costing systems; uses of cost analysis principles and techniques for decision-making purposes

ICMF 345 Fintech Innovations and Applications **4 (4-0-8)**

Prerequisites: ICMF 332 Financial Markets

Financial technologies with a focus on blockchain, cryptocurrencies, and digital finance; Mechanisms and operations of blockchain technology; Economic, security, and regulatory aspects of digital currencies; Development of critical thinking and problem-solving skills in a digital financial environment by engaging in practical applications within real-world scenarios

ICMF 346 Machine Learning in Finance **4 (4-0-8)**

Prerequisites: ICMB 150 Introduction to Programming and Business Applications **and**
ICMF 331 Financial Management

A finance course focusing on the intersection of machine learning (ML) and finance; an application of ML techniques to solve complex financial problems; fundamentals of machine learning, including supervised and unsupervised learning methods, neural networks, and deep learning, a utilization of machine learning concepts in various financial contexts such as algorithmic trading, credit scoring, fraud detection, and portfolio management; a combination of lectures, case studies, and hands-on machine learning project

ICMF 347 Sustainable Finance and Investment **4 (4-0-8)**

Prerequisites: ICMB 257 Business Finance for Entrepreneurs

Concepts in corporate sustainability; regulatory landscape on corporate sustainability; role of capital market in related to sustainability; sustainability data and standards for disclosures and performance assessment; value chain and stakeholder analysis; sustainable-linked finance; integrating sustainability information in corporate valuation; sustainability trends in capital markets

ICMF 348 IT Auditing for Risk Assurance **4 (4-0-8)**

Prerequisites: ICMB 257 Business Finance for Entrepreneurs

IT audit fundamentals, compliance regulations, key standards and frameworks; performing IT audits through practical scenarios; developing reports and presenting audit findings; ethics in IT auditing

ICMF 431 Financial Analysis and Modeling **4 (4-0-8)**

Prerequisites: ICMF 331 Financial Management **and** 4th Year Status

The capstone course for students majoring or minoring in finance; construction of financial models for financial and investment decision making; financial statement analysis, corporate and equity valuation, risk modeling, scenario analysis and financial simulation using spreadsheet -based financial models; financial case analysis and problem solving

ICMF 441 Corporate and Project Valuations **4 (4-0-8)**

Prerequisites: ICMF 331 Financial Management **and** ICMF 332 Financial Markets

Valuation techniques in corporate and project valuation processes, including discounted cash flow (DCF), multiples analysis, precedent transactions analysis, and risk assessment; evaluation of strengths and limitations of different valuation approaches; conducting a feasibility analysis; constructing comprehensive valuation models and making informed recommendations to support strategic business decisions; exploring the roles of financial advisory and investment banking through case studies, guest speakers, and/or field trips

ICMF 442 Financial Theory **4 (4-0-8)**

Prerequisites: ICMF 331 Financial Management

Financial and disruptive innovation theories; application of financial theory under disruptive environment to business decision; decisions under the certainty and uncertainty with the expected utility framework; classical financial theories such as capital structure, capital budgeting, dividend policy, modern portfolio theories with the disruptive innovation concept; MATLAB programming for finance

ICMF 443 Case Studies in Finance and Accounting **4 (4-0-8)**

Prerequisites: 4th Year Status

A finance course which offers an in-depth exploration of finance and accounting through the lens of case studies, focusing on real-world applications and problem-solving; demonstration of business and financial acumen through a comprehensive understanding of the challenges and strategies in contemporary financial environments; a strong emphasis on critical thinking, analytical skills, and the practical application of finance and accounting theories to foster informed decision-making in business scenarios; group works on case analysis, discussion, and presentation to justify proposed solutions in the perspectives of related stakeholders

ICMF 444 Special Topics in Finance **4 (4-0-8)**

Prerequisites: None

A study of contemporary issues, industry trends, theories, and best practices in finance in response to the changing business environment

ICMI

ICMI 350 Global Logistics and Supply Chain Management **4 (4-0-8)**

Prerequisites: ICMB 262 International Business Management

International Logistics Management; upstream and downstream business activities; procurement; demand forecasting; operations & production; warehouse and distribution center; logistics network design; supply chain technologies; transportation mode; inventory management

ICMI 351 Global Trade, Policies, and Regulations **4 (4-0-8)**

Prerequisites: ICMB 262 International Business Management

Global trade, policies, and regulations; regional economic integration and the utilization of preferential trade agreements; trade barriers and the impacts on international trade; the regulations on export procedures; customs formalities; harmonization system; INCOTERMS; obligations under sale, insurance, carriage, and letter of credit contracts

ICMI 352 Diversity, Cross Culture and Expatriate Management **4 (4-0-8)**

Prerequisites: ICMB 261 Human Resource Management, ICMB 262 International Business Management

Theories and concepts of diversity and inclusion; surface-level diversity; generation; gender diversity; deep level diversity; personality and values; meanings and dimensions of culture and cultural differences across the globe; analysis of similarities and differences in cultures and value systems and the impact on management practices; organizational cultures and diversity; cross-cultural communication and negotiation; management decision and control across cultures; motivation and leadership across cultures; an expatriate assignment; contemporary issues in expatriate management

ICMI 353 Regional Business Study **4 (4-0-8)**

Prerequisites: ICMB 262 International Business Management

Comparative analysis of market structures, a unique set of issues and characteristics of each specific regional market; opportunities and challenges; business model and entry strategy selection in each specific regional market; roles of innovation and technology for market penetration in regional markets

ICMI 354 Legal Issues in International Business **4 (4-0-8)**

Prerequisites: ICMB 262 International Business Management, ICMB 350 Business Law Legal

Principles of international business; written contracts; documents of foreign investment; tax planning; protection of intellectual property rights and licensing; the legal issues in relational to international business operation

ICMI 355 Leadership and Change Management in Global Business **4 (4-0-8)**

Prerequisites: ICMB 260 Management and Organizational Behavior, ICMB 261 Human Resources Management

Theories and concepts of leadership and change management in a global business context; leadership styles and their impact on organizational change; managing change processes in multinational organizations; the role of culture and communication in global leadership; strategies for leading diverse teams across different cultural backgrounds; decision-making and problem-solving in a rapidly changing business environment; ethical considerations in leadership and change management; case studies and best practices in global business transformation

ICMI 356 Environment, Social and Governance (ESG) for Global Business and Sustainability 4 (4-0-8)

Prerequisites: ICMB 262 International Business Management, ICMB 351 Business Ethics and Sustainability

Corporate sustainability and implications for global business; Harmonizing sustainability through effective stakeholder management, Corporate governance as foundation of sustainability, Environmental risks and opportunities; Social risks and opportunities, Sustainability commitment, Value chain and stakeholder analysis process, ESG disclosure, ESG in practice and professional pathways

ICMI 357 Advancing Diversity, Equity, Inclusion, and Belonging (DEIB) in International Business 4 (4-0-8)

Prerequisites: ICMB 260 Management and Organizational Behavior, ICMB 261 Human Resources Management

Introduction to DEIB; Understanding bias and discrimination; Cultural competence, sensitivity, and diversity depths; Inclusion strategies in business and generational diversity; Equity in organizational practices; Addressing workplace discrimination and harassment; Diversity and global business; The role of technology in DEIB; Psychological safety and belonging; Measuring DEIB efforts

ICMI 358 People Analytics for Global Operations **4 (4-0-8)**

Prerequisites: ICMB 260 Management and Organizational Behavior, ICMB 261 Human Resources Management

Strategic human capital management, people analytics in a global business context, transforming HR practices through data sets, enhancing decision-making, strategic interventions, creating value in business, knowledge, and tools to navigate in international business dynamics

ICMI 359 International Business Negotiation **4 (4-0-8)**

Prerequisites: ICMB 262 International Business Management

Negotiation processes, styles and conflict management; impact of different cultures on negotiation approaches, behaviors, strategies and tactics; international business negotiation strategy and planning; perception, cognition and emotion in international business negotiations; cross-cultural communication; the use of power and trading concessions; price negotiations and closing business negotiations

ICMI 360 Smart Logistics and Analytics **4 (4-0-8)**

Prerequisites: ICMB 255 Management of Business Information

Smart logistics concepts; advanced inventory management; integration of IoT, AI, and automation in logistics; predictive analytics for supply chain optimization; real-time tracking and monitoring systems; data visualization tools for logistics insights; decision-making based on data-driven strategies; case studies and practical applications in logistics and supply chain management

ICMI 450 International Finance and Risk Management for International Business **4 (4-0-8)**

Prerequisites: ICMB 257 Business Finance for Entrepreneur, ICMB 262 International Business Management

Studies of international finance from the standpoint of multinational company. An Introduction to the derivatives used for multinational company, investment in foreign operation, management of funds and financing strategies for foreign operation. Examination of risk in international business, identification of strategies to identify, assess, manage, and mitigate risk associate with global business operation, management of funds

ICMI 451 Global Strategy **4 (4-0-8)**

Prerequisites: ICMI 351 Global Trade, Policies and Regulations

Globalization and Internationalization Strategies; Internationalization Strategy Management and Process; Vision, Mission and Strategic goals; entrepreneurial internationalization approaches, opportunity creation and evaluation; internationalization and governance; internationalization of a value proposition and business model; international strategic initiatives; host market analysis; international business and marketing strategy; financial rational and risk management of alternative international strategic initiatives; internationalization action plan

ICMI 452 Special Topics in International Business **4 (4-0-8)**

Prerequisites: ICMB 262 International Business Management, ICMB 260 Management and Organizational Behavior

Contemporary issues; industry trends; theories and best practices in international business in response to the changing business environment

ICMI 453 International Marketing Management **4 (4-0-8)**

Prerequisites: ICMB 262 International Business Management, ICMB 259 Principles of Marketing

Difference between single country marketing and international marketing; rationales behind international diversification; global economic and trade environment; global- and country-specific business ecosystems; characteristics of emerging, developed, less-developed, and transitional economies; segmentation, targeting, and positioning in the various national markets; market research for international market assessment; market selection process; international market entry modes; marketing strategy in foreign markets; marketing mix in international contexts

ICMI 454 Sustainable Innovation and Entrepreneurship **4 (4-0-8)**

Prerequisites: ICMB 257 Business Finance for Entrepreneur, ICMB 259 Principles of Marketing, ICMB 262 International Business Management

Challenges, issues, and trends in sustainability; Sustainable business strategies and innovation; Development of sustainable business plan; Business ideas generation for sustainability; Sustainable business model; Organizational plan; Risk management; Action plan

ICMI 455 International Business Senior Thesis Project **12 (0-36-12)**

Prerequisites: Completed 20 credits of all IB major required courses **and** obtained a minimum of 150 credits

Theoretically well-founded thesis project; identify the theoretically well-founded topic of the thesis project identifying the research topic; formulating the research question; thesis goals definition; identifying and critiquing relevant academic literature; locating and evaluating data writing the thesis proposal, thesis draft; incorporating feedback and making revisions; writing the final thesis; revising thesis draft into final thesis

ICMK

ICMK 371 Consumer Insights – A Qualitative Approach **4 (4-0-8)**

Prerequisites: ICMB 259 Principles of Marketing

Importance of consumer insights; psychological aspects of consumer behavior; the role of qualitative approach in discovering insights; qualitative research procedures; qualitative data collection methods, focus group discussion, in-depth interview, observation, projective techniques; data collection and fieldwork; data coding; qualitative data analysis methods; interpreting insights; turning insights into marketing ideas

ICMK 372 Market Intelligence – A Quantitative Approach **4 (4-0-8)**

Prerequisites: ICMB 152 Business Statistics, ICMB 259 Principles of Marketing

Marketing research tools; impacts of data, insights, and marketing decisions; research process; defining research problem, designing research approach; data collection; descriptive statistics; inferential statistics; modelling; reporting quantitative research

ICMK 373 Consumer Behavior and Decision Making **4 (4-0-8)**

Prerequisites: ICMK371 Consumer Insights – A Qualitative Approach

Study of consumer behavior, the decision-making process, psychological responses, and sociological influences on the consumer decision; consumer decision and its impact on marketing decision; formulation of marketing strategy in response to consumer decision behavior

ICMK 379 Digital Marketing **4 (4-0-8)**

Prerequisites: ICMB 259 Principles of Marketing

An overview of digital marketing; online marketplace analysis—macro and micro environment; online customer personas and decision journey; digital marketing process; objective and budgeting for digital marketing program; digital marketing tools; developing a digital marketing program; evaluation of digital marketing project

ICMK 380 Societal Marketing **4 (4-0-8)**

Prerequisites: ICGC 2xx

Societal marketing, ethical marketing; cause marketing, cause-related marketing; purpose-driven strategies; stakeholder engagement; sustainable marketing; community well-being; social media advocacy; health awareness campaigns; environmental marketing campaigns; impact measurement

ICMK 381 E-Commerce **4 (4-0-8)**

Prerequisites: ICMB 259 Principles of Marketing

The fundamentals of e-commerce; key concepts, strategies, technologies, and trends shaping the digital marketplace; electronic transactions, digital marketing, website design, security, and mobile commerce; understanding consumer behavior, e-commerce platforms, payment systems, and legal/regulatory frameworks governing electronic transactions

ICMK 382 Integrated Marketing Communications **4 (4-0-8)**

Prerequisites: ICMB 259 Principles of Marketing

An exploration of the nature and purpose of advertising and sales promotion in accordance with an integrated marketing communications perspective; showing how these activities will fit into the general process of marketing management; addressing marketing objectives and budget, target audience selection, the communication objective, the creative strategy, the integrated communication strategy and the media strategy

ICMK 383 Brand Excellence and Consumer Experience **4 (4-0-8)**

Prerequisites: ICMB 259 Principles of Marketing

Concepts and strategies for achieving brand excellence and delivering exceptional consumer experiences; fundamental principles of branding, including brand identity, positioning, and brand personality; the role of memorable brand experiences and touchpoint management throughout the customer journey; sensory marketing and technological advancements to enhance brand engagement; brand loyalty and advocacy; brand development and brand revitalization; ethics in branding, and crisis management

ICMK 384 The Art of Luxury Branding **2 (2-0-4)**

Prerequisites: ICMB 259 Principles of Marketing

Scope and nature of the luxury sector, luxury consumer behavior and insights, crafting luxury brand identities, positioning for competitive advantage in high-end markets, engaging affluent consumers through tailored, exclusive experiences, leveraging sensory marketing to enhance brand allure, marketing communications for luxury brands, sales techniques, visual merchandising, and distribution in luxury markets, client relationship management in luxury branding, integrating digital innovation with traditional luxury values, ethical branding and sustainable practices in luxury markets, crisis management to protect luxury brand prestige and integrity

ICMK 385 Personal Branding **2 (2-0-4)**

Prerequisites: ICMB 259 Principles of Marketing

Personal branding; identifying and developing personal identity; personal branding strategies; marketing and promoting a personal brand; using social media for personal branding; online reputation management; content creation for personal branding

ICMK 386 Health & Wellness Branding **2 (2-0-4)**

Prerequisites: ICMB 259 Principles of Marketing

Health & Wellness markets; User motivations for health and wellness; segmentation for health conscious consumers; brand positioning in the wellness industry; differentiating Health & Wellness brands; crafting effective brand messages for wellness products; regulatory compliance in health marketing; digital marketing strategies for Health & Wellness brands; sustainability and ethical branding in the health sector; emerging trends and innovations in wellness products

ICMK 387 Place Branding **2 (2-0-4)**

Prerequisites: ICMB 259 Principles of Marketing

Place branding and marketing; place brand identity and image; place brand positioning; destination branding and marketing; place branding on different scalar levels; sustainable place branding; place branding strategies; place branding cases; stakeholder engagement; outcomes of place branding

ICMK 388 Regional Marketing: From North to South, West to East **4 (4-0-8)**

Prerequisites: ICMB 259 Principles of Marketing

Exploration of Thailand's diverse regional markets, understanding cultural nuances and consumer behavior across different Thai regions, developing tailored marketing strategies for northern, southern, eastern, and western Thailand, positioning brands to leverage regional strengths and opportunities, creating localized marketing campaigns that resonate with regional audiences, utilizing local media channels and community engagement for effective outreach, marketing communications tailored to regional preferences, techniques for regional market penetration and distribution, building strong local client relationships, integrating traditional Thai cultural values with modern marketing tactics, ethical marketing practices and sustainability considerations in regional contexts

ICMK 389 Digital Content Marketing **4 (4-0-8)**

Prerequisites: ICMB 259 Principles of Marketing

Digital content marketing; creation and management of digital content; online content marketing strategies; content planning and development; storytelling and branding through content; content marketing on social media; content analysis and optimization

ICMK 479 Marketing Strategy for Sustainability **4 (4-0-8)**

Prerequisites: Completed at least 124 credits

Micro-environment analysis; opportunity and challenge analysis; vision and mission; branding strategy, product strategy, pricing strategy, distribution strategy, communication strategy, innovation strategy, growth strategy, competitive strategy; sustainability concept; sustainability impact assessment

ICMK 480 Entrepreneurial Marketing for Small, Startup, and Family Business **4 (4-0-8)**

Prerequisites: ICMB 259 Principles of Marketing

Principles and strategies of marketing for small, startup, and family businesses with limited resources; market research and target segmentation to find the right battlefield; effective branding and market positioning; product development and small-scale production management; cost management and pricing; marketing communication integrating low-cost traditional and digital techniques; choosing, pitching and negotiating with distribution channels; building customer loyalty and service excellence; business scaling strategies and managing growth challenges with innovation and creativity; personal branding and strategic networking and partnership

ICMK 481 Services Marketing **4 (4-0-8)**

Prerequisites: ICMB 259 Principles of Marketing

A perspective on marketing in the service economy; service marketing concept including the management of product and brand development, pricing and revenue strategy, channels of distribution, marketing communications, service process design, demand and capacity management, services cape and environments, and people in service delivery; managing relationships and building loyalty; service recovery and customer feedback; maintaining service quality

ICMK 482 Omni-channel Retailing **4 (4-0-8)**

Prerequisites: ICMB 259 Principles of Marketing

A study of omni-channel retailing; a modern retail approach to integrate various shopping channels to provide a seamless customer experience; an exploration of the strategic, operational, and technological aspects of omni-channel retail; the coordination and integration of physical stores, online platforms, mobile applications, and social media

ICMK 483 Special Topic in Marketing **4 (4-0-8)**

Prerequisites: ICMB 259 Principles of Marketing

A study of contemporary issues, industry trends, theories, and best practices in marketing in response to the changing business environment

ICMK 485 Professional Selling Strategy **4 (4-0-8)**

Prerequisites: ICMB 259 Principles of Marketing

Professional selling strategy; sales techniques and skills; sales planning and goal setting; negotiation strategies; building and maintaining customer relationships; utilizing technology in sales; sales performance analysis and evaluation

ICMK 486 New Products Management **4 (4-0-8)**

Prerequisites: ICMK 372 Market Intelligence – A Quantitative Approach

The new product development process; opportunity identification and assessment; idea generation techniques; concept development and evaluation methods; data-driven perceptual map development and interpretation; product development tasks and methods; new product forecasting and business analysis; positioning approaches; launch strategies; market testing methods; assessing product line impacts

ICMK 487 Digital Media Analytics **4 (4-0-8)**

Prerequisites: ICMB 152 Business Statistics, ICMB 259 Principles of Marketing

Digital and social media analytics; methods of social media research; examination of owned media, earned media, paid media; social listening

ICPY

ICPY 101 Physics I **4 (4-0-8)**

Prerequisites: None

Measurement, units and dimensions; vectors, linear motion, Newton's laws of motion; kinetic and potential energy, rotational motion, linear and angular momentum; static equilibrium; fluid mechanics

ICPY 102 Physics II **4 (4-0-8)**

Prerequisites: ICPY 101 Physics I

Thermodynamics; electricity and magnetism; optics; nuclear and atomic physics

ICPY 105 Integrated Laboratory in Physics I **2 (0-4-2)**

Prerequisites: ICPY 101 Physics I

Measurement and uncertainty; propagation of errors; data analysis for experiments in motions, resonance, refraction, and diffraction, heat transfer, simple electrical circuit

ICPY 251 Mechanics I **4 (4-0-8)**

Prerequisites: ICPY 101 Physics I

Newton's law of motion, conservation laws of energy and momentum, linear and rotational dynamics, central force, oscillation, mechanical wave, rigid body dynamics, non-inertial frame of reference, Coriolis effect

ICPY 271 Mathematical Methods in Physics **4 (4-0-8)**

Prerequisites: ICPY 101 Physics I **and** ICMA 218 Multivariable Calculus

Examples of solving physics problems using Complex numbers, Contour Integras, residue theorem, system of linear equations, matrix, Eigenvalues and Eigenvectors, differential equations, Fourier analysis; probability theory and statistics, Bayesian statistics, error estimation and resample

ICPY 291 Introductory Electromagnetism **4 (4-0-8)**

Prerequisites: ICPY 102 Physics II

Coulomb's law, electric fields and potential, Gauss's Law, conductors, multipole expansion, electric field in matter, Biot-Savart Law, Ampere's Law, vector potential, magnetic field in matter

ICPY 309 Scientific Research and Presentation **4 (4-0-8)**

Prerequisites: ICCS 111 Programming and Abstractions

Scientific discovery methods in chemistry, computer science, mathematics and physics; hypothesis and proofs; literature search; written presentations, papers and journals; public presentations and formats

ICPY 334 Numerical Methods **4 (4-0-8)**

Prerequisites: ICCS 111 Programming and Abstractions **and** ICMA 106 Calculus I

Taylor’s Theorem, Numerical Derivative and Integral, Least Square Fitting, Solving System of Linear and Non-linear Equation Numerically, Optimization, Monte Carlo Simulations

ICPY 342 Integrated Laboratory in Physics II **2 (0-4-2)**

Prerequisites: ICPY 105 Integrated Laboratory in Physics I

Measurements and propagation of errors; Proving phenomena predicted by mathematical models; experiments in electricity and magnetism, analog circuit design

ICPY 343 Integrated Laboratory in Physics III **2 (0-4-2)**

Prerequisites: ICPY 105 Integrated Laboratory in Physics I

Data acquisition and data analysis techniques, frequency discriminator; Finite element analysis techniques; Spectrometry

ICPY 351 Mechanics II **4 (4-0-8)**

Prerequisites: ICPY 251 Mechanics I

Lagrangian Mechanics, variational calculus, Hamilton's Equations of Motion, Special relativity, Lorentz transformation, velocity and momentum transformation

ICPY 355 Special Topics in Physics I **4 (4-0-8)**

Prerequisites: None

Topics of current interest in physics

ICPY 356 Special Topics in Physics II **4 (4-0-8)**

Prerequisites: None

Topics of current interest in physics

ICPY 357 Special Topics in Laboratory Physics I **4 (3-2-7)**

Prerequisites: None

Topics of current interest in laboratory physics

ICPY 361 Quantum Mechanics I **4 (4-0-8)**

Prerequisites: ICPY 102 Physics II

History of quantum mechanics, wave and particle duality, Schrödinger's equation and wave function of infinite square well, Dirac potential, free particle, quantum harmonic oscillator, eigenfunctions of Hermitian operators, virial theorem, Hilbert space, uncertainty principle

ICPY 371 Thermal Physics **4 (4-0-8)**

Prerequisites: None

The laws of thermodynamics, heat engines, entropy, the axiomatic formulation of thermodynamics

ICPY 391 Electrodynamics and Optics **4 (4-0-8)**

Prerequisites: ICPY 291 Introductory Electromagnetism

Faraday's Law, circuit analysis, radiation from dipoles and moving charges, Maxwell's equations, EM waves: transmission, reflection and refraction, geometric optics, guided wave, diffraction and interference of waves

ICPY 441 Senior Project in Physics **6 (0-12-6)**

Prerequisites: ICPY 251 Mechanics I, ICPY 309 Scientific Research and Presentation, ICPY 334 Numerical Methods, ICPY 342 Integrated Laboratory in Physics II, ICPY 343 Integrated Laboratory in Physics III, ICPY 361 Quantum Mechanics I, ICPY 391 Electrodynamics and Optics, and ICPY 452 Statistical Mechanics

A student (individual or in group) performs a set of experiments with an emphasis on building theoretical understanding and becoming competent in the data analysis and report writing

ICPY 452 Statistical Mechanics **4 (4-0-8)**

Prerequisites: ICPY 361 Quantum Mechanics I

Statistical physics, distributions and probability, Boltzmann's Factor, partition and grand partition functions, Ising's Model, quantum statistics

ICPY 455 Special Topics in Physics III **4 (4-0-8)**

Prerequisites: None

Topics of current interest in physics

ICPY 456 Special Topics in Physics IV **4 (4-0-8)**

Prerequisites: None

Topics of current interest in physics

ICPY 457 Special Topics in Laboratory Physics II **4 (3-2-7)**

Prerequisites: None

Topics of current interest in laboratory physics

ICPY 461 Quantum Mechanics II **4 (4-0-8)**

Prerequisites: ICPY 361 Quantum Mechanics I

The hydrogen atom, the angular momentum, spin, two identical particle systems, Time-Independent Perturbation Theory, Scattering

ICPY 471 Atomic and Molecular Physics **4 (4-0-8)**

Prerequisites: None

One-electron atoms, Helium atom, multi-electron atoms; structure and spectra of molecules, atomic spectroscopy methods; excitations of atoms and molecules by photons and electrons

ICPY 472 Solid State Physics **4 (4-0-8)**

Prerequisites: None

Periodic structure and symmetries of crystals, diffraction, reciprocal lattice; chemical bonding, lattice dynamics, phonons, thermal properties; free electron gas, the band theory, applications in metals and semi conduction materials

ICPY 473 Nuclear Physics **4 (4-0-8)**

Prerequisites: None

The nuclear structure, nuclear forces, radioactive decay, nuclear reaction, fission, fusion, nuclear detection and measurement; applications of radioactivity, fundamental particles and interactions; classification by quantum numbers, isospin concept, symmetries, conservation laws, the quark model

ICPY 474 Astrophysics **4 (4-0-8)**

Prerequisites: None

Celestial mechanics, Kepler's Laws of Motion, Virial Theorem; Blackbody Radiation, the Quantization of Energy, Dual Property of Light; Telescopes, IR, UV X-Ray, gamma ray astronomy; spectra and the classification of stars, the Jeans density, the interiors of stars, hydrostatic equilibrium, nucleosynthesis, Hertzsprung-Russell Diagram, the main sequence, stellar evolution, white dwarf, neutron stars, supernovae, and stellar black hole

ICPY 475 Plasma Physics **4 (4-0-8)**

Prerequisites: None

Saha's Formula, the elementary statistical interpretation, the guiding center motion; Maxwell's Equation approach, Vlasov Equations, the Magnetohydrodynamic Equations

ICPY 484 Cosmology **4 (4-0-8)**

Prerequisites: None

The Newtonian Cosmology; the Homogeneous Isotropic Universe, Friedmann Equations; The Einstein-de Sitter Model, modification due to General Relativity; gravitational instability, density perturbation and evolution, the nonlinear structure evolution, dark matter halos; the cosmic microwave background and measurement, the beginning of the universe, cosmological parameters and the dark energy

ICPY 486 Observational Astronomy **4 (4-0-8)**

Prerequisites: None

An overview of observational techniques used in Astronomy; basic techniques for obtaining and analyzing data from modern optical instruments; geometrical optics, optical design and instrumentation

ICPY 487 Data Analysis in Astronomy **4 (4-0-8)**

Prerequisites: None

Types of astronomical data, basic statistics and sources of error; basic computer programming (C++, Python, IDL, SQL, etc.), data acquisition, methods used in astronomical data sets; the parameter estimation and model fitting, the Monte Carlo Method, Big Data handling techniques; the principal component analysis, the density estimation, classification techniques and neural networks, an interpretation of astronomical measurement

ICPY 488 Special Topics in Astronomy **4 (4-0-8)**

Prerequisites: None

Current research in astronomy; topics including Instrumental Science for the astronomical observation; limit and sensitivity in the electromagnetic wave and the gravitational wave observation

ICPY 490 Computational Physics **4 (4-0-8)**

Prerequisites: None

Ordinary differential equations: stability, order and chaos in the two- dimensional motion; the boundary value and eigenvalue problems: stationary solutions of the one-dimensional Schroedinger Equation; partial differential equations with different types of boundary conditions: the timedependent Schrodinger Equation, heat transfer, diffusion, wave, and Laplace Equation; Monte Carlo Methods: the Ising Model in two dimensions; the Discrete Fourier Transform and Fast Fourier Transform: diffraction, image processing

ICPY 492 Electronics **4 (4-0-8)**

Prerequisites: ICPY 102 Physics II

Microcontroller and Programming, circuit design and analysis, electrical components, networking, and analog circuit

ICPY 496 Biophysics **4 (4-0-8)**

Prerequisites: ICBI 101 Biology

Introduction to biophysics; physical methods in the study of biological systems, including molecular and cellular biology; mathematical modeling of biological phenomena; applications of physics to biology; instruments in biophysics

ICSP

ICSP 113 General Psychology **4 (4-0-8)**

Prerequisites: None

Introduction to various topics, theories, and approaches in the scientific study of behaviour and mental processes; Important psychological principles within the major subfield of psychology; Biological bases of behaviour, cognition, intelligence, emotions, learning, human development, health, psychological disorders, and psychotherapy; Application of various aspects of psychology to different contexts

ICSP 253 Introduction to Social Psychology **4 (4-0-8)**

Prerequisites: None

Social cognition and social perception; attribution; attitudes; socialization, self-esteem and the self-concept; social behaviour; interpersonal attraction; conformity and obedience; aggression; altruism; group processes; collective decision making; leadership

ICSP 254 Theories of Personality **4 (4-0-8)**

Prerequisites: None

Diverse views of human nature; the analysis of personality; Basic qualities and dispositions; characteristic ways of behaving; theoretical approaches to human personality; trait theory; the determinants of behaviour; psychodynamic and cognitive approaches

ICSP 255 Introduction to Abnormal Psychology **4 (4-0-8)**

Prerequisites: None

The definition, assessment, and classification of abnormal behaviour; historical approaches to the understanding and treatment of abnormal behaviour; psychotherapies and biological treatments

ICSP 256 Industrial and Organizational Psychology **4 (4-0-8)**

Prerequisites: None

Work-related attitudes; social influences at work; job satisfaction; work groups; matching workers with jobs

ICSP 257 Educational Psychology **4 (4-0-8)**

Prerequisites: None

An introduction to the study of human learning in the educational context; motivation, learning mechanisms, knowledge structures and intelligence, measurement and evaluation as related to teaching processes

ICSP 258 Cross-Cultural Psychology **4 (4-0-8)**

Prerequisites: None

The role of culture in the study of behaviour; psycho-social development, social behaviour, personality and cognition in cross-cultural perspective; theoretical and methodological issues

ICSP 259 Developmental Psychology **4 (4-0-8)**

Prerequisites: None

Fundamental principles of developmental psychology; lifelong, multidimensional, multidirectional of lifespan developmental perspectives; factors influencing development; theories, perspectives and research methods in developmental psychology; research in physical, cognitive, emotional, and social aspects of development from conception to death; practical applications in everyday lives knowledge to real world issues

ICSP 260 Psychology of Memory **4 (4-0-8)**

Prerequisites: None

Theories, research, and application of the psychology of memory; different types of memory; cognitive and neural mechanisms of memory; factors influencing memory and memory performance; techniques and strategies for enhancing memory performance; the applications of knowledge and research of memory in clinical and educational practices

ICSP 261 The Psychology of Paranormal Belief **4 (4-0-8)**

Prerequisites: None

Definition and classification of types of parapsychological phenomenon; research methods used in investigating the paranormal; historical approaches to understanding paranormal beliefs across cultures; anomalous experiences; states of consciousness; exceptional experiences in psychology; individual and cultural factors influencing paranormal beliefs

ICSP 262 Coaching Psychology **4 (4-0-8)**

Prerequisites: None

An introduction to theoretical frameworks that guide coaching; coaching skills; the relationship between coach and coachee; and coaching applications for personal development, relationship development, career development, health and well-being, and mindfulness

ICSP 263 The Science of Happiness and Flourishing **4 (4-0-8)**

Prerequisites: None

Theoretical models of happiness and human flourishing; methodological issues; theory and research into character strengths, gratitude, emotional regulation, growth mindset, mindfulness, achievement and resilience; current findings on positive psychological interventions; methods for personal applications; contexts where positive interventions can be effective, such as self-care, therapy, education, and coaching; positive organizations; approaches to national happiness

ICSP 350 Evolutionary Psychology **4 (4-0-8)**

Prerequisites: None

An introduction to evolutionary psychology; behavioral strategies as a means of evolutionary survival; sex and reproduction; child rearing; conflict and aggression; cooperation; status, prestige and social dominance

ICSP 352 Prosocial and Antisocial Behaviour **4 (4-0-8)**

Prerequisites: None

The psychological and anthropological understanding of prosocial and antisocial behaviours; altruism and helping; aggression and violence; theoretical approaches and debates

ICSP 353 Clinical Psychology **4 (4-0-8)**

Prerequisites: None

The use of psychological assessment methods and psychotherapeutic approaches in the treatment of individuals with psychological problems; theoretical approaches and issues

ICSP 354 Psychological Testing **4 (4-0-8)**

Prerequisites: None

Introduce the field of psychological assessment and testing, explore the history, roles, and issues involved in the field of psychological assessment, cover principles of psychometrics and statistics, the applications of assessment in various contexts as well as an examination of particular tests, such as the Rorschach, WAIS, and MMPI

ICSP 357 Psychology of Motivation **4 (4-0-8)**

Prerequisites: None

The definition, assessment, and classification of theories related to the psychology of motivation. Theories of the psychology of motivation in the fields of cognition, neuropsychology, behavioural studies and emotions

ICSP 359 Foundations of Counseling Skills **4 (4-0-8)**

Prerequisites: None

An overview of the basic concepts; history; process of counseling; skills in CBT; mechanisms of change; and applications of the major schools of counseling and psychotherapy

ICSP 360 Psychology of Marketing and Consumer Behavior **4 (4-0-8)**

Prerequisites: None

The psychology of motivation; emotions; social influence; cognition; learning; memory; and ethics in marketing and economic decision-making; practical skills in market research; data analysis; and digital marketing tools and technologies

ICSP 361 Overcoming Stereotypes, Prejudice and Discrimination **4 (4-0-8)**

Prerequisites: None

Analysis of psychological theories; psychological approaches to stereotypes, discrimination and prejudice; the emotional, behavioral and cognitive implications; the impact on our behavior and society; debiasing and metacognition

ICSP 362 The Psychology of Emotional Well-being **4 (4-0-8)**

Prerequisites: None

The experience of emotional well-being; Biological, developmental, social and cognitive aspects of emotional well-being; specific emotions in psychological perspective: happiness, sadness, fear, anger, shame, guilt, disgust, love, empathy/sympathy

ICTB

ICTB 202 Principles of Management **4 (4-0-8)**

Prerequisites: None

Overview of management and organizational behavior; evolution of management theories and thoughts; changing environment of organizations; foundation of individual behaviors; motivation; stress and work-life balance; decision making and problem solving; teamwork; communication; leadership; organization structure; ethics and social responsibility; service economies; organizational culture and change

ICTB 203 Consumer Behavior for Travel and Service Businesses **4 (4-0-8)**

Prerequisites: ICTB 219 Introduction to Travel and Service Businesses

Understanding a wide range of factors motivate consumers in tourism products; emphasis on culture and multicultural communication and relation; various factors that contribute to successful marketing in tourism; the purchase-decision process; typologies of tourist behavior from different practitioners; patterns of tourism demand and markets, divided by global region

ICTB 204 Business Communication **4 (4-0-8)**

Prerequisites: ICGC 103 Public Speaking

Communication model; principles of business writing; business presentation; memos, emails and letters; business pitching; business negotiation dialogue; approaches of negotiation; cross-cultural communication; press release; country briefings; resume and cover letter; interview preparation; a mock interview

ICTB 212 Marketing for Travel and Service Businesses **4 (4-0-8)**

Prerequisites: None

What is marketing; marketing plan, marketing macro environment; direct and indirect competitors; suppliers as business partners; market segmentation and targeting; consumer behavior; using marketing information; products and services; physical existence; location; promotion mix; pricing products; marketing channels; ethical issues in marketing

ICTB 213 Economics for Travel and Service Businesses **4 (4-0-8)**

Prerequisites: ICTB 218 Business Statistics

Principles of economics, particularly microeconomics, and applied economic concepts; assessing the socio-economic behaviors of economic agents comprising consumers, businesses, government and its agencies, particularly their business choices and decision making; covering key economic areas of demand, supply, elasticity, costing, pricing and investment

ICTB 214 Accounting for Travel and Service Businesses **4 (4-0-8)**

Prerequisites: None

Business transactions and financial statements; evolution of accounting; recording and classifying financial transactions; preparations of financial statements; characteristics of various types of accounts; accounting principles; the usefulness and limitations of accounting information

ICTB 216 Sustainable Development in Travel and Service Businesses **4 (4-0-8)**

Prerequisites: ICTB 219 Introduction to Travel and Service Businesses

Concepts of tourism and sustainable development goals; sense of global citizenship; sustainability affecting travel and service business; socio-cultural, environmental, economic impacts of tourism; visitor management and an interpretation for the sustainable development; creative tourism for promoting culture-based creativity and sustainability of travel and service business; concepts of community-based tourism practices for the sustainable development within a different geocultural context – urban and rural settings; the Global Code of Ethics

ICTB 217 Digital Marketing for Travel and Service Businesses **4 (4-0-8)**

Prerequisites: ICTB 212 Marketing for Travel and Service Businesses

Introduction to Digital Marketing; Digital Marketing Strategies; Content Marketing; Social Media Marketing; Search Engine Optimization (SEO); Pay-Per-Click (PPC); Influencer Marketing; Analytics and Data-Driven Marketing; Customer Relationship Management (CRM); Emerging Trends in Digital Marketing.

ICTB 218 Business Statistics and Data Management **4 (4-0-8)**

Prerequisites: None

Descriptive statistics; inferential statistics; normal distributions; an estimation of parameters; an analysis of variance; correlation and regression; non-parametric methods; the design of experiments; hypothesis testing; collection of data; presentation of data

ICTB 219 Introduction to Travel and Service Businesses **4 (4-0-8)**

Prerequisites: None

Introduction and overview of the Travel and Service Businesses, partnership in Travel and Service Businesses, global issues in Travel and Service Businesses, dynamics of the lodging industry, hotel management and operations, the foodservice concepts, dynamics of the event industry, leisure activities in tourism and hospitality, health and wellness, and passenger transportation, introduction to the Global Code of Ethics

ICTB 221 Room Division Operation Management **4 (4-0-8)**

Prerequisites: None

Understanding of front office operations and management in a hotel; presenting a systematic approach to front office procedures by detailing the flow of business through a hotel from the reservations process to check-out and account settlement; examining the various elements of effective front office management paying particular attention to the planning and evaluation of front office operations to human resources management; studying front office procedures and management within the context of the overall operation of a hotel; management of housekeeping duty within one's own establishment; supervision and training of staff scheduling; using different cleaning agent; safety within the work environment; housekeeping technology and legendary quality service standards

ICTB 222 Facility Management for Hotel Operations **4 (4-0-8)**

Prerequisites: None

An overview of hotel facilities and hotel departments in charge, operating costs of facilities; types and characteristics of the major building system; sustainable management for hotel facilities; hotel renovation needs; provision and maintenance of hotel information technology systems; workload planning for facilities operations; health, safety and security concerns for facilities operations; relationship between the facilities management and the operation management

ICTB 223 Hospitality Facilities Design **4 (3-2-7)**

Prerequisites: None

Fundamental of the hospitality facility design and layout emphasizing different types of lodging in the perspectives of managements and owners; different types of hospitality facilities; basic understanding of architectural plan reading and specifications; how to communicate with professional designers; flow patterns and relationships among functional areas, facilities, service and management (using bubble diagram);

hospitality space design: guestroom design; phases in the planning and design process; possible key factors, theme or concept, and trends influencing hospitality facilities design in terms of the investment

ICTB 224 Special Topics in Hotel Management **4 (4-0-8)**

Prerequisites: None

Selected topics in the hotel and hospitality industry. An analysis of contemporary issues that arise and impact on the hotel and hospitality industry

ICTB 231 Culinary Operation Management **4 (3-2-7)**

Prerequisites: None

Planning and operating food and beverage productions in quantity food settings; various methods of food preparations; ingredients and culinary terminology; reading and evaluating menus; developing recipe conversions and costing skills; examining different production schemes and product flow; designing the kitchen layout; using and taking care of equipment; service techniques; procurement management, and the cost control

ICTB 232 Baking and Pastry Business **4 (3-2-7)**

Prerequisites: None

Basic theory and skill sets used throughout the field of baking and pastry; using hand tools and equipment found in a bakeshop; exploring the baking and pastry ingredients and their functions; describing of the major methods such as beating, blending, creaming, cut in and folding; understanding the course materials by tasting and evaluating products created in class; identifying and selecting quality grains, fruits, vegetables, thickening agents, nuts and seeds, dairy products, baking spices, eggs and egg products, flours, chocolates, fats, and oils used in the baking field; business of baking and pastry

ICTB 233 Gastronomy Exploration and Food's Experiences **4 (4-0-8)**

Prerequisites: None

Understanding the contexts of gastronomy related to food and culture, where the food experiences are related to several dimensions; understanding the gastrodiplomacy strategies to support from "Farm to the World" and "Thai Kitchen to the World Kitchen Campaign"; Thai food popularity leading to food tourism destination; exploring the relationships of Thai food from the supply side to the demand side; tourist's engagement in a different food supply chain with sustainable development; Discussing Thai food story; understanding the background of food culture and heritage of Thailand in relation to history, indigenous groups, religions and the geographical analysis

ICTB 234 Restaurant Marketing and Branding Strategies **4 (4-0-8)**

Prerequisites: None

Describing the various forms of the restaurant business; discussing about advantages and disadvantages of each form of business; understanding the major elements of marketing and branding strategies; defining the concept of branding and its value in marketing and promotions; examining the relationship between the sales promotion and the marketing program; planning and implementing marketing and branding program for a specific restaurant operation

ICTB 235 Special Topics in Food & Restaurant Management **4 (4-0-8)**

Prerequisites: None

Selected topics in the Food & Restaurant Management. An analysis of contemporary issues that arise and impact on the food and restaurant related industry

ICTB 241 Travel Guide and Interpretation **4 (3-2-7)**

Prerequisites: None

A series of means for the travel communication; duties and responsibilities of tour guides; legal requirements for tour guiding; principles of tour guiding; understanding cultural sensitivity; definition of interpretation; significance of interpretation; principles of interpretation; thematic interpretation; different types of interpretation; concept of creating visitor experiences; essential knowledge of cultural heritage in Thailand, especially during Ayutthaya to the Bangkok Modernity Period, including a field work held at outstanding tourist attractions in Bangkok; the role of influencers in the travel communication; blogging and sharing the travel information

ICTB 242 Tourism Package Management and Business **4 (3-2-7)**

Prerequisites: None

Crucial relationships of various tour business components such as transportation, lodging, dining, sightseeing, attractions and shopping; understand different types of tour operators as well as basic types of organizational structures; identify tour distribution channels and appreciate the ways in the destination research, development, and supply negotiations; the role of online travel agency (OTA); device and develop tour itinerary planning and understand how to strategically price the tour, specific communications strategies of tour operators; the application of digital marketing tool; understand the three major functions of tour operations: pre-tour operation, tour execution, and post-tour phase and last appreciation; an administration of tour operation and its environment

ICTB 243 Online Travel and Service Business **4 (4-0-8)**

Prerequisites: None

Understanding roles of the online travel and service business in the tourism system; opportunities and challenges of online travel and service business; the value chain of online travel and service business; digital solutions for travel and service business; Online Travel Agency (OTA) and online intermediary business; the Global Distribution System (GDS) functionality; online distribution channels; the OTA business model; customer relationship management for OTA

ICTB 244 Wine Studies and Wine Tourism **4 (3-2-7)**

Prerequisites: Age above 20

Viticulture; viniculture; old world and new world wine; still wines; sparkling wines; fortified wines; sweet wines; food and wine pairing; wine business; principles of wine tourism; motivations of wine tourists; attracting wine tourists; marketing plan

ICTB 245 Cultural Heritage Studies for Entrepreneurship **4 (4-0-8)**

Prerequisites: None

The importance of culture and tourism entrepreneurship; to recognize the socio-cultural complexities of the cultural heritage tourism; a working relationship between UNESCO World Heritage sites and local tourism economies; to develop sustainable development in cultural heritage sites; to plan immersive experiences for interpretation and reconstruction of heritage sites

ICTB 246 Special Topics in Tourism Management **4 (4-0-8)**

Prerequisites: None

Selected topics in Tourism Management. An analysis of contemporary issues that arise and impact on the tourism industry

ICTB 251 Event Planning and Operation **4 (4-0-8)**

Prerequisites: None

Event industry overview; event architecture; event feasibility; event product development; event proposal; budgeting and monitoring; contracts and collaborations; supply chain management; team management; risk management; site selection and management; onsite coordination; event evaluation

ICTB 252 Event and Experience Design **4 (3-2-7)**

Prerequisites: None

Understanding an overview of event design; the formation and construction of experience; key design of experience; the relationships between event interaction and experience; the relationships between communication and event design; conceptualization and planning; process of event design operations; entertainment design; designing sustainable event; involving technology in event to enhance experience; evaluating event design; event design in consideration of event legacy; Identifying and finding current and examine future trends in event design

ICTB 253 Event Business Stakeholders Engagement **4 (4-0-8)**

Prerequisites: None

Understanding overall picture and detailed engagement of event business stakeholders' connection, collaboration and competition (3Cs) including events' target business sectors, target audiences; Destination Management Company (DMC); Professional Convention Organizer (PCO); Professional Exhibition Organizer (PEO); venue (i.e., exhibition/convention center, hotel, multipurpose facility, unusual venue); supporting infrastructure (i.e., Convention and Visitor Bureau (CVB), international associations, domestic associations), communities, and service providers

ICTB 254 Leisure and Sport Event **4 (3-2-7)**

Prerequisites: None

Basic understanding of the sport, lifestyle, recreation, and festive event industry; types and conceptualization of events; application of event management concept in sport and leisure events; sponsorship strategies and management; legal and ethical principles applied to sport and leisure event; entertainment management in sport and leisure event; volunteer management; crowd management; risk and crisis management specific to sport and leisure events; key criteria for evaluation in sport and leisure event

ICTB 255 Special Topics in Event Management **4 (4-0-8)**

Prerequisites: None

Selected topics in Event Management. An analysis of contemporary issues that arise and impact on the tourism industry

ICTB 261 The Basics of Exercise Science and Wellness **4 (4-0-8)**

Prerequisites: None

Physiological and psychological understanding of the body and mind in respond to physical activity; training principles; basic anatomy; sports nutrition; sports biomechanics; strength and conditioning; basics of injury prevention, treatment, and rehabilitation

ICTB 262 Principles and Practice of Sport management for Business **4 (4-0-8)**

Prerequisites: None

Foundations to sport management; history, management, marketing, financial, economic, legal and ethical principles applied to sport management; amateur sport industry; professional sport industry; sport industry support segment; lifestyles and leisure sports; career preparation

ICTB 263 Healthcare and Medical Business **4 (4-0-8)**

Prerequisites: None

Healthcare business system and environment; contemporary business themes in healthcare and medical policy and practice; vulnerable population and potential demands; healthcare and service operations; healthcare products & services; entrepreneurship in healthcare and medical

ICTB 264 Special Topics in Health & Wellness Management **4 (4-0-8)**

Prerequisites: None

Selected topics in Health & Wellness Management. An analysis of contemporary issues that arise and impact on the Health & Wellness industry

ICTB 292 Internship I **8 (0-24-8)**

Prerequisites: 70 credits

Providing hands-on experience and practical opportunity on travel and service operations; providing hotel or travel related service skills and knowledge on the necessary functions; grooming the interns on formality, professionalism, service excellence, attitude and team work aspects including understanding customer's demand & expectation, understanding multicultural environment so as to build a competitive advantage and a competent human capital.

ICTB 301 People and Talent Management **4 (4-0-8)**

Prerequisites: ICTB 202 Principles of Management

Overview and survey of human resources management and development; differences of personnel and human resources administrative system, recruitment and selection, job design, training and development together with talent management, performance and compensation management, ethics management and labour relation

ICTB 302 Business Laws for Travel and Service Businesses **4 (4-0-8)**

Prerequisites: ICTB 219 Introduction to Travel and Service Businesses

Legal principles and rules as infrastructure of legal knowledge towards the operation of travel and service businesses in the tourism and hospitality industry; encouraging legal awareness in various legal exposures and managing legal issues including developing solutions and preventive measures thereof

ICTB 303 Digital Transformation for Travel and Service Businesses **4 (4-0-8)**

Prerequisites: ICTB 219 Introduction to Travel and Service Businesses

Introduction to information technology and digital technology, strategic thinking and digital technology, digital landscape and ecosystem, the Internet and digital tourist, social media, mobile technology, digital technology for travel business, digital technology for service business, digital technology and sustainable development, and future of digital technology for travel and service business entrepreneurship

ICTB 304 Service Management and Experience Design **4 (4-0-8)**

Prerequisites: ICTB 219 Introduction to Travel and Service Businesses

Important roles of services in our economy; the nature of services and service encounters; characteristics of services; customer focus on service management; experiential design in service businesses; consumer decision model; service psychology; service strategy and competitiveness; design and development of services and service delivery systems; service failure and recovery; managing demand and supply in services; service quality and continuous improvement; tools and technique for total quality improvement; managing customer experience

ICTB 311 Finance for Travel and Service Businesses **4 (4-0-8)**

Prerequisites: ICTB 214 Accounting for Travel and Service Businesses

An introduction to the financial management for travel and service businesses; methods and importance of tourism and hospitality finance; cash management and its importance; the investment decisions regarding travel and service business projects and capital expenditures; cash control during the various stages of

operations; statement of cash flow; an introduction to feasibility studies; the financial ratios analysis and working capital

ICTB 312 Strategic Management for Travel and Service Businesses **4 (4-0-8)**

Prerequisites: 100 credits

Entrepreneurial and strategic issues in management; formulation and analysis of strategies; relationship between strategies and organisational structures; strategic thinking and managing change and the similarities and differences in strategies between sectors in relation to travel and service businesses; crisis and risk handling; ethics in business

ICTB 313 Business Research and Data Analysis for Travel and Service Businesses **4 (4-0-8)**

Prerequisites: 100 credits **and** ICTB 218 Business Statistics and Data Management

Foundation for a solid research-based solution approach to issues as present in the travel and service businesses; to understand a range of approaches to the issues as derived from the academic literature to apply specific theoretical frameworks; to provide design of experiments; collection of data; presentation of data; analysis of current trends in research industry; analyse the research results and supply a range of solutions

ICTB 314 Revenue Management in Travel and Service Businesses **4 (4-0-8)**

Prerequisites: 100 credits

The concepts of revenue management; ingredients of effective revenue management; roles of revenue manager and related department; key performance index used in revenue management; market segmentation and channel distribution in revenue management; market and competitive intelligence; benchmarking and competitive set; price & value; economics in revenue management; demand forecasting; revenue management techniques in travel and service business; market dynamic

ICTB 315 Entrepreneurship and Business Plan Development **4 (4-0-8)**

Prerequisites: 100 credits

Evaluate new business ideas; financial statements and ratios; formulate a business strategy for the new venture; careful market selection and positioning of products; compose a business plan; effectively communicate and sell new business concepts

ICTB 316 Data Analytics for Travel and Service Businesses **4 (4-0-8)**

Prerequisites: ICTB 218 Business Statistics and Data Management

Introduction to Data Analytics; Data Collection Methods; Data Preprocessing and Cleaning; Exploratory Data Analysis; Data Visualization Techniques; Statistical Methods and Data Analysis; Customer Analytics; Customer Segmentation; Customer Lifetime Value (CLV); Operational Analytics; Marketing Analytics; Data-Driven Decision Making; Ethical and Legal Considerations

ICTB 324 Hotel Business Development and Management **4 (4-0-8)**

Prerequisites: ICTB 221 Room Division Operation Management **or**
ICTB 222 Facility Management for Hotel Operations

The hotel business development; location selection; legal and tax issues; the business project development plan; an overview of the front and back of the house operations management; expansion and managing multi-unit lodging property; risk and crisis management; understanding and managing the internal stakeholders (i.e. owners, managers, employees, management companies, franchisers); engagement of external stakeholders including customers, suppliers, competitors, local communities and intermediaries (i.e., distribution channels); proactive and reactive approaches responding to the changing factors of the macroenvironment (i.e., political, economic, socio-cultural, environmental, technological and legislative factors)

ICTB 335 Restaurant Business Planning and Operations **4 (4-0-8)**

Prerequisites: ICTB 231 Culinary Operation Management **or** ICTB 232 Baking and Pastry Business

Understanding factors to consider when planning a menu; describing how the menu influences every dimension of the food service operations; listing menu types commonly used in the foodservice operations; selecting an appropriate type of menu for a foodservice business; calculating food cost; discussing various menu pricing strategies; creating an appealing menu for increasing sale; basics of the restaurant design; food safety and sanitation; achieving legal safety and sanitation requirements

ICTB 355 Creative Event Production **4 (3-2-7)**

Prerequisites: ICTB 251 Event Planning and Operation **or** ICTB 252 Event and Experience Design

Producing a real event through the application of event conceptualization; event and experience design; sustainability and technology considerations; event budgeting and monitoring; event proposal; event marketing and promotion; event sponsorships; human resources management; event logistics; procurement; site planning, management and communication; onsite coordination; event evaluation

ICTB 364 Spa and Wellness Business **4 (4-0-8)**

Prerequisites: ICTB 263 Healthcare and Medical Business

Introduction to spa and wellness industry and operations; history of spa and wellness industry, types of spa and wellness centres; latest trends in spa and wellness industry; mind and body; facility design; program settings; asset management; service quality management; human resources management in spa and wellness; promotion and branding for spa and wellness business; spa and wellness financial management; spa and wellness for special populations; self-help plan for a healthy lifestyle

ICTB 492 Internship II **8 (0-24-8)**

Prerequisites: Final trimester only

Work experience at a travel and service business related organization (e.g. hotel, restaurant, event, tourism and health & wellness); gaining insight in its operations and management; making an effective contribution to the employing organization; gaining first-hand experience of a real working environment and, in particular, the problems encountered in human, financial and other resource terms, in trying to meet organizational objectives, and understanding how such problems are tackled, understanding their roles in the organization, following instructions, directing and assuring appropriate actions, carrying out tasks assigned to you successfully; developing interpersonal and technical skills, connecting the experience with the future plan and career of your future

ITCT

ITCT 101 Computing Technologies **4 (4-0-8)**

Prerequisites: None

Computer fundamentals; operating systems; hardware specifications; internet and networking basics; IT ethics; cybersecurity awareness; IT professions; spreadsheet applications; word processing; presentation software; human-computer interaction; multimedia tools; web development; computer animation; computer vision; game development; artificial intelligence; prompt engineering; AI trends in multimedia

ITCT 202 Advanced Programming and Data Structure **4 (4-0-8)**

Prerequisites: ICMA 106 Calculus I, ICCT 111 Introduction to Programming for Creative Technology

Concepts of object-oriented programming; memory management and performance tuning; debugging and testing techniques; data structures and algorithm analysis; design and evaluation of algorithms for manipulating data structures; software versioning; real-world application development practices

ITCT 203 Introduction to Interactive Multimedia Technology **4 (4-0-8)**

Prerequisites: ITCT 101 Computing Technologies

Fundamentals of interactive multimedia systems; principles of multimedia representation and processing; introductory programming for interactive applications; text, image, and graphics rendering; animation principles; audio and video; multimedia file formats and compression; color models and digital imaging; computer vision techniques; interactive multimedia development and authoring tools; emerging trends and applications in interactive media

ITCT 204 User Experience Research and Prototyping **4 (4-0-8)**

Prerequisites: ITCT 203 Introduction to Interactive Multimedia Technology

Fundamental concepts of Human-Computer Interaction tools; application of HCI tools in user centered design; user research methods; prototyping techniques; integration of research findings into prototype development

ITCT 302 Interactive Multimedia and Game Development Technology **4 (4-0-8)**

Prerequisites: ITCT 202 Advanced Programming and Data Structure,
ITCT 204 User Experience Research and Prototyping

Interactive media architecture; interactive storytelling techniques; game engine technology; game asset integration; real-time rendering; basic physics and AI in games; gameplay mechanics and loop design; UI/UX in interactive experiences; networking and multiplayer fundamentals; performance and scalability; industry standards and workflows; introduction to game development conferences and professional networking

ITCT 303 Data Technology **4 (4-0-8)**

Prerequisites: ITCT 202 Advanced Programming and Data Structure,
ITCT 20 4 User Experience Research and Prototyping

Database systems; file and information systems; data modeling and database lifecycle; relational databases; entity-relationship models; database normalization; structured query language (SQL); transaction management and database security; data visualization principles; working with data; visual analytics; immersive visualization; multimedia data processing; audio, image, video, and animation storage and retrieval

ITCT 318 Internet of Things and Its Application **4 (4-0-8)**

Prerequisites: ITCT 303 Data Technology

Principles of the Internet of Things; the Internet of Things communication and protocol; the Internet of Things and the cloud infrastructure; case studies of IoT applications using embedded and autonomous systems; sensors and actuators.

ITCT 324 Immersive Technology **4 (4-0-8)**

Prerequisites: ITCT 344 Human-Computer Interaction,
ITCT 34 5 Interactive Multimedia and Game Development Technology

Virtual reality fundamentals; augmented reality and mixed reality concepts; immersive environments and experiences; hardware and software platforms; interaction techniques in immersive environments; UI/UX for immersive technology; spatial audio and haptic feedback; immersive storytelling; tools and engines for immersive technology; training and simulation applications; theoretical discussions; ethical and privacy in immersive technology; future trends and innovations in immersive media.

ITCT 332 Data Visualisation **4 (4-0-8)**

Prerequisites: ITCT 303 Data Technology

Examples of visualization; visualization technology; tools; a process of data visualization; working with data; color theory; human perception; visualization techniques; visual analytics; immersive visualization

ITCT 333 Advanced Game Development **4 (4-0-8)**

Prerequisites: ITCT 302 Interactive Multimedia and Game Development Technology,
ITCT 303 Data Technology

Game level design and development; level block-up techniques; terrain creation for games; procedural content generation; environment decoration; game logic design for complex scenarios; gameplay system integration; AI behaviors and pathfinding; profiling and performance analysis; optimization for game engines; deployment and publishing strategies; version control in game development; collaboration tools and workflows; real-world game development case studies

ITCT 344 Human-Computer Interaction **4 (4-0-8)**

Prerequisites: ITCT 204 User Experience Research and Prototyping

Principles and concepts of human-computer interaction; principles of graphical user interfaces; user-centered design methodologies; interaction styles and techniques; multimedia, web and game interfaces; human performance models; user experience design; accessibility and inclusive design; software engineering

trade-offs; usability principles and evaluation techniques; ethical considerations in HCI; research methodologies in Human-Computer Interaction

ITCT 345 Interactive Multimedia Production **4 (4-0-8)**

Prerequisites: ITCT 302 Interactive Multimedia and Game Development Technology,
ITCT 344 Human-Computer Interaction

Multimedia system development; digital media production workflows; interactive content creation for digital platforms; software tools and frameworks; real-time data processing; system integration and optimization; media storage and delivery; interactive system testing and debugging; collaboration tools and workflows; emerging trends in multimedia technologies and development tools

ITCT 346 Web Technology and Development **4 (4-0-8)**

Prerequisites: ITCT 303 Data Technology,
ITCT 344 Human-Computer Interaction

Fundamental mechanism and components of the internet and web; formats and structures of the languages used to develop webs; web page creation; the techniques of writing script programs working at client and server sides; web development tools; program for simulating a web server; system development for accessing the database; applications of object-oriented programs to web development; Hands-on practice related to web development; research and innovation in web design for creative technologies

ITCT 363 Artificial Intelligence in Multimedia Applications **4 (4-0-8)**

Prerequisites: ITCT 345 Interactive Multimedia and Game Development Technology,
ITCT 303 Data Technology

AI-driven multimedia processing; automation in multimedia workflows; machine learning techniques for media; content recommendation and personalization; computer vision for interactive systems; natural language processing in multimedia applications; real-time AI integration in interactive media; AI-assisted animation and procedural content generation; adaptive user experiences; generative AI tools; AI in game mechanics; ethical considerations and bias in AI-driven media; emerging trends in AI for interactive and immersive media

ITCT 391 Special Topics in Multimedia Systems **4 (4-0-8)**

Prerequisites: ICCT 111 Introduction to Programming for Creative Technology, ICMA 106 Calculus I

Recent advanced techniques in multimedia data management and multimedia technologies; interesting topics of the multimedia applications, such as e-learning and the information visualization; other related topics that can be varied depending on the interests of faculties and students

MSCT

MSCT 101 Music Appreciation **2 (2-0-4)**

Prerequisites: None

Exploring the world of music; how the music and sonic elements function, the development of form and styles, brief history of western music, surveys of significant works by significant composers

MSCT 111 Music Fundamentals and Keyboard Skills I **1 (0-2-1)**

Prerequisites: None

Music fundamentals at the initial level; music theories and ear training studies through keyboard playing; music reading, scales, chords, harmonization; transposition–in a combination of hands-on and lecture class settings

MSCT 112 Music Fundamentals and Keyboard Skills II **1 (0-2-1)**

Prerequisites: MSCT 111 Music Fundamentals and Keyboard Skills I

Music fundamentals at a higher level; music theories and ear training studies through keyboard playing; music reading, scales, chords, harmonization; transposition–in a combination of hands-on and lecture class settings

MSCT 211 Electronic Music Production I **1 (0-2-1)**

Prerequisites: MSCT 112 Music Fundamentals and Keyboard Skills II

Basic music production process on the workflow of creating MIDI and audio recording, editing, arranging, mixing and mastering

MSCT 212 Electronic Music Production II **1 (0-2-1)**

Prerequisites: MSCT 211 Electronic Music Production I

Advanced music production techniques; working with synthesis, sampling and modern mixing techniques; including learning to perform live music with the Ableton Live software

RACT

RACT 201 Learning Management and Classroom Management for Students with Special Needs 4 (3-2-7)

Prerequisite: None

Learning theories; designing and creating the learning experience; an integration of learning for the inclusive education, the learning management promoting critical and creative thinking for learning solutions; principles and concepts of developing, implementing, and evaluating the lesson plan; principles of the classroom management, creating the appropriate environment in educational settings; interactions between teachers and students, establishing rules in the classroom, behavioral management for students, developing the learning center in educational institutions; acquiring and selecting information in order to keep pace with changes

RACT 202 Introduction to the Thai Sign Language 4 (2-4-6)

Prerequisites: None

Definition, origin, types, and characteristics of the Thai sign language; finger spelling; practical skill of the Thai sign language for the deaf's daily life activities

GENERAL CATALOG

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