



Mahidol University
International College

Edited as of 12 Feb 2026

MUIC

General Catalog

2022 - 2023

Student with ID 65xxxxx

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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

2022 - 2023

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APPLIED MATHEMATICS PROGRAM

DEGREE OFFERED

Bachelor of Science (Applied Mathematics) B.Sc. (Applied Mathematics)

THE FIELD

Mathematics has proved to be an indispensable tool for understanding the world around us. It plays a fundamental role both in the realm of science and of commerce and finance. MUIC delivers applied mathematics major that combines the benefits of a well-rounded general education in science and humanities to produce high-caliber graduates capable of undertaking graduate studies and professions in IT, finance, banking, statistics, education, and actuarial science.

Through I-Design, students will have options to do minors in the following fields: 1) decision making and 2) statistics. The program also offers a track in financial mathematics for students who want to add some breadth to their degree in this field. Lastly, a certificate in actuarial mathematics is offered. Students will have opportunity to take courses such as Actuarial Mathematics I & II or Risk Management and Derivatives, and earn some credits for SOA exams, a pathway to become a credentialed actuary or financial analyst.

CAREER OPPORTUNITIES

- 1) Applied mathematicians
- 2) Researchers in commercial sector or in academia
- 3) Actuaries in insurance policy design
- 4) Firm consultants in decision-making position
- 5) Statisticians and planners in government or private sector
- 6) Data analysts in e-commerce company

CURRICULUM STRUCTURE

Courses	Credits
General Education Courses	38
Core Courses	30
Required Courses	64
I-Design Electives	20
Free Elective Courses	8
TOTAL	160

COURSE LIST

Foundation Courses

ICMA 100 Foundation Mathematics
ICME 100 English Resource Skills

Non-credit

0 (4-0-0)
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 100 Foundation Mathematics 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 101 Academic Writing and Research I will be placed into the "ERS Track". These students will be required to take ICME 100 English Resource Skills and pass the course with the grade of "S" before moving to ICGC 101 Academic Writing and Research I.

General Education Courses

38 credits

English Communication

12-16 credits

ICGC 101 Academic Writing and Research I	4 (4-0-8)
ICGC 102 Academic Writing and Research II	4 (4-0-8)
ICGC 103 Public Speaking	4 (4-0-8)
ICGC 201 Global Realities	4 (4-0-8)
ICGC 202 Literary Analysis	4 (4-0-8)
ICGC 203 Creative Writing	4 (4-0-8)
ICGC 204 Advanced Oral Communication	4 (4-0-8)
ICGC 206 Literature Into Film	4 (4-0-8)
ICGC 208 Language and Culture	4 (4-0-8)
ICGC 210 First and Second Language Acquisition	4 (4-0-8)
ICGC 211 Topics in Comparative Literature A: Poetry	4 (4-0-8)
ICGC 212 Topics in Comparative Literature B: The Short Story and the Novel	4 (4-0-8)
ICGC 213 Topics in Comparative Literature C: Drama	4 (4-0-8)
ICGC 214 Literary Non-fiction	4 (4-0-8)
ICGC 215 Writing for Research	4 (4-0-8)

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

- **'ERS Track'** – Students who are placed into 'ERS Track' will be required to take ICME 100 (a non-credit course) and complete 16 credits in English Communication: ICGC 101, ICGC 102, ICGC 103 in order, and finally, any 200+ level English courses.
- **'GC Track'** – Students who are placed into 'GC Track' will be required to complete 16 credits in English Communication: ICGC 101, ICGC 102, ICGC 103 in order, and finally, any 200+ level English courses.
- **'GC2 Track'** – Students who are placed into 'GC2 Track' will be required to complete 12 credits in English Communication: ICGC 102, ICGC 103 in order, and finally, any 200+ level English courses.

Note II: Students in 'ERS Track' and 'GC Track' must take ICGC 101, ICGC 102 and ICGC 103 without interruption beginning in their first trimester of enrollment.

Note III: Students in 'GC2 Track' must take ICGC 102 and ICGC 103 without interruption beginning in their first trimester of enrollment.

Life Appreciation	4 credits
ICGH 113 Moving Pictures: A History of Film	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 119 Listen! Soundscapes, Well-Being and Musical Soul Searching	4 (4-0-8)
ICGN 105 Ecology, Ecosystems and Socio-Economics in Southeast Asia	4 (3-2-7)
ICGN 108 Essentials of Culinary Science for Food Business	4 (3-2-7)
ICGN 109 Food for Health	4 (4-0-8)
ICGN 110 Maker Workshop	4 (3-2-7)
ICGN 112 Stargazer	4 (3-2-7)
ICGN 113 Plants, People and Poisons	4 (4-0-8)
ICGN 115 Human Evolution, Diversity and Health	4 (4-0-8)
ICGN 120 Chemistry of Cosmetics and Dietary Supplements	4 (4-0-8)
ICGN 124 Climate Change and Human Society	4 (3-2-7)
ICGN 125 Games and Learning	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 117 Physical Fitness Plan	2 (2-0-4)
ICGS 102 Business Sustainability and the Global Climate Change	4 (4-0-8)
ICGS 111 Exploring Religions	4 (4-0-8)
ICGS 115 Sociology in the Modern World	4 (4-0-8)
ICGS 125 American History, Popular Media and Modern Life	4 (4-0-8)
ICGS 126 Introduction to Psychology	4 (4-0-8)
ICGS 127 Positive Psychology	4 (4-0-8)
ICGS 128 Global Gastronomy and Cuisines	4 (4-0-8)
ICGS 129 Tea Studies	2 (2-0-4)
ICGS 141 Coffee studies	2 (2-0-4)
ICGS 142 Contemporary Spirituality and Marketing	1 (1-0-2)

ICLL 100 Self Development

***Please see additional courses on page 290.

2 (2-0-4)

Global Citizenship**4 credits**

ICGH 116 World Cinemas	4 (4-0-8)
ICGH 120 Thai and ASEAN Cinema	4 (4-0-8)
ICGH 121 The End of the World? Development and Environment	4 (4-0-8)
ICGH 122 Introduction to Asian Philosophy	4 (4-0-8)
ICGH 123 Faiths, Ecological Justice, and the Tropical Rainforests	2 (2-0-4)
ICGH 127 Rome: An Empire's Rise and Fall	4 (4-0-8)
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 170 Diversities in Multilingual Societies	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 126 Plant Society	2 (2-0-4)
ICGS 106 Fashion and Society	4 (4-0-8)
ICGS 112 Geography of Human Activities	4 (4-0-8)
ICGS 123 Tourism Concepts and Practices	4 (4-0-8)

ICGS 130 Political Science	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 143 Introduction to Air Transport and Tourism	4 (4-0-8)

***Please see additional courses on page 290.

Critical Thinking

4 credits

ICGH 101 Biotechnology: from Science to Business	4 (4-0-8)
ICGH 102 Famous Arguments and Thought Experiments in Philosophy	4 (4-0-8)
ICGH 103 Logic, Analysis and Critical Thinking: Good and Bad Arguments	4 (4-0-8)
ICGH 105 Technology, Philosophy and Human Kind: Where Are We Now?!	4 (4-0-8)
ICGH 106 The Greeks: Crucible of Civilization	4 (4-0-8)
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 Languages and Its Application	4 (4-0-8)
ICGH 124 Life Drawing and Anatomy	4 (2-4-6)
ICGH 125 How Can We Know What Is Good? Moral Reasoning and Behavior	4 (4-0-8)
ICGH 126 Behavioral Ethics: Why Good People Do Bad Things	2 (2-0-4)
ICGN 107 The Chemistry of Everyday Life	4 (4-0-8)
ICGN 111 Physics for CEO	4 (4-0-8)
ICGN 123 The Earth's Dynamic Structure	4 (3-2-7)
ICGN 127 Practical Mathematics	2 (2-0-4)
ICGS 103 Economics in Modern Business	4 (4-0-8)
ICGS 105 Personal Financial Management	4 (4-0-8)
ICGS 113 Perspectives on the Thai Past	4 (4-0-8)
ICGS 134 Is Democracy Good?	4 (4-0-8)
ICGS 135 Entrepreneurial Accounting	4 (4-0-8)
ICGS 144 Price Discrimination: Why Do We Pay More Than Others?	1 (1-0-2)

***Please see additional courses on page 290.

Leadership

4 credits

ICGN 114 The Scientific Approach and Society	4 (4-0-8)
ICGN 128 Climate Emergency, Biodiversity Crisis, and Humanity at Risk	2 (1-2-3)
ICGS 104 Essentials of Entrepreneurship	4 (4-0-8)
ICGS 118 Skills in Dealing with People Across Cultures	4 (4-0-8)
ICGS 121 Abnormal Colleagues: How Do I Make This Work?	4 (4-0-8)
ICGS 136 Social and Health Issues in Thailand	4 (3-2-7)
ICGS 137 Witchcraft and Gender Representation	4 (4-0-8)
ICGS 138 Business Event Essentials	4 (4-0-8)
ICGS 139 Leadership and Change for a Global Society	4 (4-0-8)
ICGS 145 Service-Learning – Management of Community Service Project	4 (2-4-6)
ICGS 146 Service-Learning – Salaya Community Service Learning Project	4 (2-4-6)
ICGS 147 Women in Leadership	4 (4-0-8)
ICGS 148 Service Learning - Digital Campaign for Gender Issues	4 (2-4-6)
ICGS 149 Service Learning - Making Change	4 (2-4-6)
ICGS 150 Service Learning - Campaigning for a Cause	4 (4-0-8)
ICGS 151 Service Learning - The Art of Leadership in Practice	4 (2-4-6)
ICGS 152 Fantasy Literature's Environmental Message	4 (4-0-8)

ICGS 154 Introduction to Crisis Management in Service Businesses	4 (4-0-8)
ICGS 155 Pathway to Purpose: Life Design and Self-Exploration	4 (4-0-8)
ICLL 101 Professional Development	2 (2-0-4)
<i>***Please see additional courses on page 290.</i>	

Digital Literacy

4 credits

ICGH 111 Media Literacy: Skills for 21st Century Learning	4 (4-0-8)
ICGH 128 Internet Celebrity, Culture and the Media	4 (4-0-8)
ICGN 116 Understanding and Visualizing Data	4 (3-2-7)
ICGN 118 Everyday Connectivity	4 (4-0-8)
ICGN 119 Computer Essentials	4 (4-0-8)
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 131 Digital Search Literacy	2 (2-0-4)
ICGN 132 Digital Security and Privacy	2 (2-0-4)
ICGN 133 E-Business: Technology and Digital Strategies	4 (4-0-8)
ICGN 134 Introduction to Artificial Intelligence	2 (2-0-4)
ICGS 140 Fake News, Censorship and the Politics of Truth	4 (4-0-8)
ICGS 153 Social Media Management for Service Sector	2 (2-0-4)
ICLL 102 Skills for a Digital World	2 (2-0-4)
<i>***Please see additional courses on page 290.</i>	

General Education Elective Courses

2-6 Credits

Students need to take any GE courses to fulfill their 38 credits requirement of General Education: **2 credits** for students whose English Communication track are placed into 'ERS track' or 'GC Track' and **6 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.

Applied Mathematics Major Courses

94 credits

Core Courses

30 credits

ICBI 101 Biology	4 (4-0-8)
ICBI 102 Integrated Laboratory in Biological Sciences I	2 (0-4-2)
ICCH 101 General Chemistry I	4 (4-0-8)
ICCH 103 Integrated Laboratory in Chemistry	2 (0-4-2)
ICMA 106 Calculus I	4 (4-0-8)
ICMA 213 Calculus II	4 (4-0-8)
ICMA 151 Statistics for Science I	4 (4-0-8)
ICPY 101 Physics I	4 (4-0-8)
ICPY 105 Integrated Laboratory in Physics I	2 (0-4-2)

Required Courses

64 credits

ICCS 101 Introduction to Computer Programming	4 (3-2-7)
ICCS 208 Data Structures and Abstractions	4 (3-2-7)
ICMA 214 Ordinary Differential Equations	4 (4-0-8)
ICMA 216 Calculus IIIA	2 (2-0-4)
ICMA 217 Calculus IIIB	2 (2-0-4)
ICMA 222 Introduction to Mathematical Software	4 (4-0-8)
ICMA 223 Linear Algebra A	2 (2-0-4)
ICMA 224 Linear Algebra B	2 (2-0-4)
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 323 Partial Differential Equations	4 (4-0-8)
ICMA 335 Complex Variables	4 (4-0-8)
ICMA 338 Numerical Methods	4 (4-0-8)
ICMA 350 Probability	4 (4-0-8)
ICMA 424 Abstract Algebra	4 (4-0-8)
ICMA 445 Seminar in Applied Mathematics	2 (2-0-4)
ICMA 447 Research Project in Applied Mathematics A	3 (0-6-3)
ICMA 448 Research Project in Applied Mathematics B	3 (0-6-3)

Major Elective Courses

Students can take courses from this category to fulfill their requirement of I-Design electives.

ICCS 161 Introduction to Data Science	4 (3-2-7)
ICMA 344 Time Series Analysis	4 (4-0-8)
ICMA 346 Optimization	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 432 Multivariate Analysis	4 (4-0-8)
ICMA 435 Regression Analysis	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 205 Microeconomics	4 (4-0-8)
ICMB 206 Macroeconomics	4 (4-0-8)
ICMB 213 Financial Accounting	4 (4-0-8)
ICMB 214 Managerial Accounting	4 (4-0-8)
ICMB 215 Business Finance for Entrepreneurs	4 (4-0-8)
ICMF 316 Financial Management	4 (4-0-8)
ICMF 322 Risk Management and Derivatives	4 (4-0-8)

I-Design Elective Courses

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 and the Curriculum Administrative Committee.

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 and the Curriculum Administrative Committee.

Free Elective Courses

8 credits

Students can take any courses offered by MUIC and/or Mahidol University as free elective courses with the approval from the advisor. A course within the student's major that is too closely related or redundant to core/required/elective courses is discouraged and may be disapproved by an academic advisor.

Double Major

- **Double Major in another area for applied mathematics students**

Students may choose to take a second major offered by other programs in MUIC. In order to obtain another major, students are required to complete all requirements as specified by each major.

- **Double Major in Applied Mathematics for non-applied mathematics students**

To double major in applied mathematics, students must complete ALL core and required courses in applied mathematics.

Minor in Applied Mathematics

- To minor in applied mathematics, students need to complete the following 20 credits applied mathematics courses in addition to or included in their existing requirement(s) for their respective major(s), minor(s) or certificate(s).

Applied Mathematics Minor Courses

20 credits

ICMA 214 Ordinary Differential Equations	4 (4-0-8)
ICMA 216 Calculus IIIA	2 (2-0-4)
ICMA 217 Calculus IIIB	2 (2-0-4)
ICMA 223 Linear Algebra A	2 (2-0-4)
ICMA 224 Linear Algebra B	2 (2-0-4)
ICMA 151 Statistics for Science I	4 (4-0-8)
ICMA 322 Advanced Calculus	4 (4-0-8)

** If the courses in the above list are the core, major required and major elective courses in the BBA and **Science programs** and students in these programs have already taken these courses as their major required or major elective courses, students need to select one of the following courses in order to fulfill **20 credits** of Minor in Applied Mathematics:

ICMA 222 Introduction to Mathematical Software	4 (4-0-8)
ICMA 242 Discrete Mathematics	4 (4-0-8)
ICMA 253 Statistics for Science II	4 (4-0-8)
ICMA 323 Partial Differential Equations	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)
ICMA 424 Abstract Algebra	4 (4-0-8)

Minor in Decision Making

- To minor in decision making, students need to complete the following 20 credits courses in addition to or included in their existing requirement(s) for their respective major(s), minor(s) or certificate(s).

Decision Making Minor Courses	20 credits
ICMA 356 Decision Analysis	4 (4-0-8)
ICMB 201 Business Statistics	4 (4-0-8)
OR	
ICMA 151 Statistics for Science I	4 (4-0-8)
ICIC 355 Judgment and decision making	4 (4-0-8)
ICIC 336 Behavioral Economics	4 (4-0-8)
ICBE 481 Game Theory for Business	4 (4-0-8)

Minor in Statistics

- To minor in statistics, students need to complete the following 20 credits courses in addition to or included in their existing requirement(s) for their respective major(s), minor(s) or certificate(s).

Statistics Minor Courses	20 credits
ICCS 161 Introduction to Data Science	4 (3-2-7)
ICMA 253 Statistics for Science II	4 (4-0-8)
ICMA 344 Time Series Analysis	4 (4-0-8)
ICMA 432 Multivariate Analysis	4 (4-0-8)
ICMA 435 Regression Analysis	4 (4-0-8)

Track in Financial Mathematics

- As a suggestion for students who want to specialize in financial mathematics, students are recommended to complete the following 20 credits courses in addition to or included in their existing requirement(s) for their respective major(s), minor(s) or certificate(s).

Financial Mathematics Track Courses	20 credits
ICMB 213 Financial Accounting	4 (4-0-8)
ICMB 214 Management Accounting	4 (4-0-8)
ICMB 215 Business Finance for Entrepreneurs	4 (4-0-8)
ICMF 316 Financial Management	4 (4-0-8)
ICMF 322 Risk Management and Derivatives	4 (4-0-8)

Certificate

- **Actuarial Mathematics**

*Level: Beginner

12 credits

ICMA 353 Actuarial Mathematics I

4 (4-0-8)

ICMA 354 Actuarial Mathematics II

4 (4-0-8)

ICMB 215 Business Finance for Entrepreneurs

4 (4-0-8)

Note:

- I. Students need to make sure they first pass prerequisites to the courses
- II. Please check the criteria and requirement before applying for the certificate

BIOLOGICAL SCIENCES PROGRAM

DEGREE OFFERED

Bachelor of Science (Biological Sciences) B.Sc. (Biological Sciences)

Biological Sciences program offers 3 modules:

1. Biomedical Science Module
2. Ecology and Conservation Module
3. Biotechnology Module

THE FIELD

The Biological Sciences Program at MUIC provides you clear learning objectives and outcomes and also unrivalled flexibility to design a personalized plan to explore your interests as they develop. Whether you are freshly graduated from high school or seeking inspiration for a career change, we can provide the knowledge and skills you need for success.

Core courses give you an excellent foundation in theoretical and practical elements as you examine the fundamental principles driving life processes. Major classes focus on the molecular connections between the environment and the cell throughout the domains of life and are designed to equip you with technical and transferable skills such as teamwork; ethical data collection; statistical analysis; and rigorous and logical interpretation and communication of results.

I-Design classes allow you to expand your academic interests by specialising in one of the Biological Science modules such as Biomedical Science or by undertaking a complementary minor in another discipline where you can broaden your skill set and improve your employment chances.

Our teaching is research and practice-driven providing you with opportunities to exercise your intellectual curiosity and to interact with stakeholders from multiple sectors giving you access to the tools and perspectives you need to develop your critical thinking skills. To demonstrate your ability to apply knowledge and skills in real-world settings you will pursue your own research tackling emergent challenges facing humanity and the rest of life on Earth.

Graduates of the Biological Sciences Program progress to higher degrees and professional qualifications such as in medicine or dentistry, or directly to employment in teaching; life sciences research and development; conservation and wildlife management; and the biotechnology and pharmaceutical industries.

CAREER OPPORTUNITIES

1. Graduates can work as teaching assistants in the field of Biological Sciences at any academic institutes or universities.
2. Graduates can pursue a teaching career as primary- and secondary-school teachers in the field of Biological Sciences at any international schools.
3. Graduates can work in a research and development department of any biological products companies or manufacturers.
4. Graduates can work in quality control or quality assurance positions.

5. Graduates can work as research assistants in any research institutes and projects or programs.
6. Graduates can work in scientific instruments trading and services in private and public sectors.
7. Graduates can work as customer relations for biological or biomedical product companies or private hospitals that require personnel with good command of English.
8. Graduates can become the owner of companies that sell products and/or services in the field of biological sciences.
9. Graduates can continue their studies for higher degree in any fields of biological sciences, health care professionals, and related fields, such as dentistry, veterinary science and pharmacy.

CURRICULUM STRUCTURE

Courses	Credits
General Education Courses	38
Core Science Courses	26
Major Core Courses	28
Required Major Courses	38
Elective Major Courses	10
I-Design Electives	20
Free Elective Courses	8
Total	168

COURSE LIST

Foundation Courses

ICMA 100 Foundation Mathematics
ICME 100 English Resource Skills

Non-credit

0 (4-0-0)
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 100 Foundation Mathematics 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 101 Academic Writing and Research I will be placed into the "ERS Track". These students will be required to take ICME 100 English Resource Skills and pass the course with the grade of "S" before moving to ICGC 101 Academic Writing and Research I.

General Education Courses

38 credits

English Communication

12-16 credits

ICGC 101 Academic Writing and Research I
ICGC 102 Academic Writing and Research II
ICGC 103 Public Speaking
ICGC 201 Global Realities
ICGC 202 Literary Analysis

4 (4-0-8)
4 (4-0-8)
4 (4-0-8)
4 (4-0-8)
4 (4-0-8)

ICGC 203 Creative Writing	4 (4-0-8)
ICGC 204 Advanced Oral Communication	4 (4-0-8)
ICGC 206 Literature Into Film	4 (4-0-8)
ICGC 208 Language and Culture	4 (4-0-8)
ICGC 210 First and Second Language Acquisition	4 (4-0-8)
ICGC 211 Topics in Comparative Literature A: Poetry	4 (4-0-8)
ICGC 212 Topics in Comparative Literature B: The Short Story and the Novel	4 (4-0-8)
ICGC 213 Topics in Comparative Literature C: Drama	4 (4-0-8)
ICGC 214 Literary Non-fiction	4 (4-0-8)
ICGC 215 Writing for Research	4 (4-0-8)

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

- **'ERS Track'** – Students who are placed into 'ERS Track' will be required to take ICME 100 (a non-credit course) and complete 16 credits in English Communication: ICGC 101, ICGC 102, ICGC 103 in order, and finally, any 200+ level English courses.
- **'GC Track'** – Students who are placed into 'GC Track' will be required to complete 16 credits in English Communication: ICGC 101, ICGC 102, ICGC 103 in order, and finally, any 200+ level English courses.
- **'GC2 Track'** – Students who are placed into 'GC2 Track' will be required to complete 12 credits in English Communication: ICGC 102, ICGC 103 in order, and finally, any 200+ level English courses.

Note II: Students in 'ERS Track' and 'GC Track' must take ICGC 101, ICGC 102 and ICGC 103 without interruption beginning in their first trimester of enrollment.

Note III: Students in 'GC2 Track' must take ICGC 102 and ICGC 103 without interruption beginning in their first trimester of enrollment.

Life Appreciation	4 credits
ICGH 113 Moving Pictures: A History of Film	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 119 Listen! Soundscapes, Well-Being and Musical Soul Searching	4 (4-0-8)
ICGN 105 Ecology, Ecosystems and Socio-Economics in Southeast Asia	4 (3-2-7)
ICGN 108 Essentials of Culinary Science for Food Business	4 (3-2-7)
ICGN 109 Food for Health	4 (4-0-8)
ICGN 110 Maker Workshop	4 (3-2-7)
ICGN 112 Stargazer	4 (3-2-7)
ICGN 113 Plants, People and Poisons	4 (4-0-8)
ICGN 115 Human Evolution, Diversity and Health	4 (4-0-8)
ICGN 120 Chemistry of Cosmetics and Dietary Supplements	4 (4-0-8)
ICGN 124 Climate Change and Human Society	4 (3-2-7)
ICGN 125 Games and Learning	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 117 Physical Fitness Plan	2 (2-0-4)
ICGS 102 Business Sustainability and the Global Climate Change	4 (4-0-8)
ICGS 111 Exploring Religions	4 (4-0-8)
ICGS 115 Sociology in the Modern World	4 (4-0-8)
ICGS 125 American History, Popular Media and Modern Life	4 (4-0-8)
ICGS 126 Introduction to Psychology	4 (4-0-8)
ICGS 127 Positive Psychology	4 (4-0-8)
ICGS 128 Global Gastronomy and Cuisines	4 (4-0-8)
ICGS 129 Tea Studies	2 (2-0-4)
ICGS 141 Coffee studies	2 (2-0-4)
ICGS 142 Contemporary Spirituality and Marketing	1 (1-0-2)
ICLL 100 Self Development	2 (2-0-4)

***Please see additional courses on page 290.

Global Citizenship

4 credits

ICGH 116 World Cinemas	4 (4-0-8)
ICGH 120 Thai and ASEAN Cinema	4 (4-0-8)
ICGH 121 The End of the World? Development and Environment	4 (4-0-8)
ICGH 122 Introduction to Asian Philosophy	4 (4-0-8)
ICGH 123 Faiths, Ecological Justice, and the Tropical Rainforests	2 (2-0-4)
ICGH 127 Rome: An Empire's Rise and Fall	4 (4-0-8)
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 170 Diversities in Multilingual Societies	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 126 Plant Society	2 (2-0-4)
ICGS 106 Fashion and Society	4 (4-0-8)
ICGS 112 Geography of Human Activities	4 (4-0-8)
ICGS 123 Tourism Concepts and Practices	4 (4-0-8)
ICGS 130 Political Science	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 143 Introduction to Air Transport and Tourism	4 (4-0-8)

***Please see additional courses on page 290.

Critical Thinking

4 credits

ICGH 101 Biotechnology: from Science to Business	4 (4-0-8)
ICGH 102 Famous Arguments and Thought Experiments in Philosophy	4 (4-0-8)
ICGH 103 Logic, Analysis and Critical Thinking: Good and Bad Arguments	4 (4-0-8)
ICGH 105 Technology, Philosophy and Human Kind: Where Are We Now?!	4 (4-0-8)
ICGH 106 The Greeks: Crucible of Civilization	4 (4-0-8)
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 Languages and Its Application	4 (4-0-8)
ICGH 124 Life Drawing and Anatomy	4 (2-4-6)
ICGH 125 How Can We Know What Is Good? Moral Reasoning and Behavior	4 (4-0-8)
ICGH 126 Behavioral Ethics: Why Good People Do Bad Things	2 (2-0-4)
ICGN 107 The Chemistry of Everyday Life	4 (4-0-8)
ICGN 111 Physics for CEO	4 (4-0-8)
ICGN 123 The Earth's Dynamic Structure	4 (3-2-7)
ICGN 127 Practical Mathematics	2 (2-0-4)
ICGS 103 Economics in Modern Business	4 (4-0-8)

ICGS 105 Personal Financial Management	4 (4-0-8)
ICGS 113 Perspectives on the Thai Past	4 (4-0-8)
ICGS 134 Is Democracy Good?	4 (4-0-8)
ICGS 135 Entrepreneurial Accounting	4 (4-0-8)
ICGS 144 Price Discrimination: Why Do We Pay More Than Others?	1 (1-0-2)
<i>***Please see additional courses on page 290.</i>	

Leadership

4 credits

ICGN 114 The Scientific Approach and Society	4 (4-0-8)
ICGN 128 Climate Emergency, Biodiversity Crisis, and Humanity at Risk	2 (1-2-3)
ICGS 104 Essentials of Entrepreneurship	4 (4-0-8)
ICGS 118 Skills in Dealing with People Across Cultures	4 (4-0-8)
ICGS 121 Abnormal Colleagues: How Do I Make This Work?	4 (4-0-8)
ICGS 136 Social and Health Issues in Thailand	4 (3-2-7)
ICGS 137 Witchcraft and Gender Representation	4 (4-0-8)
ICGS 138 Business Event Essentials	4 (4-0-8)
ICGS 139 Leadership and Change for a Global Society	4 (4-0-8)
ICGS 145 Service-Learning – Management of Community Service Project	4 (2-4-6)
ICGS 146 Service-Learning – Salaya Community Service Learning Project	4 (2-4-6)
ICGS 147 Women in Leadership	4 (4-0-8)
ICGS 148 Service Learning - Digital Campaign for Gender Issues	4 (2-4-6)
ICGS 149 Service Learning - Making Change	4 (2-4-6)
ICGS 150 Service Learning - Campaigning for a Cause	4 (4-0-8)
ICGS 151 Service Learning - The Art of Leadership in Practice	4 (2-4-6)
ICGS 152 Fantasy Literature's Environmental Message	4 (4-0-8)
ICGS 154 Introduction to Crisis Management in Service Businesses	4 (4-0-8)
ICGS 155 Pathway to Purpose: Life Design and Self-Exploration	4 (4-0-8)
ICLL 101 Professional Development	2 (2-0-4)
<i>***Please see additional courses on page 290.</i>	

Digital Literacy

4 credits

ICGH 111 Media Literacy: Skills for 21 st Century Learning	4 (4-0-8)
ICGH 128 Internet Celebrity, Culture and the Media	4 (4-0-8)
ICGN 116 Understanding and Visualizing Data	4 (3-2-7)
ICGN 118 Everyday Connectivity	4 (4-0-8)
ICGN 119 Computer Essentials	4 (4-0-8)
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 131 Digital Search Literacy	2 (2-0-4)
ICGN 132 Digital Security and Privacy	2 (2-0-4)
ICGN 133 E-Business: Technology and Digital Strategies	4 (4-0-8)
ICGN 134 Introduction to Artificial Intelligence	2 (2-0-4)
ICGS 140 Fake News, Censorship and the Politics of Truth	4 (4-0-8)
ICGS 153 Social Media Management for Service Sector	2 (2-0-4)
ICLL 102 Skills for a Digital World	2 (2-0-4)
<i>***Please see additional courses on page 290.</i>	

General Education Elective Courses

2-6 Credits

Students need to take any GE courses to fulfill their 38 credits requirement of General Education: **2 credits** for students whose English Communication track are placed into 'ERS track' or 'GC Track' and **6 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.

Biological Sciences Major Courses

102 Credits

Core Science Courses

26 Credits

ICBI 121 Biology I	4 (3-2-7)
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)
ICMA 106 Calculus I	4 (4-0-8)
ICPY 101 Physics I	4 (4-0-8)
ICPY 105 Integrated Laboratory in Physics I	2 (0-4-2)
ICBI 333 Scientific Research and Presentations	2 (2-0-4)

Note: *ICBI 121 Biology I can be bypassed (with credits rewarded) if students have already taken equivalent courses that can be transferred according to Mahidol University regulations.

Major Core Courses

28 Credits

ICBI 207 Ethics for Bioscience	4 (4-0-8)
ICBI 214 General Microbiology	4 (4-0-8)
ICBI 271 General Microbiology Laboratory	2 (0-4-2)
ICCH 221 Organic Chemistry I	4 (4-0-8)
ICCH 223 Organic Chemistry Laboratory Techniques	2 (0-4-2)
ICCH 225 Biochemistry	4 (4-0-8)
ICCH 226 Biochemistry Laboratory	2 (0-4-2)
ICMA 151 Statistics for Science I	4 (4-0-8)
ICMA 252 Biological Statistics Laboratory	2 (0-4-2)

Major Required Courses

38 Credits

ICBI 213 Genetics	4 (4-0-8)
ICBI 216 Cell Biology	4 (4-0-8)
ICBI 221 Animal Biology	4 (3-2-7)
ICBI 231 Plant Biology	4 (3-2-7)
ICBI 262 Practical Field Ecology and Conservation	4 (3-2-7)
ICBI 308 Molecular Biology	4 (4-0-8)
ICBI 381 Evolutionary Biology	4 (4-0-8)
ICBI 383 Systematic Biology and Biodiversity	2 (2-0-4)
ICBI 499 Research Project and Seminar in Biological Sciences	8 (0-16-8)

Major Elective Courses

at least 10 credits

For students in the Biological Sciences Program, the major elective courses are developed to enable deeper pursuit of a specific area of Biological Sciences. These courses may, if the student wishes, be further specialized into three different modules and a minor, namely module in biomedical science, module in ecology and conservation, module in biotechnology, and a minor in bioinformatics. It should be noted that students are not required to select a module to graduate with a B.Sc. in Biological Sciences. Regardless, they are required to earn at least 10 credits from Major Elective courses.

Major Elective courses listed by module:

• The Biomedical Science Module		(at least 20 credits)
ICBI 204 Developmental Biology		4 (4-0-8)
ICBI 301 Functional Histology		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 324 Introduction to Medical Toxicology		4 (4-0-8)
ICBI 328 Essential Pharmacology		4 (4-0-8)
ICBI 332 Medical Microbiology		4 (4-0-8)
ICBI 341 Neurobiology		4 (3-2-7)
ICBI 391 Health Psychology		4 (4-0-8)
ICBI 402 Epidemiology		4 (3-2-7)
ICBI 403 Introduction to Tropical Medicine		4 (4-0-8)
ICBI 404 Molecular Biology Laboratory		2 (0-4-2)
ICBI 405 Community Health		4 (3-2-7)
ICBI 406 Ergonomics		2 (2-0-4)
ICBI 407 Occupational Health and Safety		4 (4-0-8)
ICBI 411 Psychopathology		4 (4-0-8)
ICCH 222 Organic Chemistry II		4 (4-0-8)
• The Ecology and Conservation Module		(at least 20 credits)
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 440 Marine Ecology and Conservation		4 (4-0-8)
ICBI 442 Practical Marine Ecology and Conservation		2 (0-4-2)
ICBI 443 Fungal Ecology		4 (3-2-7)
• The Biotechnology Module		(at least 20 credits)
ICBI 315 Microbial Physiology and Genetics		4 (4-0-8)
ICBI 316 Environmental Microbiology		4 (3-2-7)
ICBI 372 Utilization of Water and Wastewater Treatment		4 (3-2-7)
ICBI 404 Molecular Biology Laboratory		2 (0-4-2)
ICBI 414 Industrial Microbiology		4 (4-0-8)
ICBI 415 Biotechnology		4 (4-0-8)
ICBI 432 Plant Biotechnology		4 (4-0-8)
ICBI 433 Fermentation Technology		4 (4-0-8)
ICBI 434 Food Biotechnology		4 (4-0-8)
ICBI 435 Molecular Techniques in Biotechnology		4 (4-0-8)
ICBI 436 Industrial Enzymology		4 (3-2-7)
ICBI 437 Current Issues in Biotechnology		2 (2-0-4)
ICBI 461 Cell Technology		4 (3-2-7)

ICCH 222 Organic Chemistry II	4 (4-0-8)
ICCH 200 Analytical Chemistry A	4 (3-2-7)
ICCH 201 Analytical Chemistry B	4 (3-2-7)

- **Uncategorized Major Elective Courses**

The uncategorized Major Elective courses can be used (subject to approval by the Program Director of Biological Sciences) to fulfill any module.

ICBI 211 Genetics and Molecular Biology I	4 (4-0-8)
ICBI 355 Geographic Information Systems	2 (0-4-2)
ICBI 380 Introduction to Systems Biology and Bioinformatics	4 (4-0-8)
ICBI 464 Entrepreneurship and Innovation in Science	4 (4-0-8)
ICBI 465 Internship in Biological Sciences A	4 (0-12-0)
ICBI 466 Internship in Biological Sciences B	12 (0-36-0)
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 474 Special Topics in Biological Sciences D	4 (4-0-8)
ICBI 475 Special Topics in Biological Sciences E	4 (4-0-8)
ICBI 481 Current Issues in Biological Sciences A	2 (2-0-4)
ICBI 482 Current Issues in Biological Sciences B	2 (2-0-4)
ICBI 483 Current Issues in Biological Sciences C	2 (2-0-4)
ICMA 213 Calculus II	4 (4-0-8)
ICPY 102 Physics II	4 (4-0-8)
ICPY 496 Biophysics	4 (4-0-8)

I-Design Elective Courses

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 and the Curriculum Administrative Committee.
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 and the Curriculum Administrative Committee.

Free Elective Courses

8 Credits

Students can take any courses offered by MUIC and/or Mahidol University as free elective courses with the approval from the advisor. A course within the student's major that is too closely related or redundant to core/required/elective courses is discouraged and may be disapproved by an academic advisor.

Double Major

- Student may choose to take a second major offered by other programs in MUIC. In order to obtain another major, students are required to complete all requirements as specified by each major.

Double Major in Biological Sciences

Biological Sciences Major courses

- To double major in Biological Sciences, students must complete all core and required courses in the Biological Sciences major.

Minor

- Biological Sciences students may choose to take one or more minors. In order to obtain a minor, students are required to complete all requirements as specified by each minor.

Minor in Biological Sciences

20 credits

- Students must complete 4 credits from ICBI 121 Biology I, and 16 credits from any ICBI courses from the Major Core and Major Required lists.

Note I: Some Major Core and Major Required courses may have a prerequisite, which students are required to complete before taking the corresponding Major Core and Major Required courses.

Note II: Students should seek an approval from the Program Director for their Minor course list.

Note III: Students who have completed A-level, AP, IB or equivalent qualification for Biology can be exempted from taking ICBI 121 Biology I, but still need to complete 20credits from the Major Core and Major Required lists.

Minor in Bioinformatics

20 credits

- To minor in Bioinformatics, students need to take at least 5 courses from the below list.

ICBI 325 Special Topics in Bioinformatics and Molecular Genetics	4 (4-0-8)
ICCS 101 Introduction to Computer Programming	4 (3-2-7)
ICCS 161 Introduction to Data Science	4 (3-2-7)
ICCS 204 Data Structure and Object-Oriented Programming	4 (3-2-7)
ICCS 205 Numerical Computation	4 (4-0-8)
ICCS 206 Discrete mathematics	4 (4-0-8)
ICCS 312 Algorithms and Tractability	4 (4-0-8)
ICCS 361 Data Mining	4 (4-0-8)
ICCS 461 Machine Learning	4 (4-0-8)

BUSINESS ECONOMICS PROGRAM

DEGREE OFFERED

Bachelor of Business Administration (Business Economics)

B.B.A. (Business Economics)

THE FIELD

The Business Economics Major is based on the economic foundations and developments that have occurred in this subject area over the last several decades. Business Economics major will be well-equipped in both the micro and the macro aspects of economics and their analytical applications to the operational aspects of any business in any particular industry. The curriculum not only provides students with a solid foundation in economics but also prepares them with the tools to better understand the business environment, its market structures and the strategies necessary to compete in a global business world.

CAREER OPPORTUNITIES

Career choices for Business Economic majors include business analysts and researchers for the Stock Exchange of Thailand, researchers at the Bank of Thailand, positions in the Ministries of Commerce and Finance, in addition to a variety of opportunities in private and public organizations.

CURRICULUM STRUCTURE

COURSES	CREDITS
General Education Courses	38
Core Business Courses	73
Major Required Courses	20
Major Elective Courses	24
I-Design Electives	20
Free Elective Courses	8
Total	183

COURSE LIST

Foundation Courses

ICMA 100 Foundation Mathematics

ICME 100 English Resource Skills

Non-credit

0 (4-0-0)

0 (4-0-0)

Note I: For B.B.A. students, students whose Mathematics placement is below ICMB 200 Business Mathematics are required to take ICMA 100 Foundation Mathematics and pass the course with the grade of "S" before moving to ICMB 200 Business Mathematics.

Note II: Based on their achievement on the essay portion of the MUIC entrance exam, students whose English placement is below ICGC 101 Academic Writing and Research I will be placed into the "ERS Track". These students will be required to take ICME 100 English Resource Skills and pass the course with the grade of "S" before moving to ICGC 101 Academic Writing and Research I.

General Education Courses

38 credits

English Communication

12-16 credits

ICGC 101 Academic Writing and Research I	4 (4-0-8)
ICGC 102 Academic Writing and Research II	4 (4-0-8)
ICGC 103 Public Speaking	4 (4-0-8)
ICGC 201 Global Realities	4 (4-0-8)
ICGC 202 Literary Analysis	4 (4-0-8)
ICGC 203 Creative Writing	4 (4-0-8)
ICGC 204 Advanced Oral Communication	4 (4-0-8)
ICGC 206 Literature Into Film	4 (4-0-8)
ICGC 208 Language and Culture	4 (4-0-8)
ICGC 210 First and Second Language Acquisition	4 (4-0-8)
ICGC 211 Topics in Comparative Literature A: Poetry	4 (4-0-8)
ICGC 212 Topics in Comparative Literature B: The Short Story and the Novel	4 (4-0-8)
ICGC 213 Topics in Comparative Literature C: Drama	4 (4-0-8)
ICGC 214 Literary Non-fiction	4 (4-0-8)
ICGC 215 Writing for Research	4 (4-0-8)

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

- **'ERS Track'** – Students who are placed into 'ERS Track' will be required to take ICME 100 (a non-credit course) and complete 16 credits in English Communication: ICGC 101, ICGC 102, ICGC 103 in order, and finally, any 200+ level English courses.
- **'GC Track'** – Students who are placed into 'GC Track' will be required to complete 16 credits in English Communication: ICGC 101, ICGC 102, ICGC 103 in order, and finally, any 200+ level English courses.
- **'GC2 Track'** – Students who are placed into 'GC2 Track' will be required to complete 12 credits in English Communication: ICGC 102, ICGC 103 in order, and finally, any 200+ level English courses.

Note II: Students in 'ERS Track' and 'GC Track' must take ICGC 101, ICGC 102 and ICGC 103 without interruption beginning in their first trimester of enrollment.

Note III: Students in 'GC2 Track' must take ICGC 102 and ICGC 103 without interruption beginning in their first trimester of enrollment.

Life Appreciation

4 credits

ICGH 113 Moving Pictures: A History of Film	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 119 Listen! Soundscapes, Well-Being and Musical Soul Searching	4 (4-0-8)
ICGN 105 Ecology, Ecosystems and Socio-Economics in Southeast Asia	4 (3-2-7)
ICGN 108 Essentials of Culinary Science for Food Business	4 (3-2-7)
ICGN 109 Food for Health	4 (4-0-8)
ICGN 110 Maker Workshop	4 (3-2-7)
ICGN 112 Stargazer	4 (3-2-7)

ICGN 113 Plants, People and Poisons	4 (4-0-8)
ICGN 115 Human Evolution, Diversity and Health	4 (4-0-8)
ICGN 120 Chemistry of Cosmetics and Dietary Supplements	4 (4-0-8)
ICGN 124 Climate Change and Human Society	4 (3-2-7)
ICGN 125 Games and Learning	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 117 Physical Fitness Plan	2 (2-0-4)
ICGS 102 Business Sustainability and the Global Climate Change	4 (4-0-8)
ICGS 111 Exploring Religions	4 (4-0-8)
ICGS 115 Sociology in the Modern World	4 (4-0-8)
ICGS 125 American History, Popular Media and Modern Life	4 (4-0-8)
ICGS 126 Introduction to Psychology	4 (4-0-8)
ICGS 127 Positive Psychology	4 (4-0-8)
ICGS 128 Global Gastronomy and Cuisines	4 (4-0-8)
ICGS 129 Tea Studies	2 (2-0-4)
ICGS 141 Coffee studies	2 (2-0-4)
ICGS 142 Contemporary Spirituality and Marketing	1 (1-0-2)
ICLL 100 Self Development	2 (2-0-4)

***Please see additional courses on page 290.

Global Citizenship	4 credits
ICGH 116 World Cinemas	4 (4-0-8)
ICGH 120 Thai and ASEAN Cinema	4 (4-0-8)
ICGH 121 The End of the World? Development and Environment	4 (4-0-8)
ICGH 122 Introduction to Asian Philosophy	4 (4-0-8)
ICGH 123 Faiths, Ecological Justice, and the Tropical Rainforests	2 (2-0-4)
ICGH 127 Rome: An Empire's Rise and Fall	4 (4-0-8)
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 170 Diversities in Multilingual Societies	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 126 Plant Society	2 (2-0-4)
ICGS 106 Fashion and Society	4 (4-0-8)
ICGS 112 Geography of Human Activities	4 (4-0-8)
ICGS 123 Tourism Concepts and Practices	4 (4-0-8)
ICGS 130 Political Science	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 143 Introduction to Air Transport and Tourism	4 (4-0-8)

***Please see additional courses on page 290.

Critical Thinking

4 credits

ICGH 101 Biotechnology: from Science to Business	4 (4-0-8)
ICGH 102 Famous Arguments and Thought Experiments in Philosophy	4 (4-0-8)
ICGH 103 Logic, Analysis and Critical Thinking: Good and Bad Arguments	4 (4-0-8)
ICGH 105 Technology, Philosophy and Human Kind: Where Are We Now?!	4 (4-0-8)
ICGH 106 The Greeks: Crucible of Civilization	4 (4-0-8)
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 Languages and Its Application	4 (4-0-8)
ICGH 124 Life Drawing and Anatomy	4 (2-4-6)
ICGH 125 How Can We Know What Is Good? Moral Reasoning and Behavior	4 (4-0-8)
ICGH 126 Behavioral Ethics: Why Good People Do Bad Things	2 (2-0-4)
ICGN 107 The Chemistry of Everyday Life	4 (4-0-8)
ICGN 111 Physics for CEO	4 (4-0-8)
ICGN 123 The Earth's Dynamic Structure	4 (3-2-7)
ICGN 127 Practical Mathematics	2 (2-0-4)
ICGS 103 Economics in Modern Business	4 (4-0-8)
ICGS 105 Personal Financial Management	4 (4-0-8)
ICGS 113 Perspectives on the Thai Past	4 (4-0-8)
ICGS 134 Is Democracy Good?	4 (4-0-8)
ICGS 135 Entrepreneurial Accounting	4 (4-0-8)
ICGS 144 Price Discrimination: Why Do We Pay More Than Others?	1 (1-0-2)
<i>***Please see additional courses on page 290.</i>	

Leadership

4 credits

ICGN 114 The Scientific Approach and Society	4 (4-0-8)
ICGN 128 Climate Emergency, Biodiversity Crisis, and Humanity at Risk	2 (1-2-3)
ICGS 104 Essentials of Entrepreneurship	4 (4-0-8)
ICGS 118 Skills in Dealing with People Across Cultures	4 (4-0-8)
ICGS 121 Abnormal Colleagues: How Do I Make This Work?	4 (4-0-8)
ICGS 136 Social and Health Issues in Thailand	4 (3-2-7)
ICGS 137 Witchcraft and Gender Representation	4 (4-0-8)
ICGS 138 Business Event Essentials	4 (4-0-8)
ICGS 139 Leadership and Change for a Global Society	4 (4-0-8)
ICGS 145 Service-Learning – Management of Community Service Project	4 (2-4-6)
ICGS 146 Service-Learning – Salaya Community Service Learning Project	4 (2-4-6)
ICGS 147 Women in Leadership	4 (4-0-8)
ICGS 148 Service Learning - Digital Campaign for Gender Issues	4 (2-4-6)
ICGS 149 Service Learning - Making Change	4 (2-4-6)
ICGS 150 Service Learning - Campaigning for a Cause	4 (4-0-8)
ICGS 151 Service Learning - The Art of Leadership in Practice	4 (2-4-6)
ICGS 152 Fantasy Literature's Environmental Message	4 (4-0-8)
ICGS 154 Introduction to Crisis Management in Service Businesses	4 (4-0-8)
ICGS 155 Pathway to Purpose: Life Design and Self-Exploration	4 (4-0-8)
ICLL 101 Professional Development	2 (2-0-4)

****Please see additional courses on page 290.*

Digital Literacy

4 credits

ICGH 111 Media Literacy: Skills for 21st Century Learning	4 (4-0-8)
ICGH 128 Internet Celebrity, Culture and the Media	4 (4-0-8)
ICGN 116 Understanding and Visualizing Data	4 (3-2-7)
ICGN 118 Everyday Connectivity	4 (4-0-8)
ICGN 119 Computer Essentials	4 (4-0-8)
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 131 Digital Search Literacy	2 (2-0-4)
ICGN 132 Digital Security and Privacy	2 (2-0-4)
ICGN 133 E-Business: Technology and Digital Strategies	4 (4-0-8)
ICGN 134 Introduction to Artificial Intelligence	2 (2-0-4)
ICGS 140 Fake News, Censorship and the Politics of Truth	4 (4-0-8)

ICGS 153 Social Media Management for Service Sector	2 (2-0-4)
ICLL 102 Skills for a Digital World	2 (2-0-4)
<i>***Please see additional courses on page 290.</i>	

General Education Elective Courses

2-6 Credits

Students need to take any GE courses to fulfill their 38 credits requirement of General Education: **2 credits** for students whose English Communication track are placed into 'ERS track' or 'GC Track' and **6 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.

Core Business courses

no less than 73 Credits

ICMB 200 Business Mathematics	4 (4-0-8)
ICMB 201 Business Statistics	4 (4-0-8)
ICMB 205 Microeconomics	4 (4-0-8)
ICMB 206 Macroeconomics	4 (4-0-8)
ICMB 207 Management of Business Information	4 (4-0-8)
ICMB 213 Financial Accounting	4 (4-0-8)
ICMB 214 Managerial Accounting	4 (4-0-8)
ICMB 215 Business Finance for Entrepreneurs	4 (4-0-8)
ICMB 216 Business Communication	4 (4-0-8)
ICMB 222 Principles of Marketing	4 (4-0-8)
ICMB 235 Management and Organizational Behavior	4 (4-0-8)
ICMB 236 Human Resources Management	4 (4-0-8)
ICMB 237 International Business Management	4 (4-0-8)
ICMB 310 Business Law	4 (4-0-8)
ICMB 311 Business Ethics and Sustainability	4 (4-0-8)
ICMB 312 Management Science	4 (4-0-8)
ICMB 314 Operations and Project Management	4 (4-0-8)
ICMB 401 Business Innovation and Entrepreneurship	4 (4-0-8)
OR	
ICMB 402 Business Strategy	4 (4-0-8)
ICMB 490 Career Preparation	1 (1-0-2)

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

1. Passed ICGC 101 Academic Writing and Research I with at least "D" grade or being placed in the English course level higher than ICGC 101 Academic Writing and Research I.
2. Passed ICMA 100 Foundation Mathematics with "S" grade or the placement Test.

Note II: All BBA students are required to take either ICMB 401 Business Innovation and Entrepreneurship **OR** ICMB 402 Business Strategy.

Major Required courses**no less than 20 Credits**

ICBE 371 Strategic Choices of Consumers and Firms	4 (4-0-8)
ICBE 372 World Economy	4 (4-0-8)
ICBE 373 Econometrics and Data Analysis	4 (4-0-8)
ICBE 471 Markets Structures and Pricing Strategies	4 (4-0-8)
ICBE 472 Economic Policy Analysis	4 (4-0-8)

Major Elective courses**no less than 24 Credits**

ICBE 481 Game Theory for Business	4 (4-0-8)
ICBE 482 Economic Integration	4 (4-0-8)
ICBE 484 Data Analytics for Business Strategy	4 (4-0-8)
ICBE 486 Special Topics in Business Economics	4 (4-0-8)
ICMF 316 Financial Management	4 (4-0-8)
ICMK 353 Consumer Behavior and Decision Making	4 (4-0-8)
ICMB 496 Practical Business Training – On Campus	8 (2-32-10)
ICMB 497 Practical Business Training – Off Campus	8 (0-40-8)
ICMB 498 New Business Development Program	8 (2-12-10)

Note I: All BBA students are required to take either ICMB 496 Practical Business Training – On Campus or ICMB 497 Practical Business Training – Off Campus or ICMB 498 New Business Development Program in their last year of study as part of the Major Elective Courses. Students are not allowed to register for other courses in the trimester, which either one of the three courses is taken.

Note II: All BBA students can take ICMB 496 Practical Business Training – On Campus, ICMB 497 Practical Business Training – Off Campus, ICBM 401 Business Innovation and Entrepreneurship, and ICMB 402 Business Strategy in their fourth year of study.

Note III: All BBA students can take ICMB 490 Career Preparation and ICBE 486 Special Topics in Business Economics in their third year of study.

I-Design Elective Courses**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 and the Curriculum Administrative Committee.
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 and the Curriculum Administrative Committee.

Free Elective Courses

8 credits

Students can take any courses offered by MUIC and/or Mahidol University as free elective courses with the approval from the advisor. A course within the student's major that is too closely related or redundant to core/required/elective courses is discouraged and may be disapproved by an academic advisor.

Business Economics Minor courses no less than

20 Credits

- To minor in Business Economics, students need to complete the following five courses.

ICBE 371 Strategic Choices of Consumers and Firms	4 (4-0-8)
ICBE 372 World Economy	4 (4-0-8)
ICBE 373 Econometrics and Data Analysis	4 (4-0-8)
ICBE 471 Market Structures and Pricing Strategies	4 (4-0-8)
ICBE 472 Economic Policy Analysis	4 (4-0-8)

Business Administration Minor for non-BA students courses no less than 20 Credits

- To minor in Business Administration, students need to complete the following five courses

ICMB 205 Microeconomics	4 (4-0-8)
OR	
ICMB 206 Macroeconomics	4 (4-0-8)
ICMB 213 Financial Accounting	4 (4-0-8)
ICMB 222 Principles of Marketing	4 (4-0-8)
ICMB 235 Management and Organizational Behavior	4 (4-0-8)
OR	
ICMB 236 Human Resources Management	4 (4-0-8)
ICMB XXX Choose one core course from the remaining courses (except ICMB 490 Career Preparation)	4 (4-0-8)

Note I: Student should pass ICGC 102 Academic Writing and Research II or ICGC 112 Academic Writing and Research II (Advanced) with minimum of "D" AND pass ICMA 100 Foundation Mathematics.

Note II: Students can submit the course equivalency form regarding ICBA 200 Business Mathematics and/or ICMB 201 Business Statistics to BA Division Chair.

Note III: Students must submit the minor request form to BA Division Chair.

Note IV: Students must follow the pre-requisite of the courses taken.

CHEMISTRY PROGRAM

DEGREE OFFERED

Bachelor of Science (Chemistry) B.Sc. (Chemistry)

TRACKS

The chemistry program offers three tracks.

- The first track is a Dual-Degree Program with Flinders University, Australia in a 2+2 arrangement, in which the student will receive B.Sc. in Forensic and Analytical Science.
- The second track is a B.Sc. (Chemistry) + M.Sc (Pharmacology) degrees in 4+1 arrangement with Faculty of Graduate Studies & Faculty of Medicine Siriraj Hospital.
- The third track is a degree in chemistry. For high achievers the completion of their Chemistry degree courses is possible at the end of their Junior year. Their I-Design courses in their senior year can be used to create a personalized education, leading to another minor or certificates.

THE FIELD

“Imagine a world of possibilities when you know its molecular framework.”

Chemistry is one of the most versatile branches of science. Chemistry is sometimes called “the central science”, because it provides an important connection between physical sciences with life sciences and applied sciences. The applications of chemistry reach far into the fields of food, energy, environment, material, medicine, and nanotechnology.

The Chemistry Program at Mahidol University International College reflects and is built upon the changes that have occurred in the discipline over the last few decades. Chemistry majors are taught with full rigor the essential and key subjects such as analytical chemistry, biochemistry, inorganic chemistry, organic chemistry, physical chemistry and senior project in chemistry.

The elective courses in the Chemistry Program offer the Chemistry students the opportunity to shape their own track of preferred courses after completing the core and required chemistry courses.

CAREER OPPORTUNITIES

Graduates of the international bachelor chemistry program can find employment in the following roles:

- Quality control or quality assurance positions or as a research scientist in local and multinational chemical, petrochemical, pharmaceutical manufacturing and related industries.
- Research assistant in private sector and governmental services department.
- Customer relations and as technical-support in sales and marketing team for local and international chemical, petrochemical, pharmaceutical and related companies
- Entrepreneurship in applied chemical and related industries.

CURRICULUM STRUCTURE

Courses	Credits
General Education Courses	38
Core Courses	46
Required Courses	59
Elective Courses	1
I-Design Electives	20
Free Elective Courses	8
Total	172

Track selection process

Students in consultation with their academic advisor can nominate their track at any time during their study in the program. After three trimesters of study, the Program director of chemistry approves student's nominated track in consultation with the partners (Flinder University and Siriraj for the 2+2 and 4+1 tracks respectively). It is expected that high performing students (GPAX $\geq$ 3.50 for Flinders and GPAX $\geq$ 3.25 for Siriraj) will be able to choose any tracks of his/her choice. For other students, the default option is the main track. Students may need to pass additional interviews and/or demonstrate further evidence of their commitment towards 2+ 1 or 4+1 track to be approved.

Flinders 2+2 Track

Mahidol University International College	Trimester Credits	Flinders University	EFTSL
General Education	38	Required courses	1.75
Core Courses	46	Free elective courses	0.25
Required courses	17	Total	2 EFTSL = 92 Trimester Credits
Total	101		
<u>Core courses</u> ICBI 101 Biology ICBI 102 Integrated Laboratory in Biological Sciences I ICBI 103 Biology II ICCH 101 General Chemistry I ICCH 102 General Chemistry II ICCH 103 Integrated Laboratory in Chemistry ICMA 106 Calculus I ICMA 213 Calculus II ICPY 101 Physics I ICPY 102 Physics II ICPY 105 Integrated Laboratory in Physics I ICCH 309 Scientific Research and Presentations ICMA 151 Statistics for Science I <u>Required courses</u> ICCH 221 Organic Chemistry I ICCH 222 Organic Chemistry II ICCH 223 Organic Chemistry Laboratory ICCH 400 Seminar and Research Project in Chemistry	4(4-0-8) 2(0-4-2) 4(4-0-8) 4(4-0-8) 4(4-0-8) 2(0-4-2) 4(4-0-8) 4(4-0-8) 4(4-0-8) 4(4-0-8) 2(0-4-2) 4(4-0-8) 4(4-0-8) 4(4-0-8) 4(4-0-8) 2(0-4-2) 7(2-10-9)	According to TQF1 for any B.Sc.(Chemistry) degrees awarded in Thailand, the courses must be equivalent to the following: - General education courses and courses are completed at Mahidol. 8.75 trimester credits of Physical Chemistry (7.50 for lectures and 1.25 for practice) 8.75 trimester credits of Inorganic Chemistry (7.50 for lectures and 1.25 for practice) - Organic chemistry is completed at Mahidol. 8.75 trimester credits of Analytical Chemistry (7.50 for lectures and 1.25 for practice) 5.00 trimester credits of Biochemistry (3.75 for lectures and 1.25 for practice) 5.00 trimester credits of additional Chemistry and/or practice. - Seminar and project are completed at Mahidol. 7.50 trimester credits of free elective courses	
Courses in red (48 credits) are recommended to be - completed before student’s departure for Flinders.			

Siriraj 4+1 Track

The requirements are the same as the main track. Students are allowed to transferred their results from graduate courses at Siriraj or elsewhere into major elective and I-Design.

COURSE LIST

Foundation Courses

ICMA 100 Foundation Mathematics
ICME 100 English Resource Skills

Non-credit

0 (4-0-0)
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 100 Foundation Mathematics 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 101 Academic Writing and Research I will be placed into the "ERS Track". These students will be required to take ICME 100 English Resource Skills and pass the course with the grade of "S" before moving to ICGC 101 Academic Writing and Research I.

General Education Courses

38 credits

English Communication

12-16 credits

ICGC 101 Academic Writing and Research I

4 (4-0-8)

ICGC 102 Academic Writing and Research II

4 (4-0-8)

ICGC 103 Public Speaking

4 (4-0-8)

ICGC 201 Global Realities

4 (4-0-8)

ICGC 202 Literary Analysis

4 (4-0-8)

ICGC 203 Creative Writing

4 (4-0-8)

ICGC 204 Advanced Oral Communication

4 (4-0-8)

ICGC 206 Literature Into Film

4 (4-0-8)

ICGC 208 Language and Culture

4 (4-0-8)

ICGC 210 First and Second Language Acquisition

4 (4-0-8)

ICGC 211 Topics in Comparative Literature A: Poetry

4 (4-0-8)

ICGC 212 Topics in Comparative Literature B: The Short Story and the Novel

4 (4-0-8)

ICGC 213 Topics in Comparative Literature C: Drama

4 (4-0-8)

ICGC 214 Literary Non-fiction

4 (4-0-8)

ICGC 215 Writing for Research

4 (4-0-8)

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

- **'ERS Track'** – Students who are placed into 'ERS Track' will be required to take ICME 100 (a non-credit course) and complete 16 credits in English Communication: ICGC 101, ICGC 102, ICGC 103 in order, and finally, any 200+ level English courses.
- **'GC Track'** – Students who are placed into 'GC Track' will be required to complete 16 credits in English Communication: ICGC 101, ICGC 102, ICGC 103 in order, and finally, any 200+ level English courses.
- **'GC2 Track'** – Students who are placed into 'GC2 Track' will be required to complete 12 credits in English Communication: ICGC 102, ICGC 103 in order, and finally, any 200+ level English courses.

Note II: Students in 'ERS Track' and 'GC Track' must take ICGC 101, ICGC 102 and ICGC 103 without interruption beginning in their first trimester of enrollment.

Note III: Students in 'GC2 Track' must take ICGC 102 and ICGC 103 without interruption beginning in their first trimester of enrollment.

Life Appreciation

4 credits

ICGH 113 Moving Pictures: A History of Film	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 119 Listen! Soundscapes, Well-Being and Musical Soul Searching	4 (4-0-8)
ICGN 105 Ecology, Ecosystems and Socio-Economics in Southeast Asia	4 (3-2-7)
ICGN 108 Essentials of Culinary Science for Food Business	4 (3-2-7)
ICGN 109 Food for Health	4 (4-0-8)
ICGN 110 Maker Workshop	4 (3-2-7)
ICGN 112 Stargazer	4 (3-2-7)
ICGN 113 Plants, People and Poisons	4 (4-0-8)
ICGN 115 Human Evolution, Diversity and Health	4 (4-0-8)
ICGN 120 Chemistry of Cosmetics and Dietary Supplements	4 (4-0-8)
ICGN 124 Climate Change and Human Society	4 (3-2-7)
ICGN 125 Games and Learning	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 117 Physical Fitness Plan	2 (2-0-4)
ICGS 102 Business Sustainability and the Global Climate Change	4 (4-0-8)
ICGS 111 Exploring Religions	4 (4-0-8)
ICGS 115 Sociology in the Modern World	4 (4-0-8)
ICGS 125 American History, Popular Media and Modern Life	4 (4-0-8)
ICGS 126 Introduction to Psychology	4 (4-0-8)
ICGS 127 Positive Psychology	4 (4-0-8)
ICGS 128 Global Gastronomy and Cuisines	4 (4-0-8)
ICGS 129 Tea Studies	2 (2-0-4)
ICGS 141 Coffee studies	2 (2-0-4)
ICGS 142 Contemporary Spirituality and Marketing	1 (1-0-2)

ICLL 100 Self Development	2 (2-0-4)
<i>***Please see additional courses on page 290.</i>	
Global Citizenship	4 credits
ICGH 116 World Cinemas	4 (4-0-8)
ICGH 120 Thai and ASEAN Cinema	4 (4-0-8)
ICGH 121 The End of the World? Development and Environment	4 (4-0-8)
ICGH 122 Introduction to Asian Philosophy	4 (4-0-8)
ICGH 123 Faiths, Ecological Justice, and the Tropical Rainforests	2 (2-0-4)
ICGH 127 Rome: An Empire's Rise and Fall	4 (4-0-8)
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 170 Diversities in Multilingual Societies	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 126 Plant Society	2 (2-0-4)
ICGS 106 Fashion and Society	4 (4-0-8)
ICGS 112 Geography of Human Activities	4 (4-0-8)
ICGS 123 Tourism Concepts and Practices	4 (4-0-8)

ICGS 130 Political Science	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 143 Introduction to Air Transport and Tourism	4 (4-0-8)

***Please see additional courses on page 290.

Critical Thinking

4 credits

ICGH 101 Biotechnology: from Science to Business	4 (4-0-8)
ICGH 102 Famous Arguments and Thought Experiments in Philosophy	4 (4-0-8)
ICGH 103 Logic, Analysis and Critical Thinking: Good and Bad Arguments	4 (4-0-8)
ICGH 105 Technology, Philosophy and Human Kind: Where Are We Now?!	4 (4-0-8)
ICGH 106 The Greeks: Crucible of Civilization	4 (4-0-8)
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 Languages and Its Application	4 (4-0-8)
ICGH 124 Life Drawing and Anatomy	4 (2-4-6)
ICGH 125 How Can We Know What Is Good? Moral Reasoning and Behavior	4 (4-0-8)
ICGH 126 Behavioral Ethics: Why Good People Do Bad Things	2 (2-0-4)
ICGN 107 The Chemistry of Everyday Life	4 (4-0-8)
ICGN 111 Physics for CEO	4 (4-0-8)
ICGN 123 The Earth's Dynamic Structure	4 (3-2-7)
ICGN 127 Practical Mathematics	2 (2-0-4)
ICGS 103 Economics in Modern Business	4 (4-0-8)
ICGS 105 Personal Financial Management	4 (4-0-8)
ICGS 113 Perspectives on the Thai Past	4 (4-0-8)
ICGS 134 Is Democracy Good?	4 (4-0-8)
ICGS 135 Entrepreneurial Accounting	4 (4-0-8)
ICGS 144 Price Discrimination: Why Do We Pay More Than Others?	1 (1-0-2)

***Please see additional courses on page 290.

Leadership

4 credits

ICGN 114 The Scientific Approach and Society	4 (4-0-8)
ICGN 128 Climate Emergency, Biodiversity Crisis, and Humanity at Risk	2 (1-2-3)
ICGS 104 Essentials of Entrepreneurship	4 (4-0-8)
ICGS 118 Skills in Dealing with People Across Cultures	4 (4-0-8)
ICGS 121 Abnormal Colleagues: How Do I Make This Work?	4 (4-0-8)
ICGS 136 Social and Health Issues in Thailand	4 (3-2-7)
ICGS 137 Witchcraft and Gender Representation	4 (4-0-8)
ICGS 138 Business Event Essentials	4 (4-0-8)
ICGS 139 Leadership and Change for a Global Society	4 (4-0-8)
ICGS 145 Service-Learning – Management of Community Service Project	4 (2-4-6)
ICGS 146 Service-Learning – Salaya Community Service Learning Project	4 (2-4-6)
ICGS 147 Women in Leadership	4 (4-0-8)
ICGS 148 Service Learning - Digital Campaign for Gender Issues	4 (2-4-6)
ICGS 149 Service Learning - Making Change	4 (2-4-6)
ICGS 150 Service Learning - Campaigning for a Cause	4 (4-0-8)
ICGS 151 Service Learning - The Art of Leadership in Practice	4 (2-4-6)
ICGS 152 Fantasy Literature's Environmental Message	4 (4-0-8)

ICGS 154 Introduction to Crisis Management in Service Businesses	4 (4-0-8)
ICGS 155 Pathway to Purpose: Life Design and Self-Exploration	4 (4-0-8)
ICLL 101 Professional Development	2 (2-0-4)
<i>***Please see additional courses on page 290.</i>	

Digital Literacy

4 credits

ICGH 111 Media Literacy: Skills for 21st Century Learning	4 (4-0-8)
ICGH 128 Internet Celebrity, Culture and the Media	4 (4-0-8)
ICGN 116 Understanding and Visualizing Data	4 (3-2-7)
ICGN 118 Everyday Connectivity	4 (4-0-8)
ICGN 119 Computer Essentials	4 (4-0-8)
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 131 Digital Search Literacy	2 (2-0-4)
ICGN 132 Digital Security and Privacy	2 (2-0-4)
ICGN 133 E-Business: Technology and Digital Strategies	4 (4-0-8)
ICGN 134 Introduction to Artificial Intelligence	2 (2-0-4)
ICGS 140 Fake News, Censorship and the Politics of Truth	4 (4-0-8)
ICGS 153 Social Media Management for Service Sector	2 (2-0-4)
ICLL 102 Skills for a Digital World	2 (2-0-4)
<i>***Please see additional courses on page 290.</i>	

General Education Elective Courses

2-6 Credits

Students need to take any GE courses to fulfill their 38 credits requirement of General Education: **2 credits** for students whose English Communication track are placed into 'ERS track' or 'GC Track' and **6 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.

Chemistry Major Courses

106 Credits

Chemistry Core Courses

46 Credits

ICBI 101 Biology	4 (4-0-8)
ICBI 102 Integrated Laboratory in Biological Sciences I	2 (0-4-2)
ICBI 103 Biology II	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)
ICCH 309 Scientific Research and Presentations	4 (4-0-8)
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)
ICMA 151 Statistics for Science I	4 (4-0-8)

*** Chemistry students can take any course offered by Mahidol University International College as a general education with subject to approval from an advisor. Generally, a course that is too closely related or redundant to core science and/or chemistry required/elective courses is discouraged and may be disapproved by an academic advisor. ***

Chemistry Required Courses

ICCH 200 Analytical Chemistry A	4 (3-2-7)
ICCH 201 Analytical Chemistry B	4 (3-2-7)
ICCH 202 Organic Spectroscopy	4 (4-0-8)
ICCH 203 Inorganic Chemistry A	4 (4-0-8)
ICCH 204 Inorganic Chemistry B	4 (4-0-8)
ICCH 205 Inorganic Chemistry Laboratory	2 (0-4-2)
ICCH 206 Physical Chemistry A	4 (4-0-8)
ICCH 207 Physical Chemistry B	4 (4-0-8)
ICCH 208 Physical Chemistry Laboratory	2 (0-4-2)
ICCH 209 Polymer Science and Technology	2 (2-0-4)
ICCH 221 Organic Chemistry I	4 (4-0-8)
ICCH 222 Organic Chemistry II	4 (4-0-8)
ICCH 223 Organic Chemistry Laboratory	2 (0-4-2)
ICCH 225 Biochemistry	4 (4-0-8)
ICCH 226 Biochemistry Laboratory	2 (0-4-2)
ICCH 400 Seminar and Research Project in Chemistry	7 (2-10-9)
ICCH 401 Chemical Unknown Detective	2 (0-4-2)

59 credits**Major Elective Courses**

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 (0-4-2)
ICCH 346 Special Topics in Chemistry B	2 (0-4-2)
ICCH 347 Special Topics in Chemistry C	2 (0-4-2)
ICCH 348 Special Topics in Chemistry D	2 (0-4-2)
ICCH 349 Special Topics in Chemistry E	2 (0-4-2)
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 405 Internship A	4 (0-12-4)
ICCH 406 Internship B	2 (0-6-2)

1 Credit

Elective major courses are made to reflect contemporary topics in the discipline which cannot be planned in advance. These courses include pure, applied and multidisciplinary chemistry topic such as cosmetic, environmental, medicinal, theoretical, mathematical chemistry. These are also used for credit equivalency of courses transferred from other institutions and graduate programs. (See 4+1 arrangement with Siriraj hospital.)

I-Design Elective Courses

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 and the Curriculum Administrative Committee.
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 and the Curriculum Administrative Committee.

Free Elective Courses

8 credits

Students can take any courses offered by MUIC and/or Mahidol University as free elective courses with the approval from the advisor. A course within the student's major that is too closely related or redundant to core/required/elective courses is discouraged and may be disapproved by an academic advisor.

Double Major

- **Double Major in other area for chemistry students**
Students may choose to take a second major offered by other programs in MUIC. In order to obtain another major, students are required to complete all requirements as specifies by each major.
- **Double Major in Chemistry for non-chemistry students Chemistry Major courses**
To major in Chemistry, students must complete ALL core and required courses in chemistry.

Minor in Chemistry for non-chemistry students

Chemistry Minor courses

- To minor in Chemistry, students need to complete at least 20 credits chemistry courses in additional to their existing requirement(s) for their respective major(s), minor(s) or certificate(s).

The following courses are **compulsory** for all chemistry minor students

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)

Provided that prerequisites are fulfilled, the following courses are recommended for chemistry minor students

ICCH 200 Analytical Chemistry A	4 (3-2-7)
ICCH 201 Analytical Chemistry B	4 (3-2-7)
ICCH 202 Organic Spectroscopy	4 (4-0-8)
ICCH 203 Inorganic Chemistry A	4 (4-0-8)
ICCH 204 Inorganic Chemistry B	4 (4-0-8)
ICCH 205 Inorganic Chemistry Laboratory	2 (0-4-2)
ICCH 206 Physical Chemistry A	4 (4-0-8)
ICCH 207 Physical Chemistry B	4 (4-0-8)
ICCH 208 Physical Chemistry Laboratory	2 (0-4-2)
ICCH 209 Polymer Science and Technology	2 (2-0-4)
ICCH 221 Organic Chemistry I	4 (4-0-8)
ICCH 222 Organic Chemistry II	4 (4-0-8)
ICCH 223 Organic Chemistry Laboratory	2 (0-4-2)
ICCH 225 Biochemistry	4 (4-0-8)
ICCH 226 Biochemistry Laboratory	2 (0-4-2)
ICCH 401 Chemical Unknown Detective	2 (0-4-2)
ICCH 340 Current Topics in Chemistry A	4 (4-0-8)
ICCH 345 Special Topics in Chemistry A	2 (2-0-4)
ICCH 350 Contemporary Topics in Chemistry A	1 (1-0-2)
ICCH 355 Special Practice in Chemistry A	1 (0-2-1)
ICCH 402 Undergraduate thesis	6 (0-12-6)
ICCH 403 Field study A	1 (0-3-1)

or other ICCH courses approved by the PD on a case-by-case basis. ICCH 190, ICCH 191 and other general education chemistry courses (ICGN xxx) cannot be counted towards a minor in chemistry.

Certificate

- **Chemistry**

*Level: Beginner

12 credits

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)

Any chemistry ICCH 2xx/3xx/4xx courses

Note:

- I. Students need to make sure they first pass prerequisites to the courses
- II. Please check the criteria and requirement before applying for the certificate

COMMUNICATION DESIGN PROGRAM

DEGREE OFFERED

Bachelor of Fine Arts (Communication Design)

B.F.A. (Communication Design)

THE FIELD

The Communication Design Program (CDP) at Mahidol University International College employs a project- based studio learning approach that emphasizes the design process, including research, ideation, revision, and criticism. The curriculum is designed to promote creative thinking, problem solving, and innovation that reflect 21st century challenges. The Program aims to produce professionals in communication design who function effectively in diverse contemporary contexts. Graduates embrace the core values of the University, applying their design skills for positive social purposes.

CDP is a program that combines a strong general education, acquisition of theoretical knowledge and intensive creative practice in an international environment. Class sizes are small and instructors work closely with students to help ensure favorable outcomes.

The coursework stresses hand-on experience, practical and constructive application of critical thinking skills, and effective communication of innovative ideas with various areas of study including typography, brand identity design and system, advertising, information graphics, environmental graphics, publication, package design, online communication and culture in digital media design, and illustration.

CAREER OPPORTUNITIES

Communication Design graduates will have developed a professional portfolio in preparation for various career opportunities, such as in advertising agencies, publishing companies, graphic design firms, interactive and multimedia production houses, information graphic design-based agencies, environmental graphic design-based firms, and in-house art and design divisions.

Career Opportunities after Graduation can be listed below:

1. Branding and Advertising:

- 1.1) Brand and Corporate Identity Designer
- 1.2) Brand Communication Manager
- 1.3) Creative
- 1.4) Art Director

2. Graphic Design:

- 2.1) Graphic Designer
- 2.2) Illustrator
- 2.3) Infographics Designer
- 2.4) Type Designer
- 2.5) Packaging Designer
- 2.6) Environmental Graphics Designer

3. Online and digital Communications:

- 3.1) Web and Motion Graphic Designer
- 3.2) Online Communication Media Designer
- 3.3) Multimedia / Interactive Designer
- 3.4) User Interface and User Experience Designer

CURRICULUM STRUCTURE

Course	Credits
General Education Courses	38
Major Required Courses	104
Major Elective Courses	4
I-Design Electives	20
Free Elective	8
Total	174

COURSE LIST

Foundation Courses

ICMA 100 Foundation Mathematics
ICME 100 English Resource Skills

Non-credit

0 (4-0-0)
0 (4-0-0)

Note I: Based on their achievement on the essay portion of the MUIC entrance exam, students whose English placement is below ICGC 101 Academic Writing and Research I will be placed into the “ERS Track”. These students will be required to take ICME 100 English Resource Skills and pass the course with the grade of “S” before moving to ICGC 101 Academic Writing and Research I.

General Education Courses

38 credits

English Communication

12-16 credits

ICGC 101 Academic Writing and Research I
ICGC 102 Academic Writing and Research II
ICGC 103 Public Speaking
ICGC 201 Global Realities
ICGC 202 Literary Analysis
ICGC 203 Creative Writing
ICGC 204 Advanced Oral Communication
ICGC 206 Literature Into Film
ICGC 208 Language and Culture
ICGC 210 First and Second Language Acquisition
ICGC 211 Topics in Comparative Literature A: Poetry
ICGC 212 Topics in Comparative Literature B: The Short Story and the Novel
ICGC 213 Topics in Comparative Literature C: Drama
ICGC 214 Literary Non-fiction
ICGC 215 Writing for Research

4 (4-0-8)
4 (4-0-8)
4 (4-0-8)
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4 (4-0-8)

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

- **‘ERS Track’** – Students who are placed into ‘ERS Track’ will be required to take ICME 100 (a non-credit course) and complete 16 credits in English Communication: ICGC 101, ICGC 102, ICGC 103 in order, and finally, any 200+ level English courses.
- **‘GC Track’** – Students who are placed into ‘GC Track’ will be required to complete 16 credits in English Communication: ICGC 101, ICGC 102, ICGC 103 in order, and finally, any 200+ level English courses.
- **‘GC2 Track’** – Students who are placed into ‘GC2 Track’ will be required to complete 12 credits in English Communication: ICGC 102, ICGC 103 in order, and finally, any 200+ level English courses.

Note II: Students in ‘ERS Track’ and ‘GC Track’ must take ICGC 101, ICGC 102 and ICGC 103 without interruption beginning in their first trimester of enrollment.

Note III: Students in ‘GC2 Track’ must take ICGC 102 and ICGC 103 without interruption beginning in their first trimester of enrollment.

Life Appreciation

4 credits

ICGH 113 Moving Pictures: A History of Film	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 119 Listen! Soundscapes, Well-Being and Musical Soul Searching	4 (4-0-8)
ICGN 105 Ecology, Ecosystems and Socio-Economics in Southeast Asia	4 (3-2-7)
ICGN 108 Essentials of Culinary Science for Food Business	4 (3-2-7)
ICGN 109 Food for Health	4 (4-0-8)
ICGN 110 Maker Workshop	4 (3-2-7)
ICGN 112 Stargazer	4 (3-2-7)
ICGN 113 Plants, People and Poisons	4 (4-0-8)
ICGN 115 Human Evolution, Diversity and Health	4 (4-0-8)
ICGN 120 Chemistry of Cosmetics and Dietary Supplements	4 (4-0-8)
ICGN 124 Climate Change and Human Society	4 (3-2-7)
ICGN 125 Games and Learning	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 117 Physical Fitness Plan	2 (2-0-4)
ICGS 102 Business Sustainability and the Global Climate Change	4 (4-0-8)

ICGS 111 Exploring Religions	4 (4-0-8)
ICGS 115 Sociology in the Modern World	4 (4-0-8)
ICGS 125 American History, Popular Media and Modern Life	4 (4-0-8)
ICGS 126 Introduction to Psychology	4 (4-0-8)
ICGS 127 Positive Psychology	4 (4-0-8)
ICGS 128 Global Gastronomy and Cuisines	4 (4-0-8)
ICGS 129 Tea Studies	2 (2-0-4)
ICGS 141 Coffee studies	2 (2-0-4)
ICGS 142 Contemporary Spirituality and Marketing	1 (1-0-2)
ICLL 100 Self Development	2 (2-0-4)

***Please see additional courses on page 290.

Global Citizenship

4 credits

ICGH 116 World Cinemas	4 (4-0-8)
ICGH 120 Thai and ASEAN Cinema	4 (4-0-8)
ICGH 121 The End of the World? Development and Environment	4 (4-0-8)
ICGH 122 Introduction to Asian Philosophy	4 (4-0-8)
ICGH 123 Faiths, Ecological Justice, and the Tropical Rainforests	2 (2-0-4)
ICGH 127 Rome: An Empire's Rise and Fall	4 (4-0-8)
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 170 Diversities in Multilingual Societies	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 126 Plant Society	2 (2-0-4)
ICGS 106 Fashion and Society	4 (4-0-8)
ICGS 112 Geography of Human Activities	4 (4-0-8)
ICGS 123 Tourism Concepts and Practices	4 (4-0-8)
ICGS 130 Political Science	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 143 Introduction to Air Transport and Tourism	4 (4-0-8)

***Please see additional courses on page 290.

Critical Thinking

4 credits

ICGH 101 Biotechnology: from Science to Business	4 (4-0-8)
ICGH 102 Famous Arguments and Thought Experiments in Philosophy	4 (4-0-8)
ICGH 103 Logic, Analysis and Critical Thinking: Good and Bad Arguments	4 (4-0-8)
ICGH 105 Technology, Philosophy and Human Kind: Where Are We Now?!	4 (4-0-8)
ICGH 106 The Greeks: Crucible of Civilization	4 (4-0-8)
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 Languages and Its Application	4 (4-0-8)
ICGH 124 Life Drawing and Anatomy	4 (2-4-6)
ICGH 125 How Can We Know What Is Good? Moral Reasoning and Behavior	4 (4-0-8)
ICGH 126 Behavioral Ethics: Why Good People Do Bad Things	2 (2-0-4)
ICGN 107 The Chemistry of Everyday Life	4 (4-0-8)
ICGN 111 Physics for CEO	4 (4-0-8)
ICGN 123 The Earth's Dynamic Structure	4 (3-2-7)
ICGN 127 Practical Mathematics	2 (2-0-4)
ICGS 103 Economics in Modern Business	4 (4-0-8)
ICGS 105 Personal Financial Management	4 (4-0-8)
ICGS 113 Perspectives on the Thai Past	4 (4-0-8)
ICGS 134 Is Democracy Good?	4 (4-0-8)
ICGS 135 Entrepreneurial Accounting	4 (4-0-8)
ICGS 144 Price Discrimination: Why Do We Pay More Than Others?	1 (1-0-2)

***Please see additional courses on page 290.

Leadership

4 credits

ICGN 114 The Scientific Approach and Society	4 (4-0-8)
ICGN 128 Climate Emergency, Biodiversity Crisis, and Humanity at Risk	2 (1-2-3)
ICGS 104 Essentials of Entrepreneurship	4 (4-0-8)
ICGS 118 Skills in Dealing with People Across Cultures	4 (4-0-8)
ICGS 121 Abnormal Colleagues: How Do I Make This Work?	4 (4-0-8)
ICGS 136 Social and Health Issues in Thailand	4 (3-2-7)
ICGS 137 Witchcraft and Gender Representation	4 (4-0-8)
ICGS 138 Business Event Essentials	4 (4-0-8)

ICGS 139 Leadership and Change for a Global Society	4 (4-0-8)
ICGS 145 Service-Learning – Management of Community Service Project	4 (2-4-6)
ICGS 146 Service-Learning – Salaya Community Service Learning Project	4 (2-4-6)
ICGS 147 Women in Leadership	4 (4-0-8)
ICGS 148 Service Learning - Digital Campaign for Gender Issues	4 (2-4-6)
ICGS 149 Service Learning - Making Change	4 (2-4-6)
ICGS 150 Service Learning - Campaigning for a Cause	4 (4-0-8)
ICGS 151 Service Learning - The Art of Leadership in Practice	4 (2-4-6)
ICGS 152 Fantasy Literature's Environmental Message	4 (4-0-8)
ICGS 154 Introduction to Crisis Management in Service Businesses	4 (4-0-8)
ICGS 155 Pathway to Purpose: Life Design and Self-Exploration	4 (4-0-8)
ICLL 101 Professional Development	2 (2-0-4)

***Please see additional courses on page 290.

Digital Literacy

4 credits

ICGH 111 Media Literacy: Skills for 21st Century Learning	4 (4-0-8)
ICGH 128 Internet Celebrity, Culture and the Media	4 (4-0-8)
ICGN 116 Understanding and Visualizing Data	4 (3-2-7)
ICGN 118 Everyday Connectivity	4 (4-0-8)
ICGN 119 Computer Essentials	4 (4-0-8)
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 131 Digital Search Literacy	2 (2-0-4)
ICGN 132 Digital Security and Privacy	2 (2-0-4)
ICGN 133 E-Business: Technology and Digital Strategies	4 (4-0-8)
ICGN 134 Introduction to Artificial Intelligence	2 (2-0-4)
ICGS 140 Fake News, Censorship and the Politics of Truth	4 (4-0-8)
ICGS 153 Social Media Management for Service Sector	2 (2-0-4)
ICLL 102 Skills for a Digital World	2 (2-0-4)

***Please see additional courses on page 290.

General Education Elective Courses

2-6 Credits

Students need to take any GE courses to fulfill their 38 credits requirement of General Education: **2 credits** for students whose English Communication track are placed into 'ERS track' or 'GC Track' and **6 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.

Special Education Courses

no less than 108 Credits

Foundation Courses

Non-credit

ICCD 100 CD Seminar	0 (4-0-0)
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Note: All CDP students must take ICCD 100 CD Seminar, a non-credit course.

Major Required Courses

104 credits

ICCD 103 Research Studio	4 (2-4-6)
ICCD 112 Drawing Studio	4 (2-4-6)
ICCD 119 2D Design Principles	4 (2-4-6)
ICCD 121 Color for Design	4 (2-4-6)
ICCD 130 3D Design Principles	4 (2-4-6)
ICCD 140 Digital Images and Processes	4 (2-4-6)

ICCD 150 Art History	4 (4-0-8)
ICCD 210 Communication Design Studio	4 (2-4-6)
ICCD 219 Typography	4 (2-4-6)
ICCD 221 Print Production	4 (2-4-6)
ICCD 222 Traditional Techniques Studio	4 (2-4-6)
ICCD 236 Online Culture Communication and Application	4 (4-0-8)
ICCD 250 Graphic Design History	4 (4-0-8)
ICCD 290 Typeface Design	4 (2-4-6)
ICCD 320 Environmental Graphics	4 (2-4-6)
ICCD 321 Infographics	4 (2-4-6)
ICCD 322 Integrated Branding	4 (2-4-6)
ICCD 326 Communication Design Practicum	4 (2-4-6)
ICCD 342 New Media Design	4 (2-4-6)
ICCD 353 Advertising Campaign Design	4 (2-4-6)
ICCD 400 Thesis Research and Development	4 (4-0-8)
ICCD 401 Thesis Writing Seminar	4 (4-0-8)
ICCD 410 Thesis Design	4 (2-4-6)
ICCD 411 Thesis Production	4 (2-4-6)
ICCD 420 Portfolio Development	4 (4-0-8)
ICCD 421 Exhibition and Planning	4 (2-4-6)

Major Electives Courses

4 credits

ICCD 201 Conceptual Development	4 (2-4-6)
ICCD 202 Professional Ethics	4 (4-0-8)
ICCD 223 Current Issues in Design	4 (4-0-8)
ICCD 232 Moving Images by Design	4 (2-4-6)
ICCD 233 Storytelling by Design	4 (2-4-6)
ICCD 280 Study Trips: Regional	2 (0-4-2)
ICCD 281 Study Trips: International	2 (0-4-2)
ICCD 300 Internship	4 (4-0-8)
ICCD 324 Package Design	4 (2-4-6)
ICCD 325 Illustration	4 (2-4-6)
ICCD 334 Animation Principles and Production	4 (2-4-6)
ICCD 335 Character and Concept Design	4 (2-4-6)
ICCD 336 Cinematic Language and Its Application	4 (4-0-8)
ICCD 337 Thai and ASEAN Cinema	4 (4-0-8)
ICCD 346 International Design Language and Culture	4 (4-0-8)
ICCD 351 Online Communication Execution Planning	4 (2-4-6)

I-Design Elective Courses

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 and the Curriculum Administrative Committee.
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 and the Curriculum Administrative Committee.

Free Elective Courses

8 credits

Students can take any courses offered by MUIC and/or Mahidol University as free elective courses with the approval from the advisor. A course within the student's major that is too closely related or redundant to core/required/elective courses is discouraged and may be disapproved by an academic advisor.

Minor Courses

20 credits

Minor in Creative Animation

- To minor in Creative Animation, students need to complete the following 5 courses.

ICFA 232 Moving Images by Design	4 (2-4-6)
ICFA 233 Storytelling by Design	4 (4-0-8)
ICFA 334 Animation Principles and Production	4 (2-4-6)
ICFA 335 Character and Concept Design	4 (2-4-6)
ICFA 336 Cinematic Language and Its Application	4 (4-0-8)

Minor in Film Arts

- To minor in Film Arts, students need to complete the following 5 courses.

ICFA 233 Storytelling by Design	4 (4-0-8)
ICFA 336 Cinematic Language and Its Application	4 (4-0-8)
ICFA 337 Thai and ASEAN Cinema	4 (4-0-8)
ICFA 338 Short Film Production	4 (2-4-6)
ICFA 339 Film Genre and Gender	4 (4-0-8)

Certificate

• 2D Animation *Level: Intermediate	12 credits
ICCD 335 Character and Concept Design	4 (2-4-6)
ICCD 334 Animation Principle and Production	4 (2-4-6)
ICCD 232 Moving Image by Design	4 (2-4-6)
• Creative Illustration *Level: Advanced	12 credits
ICCD 222 Traditional Technique Studio	4 (2-4-6)
ICCD 325 Illustration	4 (2-4-6)
ICCD 342 New Media Design	4 (2-4-6)
• Integrated Advertising Design *Level: Advanced	12 credits
ICCD 353 Advertising Campaign Design	4 (2-4-6)
ICCD 351 Online Communication Execution Planning	4 (2-4-6)
ICCD 223 Current Issue in Design	4 (4-0-8)
• International Design Experience *Level: Advanced	12 credits
ICCD 346 International Design Language	4 (4-0-8)
ICCD 280 Study Trips: Regional	2 (0-4-2)
OR	
ICCD 281 Study Trips: International	2 (0-4-2)
Partner Institution Course	
• UI in Practice *Level: Advanced	12 credits
ICCD 342 New Media Design	4 (2-4-6)
ICCD 321 Infographics	4 (2-4-6)
ICCD 236 Online Culture Communication and Application	4 (2-4-6)

Note:

- I. Students need to make sure they first pass prerequisites to the courses
- II. Please check the criteria and requirement before applying for the certificate

Students need to make sure they first pass prerequisites to the courses Please check the criteria and requirement before applying for the certificate

COMPUTER ENGINEERING PROGRAM

DEGREE OFFERED

Bachelor of Engineering (Computer Engineering) B.Eng. (Computer Engineering)

THE FIELD

Computer Engineering is defined as the discipline that embodies the science and technology of design, construction, implementation and maintenance of software and hardware components of modern computing systems and computer-controlled equipment. Computer engineering has traditionally been viewed as a combination of both computer science and electrical engineering. It has evolved over the past three decades as a separate, although intimately related, discipline. Computer engineering is solidly grounded in the theories and principles of computing, mathematics, science and engineering; it applies these theories and principles to solve technical problems through the design of computing hardware, software, networks and processes.

Technological advances and innovation continue to drive computer engineering. There is now a convergence of several established technologies (such as television, computer and networking technologies) resulting in widespread and ready access to information on an enormous scale. This has created many opportunities and challenges for computer engineers. This convergence of technologies and the associated innovation lie at the heart of economic development and the future of many organizations. The situation bodes well for a successful career in computer engineering.

CAREER OPPORTUNITIES

Increasingly, computer engineers are involved in the design of computer-based systems to address highly specialized and specific application needs. Computer engineers work in most industries, including the computer, aerospace, telecommunications, power production, manufacturing, defense and electronics industries. They design high-tech devices ranging from tiny microelectronic integrated-circuit chips to powerful systems that utilize those chips and efficient telecommunication systems that interconnect those systems. A wide array of complex technological systems, such as power generation and distribution systems and modern processing and manufacturing plants, rely on computer systems developed and designed by computer engineers.

CURRICULUM STRUCTURE

Courses	Credits
General Education Course	38
Core Courses	38
Major Required Courses	58
Major Elective Courses	8
I-Design Elective Courses	20
Free Elective Courses	8
Total	170

COURSE LIST

Foundation Courses

ICMA 100 Foundation Mathematics
ICME 100 English Resource Skills

Non-credit

0 (4-0-0)
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 100 Foundation Mathematics 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 101 Academic Writing and Research I will be placed into the "ERS Track". These students will be required to take ICME 100 English Resource Skills and pass the course with the grade of "S" before moving to ICGC 101 Academic Writing and Research I.

General Education Courses

38 credits

English Communication

12-16 credits

ICGC 101 Academic Writing and Research I	4 (4-0-8)
ICGC 102 Academic Writing and Research II	4 (4-0-8)
ICGC 103 Public Speaking	4 (4-0-8)
ICGC 201 Global Realities	4 (4-0-8)
ICGC 202 Literary Analysis	4 (4-0-8)
ICGC 203 Creative Writing	4 (4-0-8)
ICGC 204 Advanced Oral Communication	4 (4-0-8)
ICGC 206 Literature Into Film	4 (4-0-8)
ICGC 208 Language and Culture	4 (4-0-8)
ICGC 210 First and Second Language Acquisition	4 (4-0-8)
ICGC 211 Topics in Comparative Literature A: Poetry	4 (4-0-8)
ICGC 212 Topics in Comparative Literature B: The Short Story and the Novel	4 (4-0-8)
ICGC 213 Topics in Comparative Literature C: Drama	4 (4-0-8)
ICGC 214 Literary Non-fiction	4 (4-0-8)
ICGC 215 Writing for Research	4 (4-0-8)

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

- **'ERS Track'** – Students who are placed into 'ERS Track' will be required to take ICME 100 (a non-credit course) and complete 16 credits in English Communication: ICGC 101, ICGC 102, ICGC 103 in order, and finally, any 200+ level English courses.
- **'GC Track'** – Students who are placed into 'GC Track' will be required to complete 16 credits in English Communication: ICGC 101, ICGC 102, ICGC 103 in order, and finally, any 200+ level English courses.
- **'GC2 Track'** – Students who are placed into 'GC2 Track' will be required to complete 12 credits in English Communication: ICGC 102, ICGC 103 in order, and finally, any 200+ level English courses.

Note II: Students in 'ERS Track' and 'GC Track' must take ICGC 101, ICGC 102 and ICGC 103 without interruption beginning in their first trimester of enrollment.

Note III: Students in 'GC2 Track' must take ICGC 102 and ICGC 103 without interruption beginning in their first trimester of enrollment.

Life Appreciation	4 credits
ICGH 113 Moving Pictures: A History of Film	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 119 Listen! Soundscapes, Well-Being and Musical Soul Searching	4 (4-0-8)
ICGN 105 Ecology, Ecosystems and Socio-Economics in Southeast Asia	4 (3-2-7)
ICGN 108 Essentials of Culinary Science for Food Business	4 (3-2-7)
ICGN 109 Food for Health	4 (4-0-8)
ICGN 110 Maker Workshop	4 (3-2-7)
ICGN 112 Stargazer	4 (3-2-7)
ICGN 113 Plants, People and Poisons	4 (4-0-8)
ICGN 115 Human Evolution, Diversity and Health	4 (4-0-8)
ICGN 120 Chemistry of Cosmetics and Dietary Supplements	4 (4-0-8)
ICGN 124 Climate Change and Human Society	4 (3-2-7)
ICGN 125 Games and Learning	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 117 Physical Fitness Plan	2 (2-0-4)
ICGS 102 Business Sustainability and the Global Climate Change	4 (4-0-8)
ICGS 111 Exploring Religions	4 (4-0-8)
ICGS 115 Sociology in the Modern World	4 (4-0-8)
ICGS 125 American History, Popular Media and Modern Life	4 (4-0-8)
ICGS 126 Introduction to Psychology	4 (4-0-8)
ICGS 127 Positive Psychology	4 (4-0-8)
ICGS 128 Global Gastronomy and Cuisines	4 (4-0-8)
ICGS 129 Tea Studies	2 (2-0-4)
ICGS 141 Coffee studies	2 (2-0-4)
ICGS 142 Contemporary Spirituality and Marketing	1 (1-0-2)

ICLL 100 Self Development

***Please see additional courses on page 290.

2 (2-0-4)

Global Citizenship**4 credits**

ICGH 116 World Cinemas	4 (4-0-8)
ICGH 120 Thai and ASEAN Cinema	4 (4-0-8)
ICGH 121 The End of the World? Development and Environment	4 (4-0-8)
ICGH 122 Introduction to Asian Philosophy	4 (4-0-8)
ICGH 123 Faiths, Ecological Justice, and the Tropical Rainforests	2 (2-0-4)
ICGH 127 Rome: An Empire's Rise and Fall	4 (4-0-8)
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 170 Diversities in Multilingual Societies	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 126 Plant Society	2 (2-0-4)
ICGS 106 Fashion and Society	4 (4-0-8)
ICGS 112 Geography of Human Activities	4 (4-0-8)
ICGS 123 Tourism Concepts and Practices	4 (4-0-8)

ICGS 130 Political Science	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 143 Introduction to Air Transport and Tourism	4 (4-0-8)

***Please see additional courses on page 290.

Critical Thinking

4 credits

ICGH 101 Biotechnology: from Science to Business	4 (4-0-8)
ICGH 102 Famous Arguments and Thought Experiments in Philosophy	4 (4-0-8)
ICGH 103 Logic, Analysis and Critical Thinking: Good and Bad Arguments	4 (4-0-8)
ICGH 105 Technology, Philosophy and Human Kind: Where Are We Now?!	4 (4-0-8)
ICGH 106 The Greeks: Crucible of Civilization	4 (4-0-8)
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 Languages and Its Application	4 (4-0-8)
ICGH 124 Life Drawing and Anatomy	4 (2-4-6)
ICGH 125 How Can We Know What Is Good? Moral Reasoning and Behavior	4 (4-0-8)
ICGH 126 Behavioral Ethics: Why Good People Do Bad Things	2 (2-0-4)
ICGN 107 The Chemistry of Everyday Life	4 (4-0-8)
ICGN 111 Physics for CEO	4 (4-0-8)
ICGN 123 The Earth's Dynamic Structure	4 (3-2-7)
ICGN 127 Practical Mathematics	2 (2-0-4)
ICGS 103 Economics in Modern Business	4 (4-0-8)
ICGS 105 Personal Financial Management	4 (4-0-8)
ICGS 113 Perspectives on the Thai Past	4 (4-0-8)
ICGS 134 Is Democracy Good?	4 (4-0-8)
ICGS 135 Entrepreneurial Accounting	4 (4-0-8)
ICGS 144 Price Discrimination: Why Do We Pay More Than Others?	1 (1-0-2)

***Please see additional courses on page 290.

Leadership

4 credits

ICGN 114 The Scientific Approach and Society	4 (4-0-8)
ICGN 128 Climate Emergency, Biodiversity Crisis, and Humanity at Risk	2 (1-2-3)
ICGS 104 Essentials of Entrepreneurship	4 (4-0-8)
ICGS 118 Skills in Dealing with People Across Cultures	4 (4-0-8)
ICGS 121 Abnormal Colleagues: How Do I Make This Work?	4 (4-0-8)
ICGS 136 Social and Health Issues in Thailand	4 (3-2-7)
ICGS 137 Witchcraft and Gender Representation	4 (4-0-8)
ICGS 138 Business Event Essentials	4 (4-0-8)
ICGS 139 Leadership and Change for a Global Society	4 (4-0-8)
ICGS 145 Service-Learning – Management of Community Service Project	4 (2-4-6)
ICGS 146 Service-Learning – Salaya Community Service Learning Project	4 (2-4-6)
ICGS 147 Women in Leadership	4 (4-0-8)
ICGS 148 Service Learning - Digital Campaign for Gender Issues	4 (2-4-6)
ICGS 149 Service Learning - Making Change	4 (2-4-6)
ICGS 150 Service Learning - Campaigning for a Cause	4 (4-0-8)
ICGS 151 Service Learning - The Art of Leadership in Practice	4 (2-4-6)
ICGS 152 Fantasy Literature's Environmental Message	4 (4-0-8)

ICGS 154 Introduction to Crisis Management in Service Businesses	4 (4-0-8)
ICGS 155 Pathway to Purpose: Life Design and Self-Exploration	4 (4-0-8)
ICLL 101 Professional Development	2 (2-0-4)
<i>***Please see additional courses on page 290.</i>	

Digital Literacy

4 credits

ICGH 111 Media Literacy: Skills for 21st Century Learning	4 (4-0-8)
ICGH 128 Internet Celebrity, Culture and the Media	4 (4-0-8)
ICGN 116 Understanding and Visualizing Data	4 (3-2-7)
ICGN 118 Everyday Connectivity	4 (4-0-8)
ICGN 119 Computer Essentials	4 (4-0-8)
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 131 Digital Search Literacy	2 (2-0-4)
ICGN 132 Digital Security and Privacy	2 (2-0-4)
ICGN 133 E-Business: Technology and Digital Strategies	4 (4-0-8)
ICGN 134 Introduction to Artificial Intelligence	2 (2-0-4)
ICGS 140 Fake News, Censorship and the Politics of Truth	4 (4-0-8)
ICGS 153 Social Media Management for Service Sector	2 (2-0-4)
ICLL 102 Skills for a Digital World	2 (2-0-4)
<i>***Please see additional courses on page 290.</i>	

General Education Elective Courses

2-6 Credits

Students need to take any GE courses to fulfill their 38 credits requirement of General Education: **2 credits** for students whose English Communication track are placed into 'ERS track' or 'GC Track' and **6 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.

Major Courses

Engineering 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

58 credits

ICMA 223 Linear Algebra A	2 (2-0-4)
EGCI 202 Engineering Maths 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 319 Internship In Computer Engineering	2 (0-12-2)

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 491 Computer Engineering Seminar	1 (0-2-1)
EGCI 492 Computer Engineering Project	2 (0-4-2)

Computer Engineering Elective Courses

8 Credits

Note: To earn Specialization in each field, students must complete at least **12 credits** from each specialization track.

Network and Security Elective Courses

EGCI 432 Distributed Systems	4 (4-0-8)
EGCI 474 Internetworking Technologies I	4 (3-2-7)
EGCI 475 Internetworking Technologies II	4 (3-2-7)
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)

System and Signal Elective Courses

EGCI 431 Internet of Things	4 (4-0-8)
EGCI 451 Cloud Computing	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)

Intelligent System and Robotic Sciences Specialization Courses

EGCI 331 Introduction to IC Design	4 (4-0-8)
EGCI 406 Mechatronics	4 (3-2-7)
EGCI 407 Human-Robot Interaction (HRI)	4 (4-0-8)
EGCI 425 Data Mining	4 (4-0-8)
EGCI 461 Artificial Intelligence	4 (4-0-8)
EGCI 463 Pattern Recognition	4 (4-0-8)

Linguistic Software and Theory Elective Courses

EGCI 301 Computer Graphics	4 (4-0-8)
EGCI 404 Theory of Computation	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 494 Fundamental of Digital Forensics	4 (4-0-8)

Advanced Topics Courses

EGCI 381 Introduction to Quantum Computing	4 (4-0-8)
EGCI 382 – 389 Special Topics in Computer Engineering (...)	4 (4-0-8)
EGCI 394 – 399 Special Topics in Computer Engineering (...)	4 (3-2-5)

Field Work Elective Course

EGCI 493 Cooperative Education	8 (0-40-8)
EGCI 495 Regional Study Experience	1 (0-2-1)
EGCI 496 International Study Experience	2 (0-4-2)

I-Design Elective Courses

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 and the Curriculum Administrative Committee.
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 and the Curriculum Administrative Committee.

Free Elective Courses

8 credits

Students can take any courses offered by MUIC and/or Mahidol University as free elective courses with the approval from the advisor. A course within the student's major that is too closely related or redundant to core/required/elective courses is discouraged and may be disapproved by an academic advisor.

COMPUTER SCIENCE PROGRAM

DEGREE OFFERED

Bachelor of Science (Computer Science) B.Sc. (Computer Science)

THE FIELD

The science of computing is transforming the world at a breathtaking pace. Think self-driving cars, the Internet of Things (IoT), artificial brains, smartphones, among others. Think medical advances made possible by the sheer computation power and our newfound ability to gather and sift through massive amounts of data. In this age, this is the science that touches every life and drives every modern endeavor. Through hands-on projects and active learning activities, students in the program will be trained not only to make excellent use of the state-of-the-art technology but also to create and drive future technology. Our holistic approach to education ensures that the students have a solid understanding of the fundamentals, in the context of the present technology— capable of executing it in the real world. As a critical thinker with great communication skills, our students are well-prepared for the job market globally and for further education, whether they aspire to launch a new IT venture, develop a global-scale platform, be a leading researcher, or land a job at a tech giant.

The Computer Science curriculum brings together academic knowledge from diverse disciplines, cultivating in the students a problem-solving mindset in the spirit of liberal arts education. Furthermore, with the rise of big data, data science, and data-intensive applications, students may opt to specialize in Data Analytics & Software Engineering. This module trains the students to be specialists in working with and efficiently handling large and complex data, making them ideal hires for companies looking to build a data platform or extract value from a trove of data.

Because every student is different, each student has the freedom to customize his or her education plan from the beginning, with the expert help of the student's advisor. There are compelling options for both research-oriented and employment-oriented students: write a thesis after a year-long research training—or apprentice with our industry partner for up to 6 months, potentially securing a job offer right after.

CAREER OPPORTUNITIES

The Computer Science program prepares students for a multitude of career paths, including:

- Software developer/engineer capable of designing, implementing, and deploying solutions
- Data scientists and data platform engineers
- Further study in fields related to computing, including robotics and bioinformatics
- Owners of IT companies/startups
- Research and development in the commercial sector and in academia
- IT consultants and solution engineers, such as innovative agriculture and smart medicine
- Faculty position, teaching, or teaching assistant in the field of computing for academic institutions and international schools
- Customer relations in the IT sector, such as sales and customer service

CURRICULUM STRUCTURE

Courses	Credits
General Education Courses	38
Core Courses	34
Required Courses	52
Elective Courses	12
I-Design Electives	20
Free Elective Courses	8
Total	164

COURSE LIST

Foundation Courses

ICMA 100 Foundation Mathematics
ICME 100 English Resource Skills

Non-credit

0 (4-0-0)
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 100 Foundation Mathematics 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 101 Academic Writing and Research I will be placed into the "ERS Track". These students will be required to take ICME 100 English Resource Skills and pass the course with the grade of "S" before moving to ICGC 101 Academic Writing and Research I.

General Education Courses

38 credits

English Communication

12-16 credits

ICGC 101 Academic Writing and Research I
ICGC 102 Academic Writing and Research II
ICGC 103 Public Speaking
ICGC 201 Global Realities
ICGC 202 Literary Analysis
ICGC 203 Creative Writing
ICGC 204 Advanced Oral Communication
ICGC 206 Literature Into Film
ICGC 208 Language and Culture
ICGC 210 First and Second Language Acquisition
ICGC 211 Topics in Comparative Literature A: Poetry
ICGC 212 Topics in Comparative Literature B: The Short Story and the Novel
ICGC 213 Topics in Comparative Literature C: Drama
ICGC 214 Literary Non-fiction
ICGC 215 Writing for Research

4 (4-0-8)
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4 (4-0-8)

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

- **‘ERS Track’** – Students who are placed into ‘ERS Track’ will be required to take ICME 100 (a non-credit course) and complete 16 credits in English Communication: ICGC 101, ICGC 102, ICGC 103 in order, and finally, any 200+ level English courses.
- **‘GC Track’** – Students who are placed into ‘GC Track’ will be required to complete 16 credits in English Communication: ICGC 101, ICGC 102, ICGC 103 in order, and finally, any 200+ level English courses.
- **‘GC2 Track’** – Students who are placed into ‘GC2 Track’ will be required to complete 12 credits in English Communication: ICGC 102, ICGC 103 in order, and finally, any 200+ level English courses.

Note II: Students in ‘ERS Track’ and ‘GC Track’ must take ICGC 101, ICGC 102 and ICGC 103 without interruption beginning in their first trimester of enrollment.

Note III: Students in ‘GC2 Track’ must take ICGC 102 and ICGC 103 without interruption beginning in their first trimester of enrollment.

Life Appreciation

4 credits

ICGH 113 Moving Pictures: A History of Film	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 119 Listen! Soundscapes, Well-Being and Musical Soul Searching	4 (4-0-8)
ICGN 105 Ecology, Ecosystems and Socio-Economics in Southeast Asia	4 (3-2-7)
ICGN 108 Essentials of Culinary Science for Food Business	4 (3-2-7)
ICGN 109 Food for Health	4 (4-0-8)
ICGN 110 Maker Workshop	4 (3-2-7)
ICGN 112 Stargazer	4 (3-2-7)
ICGN 113 Plants, People and Poisons	4 (4-0-8)
ICGN 115 Human Evolution, Diversity and Health	4 (4-0-8)
ICGN 120 Chemistry of Cosmetics and Dietary Supplements	4 (4-0-8)
ICGN 124 Climate Change and Human Society	4 (3-2-7)
ICGN 125 Games and Learning	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 117 Physical Fitness Plan	2 (2-0-4)

ICGS 102 Business Sustainability and the Global Climate Change	4 (4-0-8)
ICGS 111 Exploring Religions	4 (4-0-8)
ICGS 115 Sociology in the Modern World	4 (4-0-8)
ICGS 125 American History, Popular Media and Modern Life	4 (4-0-8)
ICGS 126 Introduction to Psychology	4 (4-0-8)
ICGS 127 Positive Psychology	4 (4-0-8)
ICGS 128 Global Gastronomy and Cuisines	4 (4-0-8)
ICGS 129 Tea Studies	2 (2-0-4)
ICGS 141 Coffee studies	2 (2-0-4)
ICGS 142 Contemporary Spirituality and Marketing	1 (1-0-2)
ICLL 100 Self Development	2 (2-0-4)

***Please see additional courses on page 290.

Global Citizenship

4 credits

ICGH 116 World Cinemas	4 (4-0-8)
ICGH 120 Thai and ASEAN Cinema	4 (4-0-8)
ICGH 121 The End of the World? Development and Environment	4 (4-0-8)
ICGH 122 Introduction to Asian Philosophy	4 (4-0-8)
ICGH 123 Faiths, Ecological Justice, and the Tropical Rainforests	2 (2-0-4)
ICGH 127 Rome: An Empire's Rise and Fall	4 (4-0-8)
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 170 Diversities in Multilingual Societies	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 126 Plant Society	2 (2-0-4)
ICGS 106 Fashion and Society	4 (4-0-8)
ICGS 112 Geography of Human Activities	4 (4-0-8)
ICGS 123 Tourism Concepts and Practices	4 (4-0-8)
ICGS 130 Political Science	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 143 Introduction to Air Transport and Tourism	4 (4-0-8)
***Please see additional courses on page 290.	

Critical Thinking

4 credits

ICGH 101 Biotechnology: from Science to Business	4 (4-0-8)
ICGH 102 Famous Arguments and Thought Experiments in Philosophy	4 (4-0-8)
ICGH 103 Logic, Analysis and Critical Thinking: Good and Bad Arguments	4 (4-0-8)
ICGH 105 Technology, Philosophy and Human Kind: Where Are We Now?!	4 (4-0-8)
ICGH 106 The Greeks: Crucible of Civilization	4 (4-0-8)
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 Languages and Its Application	4 (4-0-8)
ICGH 124 Life Drawing and Anatomy	4 (2-4-6)
ICGH 125 How Can We Know What Is Good? Moral Reasoning and Behavior	4 (4-0-8)
ICGH 126 Behavioral Ethics: Why Good People Do Bad Things	2 (2-0-4)
ICGN 107 The Chemistry of Everyday Life	4 (4-0-8)
ICGN 111 Physics for CEO	4 (4-0-8)
ICGN 123 The Earth's Dynamic Structure	4 (3-2-7)
ICGN 127 Practical Mathematics	2 (2-0-4)
ICGS 103 Economics in Modern Business	4 (4-0-8)
ICGS 105 Personal Financial Management	4 (4-0-8)
ICGS 113 Perspectives on the Thai Past	4 (4-0-8)
ICGS 134 Is Democracy Good?	4 (4-0-8)
ICGS 135 Entrepreneurial Accounting	4 (4-0-8)
ICGS 144 Price Discrimination: Why Do We Pay More Than Others?	1 (1-0-2)
***Please see additional courses on page 290.	

Leadership

4 credits

ICGN 114 The Scientific Approach and Society	4 (4-0-8)
ICGN 128 Climate Emergency, Biodiversity Crisis, and Humanity at Risk	2 (1-2-3)
ICGS 104 Essentials of Entrepreneurship	4 (4-0-8)
ICGS 118 Skills in Dealing with People Across Cultures	4 (4-0-8)
ICGS 121 Abnormal Colleagues: How Do I Make This Work?	4 (4-0-8)
ICGS 136 Social and Health Issues in Thailand	4 (3-2-7)
ICGS 137 Witchcraft and Gender Representation	4 (4-0-8)

ICGS 138 Business Event Essentials	4 (4-0-8)
ICGS 139 Leadership and Change for a Global Society	4 (4-0-8)
ICGS 145 Service-Learning – Management of Community Service Project	4 (2-4-6)
ICGS 146 Service-Learning – Salaya Community Service Learning Project	4 (2-4-6)
ICGS 147 Women in Leadership	4 (4-0-8)
ICGS 148 Service Learning - Digital Campaign for Gender Issues	4 (2-4-6)
ICGS 149 Service Learning - Making Change	4 (2-4-6)
ICGS 150 Service Learning - Campaigning for a Cause	4 (4-0-8)
ICGS 151 Service Learning - The Art of Leadership in Practice	4 (2-4-6)
ICGS 152 Fantasy Literature's Environmental Message	4 (4-0-8)
ICGS 154 Introduction to Crisis Management in Service Businesses	4 (4-0-8)
ICGS 155 Pathway to Purpose: Life Design and Self-Exploration	4 (4-0-8)
ICLL 101 Professional Development	2 (2-0-4)

***Please see additional courses on page 290.

Digital Literacy

4 credits

ICGH 111 Media Literacy: Skills for 21st Century Learning	4 (4-0-8)
ICGH 128 Internet Celebrity, Culture and the Media	4 (4-0-8)
ICGN 116 Understanding and Visualizing Data	4 (3-2-7)
ICGN 118 Everyday Connectivity	4 (4-0-8)
ICGN 119 Computer Essentials	4 (4-0-8)
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 131 Digital Search Literacy	2 (2-0-4)
ICGN 132 Digital Security and Privacy	2 (2-0-4)
ICGN 133 E-Business: Technology and Digital Strategies	4 (4-0-8)
ICGN 134 Introduction to Artificial Intelligence	2 (2-0-4)
ICGS 140 Fake News, Censorship and the Politics of Truth	4 (4-0-8)
ICGS 153 Social Media Management for Service Sector	2 (2-0-4)
ICLL 102 Skills for a Digital World	2 (2-0-4)

***Please see additional courses on page 290.

General Education Elective Courses

2-6 Credits

Students need to take any GE courses to fulfill their 38 credits requirement of General Education: **2 credits** for students whose English Communication track are placed into 'ERS track' or 'GC Track' and **6 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.

Major Course

Major Core Courses

at least 34 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)
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)

Major Required Courses

at least 52 credits

Every computer science student has to complete at least **52** credits of required major courses from breadth and capstone categories. The student has to complete all breadth courses to cover core CS knowledge, and finish one of the two capstone options to gain experience working on a sizable research/development project.

Breadth Required Courses

ICCS 101 Introduction to Computer Programming	4 (3-2-7)
ICCS 121 System Skills and Low-level Programming	4 (4-0-8)
ICCS 208 Data Structures and Abstractions	4 (3-2-7)
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 216 Calculus IIIA	2 (2-0-4)
ICMA 223 Linear Algebra A	2 (2-0-4)

Capstone Required Courses

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 Education

ICCS 383 Work-Integrated Education (Trimester)	6 (0-0-216)
ICCS 384 Work-Integrated Education (Summer)	2 (0-0-72)

Major Elective Courses

at least 12 credits

Computer science major elective courses:

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 361 Data Mining	4 (4-0-8)
ICCS 371 Scalable Systems	4 (4-0-8)
ICCS 372 Software Engineering	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 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 444 E-Commerce	4 (4-0-8)
ICCS 448 Mobile Application Programming	4 (4-0-8)
ICCS 461 Machine 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 471 Topics in Software Technology I	4 (4-0-8)
ICCS 472 Topics in Software Technology II	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)
ICCS 493 Topics in Computer Science III	4 (4-0-8)
ICCS 494 Topics in Computer Science IV	4 (4-0-8)
ICCS 495 Topics in Computer Science V	4 (4-0-8)
ICMA 214 Ordinary Differential Equations	4 (4-0-8)
ICMA 217 Calculus IIIB	2 (2-0-4)
ICMA 224 Linear Algebra B	2 (2-0-4)
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)
ICPY 492 Electronics	4 (4-0-8)

I-Design Elective Courses

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 and the Curriculum Administrative Committee.
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 and the Curriculum Administrative Committee.

Free Elective Courses

8 credits

Students can take any courses offered by MUIC and/or Mahidol University as free elective courses with the approval from the advisor. A course within the student's major that is too closely related or redundant to core/required/elective courses is discouraged and may be disapproved by an academic advisor.

Minors

- Computer Science students may choose to take one or more minors offered by other programs at MUIC. In order to obtain a minor, students are required to complete all requirements as specified by that minor.

Computer Science Minors for non-Computer Science students

- The computer science program offers the following minors to students majoring in another degree program: Computer Science, Applied Data Science, and Web/Mobile Developer. To obtain a minor, the students must complete 5 courses as specified below:

Computer Science Minor

ICCS 101 Introduction to Computer Programming	4 (3-2-7)
ICCS 206 Discrete Mathematics	4 (4-0-8)
ICCS 208 Data Structures and Abstractions	4 (3-2-7)
ICCS XXX Any Computer Science course with code 200 and up	4 (x-x-x)
ICCS XXX Any Computer Science course with code 200 and up	4 (x-x-x)

Applied Data Science Minor

ICCS 101 Introduction to Computer Programming	4 (3-2-7)
ICCS 206 Discrete Mathematics	4 (4-0-8)
ICCS 208 Data Structures and Abstractions	4 (3-2-7)
ICCS 261 Principles of Data Science	4 (3-2-7)
ICCS 361 Data Mining	4 (4-0-8)

Web/Mobile Developer Minor

ICCS 101 Introduction to Computer Programming	4 (3-2-7)
ICCS 206 Discrete Mathematics	4 (4-0-8)
ICCS 208 Data Structures and Abstractions	4 (3-2-7)
ICCS 370 Software System Construction	4 (4-0-8)
ICCS 340 Web Application Development	4 (4-0-8)
OR	
ICCS 448 Mobile Application Programming	4 (4-0-8)

Double Major

- Computer Science students may choose to take a second major offered by other programs at MUIC. In order to obtain a second major, students are required to complete all requirements as specified by the major.

Computer Science Double Major for non-Computer Science students

- Students majoring in another degree program can choose computer science (CS) as a second major. To earn CS as a second major, the students must complete 14 courses (56 credits) as specified below:

Double Major Core Courses

	at least 20 credits
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)
ICCS 205 Numerical Computation	4 (4-0-8)
ICCS 206 Discrete Mathematics	4 (4-0-8)

Double Major Required Courses

ICCS 101 Introduction to Computer Programming
ICCS 121 System Skills and Low-level Programming
ICCS 208 Data Structures and Abstractions
ICCS 227 Principles of Computer Systems and Architecture
ICCS 312 Algorithms and Tractability
ICCS 370 Software System Construction

at least 24 credits

4 (3-2-7)
4 (4-0-8)
4 (3-2-7)
4 (4-0-8)
4 (4-0-8)
4 (4-0-8)

Double Major Elective Courses

ICCS XXX Any Computer Science course with code 200 and up
ICCS XXX Any Computer Science course with code 200 and up
ICCS XXX Any Computer Science course with code 200 and up

at least 12 credits

4 (x-x-x)
4 (x-x-x)
4 (x-x-x)

Certificate

- **AI and Analytics**

*Level: Advanced

12 credits

ICCS 361 Data Mining

4 (4-0-8)

ICCS 371 Scalable Systems

4 (4-0-8)

ICCS 461 Machine Learning

4 (4-0-8)

- **Computer Science Foundation**

*Level: Beginner

12 credits

ICCS 101 Introduction to Computer Programming

4 (3-2-7)

ICCS 208 Data Structures and Abstractions

4 (3-2-7)

ICCS 206 Discrete Mathematics

4 (4-0-8)

- **Software Platform Engineers**

*Level: Advanced

12 credits

ICCS 320 Networks

4 (4-0-8)

ICCS 322 Operating Systems Design and Implementation

4 (4-0-8)

OR

ICCS 221 Computer Architectures

4 (4-0-8)

ICCS 371 Scalable Systems

4 (4-0-8)

- **UX, UI and How to Make It Work**

*Level: Advanced

12 credits

ICCD 119 2D Design Principles

4 (2-4-6)

ICCS 302 Human Computer Interaction and Visualization

4 (4-0-8)

ICCS 340 Web Application Development

4 (4-0-8)

OR

ICCS 448 Mobile Application Programming

4 (4-0-8)

Note:

- I. Students need to make sure they first pass prerequisites to the courses
- II. Please check the criteria and requirement before applying for the certificate

CREATIVE TECHNOLOGY PROGRAM

DEGREES OFFERED

Bachelor of Arts and Science (Creative Technology) B.A.Sc. (Creative Technology)

THE FIELD

This program is the first transdisciplinary program with a mix of computer science, transmedia design, and communication design offered at Mahidol University. With its combination of arts and sciences, the program prepares its graduates for the emerging career opportunities of the technology- driven, fast-changing future. In addition, this program offers additional curriculum flexibility to customize for individual learning choices with MUIC's distinctive I-Design electives as well as the program's electives in MUIC, Faculty of Information and Communication Technology, and College of Music.

CAREER OPPORTUNITIES

1. Media creator
 - Animator/modeler
 - Digital media producer
 - Multimedia designer
 - Transmedia data illustrator
2. Technological creator
 - Inclusive society technologist
 - Interactive graphics technician(VR/AR/XR)
 - Web designer
 - UI/UX designer
3. Social media/online communicator

CURRICULUM STRUCTURE

COURSES	CREDITS
General Education Courses	38
Core Major Courses	68
Major Required Courses	14
Major Elective Courses	20
I-Design Electives	20
Free Elective Courses	8
Total	168

COURSE LIST

Foundation Courses

ICMA 100 Foundation Mathematics
ICME 100 English Resource Skills

Non-credit

0 (4-0-0)
0 (4-0-0)

Note I: For B.A.Sc. students, students whose Mathematics placement is below ICCT 101 Mathematics for Creative Technology I are required to take ICMA 100 Foundation Mathematics 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 101 Academic Writing and Research I will be placed into the "ERS Track". These students will be required to take ICME 100 English Resource Skills and pass the course with the grade of "S" before moving to ICGC 101 Academic Writing and Research I.

General Education Courses

38 credits

English Communication

12-16 credits

ICGC 101 Academic Writing and Research I	4 (4-0-8)
ICGC 102 Academic Writing and Research II	4 (4-0-8)
ICGC 103 Public Speaking	4 (4-0-8)
ICGC 201 Global Realities	4 (4-0-8)
ICGC 202 Literary Analysis	4 (4-0-8)
ICGC 203 Creative Writing	4 (4-0-8)
ICGC 204 Advanced Oral Communication	4 (4-0-8)
ICGC 206 Literature Into Film	4 (4-0-8)
ICGC 208 Language and Culture	4 (4-0-8)
ICGC 210 First and Second Language Acquisition	4 (4-0-8)
ICGC 211 Topics in Comparative Literature A: Poetry	4 (4-0-8)
ICGC 212 Topics in Comparative Literature B: The Short Story and the Novel	4 (4-0-8)
ICGC 213 Topics in Comparative Literature C: Drama	4 (4-0-8)
ICGC 214 Literary Non-fiction	4 (4-0-8)
ICGC 215 Writing for Research	4 (4-0-8)

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

- **'ERS Track'** – Students who are placed into 'ERS Track' will be required to take ICME 100 (a non-credit course) and complete 16 credits in English Communication: ICGC 101, ICGC 102, ICGC 103 in order, and finally, any 200+ level English courses.
- **'GC Track'** – Students who are placed into 'GC Track' will be required to complete 16 credits in English Communication: ICGC 101, ICGC 102, ICGC 103 in order, and finally, any 200+ level English courses.
- **'GC2 Track'** – Students who are placed into 'GC2 Track' will be required to complete 12 credits in English Communication: ICGC 102, ICGC 103 in order, and finally, any 200+ level English courses

Note II: Students in 'ERS Track' and 'GC Track' must take ICGC 101, ICGC 102 and ICGC 103 without interruption beginning in their first trimester of enrollment.

Note III: Students in 'GC2 Track' must take ICGC 102 and ICGC 103 without interruption beginning in their first trimester of enrollment.

Life Appreciation

4 credits

ICGH 113 Moving Pictures: A History of Film	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 119 Listen! Soundscapes, Well-Being and Musical Soul Searching	4 (4-0-8)
ICGN 105 Ecology, Ecosystems and Socio-Economics in Southeast Asia	4 (3-2-7)
ICGN 108 Essentials of Culinary Science for Food Business	4 (3-2-7)
ICGN 109 Food for Health	4 (4-0-8)
ICGN 110 Maker Workshop	4 (3-2-7)
ICGN 112 Stargazer	4 (3-2-7)
ICGN 113 Plants, People and Poisons	4 (4-0-8)
ICGN 115 Human Evolution, Diversity and Health	4 (4-0-8)
ICGN 120 Chemistry of Cosmetics and Dietary Supplements	4 (4-0-8)
ICGN 124 Climate Change and Human Society	4 (3-2-7)
ICGN 125 Games and Learning	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 117 Physical Fitness Plan	2 (2-0-4)
ICGS 102 Business Sustainability and the Global Climate Change	4 (4-0-8)
ICGS 111 Exploring Religions	4 (4-0-8)
ICGS 115 Sociology in the Modern World	4 (4-0-8)
ICGS 125 American History, Popular Media and Modern Life	4 (4-0-8)
ICGS 126 Introduction to Psychology	4 (4-0-8)
ICGS 127 Positive Psychology	4 (4-0-8)
ICGS 128 Global Gastronomy and Cuisines	4 (4-0-8)
ICGS 129 Tea Studies	2 (2-0-4)
ICGS 141 Coffee studies	2 (2-0-4)
ICGS 142 Contemporary Spirituality and Marketing	1 (1-0-2)
ICLL 100 Self Development	2 (2-0-4)

***Please see additional courses on page 290.

Global Citizenship**4 credits**

ICGH 116 World Cinemas	4 (4-0-8)
ICGH 120 Thai and ASEAN Cinema	4 (4-0-8)
ICGH 121 The End of the World? Development and Environment	4 (4-0-8)
ICGH 122 Introduction to Asian Philosophy	4 (4-0-8)
ICGH 123 Faiths, Ecological Justice, and the Tropical Rainforests	2 (2-0-4)
ICGH 127 Rome: An Empire's Rise and Fall	4 (4-0-8)
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 170 Diversities in Multilingual Societies	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 126 Plant Society	2 (2-0-4)
ICGS 106 Fashion and Society	4 (4-0-8)
ICGS 112 Geography of Human Activities	4 (4-0-8)
ICGS 123 Tourism Concepts and Practices	4 (4-0-8)
ICGS 130 Political Science	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 143 Introduction to Air Transport and Tourism	4 (4-0-8)
<i>***Please see additional courses on page 290.</i>	

Critical Thinking

4 credits

ICGH 101 Biotechnology: from Science to Business	4 (4-0-8)
ICGH 102 Famous Arguments and Thought Experiments in Philosophy	4 (4-0-8)
ICGH 103 Logic, Analysis and Critical Thinking: Good and Bad Arguments	4 (4-0-8)
ICGH 105 Technology, Philosophy and Human Kind: Where Are We Now?!	4 (4-0-8)
ICGH 106 The Greeks: Crucible of Civilization	4 (4-0-8)
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 Languages and Its Application	4 (4-0-8)
ICGH 124 Life Drawing and Anatomy	4 (2-4-6)
ICGH 125 How Can We Know What Is Good? Moral Reasoning and Behavior	4 (4-0-8)
ICGH 126 Behavioral Ethics: Why Good People Do Bad Things	2 (2-0-4)
ICGN 107 The Chemistry of Everyday Life	4 (4-0-8)
ICGN 111 Physics for CEO	4 (4-0-8)
ICGN 123 The Earth's Dynamic Structure	4 (3-2-7)
ICGN 127 Practical Mathematics	2 (2-0-4)
ICGS 103 Economics in Modern Business	4 (4-0-8)
ICGS 105 Personal Financial Management	4 (4-0-8)
ICGS 113 Perspectives on the Thai Past	4 (4-0-8)
ICGS 134 Is Democracy Good?	4 (4-0-8)
ICGS 135 Entrepreneurial Accounting	4 (4-0-8)
ICGS 144 Price Discrimination: Why Do We Pay More Than Others?	1 (1-0-2)
<i>***Please see additional courses on page 290.</i>	

Leadership

4 credits

ICGN 114 The Scientific Approach and Society	4 (4-0-8)
ICGN 128 Climate Emergency, Biodiversity Crisis, and Humanity at Risk	2 (1-2-3)
ICGS 104 Essentials of Entrepreneurship	4 (4-0-8)
ICGS 118 Skills in Dealing with People Across Cultures	4 (4-0-8)
ICGS 121 Abnormal Colleagues: How Do I Make This Work?	4 (4-0-8)
ICGS 136 Social and Health Issues in Thailand	4 (3-2-7)
ICGS 137 Witchcraft and Gender Representation	4 (4-0-8)
ICGS 138 Business Event Essentials	4 (4-0-8)
ICGS 139 Leadership and Change for a Global Society	4 (4-0-8)
ICGS 145 Service-Learning – Management of Community Service Project	4 (2-4-6)
ICGS 146 Service-Learning – Salaya Community Service Learning Project	4 (2-4-6)
ICGS 147 Women in Leadership	4 (4-0-8)
ICGS 148 Service Learning - Digital Campaign for Gender Issues	4 (2-4-6)
ICGS 149 Service Learning - Making Change	4 (2-4-6)
ICGS 150 Service Learning - Campaigning for a Cause	4 (4-0-8)
ICGS 151 Service Learning - The Art of Leadership in Practice	4 (2-4-6)
ICGS 152 Fantasy Literature's Environmental Message	4 (4-0-8)
ICGS 154 Introduction to Crisis Management in Service Businesses	4 (4-0-8)
ICGS 155 Pathway to Purpose: Life Design and Self-Exploration	4 (4-0-8)
ICLL 101 Professional Development	2 (2-0-4)
<i>***Please see additional courses on page 290.</i>	

Digital Literacy**4 credits**

ICGH 111 Media Literacy: Skills for 21st Century Learning	4 (4-0-8)
ICGH 128 Internet Celebrity, Culture and the Media	4 (4-0-8)
ICGN 116 Understanding and Visualizing Data	4 (3-2-7)
ICGN 118 Everyday Connectivity	4 (4-0-8)
ICGN 119 Computer Essentials	4 (4-0-8)
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 131 Digital Search Literacy	2 (2-0-4)
ICGN 132 Digital Security and Privacy	2 (2-0-4)
ICGN 133 E-Business: Technology and Digital Strategies	4 (4-0-8)
ICGN 134 Introduction to Artificial Intelligence	2 (2-0-4)
ICGS 140 Fake News, Censorship and the Politics of Truth	4 (4-0-8)
ICGS 153 Social Media Management for Service Sector	2 (2-0-4)
ICLL 102 Skills for a Digital World	2 (2-0-4)

***Please see additional courses on page 290.

General Education Elective Courses**2-6 Credits**

Students need to take any GE courses to fulfill their 38 credits requirement of General Education: **2 credits** for students whose English Communication track are placed into 'ERS track' or 'GC Track' and **6 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.

Major Courses**102 Credits****Core courses****68 Credits**

ICCD 119 2D Design Principles	4 (2-4-6)
ICCD 150 Art History	4 (4-0-8)
ICCD 236 Online Culture Communication and Application	4 (2-4-6)
ICCD 321 Infographics	4 (2-4-6)
ICCD 322 Integrated Branding	4 (2-4-6)
ICCD 342 New Media Design	4 (2-4-6)
ICCT 101 Mathematics for Creative Technology I	4 (4-0-8)
ICCT 102 Mathematics for Creative Technology II	4 (4-0-8)
ITCT 101 Computing Technologies	4 (4-0-8)
ITCT 111 Programming for Creative Technology	4 (4-0-8)
ITCT 201 Multimedia Systems Lab	2 (0-4-2)
ITCT 241 Computational Problem Solving	4 (4-0-8)
ITCT 301 Digital Storytelling and Machinima	4 (4-0-8)
ITCT 311 Computer Animation	4 (4-0-8)
ITCT 321 Computer Graphics	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)
RSDE 215 Learning Management and Classroom Management for Students with Special Needs	4 (3-2-7)

Major Required courses

ICCT 441 Capstone Project for Creative Technology
 ICCT 442 Term Internship
 ICCT 443 Summer Internship

14 Credits

6 (0-12-6)

6 (0-36-6)

2 (0-12-2)

Major Elective courses

Students are required to complete at least **12 credits** from the same track.

20 Credits

- **Media Track**

ITCT 322 Virtual Reality

4 (4-0-8)

ITCT 323 Augmented Reality

4 (4-0-8)

ITCT 331 Game Design and Development

4 (4-0-8)

ITCT 332 Data Visualisation

4 (4-0-8)

ITCT 391 Special Topics in Multimedia Systems

4 (4-0-8)

RSGE 210 Introduction to the Thai Sign Language

4 (2-4-6)

- **Technology Track**

ITCT 318 Internet of Things and Its Application

4 (4-0-8)

ITCT 341 Agile Software Development

4 (4-0-8)

ITCT 342 Database Management Systems

4 (4-0-8)

ITCT 343 Introduction to E-Business Systems

4 (4-0-8)

ITCT 344 Human-Computer Interaction

4 (4-0-8)

ITCT 361 Advanced Artificial Intelligence

4 (4-0-8)

ITCT 362 Data Science Essentials and Applications

4 (4-0-8)

I-Design Elective Courses**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 and the Curriculum Administrative Committee.
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 and the Curriculum Administrative Committee.

Free Elective Courses**8 credits**

Students can take any courses offered by MUIC and/or Mahidol University as free elective courses with the approval from the advisor. A course within the student's major that is too closely related or redundant to core/required/elective courses is discouraged and may be disapproved by an academic advisor.

FINANCE PROGRAM

DEGREE OFFERED

Bachelor of Business Administration (Finance)

B.B.A. (Finance)

THE FIELD

The Finance Major is a rigorous program which will equip you with a solid financial foundation and essential quantitative skills for Finance. The distinctive feature of the Finance Major is its strong emphasis on corporate finance and financial investment, as well as emerging tools of financial technology; improvements in corporate governance; and financial strategies in emerging economies. The curriculum furnishes Finance Majors with the necessary knowledge in microeconomics; macroeconomics; data analytics; accounting; financial analysis; risk management; banking operations; and corporate governance. The courses are further tailored to provide students with practical computational skills; and an in-depth understanding of the application of financial theory in a world of disruptive innovation, further advanced through internships and research.

CAREER OPPORTUNITIES

The BBA Finance Majors are well prepared for professional careers in: financial consulting; investment banking; financial and risk management; asset management; corporate finance; financial and economic research; as well as business entrepreneurs.

CURRICULUM STRUCTURE

Courses	Credits
General Education Courses	38
Core Business Courses	73
Major Required Courses	20
Major Elective Courses	24
I-Design Electives	20
Free Elective Courses	8
Total	183

COURSE LIST

Foundation Courses

ICMA 100 Foundation Mathematics

ICME 100 English Resource Skills

Non-credit

0 (4-0-0)

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 100 Foundation Mathematics 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 101 Academic Writing and Research I will be placed into the "ERS Track". These students

will be required to take ICME 100 English Resource Skills and pass the course with the grade of "S" before moving to ICGC 101 Academic Writing and Research I.

General Education Courses

38 credits

English Communication

12-16 credits

ICGC 101 Academic Writing and Research I	4 (4-0-8)
ICGC 102 Academic Writing and Research II	4 (4-0-8)
ICGC 103 Public Speaking	4 (4-0-8)
ICGC 201 Global Realities	4 (4-0-8)
ICGC 202 Literary Analysis	4 (4-0-8)
ICGC 203 Creative Writing	4 (4-0-8)
ICGC 204 Advanced Oral Communication	4 (4-0-8)
ICGC 206 Literature Into Film	4 (4-0-8)
ICGC 208 Language and Culture	4 (4-0-8)
ICGC 210 First and Second Language Acquisition	4 (4-0-8)
ICGC 211 Topics in Comparative Literature A: Poetry	4 (4-0-8)
ICGC 212 Topics in Comparative Literature B: The Short Story and the Novel	4 (4-0-8)
ICGC 213 Topics in Comparative Literature C: Drama	4 (4-0-8)
ICGC 214 Literary Non-fiction	4 (4-0-8)
ICGC 215 Writing for Research	4 (4-0-8)

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

- **'ERS Track'** – Students who are placed into 'ERS Track' will be required to take ICME 100 (a non-credit course) and complete 16 credits in English Communication: ICGC 101, ICGC 102, ICGC 103 in order, and finally, any 200+ level English courses.
- **'GC Track'** – Students who are placed into 'GC Track' will be required to complete 16 credits in English Communication: ICGC 101, ICGC 102, ICGC 103 in order, and finally, any 200+ level English courses.
- **'GC2 Track'** – Students who are placed into 'Advanced GC Track' will be required to complete 12 credits in English Communication: ICGC 102, ICGC 103 in order, and finally, any 200+ level English courses.

Note II: Students in 'ERS Track' and 'GC Track' must take ICGC 101, ICGC 102 and ICGC 103 without interruption beginning in their first trimester of enrollment.

Note III: Students in 'GC2 Track' must take ICGC 102 and ICGC 103 without interruption beginning in their first trimester of enrollment.

Life Appreciation

4 credits

ICGH 113 Moving Pictures: A History of Film	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 119 Listen! Soundscapes, Well-Being and Musical Soul Searching	4 (4-0-8)
ICGN 105 Ecology, Ecosystems and Socio-Economics in Southeast Asia	4 (3-2-7)
ICGN 108 Essentials of Culinary Science for Food Business	4 (3-2-7)

ICGN 109 Food for Health	4 (4-0-8)
ICGN 110 Maker Workshop	4 (3-2-7)
ICGN 112 Stargazer	4 (3-2-7)
ICGN 113 Plants, People and Poisons	4 (4-0-8)
ICGN 115 Human Evolution, Diversity and Health	4 (4-0-8)
ICGN 120 Chemistry of Cosmetics and Dietary Supplements	4 (4-0-8)
ICGN 124 Climate Change and Human Society	4 (3-2-7)
ICGN 125 Games and Learning	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 117 Physical Fitness Plan	2 (2-0-4)
ICGS 102 Business Sustainability and the Global Climate Change	4 (4-0-8)
ICGS 111 Exploring Religions	4 (4-0-8)
ICGS 115 Sociology in the Modern World	4 (4-0-8)
ICGS 125 American History, Popular Media and Modern Life	4 (4-0-8)
ICGS 126 Introduction to Psychology	4 (4-0-8)
ICGS 127 Positive Psychology	4 (4-0-8)
ICGS 128 Global Gastronomy and Cuisines	4 (4-0-8)
ICGS 129 Tea Studies	2 (2-0-4)
ICGS 141 Coffee studies	2 (2-0-4)
ICGS 142 Contemporary Spirituality and Marketing	1 (1-0-2)
ICLL 100 Self Development	2 (2-0-4)

***Please see additional courses on page 290.

Global Citizenship	4 credits
ICGH 116 World Cinemas	4 (4-0-8)
ICGH 120 Thai and ASEAN Cinema	4 (4-0-8)
ICGH 121 The End of the World? Development and Environment	4 (4-0-8)
ICGH 122 Introduction to Asian Philosophy	4 (4-0-8)
ICGH 123 Faiths, Ecological Justice, and the Tropical Rainforests	2 (2-0-4)
ICGH 127 Rome: An Empire's Rise and Fall	4 (4-0-8)
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 170 Diversities in Multilingual Societies	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 126 Plant Society	2 (2-0-4)
ICGS 106 Fashion and Society	4 (4-0-8)
ICGS 112 Geography of Human Activities	4 (4-0-8)
ICGS 123 Tourism Concepts and Practices	4 (4-0-8)
ICGS 130 Political Science	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 143 Introduction to Air Transport and Tourism	4 (4-0-8)

***Please see additional courses on page 290.

Critical Thinking	4 credits
ICGH 101 Biotechnology: from Science to Business	4 (4-0-8)
ICGH 102 Famous Arguments and Thought Experiments in Philosophy	4 (4-0-8)
ICGH 103 Logic, Analysis and Critical Thinking: Good and Bad Arguments	4 (4-0-8)
ICGH 105 Technology, Philosophy and Human Kind: Where Are We Now?!	4 (4-0-8)
ICGH 106 The Greeks: Crucible of Civilization	4 (4-0-8)

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 Languages and Its Application	4 (4-0-8)
ICGH 124 Life Drawing and Anatomy	4 (2-4-6)
ICGH 125 How Can We Know What Is Good? Moral Reasoning and Behavior	4 (4-0-8)
ICGH 126 Behavioral Ethics: Why Good People Do Bad Things	2 (2-0-4)
ICGN 107 The Chemistry of Everyday Life	4 (4-0-8)
ICGN 111 Physics for CEO	4 (4-0-8)
ICGN 123 The Earth's Dynamic Structure	4 (3-2-7)
ICGN 127 Practical Mathematics	2 (2-0-4)
ICGS 103 Economics in Modern Business	4 (4-0-8)
ICGS 105 Personal Financial Management	4 (4-0-8)
ICGS 113 Perspectives on the Thai Past	4 (4-0-8)
ICGS 134 Is Democracy Good?	4 (4-0-8)
ICGS 135 Entrepreneurial Accounting	4 (4-0-8)
ICGS 144 Price Discrimination: Why Do We Pay More Than Others?	1 (1-0-2)

***Please see additional courses on page 290.

Leadership

4 credits

ICGN 114 The Scientific Approach and Society	4 (4-0-8)
ICGN 128 Climate Emergency, Biodiversity Crisis, and Humanity at Risk	2 (1-2-3)
ICGS 104 Essentials of Entrepreneurship	4 (4-0-8)
ICGS 118 Skills in Dealing with People Across Cultures	4 (4-0-8)
ICGS 121 Abnormal Colleagues: How Do I Make This Work?	4 (4-0-8)
ICGS 136 Social and Health Issues in Thailand	4 (3-2-7)
ICGS 137 Witchcraft and Gender Representation	4 (4-0-8)
ICGS 138 Business Event Essentials	4 (4-0-8)
ICGS 139 Leadership and Change for a Global Society	4 (4-0-8)
ICGS 145 Service-Learning – Management of Community Service Project	4 (2-4-6)
ICGS 146 Service-Learning – Salaya Community Service Learning Project	4 (2-4-6)
ICGS 147 Women in Leadership	4 (4-0-8)
ICGS 148 Service Learning - Digital Campaign for Gender Issues	4 (2-4-6)
ICGS 149 Service Learning - Making Change	4 (2-4-6)
ICGS 150 Service Learning - Campaigning for a Cause	4 (4-0-8)
ICGS 151 Service Learning - The Art of Leadership in Practice	4 (2-4-6)
ICGS 152 Fantasy Literature's Environmental Message	4 (4-0-8)
ICGS 154 Introduction to Crisis Management in Service Businesses	4 (4-0-8)
ICGS 155 Pathway to Purpose: Life Design and Self-Exploration	4 (4-0-8)
ICLL 101 Professional Development	2 (2-0-4)

***Please see additional courses on page 290.

Digital Literacy

4 credits

ICGH 111 Media Literacy: Skills for 21st Century Learning	4 (4-0-8)
ICGH 128 Internet Celebrity, Culture and the Media	4 (4-0-8)
ICGN 116 Understanding and Visualizing Data	4 (3-2-7)
ICGN 118 Everyday Connectivity	4 (4-0-8)
ICGN 119 Computer Essentials	4 (4-0-8)
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 131 Digital Search Literacy	2 (2-0-4)
ICGN 132 Digital Security and Privacy	2 (2-0-4)

ICGN 133 E-Business: Technology and Digital Strategies	4 (4-0-8)
ICGN 134 Introduction to Artificial Intelligence	2 (2-0-4)
ICGS 140 Fake News, Censorship and the Politics of Truth	4 (4-0-8)
ICGS 153 Social Media Management for Service Sector	2 (2-0-4)
ICLL 102 Skills for a Digital World	2 (2-0-4)

***Please see additional courses on page 290.

General Education Elective Courses

2-6 Credits

Students need to take any GE courses to fulfill their 38 credits requirement of General Education: **2 credits** for students whose English Communication track are placed into 'ERS track' or 'GC Track' and **6 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.

Core Business courses

no less than 73 Credits

ICMB 200 Business Mathematics	4 (4-0-8)
ICMB 201 Business Statistics	4 (4-0-8)
ICMB 205 Microeconomics	4 (4-0-8)
ICMB 206 Macroeconomics	4 (4-0-8)
ICMB 207 Management of Business Information	4 (4-0-8)
ICMB 213 Financial Accounting	4 (4-0-8)
ICMB 214 Managerial Accounting	4 (4-0-8)
ICMB 215 Business Finance for Entrepreneurs	4 (4-0-8)
ICMB 216 Business Communication	4 (4-0-8)
ICMB 222 Principles of Marketing	4 (4-0-8)
ICMB 235 Management and Organizational Behavior	4 (4-0-8)
ICMB 236 Human Resources Management	4 (4-0-8)
ICMB 237 International Business Management	4 (4-0-8)
ICMB 310 Business Law	4 (4-0-8)
ICMB 311 Business Ethics and Sustainability	4 (4-0-8)
ICMB 312 Management Science	4 (4-0-8)
ICMB 314 Operations and Project Management	4 (4-0-8)
ICMB 401 Business Innovation and Entrepreneurship	4 (4-0-8)
OR	
ICMB 402 Business Strategy	4 (4-0-8)
ICMB 490 Career Preparation	1 (1-0-2)

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

1. Passed ICGC 101 Academic Writing and Research I with at least "D" grade or being placed in the English course level higher than ICGC 101 Academic Writing and Research I.
2. Passed ICMA 100 Foundation Mathematics with "S" grade or the placement Test.

Note II: All BBA students are required to take either ICMB 401 Business Innovation and Entrepreneurship **OR** ICMB 402 Business Strategy.

Major Required courses

ICMF 316 Financial Management	4 (4-0-8)
ICMF 317 International Financial Markets	4 (4-0-8)
ICMF 318 Investment Analysis and Portfolio Management	4 (4-0-8)
ICMF 319 Multinational Corporate Finance	4 (4-0-8)
ICMF 420 Financial Analysis and Modeling	4 (4-0-8)

no less than 20 Credits**Major Elective courses no less than 24 Credits**

ICBE 373 Econometrics and Data Analysis	4 (4-0-8)
ICMF 320 Business Taxation	4 (4-0-8)
ICMF 321 Intermediate Accounting	4 (4-0-8)
ICMF 322 Risk Management and Derivatives	4 (4-0-8)
ICMF 323 Banking and Financial Institutions Management	4 (4-0-8)
ICMF 324 Big Data and Financial Analytics	4 (4-0-8)
ICMF 425 Corporate and Alternative Asset Valuations	4 (4-0-8)
ICMF 426 Special Topics in Finance	4 (4-0-8)
ICMF 427 Financial Theory and Innovations in a Disruptive World	4 (4-0-8)
ICMB 496 Practical Business Training – On Campus	8 (2-32-10)
ICMB 497 Practical Business Training – Off Campus	8 (0-40-8)
ICMB 498 New Business Development Program	8 (2-12-10)

Note I: All BBA students are required to take either ICMB 496 Practical Business Training – On Campus or ICMB 497 Practical Business Training – Off Campus or ICMB 498 New Business Development Program in their last year of study as part of the Major Elective Courses. Students are not allowed to register for other courses in the trimester, which either one of the three courses is taken.

Note II: All BBA students can take ICMB 496 Practical Business Training–On Campus, ICMB 497 Practical Business Training – Off Campus, ICBM 401 Business Innovation and Entrepreneurship, and ICMB 402 Business Strategy in their fourth year of study.

Note III: All BBA students can take ICMB 490 Career Preparation, ICMF 426 Special Topics in Finance, ICMF 420 Financial Analysis and Modeling, and ICMF 427 Financial Theory and Innovation in Distributive World in their third year of study.

Note IV: All Finance student are required to complete a video viewing of CFA Modules, code of ethics and standards of professional conduct study before taking ICMB 497 Practical Business Training–Off Campus

I-Design Elective Courses**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 and the Curriculum Administrative Committee.
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 and the Curriculum Administrative Committee.

Free Elective Courses

8 credits

Students can take any courses offered by MUIC and/or Mahidol University as free elective courses with the approval from the advisor. A course within the student's major that is too closely related or redundant to core/required/elective courses is discouraged and may be disapproved by an academic advisor.

Finance Minor courses

no less than 20 Credits

To minor in Finance, students need to complete the following five courses.

ICMF 316 Financial Management	4 (4-0-8)
ICMF 317 International Financial Markets	4 (4-0-8)
ICMF 318 Investment Analysis and Portfolio Management	4 (4-0-8)
ICMF 319 Multinational Corporate Finance	4 (4-0-8)
ICMF 420 Financial Analysis and Modeling	4 (4-0-8)

FOOD SCIENCE AND TECHNOLOGY PROGRAM

DEGREE OFFERED

Bachelor of Science (Food Science and Technology) B.Sc. (Food Science and Technology)

THE FIELD

Food Science and Technology involves the application of a variety of scientific disciplines to food manufacturing. Students gain knowledge on physical, microbiological, and chemical properties and compositions of food, from raw materials all the way to finished products. Interrelated fields such as nutritional science, sensory science, processing, and engineering enable students to develop and manufacture safe and nutritious food products to meet consumer demand. The students will be stimulated to develop research specialization with strong critical thinking and innovation.

Our Food Science and Technology students can choose between two tracks in the third year, a research track and a work integrated education track that allow students to hone their skills through research or through experiences in industrial settings. In the final year, the students can select between two modules; food innovation and design module or culinary science module or they can explore more knowledge in many different areas of their choices.

CAREER OPPORTUNITIES

1. Graduates can work in Quality Control or Quality Assurance positions in food manufacturing and related markets.
2. Graduates can work in Food Product Research and Development departments.
3. Graduates can work in trading and services departments in private and governmental sectors.
4. Graduates will be demanded in food manufacturing and related markets.
5. Graduates can work in customer relations for food companies
6. Graduates can work in the field of food science and technology in academic organizations either in Thailand or outside Thailand.
7. Graduates can continue their study in the field of food science and technology and related fields including business administration, production management, supply chain management, marketing, food policy etc., in Thailand and abroad.
8. Graduates can pursue entrepreneurship in food area and related business.

CURRICULUM STRUCTURE

Courses	Credits
General Education Courses	38
Food Science Courses	114
I-Design Electives	20
Free Elective Courses	8
Total	180

COURSE LIST

Foundation Courses

ICMA 100 Foundation Mathematics
ICME 100 English Resource Skills

Non-credit

0 (4-0-0)
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 100 Foundation Mathematics 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 101 Academic Writing and Research I will be placed into the "ERS Track". These students will be required to take ICME 100 English Resource Skills and pass the course with the grade of "S" before moving to ICGC 101 Academic Writing and Research I.

General Education Courses

38 credits

English Communication

12-16 credits

ICGC 101 Academic Writing and Research I
ICGC 102 Academic Writing and Research II

4 (4-0-8)
4 (4-0-8)

ICGC 103 Public Speaking

4 (4-0-8)

ICGC 201 Global Realities

4 (4-0-8)

ICGC 202 Literary Analysis

4 (4-0-8)

ICGC 203 Creative Writing

4 (4-0-8)

ICGC 204 Advanced Oral Communication

4 (4-0-8)

ICGC 206 Literature Into Film

4 (4-0-8)

ICGC 208 Language and Culture

4 (4-0-8)

ICGC 210 First and Second Language Acquisition

4 (4-0-8)

ICGC 211 Topics in Comparative Literature A: Poetry

4 (4-0-8)

ICGC 212 Topics in Comparative Literature B: The Short Story and the Novel

4 (4-0-8)

ICGC 213 Topics in Comparative Literature C: Drama

4 (4-0-8)

ICGC 214 Literary Non-fiction

4 (4-0-8)

ICGC 215 Writing for Research

4 (4-0-8)

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

- **'ERS Track'** – Students who are placed into 'ERS Track' will be required to take ICME 100 (a non-credit course) and complete 16 credits in English Communication: ICGC 101, ICGC 102, ICGC 103 in order, and finally, any 200+ level English courses.
- **'GC Track'** – Students who are placed into 'GC Track' will be required to complete 16 credits in English Communication: ICGC 101, ICGC 102, ICGC 103 in order, and finally, any 200+ level English courses.
- **'GC2 Track'** – Students who are placed into 'GC2 Track' will be required to complete 12 credits in English Communication: ICGC 102, ICGC 103 in order, and finally, any 200+ level English courses.

Note II: Students in 'ERS Track' and 'GC Track' must take ICGC 101, ICGC 102 and ICGC 103 without interruption beginning in their first trimester of enrollment.

Note III: Students in 'GC2 Track' must take ICGC 102 and ICGC 103 without interruption beginning in their first trimester of enrollment.

Life Appreciation	4 credits
ICGH 113 Moving Pictures: A History of Film	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 119 Listen! Soundscapes, Well-Being and Musical Soul Searching	4 (4-0-8)
ICGN 105 Ecology, Ecosystems and Socio-Economics in Southeast Asia	4 (3-2-7)
ICGN 108 Essentials of Culinary Science for Food Business	4 (3-2-7)
ICGN 109 Food for Health	4 (4-0-8)
ICGN 110 Maker Workshop	4 (3-2-7)
ICGN 112 Stargazer	4 (3-2-7)
ICGN 113 Plants, People and Poisons	4 (4-0-8)
ICGN 115 Human Evolution, Diversity and Health	4 (4-0-8)
ICGN 120 Chemistry of Cosmetics and Dietary Supplements	4 (4-0-8)
ICGN 124 Climate Change and Human Society	4 (3-2-7)
ICGN 125 Games and Learning	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 117 Physical Fitness Plan	2 (2-0-4)
ICGS 102 Business Sustainability and the Global Climate Change	4 (4-0-8)
ICGS 111 Exploring Religions	4 (4-0-8)
ICGS 115 Sociology in the Modern World	4 (4-0-8)
ICGS 125 American History, Popular Media and Modern Life	4 (4-0-8)
ICGS 126 Introduction to Psychology	4 (4-0-8)
ICGS 127 Positive Psychology	4 (4-0-8)
ICGS 128 Global Gastronomy and Cuisines	4 (4-0-8)
ICGS 129 Tea Studies	2 (2-0-4)
ICGS 141 Coffee studies	2 (2-0-4)
ICGS 142 Contemporary Spirituality and Marketing	1 (1-0-2)

ICLL 100 Self Development

***Please see additional courses on page 290.

2 (2-0-4)

Global Citizenship**4 credits**

ICGH 116 World Cinemas	4 (4-0-8)
ICGH 120 Thai and ASEAN Cinema	4 (4-0-8)
ICGH 121 The End of the World? Development and Environment	4 (4-0-8)
ICGH 122 Introduction to Asian Philosophy	4 (4-0-8)
ICGH 123 Faiths, Ecological Justice, and the Tropical Rainforests	2 (2-0-4)
ICGH 127 Rome: An Empire's Rise and Fall	4 (4-0-8)
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 170 Diversities in Multilingual Societies	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 126 Plant Society	2 (2-0-4)
ICGS 106 Fashion and Society	4 (4-0-8)
ICGS 112 Geography of Human Activities	4 (4-0-8)
ICGS 123 Tourism Concepts and Practices	4 (4-0-8)

ICGS 130 Political Science	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 143 Introduction to Air Transport and Tourism	4 (4-0-8)

***Please see additional courses on page 290.

Critical Thinking

4 credits

ICGH 101 Biotechnology: from Science to Business	4 (4-0-8)
ICGH 102 Famous Arguments and Thought Experiments in Philosophy	4 (4-0-8)
ICGH 103 Logic, Analysis and Critical Thinking: Good and Bad Arguments	4 (4-0-8)
ICGH 105 Technology, Philosophy and Human Kind: Where Are We Now?!	4 (4-0-8)
ICGH 106 The Greeks: Crucible of Civilization	4 (4-0-8)
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 Languages and Its Application	4 (4-0-8)
ICGH 124 Life Drawing and Anatomy	4 (2-4-6)
ICGH 125 How Can We Know What Is Good? Moral Reasoning and Behavior	4 (4-0-8)
ICGH 126 Behavioral Ethics: Why Good People Do Bad Things	2 (2-0-4)
ICGN 107 The Chemistry of Everyday Life	4 (4-0-8)
ICGN 111 Physics for CEO	4 (4-0-8)
ICGN 123 The Earth's Dynamic Structure	4 (3-2-7)
ICGN 127 Practical Mathematics	2 (2-0-4)
ICGS 103 Economics in Modern Business	4 (4-0-8)
ICGS 105 Personal Financial Management	4 (4-0-8)
ICGS 113 Perspectives on the Thai Past	4 (4-0-8)
ICGS 134 Is Democracy Good?	4 (4-0-8)
ICGS 135 Entrepreneurial Accounting	4 (4-0-8)
ICGS 144 Price Discrimination: Why Do We Pay More Than Others?	1 (1-0-2)

***Please see additional courses on page 290.

Leadership

4 credits

ICGN 114 The Scientific Approach and Society	4 (4-0-8)
ICGN 128 Climate Emergency, Biodiversity Crisis, and Humanity at Risk	2 (1-2-3)
ICGS 104 Essentials of Entrepreneurship	4 (4-0-8)
ICGS 118 Skills in Dealing with People Across Cultures	4 (4-0-8)
ICGS 121 Abnormal Colleagues: How Do I Make This Work?	4 (4-0-8)
ICGS 136 Social and Health Issues in Thailand	4 (3-2-7)
ICGS 137 Witchcraft and Gender Representation	4 (4-0-8)
ICGS 138 Business Event Essentials	4 (4-0-8)
ICGS 139 Leadership and Change for a Global Society	4 (4-0-8)
ICGS 145 Service-Learning – Management of Community Service Project	4 (2-4-6)
ICGS 146 Service-Learning – Salaya Community Service Learning Project	4 (2-4-6)
ICGS 147 Women in Leadership	4 (4-0-8)
ICGS 148 Service Learning - Digital Campaign for Gender Issues	4 (2-4-6)
ICGS 149 Service Learning - Making Change	4 (2-4-6)
ICGS 150 Service Learning - Campaigning for a Cause	4 (4-0-8)
ICGS 151 Service Learning - The Art of Leadership in Practice	4 (2-4-6)
ICGS 152 Fantasy Literature's Environmental Message	4 (4-0-8)

ICGS 154 Introduction to Crisis Management in Service Businesses	4 (4-0-8)
ICGS 155 Pathway to Purpose: Life Design and Self-Exploration	4 (4-0-8)
ICLL 101 Professional Development	2 (2-0-4)
<i>***Please see additional courses on page 290.</i>	

Digital Literacy

4 credits

ICGH 111 Media Literacy: Skills for 21st Century Learning	4 (4-0-8)
ICGH 128 Internet Celebrity, Culture and the Media	4 (4-0-8)
ICGN 116 Understanding and Visualizing Data	4 (3-2-7)
ICGN 118 Everyday Connectivity	4 (4-0-8)
ICGN 119 Computer Essentials	4 (4-0-8)
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 131 Digital Search Literacy	2 (2-0-4)
ICGN 132 Digital Security and Privacy	2 (2-0-4)
ICGN 133 E-Business: Technology and Digital Strategies	4 (4-0-8)
ICGN 134 Introduction to Artificial Intelligence	2 (2-0-4)
ICGS 140 Fake News, Censorship and the Politics of Truth	4 (4-0-8)
ICGS 153 Social Media Management for Service Sector	2 (2-0-4)
ICLL 102 Skills for a Digital World	2 (2-0-4)
<i>***Please see additional courses on page 290.</i>	

General Education Elective Courses

2-6 Credits

Students need to take any GE courses to fulfill their 38 credits requirement of General Education: **2 credits** for students whose English Communication track are placed into 'ERS track' or 'GC Track' and **6 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.

Major Courses

114 credits

Core Courses

50 credits

ICBI 121 Biology I	4 (3-2-7)
ICCH 101 General Chemistry I	4 (4-0-8)
ICCH 102 General Chemistry II	4 (4-0-8)
ICCH 103 Integrated Laboratory Techniques in Chemistry I	2 (0-4-2)
ICCH 200 Analytical Chemistry A	4 (3-2-7)
ICCH 221 Organic Chemistry I	4 (4-0-8)
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)
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)

Major Required Courses

56 credits

ICFS 112 Principle of Food Science and technology	2 (2-0-4)
ICFS 314 Food Analysis	4 (3-2-7)
ICFS 317 Food Chemistry	4 (3-2-7)
ICFS 318 Food Ingredients Functionality	2 (2-0-4)

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 Shelflife 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 361 Principles of Quality Assurance in Food Processing	4 (4-0-8)
ICFS 362 Food Safety and Sanitation	4 (4-0-8)
ICFS 364 Food Law and Standards	3 (3-0-6)
ICFS 391 Scientific Research and Presentation	2 (2-0-4)
ICFS 491 Seminar in Food Science and Technology	2 (2-0-4)

****Students may choose one of the following **two** options:**

Research option:

Internship in Food Science and Technology and senior project in Food Science and Technology (ICFS 451 and ICFS 497) for a total **8** credits

ICFS 451 Internship in Food Science and Technology	4 (0-12-4)
ICFS 497 Senior Project in Food Science and Technology	4 (0-8-4)

Work integrated education option:

Work integrated education (ICFS 464) for a total of **8** credits

ICFS 464 Work Integrated Education	8 (0-24-0)
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Major Elective Courses

	8 credits
ICFS 320 Food Chemistry and Quality	4 (3-2-7)
ICFS 323 Foods for Sports and Exercises	4 (4-0-8)
ICFS 345 Food Product and Process Design	4 (4-0-8)
ICFS 365 Food Safety and Sanitation Management	4 (4-0-8)
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 375 Integrated Sensory and Consumer Sciences for Product Development	4 (3-2-7)
ICFS 376 Science of Thai Culinary Arts	4 (3-2-7)
ICFS 411 Food Product Development	4 (4-0-8)
ICFS 413 Marketing of Food Product and Services	2 (2-0-4)
ICFS 414 Operations Management in Food Business	2 (2-0-4)
ICFS 418 Fruits and Vegetables Technology	4 (3-2-7)
ICFS 419 Meat, Poultry and Marine Product Technology	4 (3-2-7)
ICFS 422 Dairy Products 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 Confectionary and Chocolate Technology	4 (3-2-7)
ICFS 432 Sensory Evaluation of Food Products	4 (3-2-7)
ICFS 436 Food Fermentation Technology	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 439 Food Product Innovation	4 (4-0-8)
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)

I-Design Elective Courses

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 and the Curriculum Administrative Committee.
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 and the Curriculum Administrative Committee.

Free Elective Courses

8 credits

Students can take any courses offered by MUIC and/or Mahidol University as free elective courses with the approval from the advisor. A course within the student's major that is too closely related or redundant to core/required/elective courses is discouraged and may be disapproved by an academic advisor.

Modules for Food Science students

1. Culinary Science Module

20 credits

Students who wish to complete a Culinary Science module must complete these following course

ICFS 171 Discovering Culinary Techniques	4 (2-4-6)
ICFS 172 World Cuisines	4 (2-4-6)
ICFS 373 Food Safety for Food Service Industry	2 (2-0-4)
ICFS 374 Experimental Design in Food Product Development	2 (1-2-3)
ICFS 375 Integrated Sensory and Consumer Science for Product Development	4 (3-2-7)
ICFS 413 Marketing of Food Product and Services	2 (2-0-4)
ICFS 414 Operations Management in Food Business	2 (2-0-4)

Minor

- Students may choose to take minor offered by other programs in MUIC. In order to obtain minor, students are required to complete all requirements as specified by each minor.

Food Innovation and Design Minor for non-Food Science students

20 credits

- To minor in Food Innovation and Design, students except Food Science major need to complete 20 credits of these following courses

ICMB 222 Principle of Marketing	4 (4-0-8)
ICFS 345 Food Product and Process Design	4 (4-0-8)
ICFS 365 Food Safety and Sanitation Management	4 (4-0-8)
ICFS 366 Consultancy and Auditing in Food Quality and Safety Management	4 (4-0-8)
ICFS 439 Food Product Innovation	4 (4-0-8)

Intercultural Studies and Languages Program

DEGREE OFFERED

Bachelor of Arts Program in Intercultural Studies and Languages (International Program)

B.A. Intercultural Studies and Languages (International Program)

CONCENTRATIONS

Intercultural Studies and Languages Program offers 3 concentrations:

1. Foreign Language and Culture Concentration (FLC)
2. Literary and Cultural Studies Concentration (LCS)
3. Ethics, Philosophy, and Economics Concentration (EPE)

THE FIELD

The Intercultural Studies Program provides an interdisciplinary and truly global approach to prepare students for a world in which they need to engage and interact in various cultural contexts. The program aims to be innovative in its design and responsive to today's rapidly changing world, while remaining faithful to the ideals of the liberal arts tradition, foremost of which is to promote good global citizenship by fostering cultural appreciation, multilingual proficiency, critical thinking skills, ethical leadership, and creative problem solving. This major brings together diverse aspects of a humanities/ liberal arts education: a broad range of methods, perspectives and challenges are explored in the areas of language, culture, and economics. In doing so, the program aims to foster the analytical and intuitive thinking skills, creativity, communicative facility and ethical awareness that prepare students to be future decision-makers and lifelong learners.

All students in the Intercultural Studies major study a common set of core courses designed to introduce them to theories and methodology in Intercultural Studies in addition to new fields and subfields of various related disciplines. Depending on their interests and abilities, students are encouraged to decide on one of three concentrations with close consultation with their advisor. Regular joint symposiums with faculty and students aim to develop a learning community that encourages knowledge creation and the exchange of ideas between students and instructors in the different orientations. In their final academic year, they are required to conduct research as part of an individual project or group seminar.

While developing competencies that are fundamental to all careers, the program will be of particular benefit to students preparing for graduate studies or further training in the field of humanities, such as in cultural studies, law, journalism, economics and politics. The strong interdisciplinary approach aims to widen students' intellectual abilities and analytical thinking so that they are competent decision- makers operating on a global sphere.

CAREER OPPORTUNITIES

- Journalists and media content developers
- Public relations officers and event organizers
- Public and foreign service specialists
- Academics and educators
- Political, economic and legal consultant
- Writers, editors and publishers

CURRICULUM STRUCTURE

Courses	Credits
General Education Courses	38
Major Courses	100
I-Design Electives	20
Free Elective Courses	8
Total	166

COURSE LIST**Foundation Courses**

ICMA 100 Foundation Mathematics
 ICME 100 English Resource Skills

Non-credit

0 (4-0-0)
 0 (4-0-0)

Note I: Based on their achievement on the essay portion of the MUIC entrance exam, students whose English placement is below ICGC 101 Academic Writing and Research I will be placed into the “ERS Track”. These students will be required to take ICME 100 English Resource Skills and pass the course with the grade of "S" before moving to ICGC 101 Academic Writing and Research I.

General Education Courses**38 credits****English Communication****12-16 credits**

ICGC 101 Academic Writing and Research I	4 (4-0-8)
ICGC 102 Academic Writing and Research II	4 (4-0-8)
ICGC 103 Public Speaking	4 (4-0-8)
ICGC 201 Global Realities	4 (4-0-8)
ICGC 202 Literary Analysis	4 (4-0-8)
ICGC 203 Creative Writing	4 (4-0-8)
ICGC 204 Advanced Oral Communication	4 (4-0-8)
ICGC 206 Literature Into Film	4 (4-0-8)
ICGC 208 Language and Culture	4 (4-0-8)
ICGC 210 First and Second Language Acquisition	4 (4-0-8)
ICGC 211 Topics in Comparative Literature A: Poetry	4 (4-0-8)
ICGC 212 Topics in Comparative Literature B: The Short Story and the Novel	4 (4-0-8)
ICGC 213 Topics in Comparative Literature C: Drama	4 (4-0-8)
ICGC 214 Literary Non-fiction	4 (4-0-8)
ICGC 215 Writing for Research	4 (4-0-8)

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

- **‘ERS Track’** – Students who are placed into ‘ERS Track’ will be required to take ICME 100 (a non-credit course) and complete 16 credits in English Communication: ICGC 101, ICGC 102, ICGC 103 in order, and finally, any 200+ level English courses.

- **'GC Track'** – Students who are placed into 'GC Track' will be required to complete 16 credits in English Communication: ICGC 101, ICGC 102, ICGC 103 in order, and finally, any 200+ level English courses.
- **'GC2 Track'** – Students who are placed into 'GC2 Track' will be required to complete 12 credits in English Communication: ICGC 102, ICGC 103 in order, and finally, any 200+ level English courses.

Note II: Students in 'ERS Track' and 'GC Track' must take ICGC 101, ICGC 102 and ICGC 103 without interruption beginning in their first trimester of enrollment.

Note III: Students in 'GC2 Track' must take ICGC 102 and ICGC 103 without interruption beginning in their first trimester of enrollment.

Life Appreciation

4 credits

ICGH 113 Moving Pictures: A History of Film	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 119 Listen! Soundscapes, Well-Being and Musical Soul Searching	4 (4-0-8)
ICGN 105 Ecology, Ecosystems and Socio-Economics in Southeast Asia	4 (3-2-7)
ICGN 108 Essentials of Culinary Science for Food Business	4 (3-2-7)
ICGN 109 Food for Health	4 (4-0-8)
ICGN 110 Maker Workshop	4 (3-2-7)
ICGN 112 Stargazer	4 (3-2-7)
ICGN 113 Plants, People and Poisons	4 (4-0-8)
ICGN 115 Human Evolution, Diversity and Health	4 (4-0-8)
ICGN 120 Chemistry of Cosmetics and Dietary Supplements	4 (4-0-8)
ICGN 124 Climate Change and Human Society	4 (3-2-7)
ICGN 125 Games and Learning	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 117 Physical Fitness Plan	2 (2-0-4)
ICGS 102 Business Sustainability and the Global Climate Change	4 (4-0-8)
ICGS 111 Exploring Religions	4 (4-0-8)
ICGS 115 Sociology in the Modern World	4 (4-0-8)
ICGS 125 American History, Popular Media and Modern Life	4 (4-0-8)

ICGS 126 Introduction to Psychology	4 (4-0-8)
ICGS 127 Positive Psychology	4 (4-0-8)
ICGS 128 Global Gastronomy and Cuisines	4 (4-0-8)
ICGS 129 Tea Studies	2 (2-0-4)
ICGS 141 Coffee studies	2 (2-0-4)
ICGS 142 Contemporary Spirituality and Marketing	1 (1-0-2)
ICLL 100 Self Development	2 (2-0-4)

***Please see additional courses on page 290.

Global Citizenship	4 credits
ICGH 116 World Cinemas	4 (4-0-8)
ICGH 120 Thai and ASEAN Cinema	4 (4-0-8)
ICGH 121 The End of the World? Development and Environment	4 (4-0-8)
ICGH 122 Introduction to Asian Philosophy	4 (4-0-8)
ICGH 123 Faiths, Ecological Justice, and the Tropical Rainforests	2 (2-0-4)
ICGH 127 Rome: An Empire's Rise and Fall	4 (4-0-8)
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 170 Diversities in Multilingual Societies	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 126 Plant Society	2 (2-0-4)
ICGS 106 Fashion and Society	4 (4-0-8)
ICGS 112 Geography of Human Activities	4 (4-0-8)
ICGS 123 Tourism Concepts and Practices	4 (4-0-8)
ICGS 130 Political Science	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 143 Introduction to Air Transport and Tourism	4 (4-0-8)

***Please see additional courses on page 290.

Critical Thinking

4 credits

ICGH 101 Biotechnology: from Science to Business	4 (4-0-8)
ICGH 102 Famous Arguments and Thought Experiments in Philosophy	4 (4-0-8)
ICGH 103 Logic, Analysis and Critical Thinking: Good and Bad Arguments	4 (4-0-8)
ICGH 105 Technology, Philosophy and Human Kind: Where Are We Now?!	4 (4-0-8)
ICGH 106 The Greeks: Crucible of Civilization	4 (4-0-8)
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 Languages and Its Application	4 (4-0-8)
ICGH 124 Life Drawing and Anatomy	4 (2-4-6)
ICGH 125 How Can We Know What Is Good? Moral Reasoning and Behavior	4 (4-0-8)
ICGH 126 Behavioral Ethics: Why Good People Do Bad Things	2 (2-0-4)
ICGN 107 The Chemistry of Everyday Life	4 (4-0-8)
ICGN 111 Physics for CEO	4 (4-0-8)
ICGN 123 The Earth's Dynamic Structure	4 (3-2-7)
ICGN 127 Practical Mathematics	2 (2-0-4)
ICGS 103 Economics in Modern Business	4 (4-0-8)
ICGS 105 Personal Financial Management	4 (4-0-8)
ICGS 113 Perspectives on the Thai Past	4 (4-0-8)
ICGS 134 Is Democracy Good?	4 (4-0-8)
ICGS 135 Entrepreneurial Accounting	4 (4-0-8)
ICGS 144 Price Discrimination: Why Do We Pay More Than Others?	1 (1-0-2)

***Please see additional courses on page 290.

Leadership

4 credits

ICGN 114 The Scientific Approach and Society	4 (4-0-8)
ICGN 128 Climate Emergency, Biodiversity Crisis, and Humanity at Risk	2 (1-2-3)
ICGS 104 Essentials of Entrepreneurship	4 (4-0-8)
ICGS 118 Skills in Dealing with People Across Cultures	4 (4-0-8)
ICGS 121 Abnormal Colleagues: How Do I Make This Work?	4 (4-0-8)
ICGS 136 Social and Health Issues in Thailand	4 (3-2-7)
ICGS 137 Witchcraft and Gender Representation	4 (4-0-8)
ICGS 138 Business Event Essentials	4 (4-0-8)
ICGS 139 Leadership and Change for a Global Society	4 (4-0-8)
ICGS 145 Service-Learning – Management of Community Service Project	4 (2-4-6)
ICGS 146 Service-Learning – Salaya Community Service Learning Project	4 (2-4-6)

ICGS 147 Women in Leadership	4 (4-0-8)
ICGS 148 Service Learning - Digital Campaign for Gender Issues	4 (2-4-6)
ICGS 149 Service Learning - Making Change	4 (2-4-6)
ICGS 150 Service Learning - Campaigning for a Cause	4 (4-0-8)
ICGS 151 Service Learning - The Art of Leadership in Practice	4 (2-4-6)
ICGS 152 Fantasy Literature's Environmental Message	4 (4-0-8)
ICGS 154 Introduction to Crisis Management in Service Businesses	4 (4-0-8)
ICGS 155 Pathway to Purpose: Life Design and Self-Exploration	4 (4-0-8)
ICLL 101 Professional Development	2 (2-0-4)

***Please see additional courses on page 290.

Digital Literacy

4 credits

ICGH 111 Media Literacy: Skills for 21st Century Learning	4 (4-0-8)
ICGH 128 Internet Celebrity, Culture and the Media	4 (4-0-8)
ICGN 116 Understanding and Visualizing Data	4 (3-2-7)
ICGN 118 Everyday Connectivity	4 (4-0-8)
ICGN 119 Computer Essentials	4 (4-0-8)
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 131 Digital Search Literacy	2 (2-0-4)
ICGN 132 Digital Security and Privacy	2 (2-0-4)
ICGN 133 E-Business: Technology and Digital Strategies	4 (4-0-8)
ICGN 134 Introduction to Artificial Intelligence	2 (2-0-4)
ICGS 140 Fake News, Censorship and the Politics of Truth	4 (4-0-8)
ICGS 153 Social Media Management for Service Sector	2 (2-0-4)
ICLL 102 Skills for a Digital World	2 (2-0-4)

***Please see additional courses on page 290.

General Education Elective Courses

2-6 Credits

Students need to take any GE courses to fulfill their 38 credits requirement of General Education: **2 credits** for students whose English Communication track are placed into 'ERS track' or 'GC Track' and **6 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.

Major Courses in Intercultural Studies and Languages

100 credits

Core Courses

40 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)
ICIC 451 Senior Writing Seminar	4 (4-0-8)

Note I: ICIC 451 Senior Writing Seminar is to be taken in the final year of the program.

Foreign Language and Culture Concentration (FLC)

Required Courses

8 Credits

ICIC 353 Comparative Literature and Civilization

4 (4-0-8)

ICIC 452 Independent Project in Humanities and Languages

4 (4-0-8)

Note: The 2 courses above are required courses for the Foreign Language and Culture Concentration. 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

52 Credits

Languages:

1. Students must complete 11 consecutive course levels in Language 1 (44 credits)
2. Students must complete 2 consecutive course levels in Language 2 (in any language other than Language 1. Previous knowledge accepted (placement test required) (8 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

Compulsory Courses for Literary and Cultural Studies Concentration

ICIC 351 Thinking the Other	4 (4-0-8)
ICIC 352 Postcolonialism: Diverse English Speaking Cultures	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 452 Independent Project in Humanities and Languages	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 364 Literary Theory and Criticism	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)

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 453 Research Seminar	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 373 Reason and Passion: The Philosophy of Emotion	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)
ICMB 201 Business Statistics	4 (4-0-8)
ICMB 205 Microeconomics	4 (4-0-8)
ICMB 206 Macroeconomics	4 (4-0-8)
ICBE 481 Game Theory for Business	4 (4-0-8)

Note: Students must take 6 courses from the above list of elective courses in the Ethics, Philosophy, and Economics 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.

I-Design Elective Courses

20 credits

The purpose of the I-Design elective 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 elective 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 and the Curriculum Administrative Committee.
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 and the Curriculum Administrative Committee.

Free Elective Courses

8 credits

Students can take any courses offered by MUIC and/or Mahidol University as free elective courses with the approval from the advisor. A course within the student's major that is too closely related or redundant to core/required/elective courses is discouraged and may be disapproved by an academic advisor.

Minors

ICIC students may choose to take any minor offered by any division in MUIC. In order to obtain a minor, students are required to complete all the requirements specified by each program.

- **'Foreign Language – German' Minor**

The Intercultural Studies and Languages program (ICIC) offers a minor in 'Foreign Language – German' to students from all majors in Mahidol University International College: Students who wish to obtain a minor in 'Foreign Language – German' need to complete all the 5 courses listed below.

If their placement test result is below the Intermediate level, they will have to complete prior levels as prerequisites. Special cases will be taken under consideration by the Foreign Languages Program Director and Chair of the Humanities and Language Division.

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)

Note: ICIC students who start from the Elementary I level or are placed below the Intermediate level can count prerequisites as free elective courses, major elective courses (L2 requirements) or additional credits.

- **‘Foreign Language – Japanese’ Minor**

The Intercultural Studies and Languages program (ICIC) offers a minor in ‘Foreign Language – Japanese’ to students from all majors in Mahidol University International College: Students who wish to obtain a minor in ‘Foreign Language – Japanese’ need to complete all the 5 courses listed below.

If their placement test result is below the Intermediate level, they will have to complete prior levels as prerequisites. Special cases will be taken under consideration by the Foreign Languages Program Director and Chair of the Humanities and Language Division.

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)

Note: ICIC students who start from the Elementary I level or are placed below the Intermediate level can count prerequisites as free elective courses, major elective courses (L2 requirements) or additional credits.

- **‘Foreign Language – French’ Minor**

The Intercultural Studies and Languages program (ICIC) offers a minor in ‘Foreign Language – French’ to students from all majors in Mahidol University International College: Students who wish to obtain a minor in ‘Foreign Language – French’ need to complete all the 5 courses listed below.

If their placement test result is below the Intermediate level, they will have to complete prior levels as prerequisites. Special cases will be taken under consideration by the Foreign Languages Program Director and Chair of the Humanities and Language Division.

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)

Note: ICIC students who start from the Elementary I level or are placed below the Intermediate level can count prerequisites as free elective courses, major elective courses (L2 requirements) or additional credits.

- **‘Foreign Language – Chinese’ Minor**

The Intercultural Studies and Languages program (ICIC) offers a minor in ‘Foreign Language – Chinese’ to students from all majors in Mahidol University International College: Students who wish to obtain a minor in ‘Foreign Language – Chinese’ need to complete all the 5 courses listed below.

If their placement test result is below the Intermediate level, they will have to complete prior levels as prerequisites. Special cases will be taken under consideration by the Foreign Languages Program Director and Chair of the Humanities and Language Division.

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)

Note: ICIC students who start from the Elementary I level or are placed below the Intermediate level can count prerequisites as free elective courses, major elective courses (L2 requirements) or additional credits.

- **‘Foreign Language – Spanish’ Minor**

The Intercultural Studies and Languages program (ICIC) offers a minor in ‘Foreign Language – Spanish’ to students from all majors in Mahidol University International College. Students who wish to obtain a minor in ‘Foreign Language – Spanish’ need to complete all the 5 courses listed below.

If their placement test result is below the Intermediate level, they will have to complete prior levels as prerequisites. Special cases will be taken under consideration by the Foreign Languages Program Director and Chair of the Humanities and Language Division.

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)

Note: ICIC students who start from the Elementary I level or are placed below the Intermediate level can count prerequisites as free elective courses, major elective courses (L2 requirements) or additional credits.

- **‘Critical Cultural Literacy’ Minor**

The Intercultural Studies and Languages program (ICIC) offers a minor in ‘Critical Cultural Literacy’ to students from all majors in Mahidol University International College. Students who wish to obtain a minor in ‘Critical Cultural Literacy’ need to complete any 5 courses from the list below.

ICIC 251 Contemporary Southeast Asia: Cultural Studies	4 (4-0-8)
ICIC 259 Intercultural Communication	4 (4-0-8)
ICIC 351 Thinking the Other	4 (4-0-8)
ICIC 352 Postcolonialism: Diverse English Speaking Cultures	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 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 372 From Modernism to Postmodernism	4 (4-0-8)

- **‘Applied Ethics, Behavioral Analysis and Social Engineering’ Minor**

The Intercultural Studies and Languages program (ICIC) offers a minor in ‘Applied Ethics, Behavioral Analysis and Social Engineering’ to students from all majors in Mahidol University International College:

1. Students who wish to obtain a minor in ‘Applied Ethics and Behavioral Science’ need to first complete the following 2 compulsory courses.

ICIC 356 Ethics and Politics	4 (4-0-8)
ICIC 375 Behavior, Ethics and Technology	4 (4-0-8)

2. Students who wish to obtain a minor in ‘Applied Ethics and Behavioral Science’ need to then complete any 3 courses from the list below.

ICIC 253 Value Studies	4 (4-0-8)
ICIC 355 Judgment and Decision Making	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)

- **‘Human and Artificial Intelligence’ Minor**

The Intercultural Studies and Languages program (ICIC) offers a minor in ‘Human and Artificial Intelligence’ to students from all majors in Mahidol University International College:

1. Students who wish to obtain a minor in ‘Human and Artificial Intelligence’ need to first complete the following 2 compulsory courses.

ICIC 371 Minds and Machines	4 (4-0-8)
ICIC 376 Information, Knowledge, Representation	4 (4-0-8)

2. Students who wish to obtain a minor in ‘Human and Artificial Intelligence’ need to then complete any 3 courses from the list below.

EGCI 461 Artificial Intelligence	4 (4-0-8)
ICCS 161 Introduction to Data Science	4 (3-2-7)
ICIC 252 Formal Reasoning: Human and Artificial	4 (4-0-8)
ICIC 369 Humanity Today: Between Science and Fiction	4 (4-0-8)
ICIC 373 Reason and Passion: The Philosophy of Emotion	4 (4-0-8)

Certificate

- **Elementary Chinese**

*Level: Beginner

12 credits

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)

- **Elementary French**

*Level: Beginner

12 credits

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)

- **Elementary German**

*Level: Beginner

12 credits

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)

- **Elementary Japanese**

*Level: Beginner

12 credits

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)

- **Elementary Spanish**

*Level: Beginner

12 credits

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)

- **Elementary Thai**

*Level: Beginner

12 credits

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)

**Note: The contents are subject to change without prior notice. Students are advised to check for up-to-date information with the relevant offices or departments*

- **Pre-intermediate Chinese**

*Level: Pre-intermediate

12 credits

ICGL 231 Pre-intermediate Chinese I
ICGL 232 Pre-intermediate Chinese II
ICGL 233 Pre-intermediate Chinese III

4 (4-0-8)
4 (4-0-8)
4 (4-0-8)

- **Pre-intermediate French**

*Level: Pre-intermediate

12 credits

ICGL 221 Pre-intermediate French I
ICGL 222 Pre-intermediate French II
ICGL 223 Pre-intermediate French III

4 (4-0-8)
4 (4-0-8)
4 (4-0-8)

- **Pre-intermediate German**

*Level: Pre-intermediate

12 credits

ICGL 201 Pre-intermediate German I
ICGL 202 Pre-intermediate German II
ICGL 203 Pre-intermediate German III

4 (4-0-8)
4 (4-0-8)
4 (4-0-8)

- **Pre-intermediate Japanese**

*Level: Pre-intermediate

12 credits

ICGL 211 Pre-intermediate Japanese I
ICGL 212 Pre-intermediate Japanese II
ICGL 213 Pre-intermediate Japanese III

4 (4-0-8)
4 (4-0-8)
4 (4-0-8)

- **Pre-intermediate Spanish**

*Level: Pre-intermediate

12 credits

ICGL 241 Pre-intermediate Spanish I
ICGL 242 Pre-intermediate Spanish II
ICGL 243 Pre-intermediate Spanish III

4 (4-0-8)
4 (4-0-8)
4 (4-0-8)

Note:

- I. Students need to make sure they first pass prerequisites to the courses
- II. Please check the criteria and requirement before applying for the certificate

**Note: The contents are subject to change without prior notice. Students are advised to check for up-to-date information with the relevant offices or departments*

INTERNATIONAL BUSINESS PROGRAM

DEGREES OFFERED

Bachelor of Business Administration (International Business)

B.B.A. (International Business)

THE FIELD

Given the rapid and ever-increasing developments in globalization, the International Business Major has become one of the most popular academic programs at MUIC, particularly since it explores all facets of operating a business internationally. The curriculum offers a wide range of business issues and concerns in the areas of economics, trade, finance, marketing, human resources, operations, legal issues, ethics, import and export, the impact on foreign direct investment (FDI) as well as global business competition and co-operation. Business negotiations and international business management are emphasized in such a way as to provide students with a greater insight into global leadership development and identifying alternative approaches for entering various markets worldwide.

CAREER OPPORTUNITIES

Apart from pursuing graduate studies in their designated field, International Business majors can readily secure managerial positions in multinational corporations in such areas as import/exports, operations and sales, logistics and business development. Opportunities also exist in international business and strategic management as well as entrepreneurial endeavors.

CURRICULUM STRUCTURE

Courses	Credits
General Education Courses	38
Core Business Courses	73
Major Required Courses	20
Major Elective Courses	24
I-Design Electives	20
Free Elective Courses	8
Total	183

COURSE LIST

Foundation Courses

ICMA 100 Foundation Mathematics

ICME 100 English Resource Skills

Non-credit

0 (4-0-0)

0 (4-0-0)

Note I: For B.B.A. students, students whose Mathematics placement is below ICMB 200 Business Mathematics are required to take ICMA 100 Foundation Mathematics and pass the course with the grade of "S" before moving to ICMB 200 Business Mathematics.

Note II: Based on their achievement on the essay portion of the MUIC entrance exam, students whose English placement is below ICGC 101 Academic Writing and Research I will be placed into the "ERS Track". These students

will be required to take ICME 100 English Resource Skills and pass the course with the grade of "S" before moving to ICGC 101 Academic Writing and Research I.

General Education Courses

38 credits

English Communication

12-16 credits

ICGC 101 Academic Writing and Research I	4 (4-0-8)
ICGC 102 Academic Writing and Research II	4 (4-0-8)
ICGC 103 Public Speaking	4 (4-0-8)
ICGC 201 Global Realities	4 (4-0-8)
ICGC 202 Literary Analysis	4 (4-0-8)
ICGC 203 Creative Writing	4 (4-0-8)
ICGC 204 Advanced Oral Communication	4 (4-0-8)
ICGC 206 Literature Into Film	4 (4-0-8)
ICGC 208 Language and Culture	4 (4-0-8)
ICGC 210 First and Second Language Acquisition	4 (4-0-8)
ICGC 211 Topics in Comparative Literature A: Poetry	4 (4-0-8)
ICGC 212 Topics in Comparative Literature B: The Short Story and the Novel	4 (4-0-8)
ICGC 213 Topics in Comparative Literature C: Drama	4 (4-0-8)
ICGC 214 Literary Non-fiction	4 (4-0-8)
ICGC 215 Writing for Research	4 (4-0-8)

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

- **'ERS Track'** – Students who are placed into 'ERS Track' will be required to take ICME 100 (a non-credit course) and complete 16 credits in English Communication: ICGC 101, ICGC 102, ICGC 103 in order, and finally, any 200+ level English courses.
- **'GC Track'** – Students who are placed into 'GC Track' will be required to complete 16 credits in English Communication: ICGC 101, ICGC 102, ICGC 103 in order, and finally, any 200+ level English courses.
- **'GC2 Track'** – Students who are placed into 'GC2 Track' will be required to complete 12 credits in English Communication: ICGC 102, ICGC 103 in order, and finally, any 200+ level English courses.

Note II: Students in 'ERS Track' and 'GC Track' must take ICGC 101, ICGC 102 and ICGC 103 without interruption beginning in their first trimester of enrollment.

Note III: Students in 'GC2 Track' must take ICGC 102 and ICGC 103 without interruption beginning in their first trimester of enrollment.

Life Appreciation

4 credits

ICGH 113 Moving Pictures: A History of Film	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 119 Listen! Soundscapes, Well-Being and Musical Soul Searching	4 (4-0-8)
ICGN 105 Ecology, Ecosystems and Socio-Economics in Southeast Asia	4 (3-2-7)
ICGN 108 Essentials of Culinary Science for Food Business	4 (3-2-7)
ICGN 109 Food for Health	4 (4-0-8)
ICGN 110 Maker Workshop	4 (3-2-7)
ICGN 112 Stargazer	4 (3-2-7)

ICGN 113 Plants, People and Poisons	4 (4-0-8)
ICGN 115 Human Evolution, Diversity and Health	4 (4-0-8)
ICGN 120 Chemistry of Cosmetics and Dietary Supplements	4 (4-0-8)
ICGN 124 Climate Change and Human Society	4 (3-2-7)
ICGN 125 Games and Learning	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 117 Physical Fitness Plan	2 (2-0-4)
ICGS 102 Business Sustainability and the Global Climate Change	4 (4-0-8)
ICGS 111 Exploring Religions	4 (4-0-8)
ICGS 115 Sociology in the Modern World	4 (4-0-8)
ICGS 125 American History, Popular Media and Modern Life	4 (4-0-8)
ICGS 126 Introduction to Psychology	4 (4-0-8)
ICGS 127 Positive Psychology	4 (4-0-8)
ICGS 128 Global Gastronomy and Cuisines	4 (4-0-8)
ICGS 129 Tea Studies	2 (2-0-4)
ICGS 141 Coffee studies	2 (2-0-4)
ICGS 142 Contemporary Spirituality and Marketing	1 (1-0-2)
ICLL 100 Self Development	2 (2-0-4)

***Please see additional courses on page 290.

Global Citizenship	4 credits
ICGH 116 World Cinemas	4 (4-0-8)
ICGH 120 Thai and ASEAN Cinema	4 (4-0-8)
ICGH 121 The End of the World? Development and Environment	4 (4-0-8)
ICGH 122 Introduction to Asian Philosophy	4 (4-0-8)
ICGH 123 Faiths, Ecological Justice, and the Tropical Rainforests	2 (2-0-4)
ICGH 127 Rome: An Empire's Rise and Fall	4 (4-0-8)
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 170 Diversities in Multilingual Societies	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 126 Plant Society	2 (2-0-4)
ICGS 106 Fashion and Society	4 (4-0-8)
ICGS 112 Geography of Human Activities	4 (4-0-8)
ICGS 123 Tourism Concepts and Practices	4 (4-0-8)
ICGS 130 Political Science	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 143 Introduction to Air Transport and Tourism	4 (4-0-8)

***Please see additional courses on page 290.

Critical Thinking

4 credits

ICGH 101 Biotechnology: from Science to Business	4 (4-0-8)
ICGH 102 Famous Arguments and Thought Experiments in Philosophy	4 (4-0-8)
ICGH 103 Logic, Analysis and Critical Thinking: Good and Bad Arguments	4 (4-0-8)
ICGH 105 Technology, Philosophy and Human Kind: Where Are We Now?!	4 (4-0-8)
ICGH 106 The Greeks: Crucible of Civilization	4 (4-0-8)
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 Languages and Its Application	4 (4-0-8)
ICGH 124 Life Drawing and Anatomy	4 (2-4-6)
ICGH 125 How Can We Know What Is Good? Moral Reasoning and Behavior	4 (4-0-8)
ICGH 126 Behavioral Ethics: Why Good People Do Bad Things	2 (2-0-4)
ICGN 107 The Chemistry of Everyday Life	4 (4-0-8)
ICGN 111 Physics for CEO	4 (4-0-8)
ICGN 123 The Earth's Dynamic Structure	4 (3-2-7)
ICGN 127 Practical Mathematics	2 (2-0-4)
ICGS 103 Economics in Modern Business	4 (4-0-8)
ICGS 105 Personal Financial Management	4 (4-0-8)
ICGS 113 Perspectives on the Thai Past	4 (4-0-8)
ICGS 134 Is Democracy Good?	4 (4-0-8)
ICGS 135 Entrepreneurial Accounting	4 (4-0-8)
ICGS 144 Price Discrimination: Why Do We Pay More Than Others?	1 (1-0-2)
<i>***Please see additional courses on page 290.</i>	

Leadership

4 credits

ICGN 114 The Scientific Approach and Society	4 (4-0-8)
ICGN 128 Climate Emergency, Biodiversity Crisis, and Humanity at Risk	2 (1-2-3)
ICGS 104 Essentials of Entrepreneurship	4 (4-0-8)
ICGS 118 Skills in Dealing with People Across Cultures	4 (4-0-8)
ICGS 121 Abnormal Colleagues: How Do I Make This Work?	4 (4-0-8)
ICGS 136 Social and Health Issues in Thailand	4 (3-2-7)
ICGS 137 Witchcraft and Gender Representation	4 (4-0-8)
ICGS 138 Business Event Essentials	4 (4-0-8)
ICGS 139 Leadership and Change for a Global Society	4 (4-0-8)
ICGS 145 Service-Learning – Management of Community Service Project	4 (2-4-6)
ICGS 146 Service-Learning – Salaya Community Service Learning Project	4 (2-4-6)
ICGS 147 Women in Leadership	4 (4-0-8)
ICGS 148 Service Learning - Digital Campaign for Gender Issues	4 (2-4-6)
ICGS 149 Service Learning - Making Change	4 (2-4-6)
ICGS 150 Service Learning - Campaigning for a Cause	4 (4-0-8)
ICGS 151 Service Learning - The Art of Leadership in Practice	4 (2-4-6)
ICGS 152 Fantasy Literature's Environmental Message	4 (4-0-8)
ICGS 154 Introduction to Crisis Management in Service Businesses	4 (4-0-8)
ICLL 101 Professional Development	2 (2-0-4)
<i>***Please see additional courses on page 290.</i>	

Digital Literacy

4 credits

ICGH 111 Media Literacy: Skills for 21st Century Learning	4 (4-0-8)
ICGH 128 Internet Celebrity, Culture and the Media	4 (4-0-8)
ICGN 116 Understanding and Visualizing Data	4 (3-2-7)
ICGN 118 Everyday Connectivity	4 (4-0-8)
ICGN 119 Computer Essentials	4 (4-0-8)
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 131 Digital Search Literacy	2 (2-0-4)
ICGN 132 Digital Security and Privacy	2 (2-0-4)
ICGN 133 E-Business: Technology and Digital Strategies	4 (4-0-8)
ICGN 134 Introduction to Artificial Intelligence	2 (2-0-4)
ICGS 140 Fake News, Censorship and the Politics of Truth	4 (4-0-8)

ICGS 153 Social Media Management for Service Sector	2 (2-0-4)
ICLL 102 Skills for a Digital World	2 (2-0-4)
***Please see additional courses on page 290.	

General Education Elective Courses

2-6 Credits

Students need to take any GE courses to fulfill their 38 credits requirement of General Education: **2 credits** for students whose English Communication track are placed into 'ERS track' or 'GC Track' and **6 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.

Core Business courses

no less than 73 Credits

ICMB 200 Business Mathematics	4 (4-0-8)
ICMB 201 Business Statistics	4 (4-0-8)
ICMB 205 Microeconomics	4 (4-0-8)
ICMB 206 Macroeconomics	4 (4-0-8)
ICMB 207 Management of Business Information	4 (4-0-8)
ICMB 213 Financial Accounting	4 (4-0-8)
ICMB 214 Managerial Accounting	4 (4-0-8)
ICMB 215 Business Finance for Entrepreneurs	4 (4-0-8)
ICMB 216 Business Communication	4 (4-0-8)
ICMB 222 Principles of Marketing	4 (4-0-8)
ICMB 235 Management and Organizational Behavior	4 (4-0-8)
ICMB 236 Human Resources Management	4 (4-0-8)
ICMB 237 International Business Management	4 (4-0-8)
ICMB 310 Business Law	4 (4-0-8)
ICMB 311 Business Ethics and Sustainability	4 (4-0-8)
ICMB 312 Management Science	4 (4-0-8)
ICMB 314 Operations and Project Management	4 (4-0-8)
ICMB 401 Business Innovation and Entrepreneurship	4 (4-0-8)
OR	
ICMB 402 Business Strategy	4 (4-0-8)
ICMB 490 Career Preparation	1 (1-0-2)

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

1. Passed ICGC 101 Academic Writing and Research I with at least "D" grade or being placed in the English course level higher than ICGC 101 Academic Writing and Research I.
2. Passed ICMA 100 Foundation Mathematics with "S" grade or the placement Test.

Note II: All BBA students are required to take either ICMB 401 Business Innovation and Entrepreneurship OR ICMB 402 Business Strategy.

Major Required courses

no less than 20 Credits

ICMI 331 Global Logistics and Supply Chain Management	4 (4-0-8)
ICMI 332 Diversity, Cross Culture and Expatriate Management	4 (4-0-8)
ICMI 333 Global Trade, Policies, and Regulations	4 (4-0-8)

ICMI 431 Risk Management in International Business	4 (4-0-8)
ICMI 432 Internationalization Strategy	4 (4-0-8)

Major Elective courses

no less than 24 Credits

ICBE 372 World Economy	4 (4-0-8)
ICMI 334 Regional Business Study	4 (4-0-8)
ICMI 335 Legal Issues in International Business	4 (4-0-8)
ICMI 336 Leadership and Change Management in the Global Business	4 (4-0-8)
ICMI 337 Management and Governance in Multinational Enterprises	4 (4-0-8)
ICMI 436 Special Topics in International Business	4 (4-0-8)
ICMK 453 Global Marketing Strategy	4 (4-0-8)
ICMB 496 Practical Business Training – On Campus	8 (2-32-10)
ICMB 497 Practical Business Training – Off Campus	8 (0-40-8)
ICMB 498 New Business Development Program	8 (2-12-10)

Note I: All BBA students are required to take either ICMB 496 Practical Business Training – On Campus or ICMB 497 Practical Business Training – Off Campus or ICMB 498 New Business Development Program in their last year of study as part of the Major Elective Courses. Students are not allowed to register for other courses in the trimester, which either one of the three courses is taken.

Note II: All BBA students can take ICMB 496 Practical Business Training – On Campus, ICMB 497 Practical Business Training – Off Campus, ICBM 401 Business Innovation and Entrepreneurship, ICMB 402 Business Strategy, and ICMI 432 Internationalization Strategy in their fourth year of study.

Note III: All BBA students can take ICMB 490 Career Preparation, ICMI 436 Special Topics in International Business, and in their third year of study.

I-Design Elective Courses

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 and the Curriculum Administrative Committee.
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 and the Curriculum Administrative Committee.

Free Elective Courses

8 credits

Students can take any courses offered by MUIC and/or Mahidol University as free elective courses with the approval from the advisor. A course within the student's major that is too closely related or redundant to core/required/elective courses is discouraged and may be disapproved by an academic advisor.

International Business Minor courses

no less than 20 Credits

- To minor in International Business, students need to complete the following five courses.

ICMI 331 Global Logistics and Supply Chain Management	4 (4-0-8)
ICMI 332 Diversity, Cross Culture and Expatriate Management	4 (4-0-8)
ICMI 333 Global Trade, Policies, and Regulations	4 (4-0-8)
ICMI 431 Risk Management in International Business	4 (4-0-8)
ICMI 432 Internationalization Strategy	4 (4-0-8)

International Relations and Global Affairs Program

DEGREE OFFERED

Bachelor of Arts (International Relations and Global Affairs)

B.A. (International Relations and Global Affairs)

THE FIELD

The Social Science Division currently offers a Bachelor degree in International Relations and Global Affairs where students can graduate within three years. The program prepares students for a wide variety of careers in public and private sectors, international organizations and NGOs. Building on existing Divisional and College strengths, it provides students with the skills and knowledge essential for success in a competitive, interdependent and rapidly-changing 21st century. It supports the goal, articulated in the Thailand 4.0 program, of “International awareness and orientation: harnessing globalization”. Students can choose a Senior Thesis or Internship to prepare them for further academic studies and / or a professional career.

Career Opportunities

The Social Science Division is committed to providing high quality education to our students integrating academic and practical skills based content in courses. Our alumni are engaged in wide range of professions which include but are not limited to the following; politics, government, diplomats, NGO professionals, United Nations, commercial aircraft pilots, entrepreneurship, development agencies, tourism and travel, hotel management, consultants, journalism, international business and many more.

CURRICULUM STRUCTURE

Courses	Credits
General Education Courses	38
Core Courses	52
Major Elective Courses	60
Free Elective Courses	8
Total	158

COURSE LIST

Foundation Courses

ICMA 100 Foundation Mathematics

ICME 100 English Resource Skills

Non-credit

0 (4-0-0)

0 (4-0-0)

Note I: Based on their achievement on the essay portion of the MUIC entrance exam, students whose English placement is below ICGC 101 Academic Writing and Research I will be placed into the “ERS Track”. These students will be required to take ICME 100 English Resource Skills and pass the course with the grade of “S” before moving to ICGC 101 Academic Writing and Research I.

General Education Courses

38 credits

English Communication

12-16 credits

ICGC 101 Academic Writing and Research I	4 (4-0-8)
ICGC 102 Academic Writing and Research II	4 (4-0-8)
ICGC 103 Public Speaking	4 (4-0-8)
ICGC 201 Global Realities	4 (4-0-8)
ICGC 202 Literary Analysis	4 (4-0-8)
ICGC 203 Creative Writing	4 (4-0-8)
ICGC 204 Advanced Oral Communication	4 (4-0-8)
ICGC 206 Literature Into Film	4 (4-0-8)
ICGC 208 Language and Culture	4 (4-0-8)
ICGC 210 First and Second Language Acquisition	4 (4-0-8)
ICGC 211 Topics in Comparative Literature A: Poetry	4 (4-0-8)
ICGC 212 Topics in Comparative Literature B: The Short Story and the Novel	4 (4-0-8)
ICGC 213 Topics in Comparative Literature C: Drama	4 (4-0-8)
ICGC 214 Literary Non-fiction	4 (4-0-8)
ICGC 215 Writing for Research	4 (4-0-8)

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

- **'ERS Track'** – Students who are placed into 'ERS Track' will be required to take ICME 100 (a non-credit course) and complete 16 credits in English Communication: ICGC 101, ICGC 102, ICGC 103 in order, and finally, any 200+ level English courses.
- **'GC Track'** – Students who are placed into 'GC Track' will be required to complete 16 credits in English Communication: ICGC 101, ICGC 102, ICGC 103 in order, and finally, any 200+ level English courses.
- **'GC2 Track'** – Students who are placed into 'GC2 Track' will be required to complete 12 credits in English Communication: ICGC 102, ICGC 103 in order, and finally, any 200+ level English courses.

Note II: Students in 'ERS Track' and 'GC Track' must take ICGC 101, ICGC 102 and ICGC 103 without interruption beginning in their first trimester of enrollment.

Note III: Students in 'GC2 Track' must take ICGC 102 and ICGC 103 without interruption beginning in their first trimester of enrollment.

Life Appreciation

4 credits

ICGH 113 Moving Pictures: A History of Film	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 119 Listen! Soundscapes, Well-Being and Musical Soul Searching	4 (4-0-8)
ICGN 105 Ecology, Ecosystems and Socio-Economics in Southeast Asia	4 (3-2-7)
ICGN 108 Essentials of Culinary Science for Food Business	4 (3-2-7)
ICGN 109 Food for Health	4 (4-0-8)
ICGN 110 Maker Workshop	4 (3-2-7)
ICGN 112 Stargazer	4 (3-2-7)
ICGN 113 Plants, People and Poisons	4 (4-0-8)

ICGN 115 Human Evolution, Diversity and Health	4 (4-0-8)
ICGN 120 Chemistry of Cosmetics and Dietary Supplements	4 (4-0-8)
ICGN 124 Climate Change and Human Society	4 (3-2-7)
ICGN 125 Games and Learning	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 117 Physical Fitness Plan	2 (2-0-4)
ICGS 102 Business Sustainability and the Global Climate Change	4 (4-0-8)
ICGS 111 Exploring Religions	4 (4-0-8)
ICGS 115 Sociology in the Modern World	4 (4-0-8)
ICGS 125 American History, Popular Media and Modern Life	4 (4-0-8)
ICGS 126 Introduction to Psychology	4 (4-0-8)
ICGS 127 Positive Psychology	4 (4-0-8)
ICGS 128 Global Gastronomy and Cuisines	4 (4-0-8)
ICGS 129 Tea Studies	2 (2-0-4)
ICGS 141 Coffee studies	2 (2-0-4)
ICGS 142 Contemporary Spirituality and Marketing	1 (1-0-2)
ICLL 100 Self Development	2 (2-0-4)

***Please see additional courses on page 290.

Global Citizenship	4 credits
ICGH 116 World Cinemas	4 (4-0-8)
ICGH 120 Thai and ASEAN Cinema	4 (4-0-8)
ICGH 121 The End of the World? Development and Environment	4 (4-0-8)
ICGH 122 Introduction to Asian Philosophy	4 (4-0-8)
ICGH 123 Faiths, Ecological Justice, and the Tropical Rainforests	2 (2-0-4)
ICGH 127 Rome: An Empire's Rise and Fall	4 (4-0-8)
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 170 Diversities in Multilingual Societies	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 126 Plant Society	2 (2-0-4)
ICGS 106 Fashion and Society	4 (4-0-8)
ICGS 112 Geography of Human Activities	4 (4-0-8)
ICGS 123 Tourism Concepts and Practices	4 (4-0-8)
ICGS 130 Political Science	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 143 Introduction to Air Transport and Tourism	4 (4-0-8)

***Please see additional courses on page 290.

Critical Thinking

4 credits

ICGH 101 Biotechnology: from Science to Business	4 (4-0-8)
ICGH 102 Famous Arguments and Thought Experiments in Philosophy	4 (4-0-8)
ICGH 103 Logic, Analysis and Critical Thinking: Good and Bad Arguments	4 (4-0-8)
ICGH 105 Technology, Philosophy and Human Kind: Where Are We Now?!	4 (4-0-8)
ICGH 106 The Greeks: Crucible of Civilization	4 (4-0-8)
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 Languages and Its Application	4 (4-0-8)
ICGH 124 Life Drawing and Anatomy	4 (2-4-6)

ICGH 125 How Can We Know What Is Good? Moral Reasoning and Behavior	4 (4-0-8)
ICGH 126 Behavioral Ethics: Why Good People Do Bad Things	2 (2-0-4)
ICGN 107 The Chemistry of Everyday Life	4 (4-0-8)
ICGN 111 Physics for CEO	4 (4-0-8)
ICGN 123 The Earth's Dynamic Structure	4 (3-2-7)
ICGN 127 Practical Mathematics	2 (2-0-4)
ICGS 103 Economics in Modern Business	4 (4-0-8)
ICGS 105 Personal Financial Management	4 (4-0-8)
ICGS 113 Perspectives on the Thai Past	4 (4-0-8)
ICGS 134 Is Democracy Good?	4 (4-0-8)
ICGS 135 Entrepreneurial Accounting	4 (4-0-8)
ICGS 144 Price Discrimination: Why Do We Pay More Than Others?	1 (1-0-2)
<i>***Please see additional courses on page 290.</i>	

Leadership

4 credits

ICGN 114 The Scientific Approach and Society	4 (4-0-8)
ICGN 128 Climate Emergency, Biodiversity Crisis, and Humanity at Risk	2 (1-2-3)
ICGS 104 Essentials of Entrepreneurship	4 (4-0-8)
ICGS 118 Skills in Dealing with People Across Cultures	4 (4-0-8)
ICGS 121 Abnormal Colleagues: How Do I Make This Work?	4 (4-0-8)
ICGS 136 Social and Health Issues in Thailand	4 (3-2-7)
ICGS 137 Witchcraft and Gender Representation	4 (4-0-8)
ICGS 138 Business Event Essentials	4 (4-0-8)
ICGS 139 Leadership and Change for a Global Society	4 (4-0-8)
ICGS 145 Service-Learning – Management of Community Service Project	4 (2-4-6)
ICGS 146 Service-Learning – Salaya Community Service Learning Project	4 (2-4-6)
ICGS 147 Women in Leadership	4 (4-0-8)
ICGS 148 Service Learning - Digital Campaign for Gender Issues	4 (2-4-6)
ICGS 149 Service Learning - Making Change	4 (2-4-6)
ICGS 150 Service Learning - Campaigning for a Cause	4 (4-0-8)
ICGS 151 Service Learning - The Art of Leadership in Practice	4 (2-4-6)
ICGS 152 Fantasy Literature's Environmental Message	4 (4-0-8)
ICGS 154 Introduction to Crisis Management in Service Businesses	4 (4-0-8)
ICGS 155 Pathway to Purpose: Life Design and Self-Exploration	4 (4-0-8)
ICLL 101 Professional Development	2 (2-0-4)
<i>***Please see additional courses on page 290.</i>	

Digital Literacy

4 credits

ICGH 111 Media Literacy: Skills for 21st Century Learning	4 (4-0-8)
ICGH 128 Internet Celebrity, Culture and the Media	4 (4-0-8)
ICGN 116 Understanding and Visualizing Data	4 (3-2-7)
ICGN 118 Everyday Connectivity	4 (4-0-8)
ICGN 119 Computer Essentials	4 (4-0-8)
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 131 Digital Search Literacy	2 (2-0-4)
ICGN 132 Digital Security and Privacy	2 (2-0-4)
ICGN 133 E-Business: Technology and Digital Strategies	4 (4-0-8)
ICGN 134 Introduction to Artificial Intelligence	2 (2-0-4)
ICGS 140 Fake News, Censorship and the Politics of Truth	4 (4-0-8)
ICGS 153 Social Media Management for Service Sector	2 (2-0-4)

ICLL 102 Skills for a Digital World
 ***Please see additional courses on page 290.

2 (2-0-4)

General Education Elective Courses

2-6 Credits

Students need to take any GE courses to fulfill their 38 credits requirement of General Education: **2 credits** for students whose English Communication track are placed into 'ERS track' or 'GC Track' and **6 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 in International Relations and Global Affairs

112 credits

Core International Relations and Global Affairs 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)

Elective International Relations and Global Affairs courses

60 Credits

International Relations and World Politics

ICIR 211 Globalization and Social

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 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 315 Devolution, Privatization and State Failure

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 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

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 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)

Senior Thesis or Internship for Final Trimester

ICIR 401 Internship	12 (0-36-12)
ICIR 402 Senior Thesis	12 (0-0-68)

Note I: Students can substitute alternative electives in the fields 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 choose courses from both International Relations and World Politics and Global Affairs: Asia and Beyond to complete their major elective requirements without restriction.

Free Elective Courses

8 credits

Students can take any courses offered by MUIC and/or Mahidol University as free elective courses with the approval from the advisor. A course within the student's major that is too closely related or redundant to core/required/elective courses is discouraged and may be disapproved by an academic advisor.

Minor

- Students may choose to take minor offered by other programs in MUIC. In order to obtain minor, students are required to complete all requirements as specifies by each minor.

Minors for all majors

The Social Science Division offers 4 minors for students from all majors in Mahidol University International College. The minors are International Relations, Global Affairs, Asian Studies and Psychology. Students registered in the Social Science Division cannot do a minor in International Relations, Global Affairs and Asian Studies. Students registered in the Social Science Division can only do a minor in Psychology. All students who choose to register and complete a minor in the Social Science Division need to complete 5 courses from the courses offered in their selected minor. The following minors are indicated with course options for students.

Social Science Division Minor Programs

The Social Science Division has four (4) minor programs which are offered to students at MUIC.

1. International Relations Minor
2. Global Affairs Minor
3. Psychology Minor

Note I: Students majoring in International Relations and Global Affairs cannot take the following minor programs: International Relations, Global Affairs.

Note II: Students majoring International Relations and Global Affairs can only take the Psychology minor offered by the Social Science Division.

• International Relations Minor

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 211 Globalization and Social Change	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 218 Authoritarian Populism	4 (4-0-8)
ICIR 221 International Political Economy	4 (4-0-8)
ICIR 222 International Organizations	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 239 Nations and Nationalisms	4 (4-0-8)

ICIR 302 ASEAN and Southeast Asian Regionalism	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 315 Devolution, Privatization and State Failure	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 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)

Note I: Students who choose the International Relations minor must register and complete ICIR 101 Approaches to International Relations.

Note II: Students may choose any 4 courses in addition to ICIR 101 to complete the International Relations minor.

Note III: Alternative courses can be substituted to complete the minor if approved by the Program Director and Chair of the division

• **Global Affairs Minor**

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 211 Globalization and Social Change	4 (4-0-8)
ICIR 212 Social Institutions of the Modern World	4 (4-0-8)
ICIR 213 Conflict, War and Peace Studies	4 (4-0-8)
ICIR 214 Perspectives on Thailand	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 221 International Political Economy	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 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 302 ASEAN and Southeast Asian Regionalism	4 (4-0-8)
ICIR 306 Intelligence, Data and Surveillance	4 (4-0-8)
ICIR 307 The United Nations and Contemporary World Politics	4 (4-0-8)
ICIR 308 Political Islam	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 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 327 Ethnicity and Representation in International Affairs	4 (4-0-8)
ICIR 331 Religion and Politics in the Contemporary World	4 (4-0-8)

Note I: Alternative courses can be substituted to complete the minor if approved by the Program Director and Chair of the division

• **Psychology Minor**

ICSP 112 Introduction to Psychology	4 (4-0-8)
ICSP 250 History and Systems of Psychology	4 (4-0-8)
ICSP 251 Introduction to Developmental Psychology I	4 (4-0-8)
ICSP 252 Introduction to Developmental Psychology II	4 (4-0-8)
ICSP 253 Introduction to Social Psychology	4 (4-0-8)
ICSP 254 Theories of Personality	4 (4-0-8)
ICSP 255 Introduction to Abnormal Psychology	4 (4-0-8)
ICSP 256 Industrial and Organizational Psychology	4 (4-0-8)
ICSP 257 Educational Psychology	4 (4-0-8)
ICSP 258 Cross-Cultural Psychology	4 (4-0-8)
ICSP 350 Evolutionary Psychology	4 (4-0-8)
ICSP 351 Introduction to the Freudian and Psychodynamic Traditions	4 (4-0-8)
ICSP 352 Prosocial and Antisocial Behaviour	4 (4-0-8)
ICSP 353 Clinical Psychology	4 (4-0-8)
ICSP 354 Psychological testing	4 (4-0-8)
ICSP 355 Drug Use and Behavior	4 (4-0-8)
ICSP 356 Psychology of Emotion	4 (4-0-8)
ICSP 357 Psychology of Motivation	4 (4-0-8)
ICSP 358 Psychology of Economics	4 (4-0-8)
ICSP 359 Foundations of Counseling Skills	4 (4-0-8)

Note I: Students who choose the Psychology minor must register and complete ICSP Introduction to Psychology.

Note II: Alternative courses can be substituted to complete the minor if approved by the Program Director and Chair of the division.

Certificate

- **Marketing for Politics**

*Level: Beginner

12 credits

ICMB 222 Principles of Marketing

4 (4-0-8)

ICIR 102 Approaches to Comparative Politics and Systems

4 (4-0-8)

OR

ICIR 223 Democracy as a Political System*

4 (4-0-8)

ICIR 309 Public Diplomacy and Nation Branding

4 (4-0-8)

Capstone course (project-based learning)

***Remark:** International Relations and Global Affairs majors cannot take ICIR 102 of the Marketing and Politics Certificate. International Relations and Global Affairs majors can take ICIR 223 in place of ICIR 102 to complete the Marketing for Politics Certificate.

Note:

- I. Students need to make sure they first pass prerequisites to the courses
- II. Please check the criteria and requirement before applying for the certificate

MARKETING PROGRAM

DEGREE OFFERED

Bachelor of Business Administration (Marketing)

B.B.A. (Marketing)

THE FIELD

The Marketing Major provides students with relevant marketing skills, a crucial component of any business which includes conducting research to learn about the needs of customers, developing new products or refining existing ones, setting prices, determining where products should be sold and promoting the product to the final users. The curriculum furnishes Marketing majors with a sound foundation in the basics of marketing, consumer behavior and marketing research before advancing to the higher level modules of different marketing strategy courses. Students learn how to analyze situations and implement strategies under different market environments through lectures, class discussions, case studies and projects.

CAREER OPPORTUNITIES

Marketing majors are well qualified to meet the challenges of working in the business sector. Career opportunities in local and multinational companies include positions as marketing, brand and product managers, trade marketers in retail operations and research analysts, in addition to account executives in advertising agencies, marketing jobs in non-governmental organizations and entrepreneurial ventures. Many of our majors go on to pursue their graduate studies in Business Administration or Marketing Research, Communication and Logistics.

CURRICULUM STRUCTURE

Courses	Credits
General Education Courses	38
Core Business Courses	73
Major Required Courses	20
Major Elective Courses	24
I-Design Electives	20
Free Elective Courses	8
Total	183

COURSE LIST

Foundation Courses

ICMA 100 Foundation Mathematics

ICME 100 English Resource Skills

Non-credit

0 (4-0-0)

0 (4-0-0)

Note I: For B.B.A. students, students whose Mathematics placement is below ICMB 200 Business Mathematics are required to take ICMA 100 Foundation Mathematics and pass the course with the grade of "S" before moving to ICMB 200 Business Mathematics.

Note II: Based on their achievement on the essay portion of the MUIC entrance exam, students whose English placement is below ICGC 101 Academic Writing and Research I will be placed into the "ERS Track". These students will be required to take ICME 100 English Resource Skills and pass the course with the grade of "S" before moving to ICGC 101 Academic Writing and Research I.

General Education Courses

38 credits

English Communication

12-16 credits

ICGC 101 Academic Writing and Research I	4 (4-0-8)
ICGC 102 Academic Writing and Research II	4 (4-0-8)
ICGC 103 Public Speaking	4 (4-0-8)
ICGC 201 Global Realities	4 (4-0-8)
ICGC 202 Literary Analysis	4 (4-0-8)
ICGC 203 Creative Writing	4 (4-0-8)
ICGC 204 Advanced Oral Communication	4 (4-0-8)
ICGC 206 Literature Into Film	4 (4-0-8)
ICGC 208 Language and Culture	4 (4-0-8)
ICGC 210 First and Second Language Acquisition	4 (4-0-8)
ICGC 211 Topics in Comparative Literature A: Poetry	4 (4-0-8)
ICGC 212 Topics in Comparative Literature B: The Short Story and the Novel	4 (4-0-8)
ICGC 213 Topics in Comparative Literature C: Drama	4 (4-0-8)
ICGC 214 Literary Non-fiction	4 (4-0-8)
ICGC 215 Writing for Research	4 (4-0-8)

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

- **'ERS Track'** – Students who are placed into 'ERS Track' will be required to take ICME 100 (a non-credit course) and complete 16 credits in English Communication: ICGC 101, ICGC 102, ICGC 103 in order, and finally, any 200+ level English courses.
- **'GC Track'** – Students who are placed into 'GC Track' will be required to complete 16 credits in English Communication: ICGC 101, ICGC 102, ICGC 103 in order, and finally, any 200+ level English courses.
- **'GC2 Track'** – Students who are placed into 'GC2 Track' will be required to complete 12 credits in English Communication: ICGC 102, ICGC 103 in order, and finally, any 200+ level English courses.

Note II: Students in 'ERS Track' and 'GC Track' must take ICGC 101, ICGC 102 and ICGC 103 without interruption beginning in their first trimester of enrollment.

Note III: Students in 'GC2 Track' must take ICGC 102 and ICGC 103 without interruption beginning in their first trimester of enrollment.

Life Appreciation

4 credits

ICGH 113 Moving Pictures: A History of Film	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 119 Listen! Soundscapes, Well-Being and Musical Soul Searching	4 (4-0-8)
ICGN 105 Ecology, Ecosystems and Socio-Economics in Southeast Asia	4 (3-2-7)
ICGN 108 Essentials of Culinary Science for Food Business	4 (3-2-7)
ICGN 109 Food for Health	4 (4-0-8)
ICGN 110 Maker Workshop	4 (3-2-7)
ICGN 112 Stargazer	4 (3-2-7)

ICGN 113 Plants, People and Poisons	4 (4-0-8)
ICGN 115 Human Evolution, Diversity and Health	4 (4-0-8)
ICGN 120 Chemistry of Cosmetics and Dietary Supplements	4 (4-0-8)
ICGN 124 Climate Change and Human Society	4 (3-2-7)
ICGN 125 Games and Learning	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 117 Physical Fitness Plan	2 (2-0-4)
ICGS 102 Business Sustainability and the Global Climate Change	4 (4-0-8)
ICGS 111 Exploring Religions	4 (4-0-8)
ICGS 115 Sociology in the Modern World	4 (4-0-8)
ICGS 125 American History, Popular Media and Modern Life	4 (4-0-8)
ICGS 126 Introduction to Psychology	4 (4-0-8)
ICGS 127 Positive Psychology	4 (4-0-8)
ICGS 128 Global Gastronomy and Cuisines	4 (4-0-8)
ICGS 129 Tea Studies	2 (2-0-4)
ICGS 141 Coffee studies	2 (2-0-4)
ICGS 142 Contemporary Spirituality and Marketing	1 (1-0-2)
ICLL 100 Self Development	2 (2-0-4)

***Please see additional courses on page 290.

Global Citizenship	4 credits
ICGH 116 World Cinemas	4 (4-0-8)
ICGH 120 Thai and ASEAN Cinema	4 (4-0-8)
ICGH 121 The End of the World? Development and Environment	4 (4-0-8)
ICGH 122 Introduction to Asian Philosophy	4 (4-0-8)
ICGH 123 Faiths, Ecological Justice, and the Tropical Rainforests	2 (2-0-4)
ICGH 127 Rome: An Empire's Rise and Fall	4 (4-0-8)
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 170 Diversities in Multilingual Societies	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 126 Plant Society	2 (2-0-4)
ICGS 106 Fashion and Society	4 (4-0-8)
ICGS 112 Geography of Human Activities	4 (4-0-8)
ICGS 123 Tourism Concepts and Practices	4 (4-0-8)
ICGS 130 Political Science	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 143 Introduction to Air Transport and Tourism	4 (4-0-8)

***Please see additional courses on page 290.

Critical Thinking

4 credits

ICGH 101 Biotechnology: from Science to Business	4 (4-0-8)
ICGH 102 Famous Arguments and Thought Experiments in Philosophy	4 (4-0-8)
ICGH 103 Logic, Analysis and Critical Thinking: Good and Bad Arguments	4 (4-0-8)
ICGH 105 Technology, Philosophy and Human Kind: Where Are We Now?!	4 (4-0-8)
ICGH 106 The Greeks: Crucible of Civilization	4 (4-0-8)
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 Languages and Its Application	4 (4-0-8)
ICGH 124 Life Drawing and Anatomy	4 (2-4-6)
ICGH 125 How Can We Know What Is Good? Moral Reasoning and Behavior	4 (4-0-8)
ICGH 126 Behavioral Ethics: Why Good People Do Bad Things	2 (2-0-4)
ICGN 107 The Chemistry of Everyday Life	4 (4-0-8)
ICGN 111 Physics for CEO	4 (4-0-8)
ICGN 123 The Earth's Dynamic Structure	4 (3-2-7)
ICGN 127 Practical Mathematics	2 (2-0-4)
ICGS 103 Economics in Modern Business	4 (4-0-8)
ICGS 105 Personal Financial Management	4 (4-0-8)
ICGS 113 Perspectives on the Thai Past	4 (4-0-8)
ICGS 134 Is Democracy Good?	4 (4-0-8)
ICGS 135 Entrepreneurial Accounting	4 (4-0-8)
ICGS 144 Price Discrimination: Why Do We Pay More Than Others?	1 (1-0-2)

***Please see additional courses on page 290.

Leadership

4 credits

ICGN 114 The Scientific Approach and Society	4 (4-0-8)
ICGN 128 Climate Emergency, Biodiversity Crisis, and Humanity at Risk	2 (1-2-3)
ICGS 104 Essentials of Entrepreneurship	4 (4-0-8)
ICGS 118 Skills in Dealing with People Across Cultures	4 (4-0-8)
ICGS 121 Abnormal Colleagues: How Do I Make This Work?	4 (4-0-8)
ICGS 136 Social and Health Issues in Thailand	4 (3-2-7)
ICGS 137 Witchcraft and Gender Representation	4 (4-0-8)
ICGS 138 Business Event Essentials	4 (4-0-8)
ICGS 139 Leadership and Change for a Global Society	4 (4-0-8)
ICGS 145 Service-Learning – Management of Community Service Project	4 (2-4-6)
ICGS 146 Service-Learning – Salaya Community Service Learning Project	4 (2-4-6)
ICGS 147 Women in Leadership	4 (4-0-8)
ICGS 148 Service Learning - Digital Campaign for Gender Issues	4 (2-4-6)
ICGS 149 Service Learning - Making Change	4 (2-4-6)
ICGS 150 Service Learning - Campaigning for a Cause	4 (4-0-8)
ICGS 151 Service Learning - The Art of Leadership in Practice	4 (2-4-6)
ICGS 152 Fantasy Literature's Environmental Message	4 (4-0-8)
ICGS 154 Introduction to Crisis Management in Service Businesses	4 (4-0-8)
ICLL 101 Professional Development	2 (2-0-4)

***Please see additional courses on page 290.

Digital Literacy

4 credits

ICGH 111 Media Literacy: Skills for 21st Century Learning	4 (4-0-8)
ICGH 128 Internet Celebrity, Culture and the Media	4 (4-0-8)
ICGN 116 Understanding and Visualizing Data	4 (3-2-7)
ICGN 118 Everyday Connectivity	4 (4-0-8)
ICGN 119 Computer Essentials	4 (4-0-8)
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 131 Digital Search Literacy	2 (2-0-4)
ICGN 132 Digital Security and Privacy	2 (2-0-4)
ICGN 133 E-Business: Technology and Digital Strategies	4 (4-0-8)
ICGN 134 Introduction to Artificial Intelligence	2 (2-0-4)
ICGS 140 Fake News, Censorship and the Politics of Truth	4 (4-0-8)

ICGS 153 Social Media Management for Service Sector	2 (2-0-4)
ICLL 102 Skills for a Digital World	2 (2-0-4)
<i>***Please see additional courses on page 290.</i>	

General Education Elective Courses

2-6 Credits

Students need to take any GE courses to fulfill their 38 credits requirement of General Education: **2 credits** for students whose English Communication track are placed into 'ERS track' or 'GC Track' and **6 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.

Core Business courses

no less than 73 Credits

ICMB 200 Business Mathematics	4 (4-0-8)
ICMB 201 Business Statistics	4 (4-0-8)
ICMB 205 Microeconomics	4 (4-0-8)
ICMB 206 Macroeconomics	4 (4-0-8)
ICMB 207 Management of Business Information	4 (4-0-8)
ICMB 213 Financial Accounting	4 (4-0-8)
ICMB 214 Managerial Accounting	4 (4-0-8)
ICMB 215 Business Finance for Entrepreneurs	4 (4-0-8)
ICMB 216 Business Communication	4 (4-0-8)
ICMB 222 Principles of Marketing	4 (4-0-8)
ICMB 235 Management and Organizational Behavior	4 (4-0-8)
ICMB 236 Human Resources Management	4 (4-0-8)
ICMB 237 International Business Management	4 (4-0-8)
ICMB 310 Business Law	4 (4-0-8)
ICMB 311 Business Ethics and Sustainability	4 (4-0-8)
ICMB 312 Management Science	4 (4-0-8)
ICMB 314 Operations and Project Management	4 (4-0-8)
ICMB 401 Business Innovation and Entrepreneurship	4 (4-0-8)
OR	
ICMB 402 Business Strategy	4 (4-0-8)
ICMB 490 Career Preparation	1 (1-0-2)

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

1. Passed ICGC 101 Academic Writing and Research I with at least "D" grade or being placed in the English course level higher than ICGC 101 Academic Writing and Research I.
2. Passed ICMA 100 Foundation Mathematics with "S" grade or the placement Test.

Note II: All BBA students are required to take either ICMB 401 Business Innovation and Entrepreneurship **OR** ICMB 402 Business Strategy.

Major Required courses

no less than 20 Credits

ICMK 351 Consumer Insights – A Qualitative Approach	4 (4-0-8)
ICMK 352 Market Intelligence – A Quantitative Approach	4 (4-0-8)
ICMK 353 Consumer Behavior and Decision Making	4 (4-0-8)

ICMK 361 Digital Marketing	4 (4-0-8)
ICMK 461 Marketing Strategy for Sustainability	4 (4-0-8)

Major Elective courses

no less than 24 Credits

ICBE 471 Market Structures and Pricing Strategies	4 (4-0-8)
ICMI 331 Global Logistics and Supply Chain Management	4 (4-0-8)
ICMK 354 New Products Management	4 (4-0-8)
ICMK 355 Integrated Marketing Communications	4 (4-0-8)
ICMK 362 Strategic Brand Management	4 (4-0-8)
ICMK 451 Distribution and Retail Channels	4 (4-0-8)
ICMK 452 Business Marketing and Selling Strategy	4 (4-0-8)
ICMK 453 Global Marketing Strategy	4 (4-0-8)
ICMK 456 Special Topics in Marketing	4 (4-0-8)
ICMB 496 Practical Business Training – On Campus	8 (2-32-10)
ICMB 497 Practical Business Training – Off Campus	8 (0-40-8)
ICMB 498 New Business Development Program	8 (2-12-10)

Note I: All BBA students are required to take either ICMB 496 Practical Business Training – On Campus or ICMB 497 Practical Business Training – Off Campus or ICMB 498 New Business Development Program in their last year of study as part of the Major Elective Courses. Students are not allowed to register for other courses in the trimester, which either one of the three courses is taken.

Note II: All BBA students can take ICMB 496 Practical Business Training – On Campus, ICMB 497 Practical Business Training – Off Campus, ICBM 401 Business Innovation and Entrepreneurship, ICMB 402 Business Strategy and ICMK 461 Marketing strategy for Sustainability in their fourth year of study.

I-Design Elective Courses

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 and the Curriculum Administrative Committee.
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 and the Curriculum Administrative Committee.

Free Elective Courses

8 credits

Students can take any courses offered by MUIC and/or Mahidol University as free elective courses with the approval from the advisor. A course within the student's major that is too closely related or redundant to core/required/elective courses is discouraged and may be disapproved by an academic advisor.

Marketing Minor courses

no less than 20 Credits

To minor in Marketing, students need to complete the following five courses.

ICMK 351 Consumer Insights – A Qualitative Approach	4 (4-0-8)
ICMK 352 Market Intelligence – A Quantitative Approach	4 (4-0-8)
ICMK 353 Consumer Behavior and Decision Making	4 (4-0-8)
ICMK 361 Digital Marketing	4 (4-0-8)
ICMK 461 Marketing Strategy for Sustainability	4 (4-0-8)

MEDIA AND COMMUNICATION PROGRAM

DEGREE OFFERED

Bachelor of Communication Arts (Media and Communication)

B. Com. Arts (Media and Communication)

MODULE

Media and Communication Program offers 3 modules:

1. Digital Journalism
2. Creative Content
3. Integrated Media Communication

THE FIELD

The Media and Communication Program is the first degree program in Thailand that both focuses on today's converging digital media environments and designs to prepare students for emerging ASEAN markets. The courses combine the field of Mass Communication and Journalism, Creative Content and Integrated Media Communication i.e. acting, directing, scriptwriting digital media campaign to convergence media production. Through the integration of Theory and Practice, the curriculum delivers both knowledge and application. This method allows students to gain a deep understanding of theory while equipping them with the necessary skills for entering the workforce. The students, thus, are expected to have a broad range of knowledge and creative skills, from critical thinking and excellent writing to the ability to create strategic communication campaign, sharp media issues, interactive media, performing art projects, and media policy etc. The graduates will understand, initiate and use media creatively as a communication tool, from the personal, to corporate, to community, to national and global levels.

CAREER OPPORTUNITY

• Digital Journalism Concentration

Journalists, News Editors and TV anchors, TV Documentary Makers, Broadcast Media Producers, Feature Writers, Media Consultants and Researchers, Media Public Policy Makers

• Creative Content Concentration

Actors, Directors, Scriptwriters, and Producers for the entertainment industry e.g. theatre, film and TV; Acting Coach, Event Organizers and Stage Managers, Crews in production houses for film and advertising agencies

• Digital Integrated Media Communication Concentration

Digital content creators, media campaign strategist, and account executives both for digital media and advertising agencies

CURRICULUM STRUCTURE

Courses	Credits
General Education Courses	38
Core Courses	56
Major Required Courses	16
Major Elective Tracks	12
Compulsory Elective Courses	18
I –Design Electives	20
Free Elective Courses	8
Total	168

COURSE LIST

Foundation Courses

ICMA 100 Foundation Mathematics
ICME 100 English Resource Skills

Non-credit

0 (4-0-0)
0 (4-0-0)

Note I: Based on their achievement on the essay portion of the MUIC entrance exam, students whose English placement is below ICGC 101 Academic Writing and Research I will be placed into the “ERS Track”. These students will be required to take ICME 100 English Resource Skills and pass the course with the grade of "S" before moving to ICGC 101 Academic Writing and Research I.

General Education Courses

38 credits

English Communication

12-16 credits

ICGC 101 Academic Writing and Research I
ICGC 102 Academic Writing and Research II
ICGC 103 Public Speaking
ICGC 201 Global Realities
ICGC 202 Literary Analysis
ICGC 203 Creative Writing
ICGC 204 Advanced Oral Communication
ICGC 206 Literature Into Film
ICGC 208 Language and Culture
ICGC 210 First and Second Language Acquisition
ICGC 211 Topics in Comparative Literature A: Poetry
ICGC 212 Topics in Comparative Literature B: The Short Story and the Novel
ICGC 213 Topics in Comparative Literature C: Drama
ICGC 214 Literary Non-fiction
ICGC 215 Writing for Research

4 (4-0-8)
4 (4-0-8)
4 (4-0-8)
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4 (4-0-8)
4 (4-0-8)
4 (4-0-8)
4 (4-0-8)

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

- **‘ERS Track’** – Students who are placed into ‘ERS Track’ will be required to take ICME 100 (a non-credit course) and complete 16 credits in English Communication: ICGC 101, ICGC 102, ICGC 103 in order, and finally, any 200+ level English courses.
- **‘GC Track’** – Students who are placed into ‘GC Track’ will be required to complete 16 credits in English Communication: ICGC 101, ICGC 102, ICGC 103 in order, and finally, any 200+ level English courses.
- **‘GC2 Track’** – Students who are placed into ‘GC2 Track’ will be required to complete 12 credits in English Communication: ICGC 102, ICGC 103 in order, and finally, any 200+ level English courses.

Note II: Students in ‘ERS Track’ and ‘GC Track’ must take ICGC 101, ICGC 102 and ICGC 103 without interruption beginning in their first trimester of enrollment.

Note III: Students in ‘GC2 Track’ must take ICGC 102 and ICGC 103 without interruption beginning in their first trimester of enrollment.

Life Appreciation

4 credits

ICGH 113 Moving Pictures: A History of Film	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 119 Listen! Soundscapes, Well-Being and Musical Soul Searching	4 (4-0-8)
ICGN 105 Ecology, Ecosystems and Socio-Economics in Southeast Asia	4 (3-2-7)
ICGN 108 Essentials of Culinary Science for Food Business	4 (3-2-7)
ICGN 109 Food for Health	4 (4-0-8)
ICGN 110 Maker Workshop	4 (3-2-7)
ICGN 112 Stargazer	4 (3-2-7)
ICGN 113 Plants, People and Poisons	4 (4-0-8)
ICGN 115 Human Evolution, Diversity and Health	4 (4-0-8)
ICGN 120 Chemistry of Cosmetics and Dietary Supplements	4 (4-0-8)
ICGN 124 Climate Change and Human Society	4 (3-2-7)
ICGN 125 Games and Learning	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 117 Physical Fitness Plan	2 (2-0-4)
ICGS 102 Business Sustainability and the Global Climate Change	4 (4-0-8)

ICGS 111 Exploring Religions	4 (4-0-8)
ICGS 115 Sociology in the Modern World	4 (4-0-8)
ICGS 125 American History, Popular Media and Modern Life	4 (4-0-8)
ICGS 126 Introduction to Psychology	4 (4-0-8)
ICGS 127 Positive Psychology	4 (4-0-8)
ICGS 128 Global Gastronomy and Cuisines	4 (4-0-8)
ICGS 129 Tea Studies	2 (2-0-4)
ICGS 141 Coffee studies	2 (2-0-4)
ICGS 142 Contemporary Spirituality and Marketing	1 (1-0-2)
ICLL 100 Self Development	2 (2-0-4)

***Please see additional courses on page 290.

Global Citizenship

4 credits

ICGH 116 World Cinemas	4 (4-0-8)
ICGH 120 Thai and ASEAN Cinema	4 (4-0-8)
ICGH 121 The End of the World? Development and Environment	4 (4-0-8)
ICGH 122 Introduction to Asian Philosophy	4 (4-0-8)
ICGH 123 Faiths, Ecological Justice, and the Tropical Rainforests	2 (2-0-4)
ICGH 127 Rome: An Empire's Rise and Fall	4 (4-0-8)
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 170 Diversities in Multilingual Societies	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 126 Plant Society	2 (2-0-4)
ICGS 106 Fashion and Society	4 (4-0-8)
ICGS 112 Geography of Human Activities	4 (4-0-8)
ICGS 123 Tourism Concepts and Practices	4 (4-0-8)
ICGS 130 Political Science	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 143 Introduction to Air Transport and Tourism	4 (4-0-8)

***Please see additional courses on page 290.

Critical Thinking

4 credits

ICGH 101 Biotechnology: from Science to Business	4 (4-0-8)
ICGH 102 Famous Arguments and Thought Experiments in Philosophy	4 (4-0-8)
ICGH 103 Logic, Analysis and Critical Thinking: Good and Bad Arguments	4 (4-0-8)
ICGH 105 Technology, Philosophy and Human Kind: Where Are We Now?!	4 (4-0-8)
ICGH 106 The Greeks: Crucible of Civilization	4 (4-0-8)
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 Languages and Its Application	4 (4-0-8)
ICGH 124 Life Drawing and Anatomy	4 (2-4-6)
ICGH 125 How Can We Know What Is Good? Moral Reasoning and Behavior	4 (4-0-8)
ICGH 126 Behavioral Ethics: Why Good People Do Bad Things	2 (2-0-4)
ICGN 107 The Chemistry of Everyday Life	4 (4-0-8)
ICGN 111 Physics for CEO	4 (4-0-8)
ICGN 123 The Earth's Dynamic Structure	4 (3-2-7)
ICGN 127 Practical Mathematics	2 (2-0-4)
ICGS 103 Economics in Modern Business	4 (4-0-8)
ICGS 105 Personal Financial Management	4 (4-0-8)
ICGS 113 Perspectives on the Thai Past	4 (4-0-8)
ICGS 134 Is Democracy Good?	4 (4-0-8)
ICGS 135 Entrepreneurial Accounting	4 (4-0-8)
ICGS 144 Price Discrimination: Why Do We Pay More Than Others?	1 (1-0-2)

***Please see additional courses on page 290.

Leadership

4 credits

ICGN 114 The Scientific Approach and Society	4 (4-0-8)
ICGN 128 Climate Emergency, Biodiversity Crisis, and Humanity at Risk	2 (1-2-3)
ICGS 104 Essentials of Entrepreneurship	4 (4-0-8)
ICGS 118 Skills in Dealing with People Across Cultures	4 (4-0-8)
ICGS 121 Abnormal Colleagues: How Do I Make This Work?	4 (4-0-8)
ICGS 136 Social and Health Issues in Thailand	4 (3-2-7)
ICGS 137 Witchcraft and Gender Representation	4 (4-0-8)
ICGS 138 Business Event Essentials	4 (4-0-8)

ICGS 139 Leadership and Change for a Global Society	4 (4-0-8)
ICGS 145 Service-Learning – Management of Community Service	4 (2-4-6)
Project ICGS 146 Service-Learning – Salaya Community Service Learning	4 (2-4-6)
Project ICGS 147 Women in Leadership	4 (4-0-8)
ICGS 148 Service Learning - Digital Campaign for Gender Issues	4 (2-4-6)
ICGS 149 Service Learning - Making Change	4 (2-4-6)
ICGS 150 Service Learning - Campaigning for a Cause	4 (4-0-8)
ICGS 151 Service Learning - The Art of Leadership in Practice	4 (2-4-6)
ICGS 152 Fantasy Literature's Environmental Message	4 (4-0-8)
ICGS 154 Introduction to Crisis Management in Service Businesses	4 (4-0-8)
ICGS 155 Pathway to Purpose: Life Design and Self-Exploration	4 (4-0-8)
ICLL 101 Professional Development	2 (2-0-4)

***Please see additional courses on page 290.

Digital Literacy

4 credits

ICGH 111 Media Literacy: Skills for 21st Century Learning	4 (4-0-8)
ICGH 128 Internet Celebrity, Culture and the Media	4 (4-0-8)
ICGN 116 Understanding and Visualizing Data	4 (3-2-7)
ICGN 118 Everyday Connectivity	4 (4-0-8)
ICGN 119 Computer Essentials	4 (4-0-8)
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 131 Digital Search Literacy	2 (2-0-4)
ICGN 132 Digital Security and Privacy	2 (2-0-4)
ICGN 133 E-Business: Technology and Digital Strategies	4 (4-0-8)
ICGN 134 Introduction to Artificial Intelligence	2 (2-0-4)
ICGS 140 Fake News, Censorship and the Politics of Truth	4 (4-0-8)
ICGS 153 Social Media Management for Service Sector	2 (2-0-4)
ICLL 102 Skills for a Digital World	2 (2-0-4)

***Please see additional courses on page 290.

General Education Elective Courses

2-6 Credits

Students need to take any GE courses to fulfill their 38 credits requirement of General Education: **2 credits** for students whose English Communication track are placed into 'ERS track' or 'GC Track' and **6 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.

Major Courses

102 Credits

Core Courses

56 Credits

ICMC 101 Introduction to Media and Communication	4 (4-0-8)
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 109 Photo Representation in the 21st Century	4 (4-0-8)
ICMC 110 Mediating Your Life	4 (4-0-8)
ICMC 111 Convergence Media Culture	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	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

16 credits

Module I: Digital Journalism

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)

Module II: Creative Content

ICMC 223 Southeast Asian Creative Content Analysis: from Ethno-Historiography Perspectives	4 (4-0-8)
ICMC 228 Essentials in Pre-Production	4 (4-0-8)
ICMC 229 Digital Media Production	4 (2-4-6)
ICMC 230 Literature for Content Creation	4 (4-0-8)

Module III: Integrated Media Communication

ICMC 231 Integrated Media Campaigns	4 (4-0-8)
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)

Major Elective Tracks

12 credits

(Study 1 track OR choose 3 subjects from any track)

Track I: Writing

ICMC 313 Film Screenwriting	4 (4-0-8)
ICMC 314 Style and Presentation in Writing	4 (4-0-8)
ICMC 315 Series and Dramatic Writing	4 (4-0-8)

Track II: 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)

Track III: Directing

ICMC 313 Film Screenwriting	4 (4-0-8)
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OR

ICMC 315 Series and Dramatic Writing	4 (4-0-8)
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ICMC 333 Directing I: Directing the Actors	4 (2-4-6)
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ICMC 334 Directing II: Directing for Recorded Media	4 (2-4-6)
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Track IV: Critical Studies

ICMC 345 Genre Movies and Media	4 (4-0-8)
ICMC 346 "New Waves" Cinema	4 (4-0-8)
ICMC 347 Cinema: Beyond the New Waves	4 (4-0-8)

Track V: Dance and 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)

Track VI: Digital Media Production

ICMC 364 Essentials in Production	4 (2-4-6)
ICMC 365 Essentials in Post-Production I	4 (2-4-6)
ICMC 366 Essentials in Post-Production II	4 (2-4-6)

Track VII: Communication Management

ICMC 375 Art of Persuasion	4 (4-0-8)
ICMC 376 Targeted Audience Analysis	4 (4-0-8)
ICMC 377 Film and Media Planning, Funding and Administrating	4 (4-0-8)

Additional Major Electives

ICMC 203 Popular Entertainment	4 (4-0-8)
ICMC 342 Film Criticism	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 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)

Compulsory Electives

ICMC 399 Professional Internship in Media and Communication	8 (0-24-8)
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)

I-Design Elective Courses**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 and the Curriculum Administrative Committee.
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 and the Curriculum Administrative Committee.

Free Elective Courses

8 credits

Students can take any courses offered by MUIC and/or Mahidol University as free elective courses with the approval from the advisor. A course within the student's major that is too closely related or redundant to core/required/elective courses is discouraged and may be disapproved by an academic advisor.

Minor Courses

• Minor in Media and Communication for non-media and communication students

To minor in Media and Communication, students need to complete at least 5 courses (20 credits) from the below list

ICMC 109 Photo Representation in the 21st century	4 (4-0-8)
ICMC 110 Mediating Your Life	4 (4-0-8)
ICMC 111 Convergence Media Culture	4 (4-0-8)
ICMC 208 Transmedia Storytelling	4 (4-0-8)
ICMC 209 Creativity and Digital Communication	4 (4-0-8)
ICMC 217 Media Psychology	4 (4-0-8)

PHYSICS PROGRAM

DEGREE OFFERED

Bachelor of Science (Physics) B.Sc. (Physics)

TRACKS

The Physics curriculum offers elective courses with strong focus on 2 tracks:

1. Astrophysics
2. Computational Physics

THE FIELD

Physics, one of the major basic sciences, essentially focuses on the elements of matter, their interaction, energy and applications. Physics plays a fundamental role both in the sciences and in the world of technology. It also provides the skills for dealing with all of the scientific concepts. An understanding of physics is also useful for students in social sciences and valuable for anyone interested in the full range of human culture. MUIC offers a Physics Major to produce graduates who are knowledgeable and highly qualified in this scientific discipline. There is a great demand for graduates in physics who can contribute to both national development in science and technology and international scientific advancement.

CAREER OPPORTUNITIES

1. **Scientists in institutes or laboratories:** You may have heard about NASA, CERN, LIGO. Physicists usually involve with almost all of cutting-edge technologies.
2. **Physics instructors in international institutes:** Nurture the young and brilliant minds to flourish. Since Physics is one of the fundamental subjects for any scientific disciplines, competent Physics instructors are always sought after.
3. **Financial analysts:** Physics and Wall Street? We can do mathematics, create a model, run simulations. Money and people behaviour is no stranger to us. Plenty of Physicists are working in Financial sectors.
4. **Start-up Entrepreneurs:** What do Elon Musk and Tony Stark have in commons? Ans: Physics Degree.
1. **Consultants and developers at technology-based company:** Here is a quote from Richard Feynman, a scientist in the Manhattan Project that developed an atomic bomb which arguably ended WWII, 1965 Physics Nobel Prize Laureate, and a beloved Physics professor at Caltech, "At that time nobody knew what a physicist even was,... after the war, it was the exact opposite: people wanted physicists everywhere." Mic Drop.

CURRICULUM STRUCTURE

Courses	Credits
General Education Courses	38
Core Courses	38
Major Required Courses	62
Major Elective Courses	8
I-Design Electives	20
Free Elective Courses	8
Total	174

COURSE LIST

Foundation Courses

ICMA 100 Foundation Mathematics
ICME 100 English Resource Skills

Non-credit

0 (4-0-0)
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 100 Foundation Mathematics 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 101 Academic Writing and Research I will be placed into the "ERS Track". These students will be required to take ICME 100 English Resource Skills and pass the course with the grade of "S" before moving to ICGC 101 Academic Writing and Research I.

General Education Courses

38 credits

English Communication

12-16 credits

ICGC 101 Academic Writing and Research I
ICGC 102 Academic Writing and Research II
ICGC 103 Public Speaking
ICGC 201 Global Realities
ICGC 202 Literary Analysis
ICGC 203 Creative Writing
ICGC 204 Advanced Oral Communication
ICGC 206 Literature Into Film
ICGC 208 Language and Culture
ICGC 210 First and Second Language Acquisition
ICGC 211 Topics in Comparative Literature A: Poetry
ICGC 212 Topics in Comparative Literature B: The Short Story and the Novel
ICGC 213 Topics in Comparative Literature C: Drama
ICGC 214 Literary Non-fiction
ICGC 215 Writing for Research

4 (4-0-8)
4 (4-0-8)
4 (4-0-8)
4 (4-0-8)
4 (4-0-8)
4 (4-0-8)
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4 (4-0-8)
4 (4-0-8)
4 (4-0-8)

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

- **'ERS Track'** – Students who are placed into 'ERS Track' will be required to take ICME 100 (a non-credit course) and complete 16 credits in English Communication: ICGC 101, ICGC 102, ICGC 103 in order, and finally, any 200+ level English courses.
- **'GC Track'** – Students who are placed into 'GC Track' will be required to complete 16 credits in English Communication: ICGC 101, ICGC 102, ICGC 103 in order, and finally, any 200+ level English courses.
- **'GC2 Track'** – Students who are placed into 'Advanced GC Track' will be required to complete 12 credits in English Communication: ICGC 102, ICGC 103 in order, and finally, any 200+ level English courses.

Note II: Students in 'ERS Track' and 'GC Track' must take ICGC 101, ICGC 102 and ICGC 103 without interruption beginning in their first trimester of enrollment.

Note III: Students in 'GC2 Track' must take ICGC 102 and ICGC 103 without interruption beginning in their first trimester of enrollment.

Life Appreciation

ICGH 113 Moving Pictures: A History of Film	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 119 Listen! Soundscapes, Well-Being and Musical Soul Searching	4 (4-0-8)
ICGN 105 Ecology, Ecosystems and Socio-Economics in Southeast Asia	4 (3-2-7)
ICGN 108 Essentials of Culinary Science for Food Business	4 (3-2-7)
ICGN 109 Food for Health	4 (4-0-8)
ICGN 110 Maker Workshop	4 (3-2-7)
ICGN 112 Stargazer	4 (3-2-7)
ICGN 113 Plants, People and Poisons	4 (4-0-8)
ICGN 115 Human Evolution, Diversity and Health	4 (4-0-8)
ICGN 120 Chemistry of Cosmetics and Dietary Supplements	4 (4-0-8)
ICGN 124 Climate Change and Human Society	4 (3-2-7)
ICGN 125 Games and Learning	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 117 Physical Fitness Plan	2 (2-0-4)
ICGS 102 Business Sustainability and the Global Climate Change	4 (4-0-8)
ICGS 111 Exploring Religions	4 (4-0-8)
ICGS 115 Sociology in the Modern World	4 (4-0-8)
ICGS 125 American History, Popular Media and Modern Life	4 (4-0-8)
ICGS 126 Introduction to Psychology	4 (4-0-8)
ICGS 127 Positive Psychology	4 (4-0-8)
ICGS 128 Global Gastronomy and Cuisines	4 (4-0-8)
ICGS 129 Tea Studies	2 (2-0-4)
ICGS 141 Coffee studies	2 (2-0-4)
ICGS 142 Contemporary Spirituality and Marketing	1 (1-0-2)
ICLL 100 Self Development	2 (2-0-4)

***Please see additional courses on page 290.

Global Citizenship

4 credits

ICGH 116 World Cinemas	4 (4-0-8)
ICGH 120 Thai and ASEAN Cinema	4 (4-0-8)
ICGH 121 The End of the World? Development and Environment	4 (4-0-8)
ICGH 122 Introduction to Asian Philosophy	4 (4-0-8)
ICGH 123 Faiths, Ecological Justice, and the Tropical Rainforests	2 (2-0-4)
ICGH 127 Rome: An Empire's Rise and Fall	4 (4-0-8)
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 170 Diversities in Multilingual Societies	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 126 Plant Society	2 (2-0-4)
ICGS 106 Fashion and Society	4 (4-0-8)
ICGS 112 Geography of Human Activities	4 (4-0-8)
ICGS 123 Tourism Concepts and Practices	4 (4-0-8)
ICGS 130 Political Science	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 143 Introduction to Air Transport and Tourism	4 (4-0-8)

***Please see additional courses on page 290.

Critical Thinking

4 credits

ICGH 101 Biotechnology: from Science to Business	4 (4-0-8)
ICGH 102 Famous Arguments and Thought Experiments in Philosophy	4 (4-0-8)
ICGH 103 Logic, Analysis and Critical Thinking: Good and Bad Arguments	4 (4-0-8)
ICGH 105 Technology, Philosophy and Human Kind: Where Are We Now?!	4 (4-0-8)
ICGH 106 The Greeks: Crucible of Civilization	4 (4-0-8)
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 Languages and Its Application	4 (4-0-8)
ICGH 124 Life Drawing and Anatomy	4 (2-4-6)
ICGH 125 How Can We Know What Is Good? Moral Reasoning and Behavior	4 (4-0-8)
ICGH 126 Behavioral Ethics: Why Good People Do Bad Things	2 (2-0-4)
ICGN 107 The Chemistry of Everyday Life	4 (4-0-8)
ICGN 111 Physics for CEO	4 (4-0-8)
ICGN 123 The Earth's Dynamic Structure	4 (3-2-7)
ICGN 127 Practical Mathematics	2 (2-0-4)
ICGS 103 Economics in Modern Business	4 (4-0-8)
ICGS 105 Personal Financial Management	4 (4-0-8)
ICGS 113 Perspectives on the Thai Past	4 (4-0-8)
ICGS 134 Is Democracy Good?	4 (4-0-8)
ICGS 135 Entrepreneurial Accounting	4 (4-0-8)
ICGS 144 Price Discrimination: Why Do We Pay More Than Others?	1 (1-0-2)

***Please see additional courses on page 290.

Leadership

4 credits

ICGN 114 The Scientific Approach and Society	4 (4-0-8)
ICGN 128 Climate Emergency, Biodiversity Crisis, and Humanity at Risk	2 (1-2-3)
ICGS 104 Essentials of Entrepreneurship	4 (4-0-8)
ICGS 118 Skills in Dealing with People Across Cultures	4 (4-0-8)
ICGS 121 Abnormal Colleagues: How Do I Make This Work?	4 (4-0-8)
ICGS 136 Social and Health Issues in Thailand	4 (3-2-7)
ICGS 137 Witchcraft and Gender Representation	4 (4-0-8)
ICGS 138 Business Event Essentials	4 (4-0-8)

ICGS 139 Leadership and Change for a Global Society	4 (4-0-8)
ICGS 145 Service-Learning – Management of Community Service	4 (2-4-6)
Project ICGS 146 Service-Learning – Salaya Community Service Learning	4 (2-4-6)
Project ICGS 147 Women in Leadership	4 (4-0-8)
ICGS 148 Service Learning - Digital Campaign for Gender Issues	4 (2-4-6)
ICGS 149 Service Learning - Making Change	4 (2-4-6)
ICGS 150 Service Learning - Campaigning for a Cause	4 (4-0-8)
ICGS 151 Service Learning - The Art of Leadership in Practice	4 (2-4-6)
ICGS 152 Fantasy Literature's Environmental Message	4 (4-0-8)
ICGS 154 Introduction to Crisis Management in Service Businesses	4 (4-0-8)
ICGS 155 Pathway to Purpose: Life Design and Self-Exploration	4 (4-0-8)
ICLL 101 Professional Development	2 (2-0-4)

***Please see additional courses on page 290.

Digital Literacy

4 credits

ICGH 111 Media Literacy: Skills for 21st Century Learning	4 (4-0-8)
ICGH 128 Internet Celebrity, Culture and the Media	4 (4-0-8)
ICGN 116 Understanding and Visualizing Data	4 (3-2-7)
ICGN 118 Everyday Connectivity	4 (4-0-8)
ICGN 119 Computer Essentials	4 (4-0-8)
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 131 Digital Search Literacy	2 (2-0-4)
ICGN 132 Digital Security and Privacy	2 (2-0-4)
ICGN 133 E-Business: Technology and Digital Strategies	4 (4-0-8)
ICGN 134 Introduction to Artificial Intelligence	2 (2-0-4)
ICGS 140 Fake News, Censorship and the Politics of Truth	4 (4-0-8)
ICGS 153 Social Media Management for Service Sector	2 (2-0-4)
ICLL 102 Skills for a Digital World	2 (2-0-4)

***Please see additional courses on page 290.

General Education Elective Courses

2-6 Credits

Students need to take any GE courses to fulfill their 38 credits requirement of General Education: **2 credits** for students whose English Communication track are placed into 'ERS track' or 'GC Track' and **6 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.

Major Courses in Physics

108 Credits

Core Science Courses

38 Credits

ICBI 101 Biology	4 (4-0-8)
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ICBI 102 Integrated Laboratory in Biological Sciences I	2 (0-4-2)
ICBI 103 Biology II	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 Techniques in Chemistry I	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)

Required Major Courses

62 Credits

ICPY 200 Modern Physics	4 (4-0-8)
ICPY 221 Computer Programming for Physics	4 (3-2-7)
ICPY 231 Mathematical Methods for Physics IA	2 (2-0-4)
ICPY 232 Mathematical Methods for Physics IB	2 (2-0-4)
ICPY 309 Scientific Research and Presentation	4 (4-0-8)
ICPY 321 Intermediate Mechanics	4 (4-0-8)
ICPY 322 Electricity and Magnetism	4 (4-0-8)
ICPY 323 Electrodynamics	4 (4-0-8)
ICPY 324 Wave and Optics	4 (4-0-8)
ICPY 334 Numerical Methods in Physics	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 361 Quantum Mechanics I	4 (4-0-8)
ICPY 441 Senior Project in Physics	6 (0-12-6)
ICPY 451 Analytical Mechanics	4 (4-0-8)
ICPY 452 Statistical Mechanics	4 (4-0-8)
ICPY 461 Quantum Mechanics II	4 (4-0-8)

Major Elective Courses

8 Credits

ICCS 206 Discrete Mathematics	4 (3-2-7)
ICCS 208 Data Structures and Abstractions	4 (3-2-7)
ICMA 424 Abstract Algebra	4 (4-0-8)
ICPY 233 Mathematical Methods for Physics IIA	2 (2-0-4)
ICPY 234 Mathematical Methods for Physics IIB	2 (2-0-4)
ICPY 333 Mathematical Methods for Physics III	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 463 Quantum Mechanics III	4 (4-0-8)
ICPY 471 Atomic and Molecular Physics	4 (4-0-8)
ICPY 472 Solid State Physics	4 (4-0-8)
ICPY 473 Nuclear and Particle 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 Elective Courses

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 and the Curriculum Administrative Committee.
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 and the Curriculum Administrative Committee.

Free Elective Courses

8 credits

Students can take any courses offered by MUIC and/or Mahidol University as free elective courses with the approval from the advisor. A course within the student's major that is too closely related or redundant to core/required/elective courses is discouraged and may be disapproved by an academic advisor.

Minor

- Physics program offers a minor degree in Physics for students from other programs. Physics Students may choose to take minor offered by other programs in MUIC. In order to obtain minor, students are required to complete all requirements as specified by each minor.

Minor in Physics

at least 20 credits

- To minor in Physics, students need to complete the following courses.

Required Courses for Minor in Physics

20 credits

ICPY 200 Modern Physics	4 (4-0-8)
ICPY 321 Intermediate Mechanics	4 (4-0-8)
ICPY 322 Electricity and Magnetism	4 (4-0-8)
ICPY 361 Quantum Mechanics I	4 (4-0-8)
ICPY 452 Statistical Mechanics	4 (4-0-8)

Certificate

- **Gadget Developer**

*Level: Beginner

12 credits

ICPY 102 Physics II

4 (4-0-8)

ICPY 221 Computer Programming for Physics

4 (4-0-8)

ICPY 492 Electronics

4 (4-0-8)

Note:

- I. Students need to make sure they first pass prerequisites to the courses
- II. Please check the criteria and requirement before applying for the certificate

TRAVEL AND SERVICE BUSINESS ENTREPRENEURSHIP PROGRAM

DEGREE OFFERED

Bachelor of Management (Travel and Service Business Entrepreneurship)
B.M. (Travel and Service Business Entrepreneurship)

MODULE

Travel and Service Business Entrepreneurship Program offers 5 modules:

1. Hotel
2. Food & Restaurant
3. Tourism
4. Event
5. Health & Wellness

THE FIELD

The Bachelor of Management in Travel and Service Business Entrepreneurship fosters professionalism, analytical and practical skills and knowledge in the travel industry and the related service businesses. The key industries comprise hotel, restaurant, event, tourism and health & wellness. The programme aims to produce graduates who have the characteristics, knowledge and skills as follows:

1. To be able to operate within the local and international travel and service business environment;
2. To have an entrepreneurial and a managerial competency to develop the organizations/enterprises in travel and service businesses with sustainability mindset;
3. To be able to develop a cultural awareness and cross-cultural sensitivity;
4. To be able to withhold ethical and professional standard being required in travel and service businesses.

In order to provide students with a greater range of career options, the Travel and Service Business Entrepreneurship program offers five areas of interest from which students can choose.

Hotel field:

The Hospitality field focuses on the importance of quality services within hotels, strategic management, service marketing, human resource training and development, facilities design, and feasibility studies and business development in the industry. Within the field, students are trained within the individual departments of a hotel, and more importantly, they are trained from a managerial perspective. The students also have an opportunity to put management knowledge and theories into practice during their internships with industry practitioners.

Food & Beverage field:

The food and beverage field focuses on how to prepare students for adequate fundamental knowledge in order to run and operate the restaurant businesses ranging from small to medium sizes. Within the field, students are provided with the following knowledge: food and beverage management, culinary operation management, gastronomy exploration and food's experiences, restaurant marketing and branding Strategies, and restaurant business planning and operations.

Tourism field:

The Tourism field engages students in the areas of tourism business planning and development, product innovation in tourism, online travel service, destination promotion strategies, creating tourism competitiveness, special interest tourism (i.e. wine studies), travel guide and interpretation and interpretation of heritage tourism. The module aims to enhance students' practical and analytical skills towards tourism related business planning and

development, creating value innovation in tourism business, strategic development in destination marketing and creating tourism business competitiveness.

Event field:

The Event field prepares students for careers in event and MICE management businesses. Within this group, students gain knowledge and experiences in planning, designing, organizing, budgeting and implementing special events, sport events, meetings, incentives, conventions, conferences, exhibitions and expositions. It also provides students with professional preparation, focusing on the concepts and principles involved in event and MICE management, budgets and finance, site selection, contracts, vendors, negotiations, marketing and promotions, food and beverage management, modern technology, hospitality law and event logistics. The event and MICE industry is an exciting, fast-paced field that allows and encourages creativity and innovation.

Health & Wellness field:

The health & wellness field focuses on preparing students to have adequate knowledge for the emerging service segments relating to travel industry, and will be an important segment in the next coming decades. Within this group, students will gain a better understanding on concepts relating to health science and wellness, sport and health, healthcare and medical, and spa and wellness. Students will have the opportunity to choose types of the related health businesses as aforementioned based on their interest to deepen operational and managerial principles.

The prior-curriculum, under similar divisional structure and acts as a fundamental of this recent curriculum, has been certified by AUN-QA and UNWTO.TedQual.

CAREER OPPORTUNITIES

Career opportunities after graduation

1. Students will be able to work in private sectors relating to international travel and the related service businesses with focuses on hotel, accommodation, restaurant, tourism, event, and health & wellness or be able to operate their own small and medium business. Set skills and knowledge gained from the curriculum also allow students to have opportunities in other service related business including airline, cruise, spa and hospital companies.
2. Students will be able to work in public sectors relating to the travel and the related service businesses by focusing on hotel accommodation, restaurant, tourism, event, and health & wellness. Set of skills and knowledge gained from some fundamental courses and elective courses in the curriculum allow students to work with the public sector such as Tourism Authority of Thailand, or Thailand Convention and Exhibition Bureau (TCEB).
3. Since students are trained for a basic research method course, both on qualitative and quantitative approaches, they are applicable to work in a research field or for market research companies in relation to areas of hospitality and tourism industry.

To conclude in categories:

- **Primary careers**

Entrepreneurship: Restaurant owner; Hotel owner and operator; Event planner and organizer (own); Travel agency and TourOperator; Health business owner (Spa, fitness etc.).

Corporate/Industry sector: Positions in various hotel, restaurant, functions (Sales & marketing, HR, Revenue management, Finance, Housekeeping, Front office, Reception, Beverage, Kitchen). Managerial level positions in the hotel chain/corporation; Spa manager; Event planner and organizer; Travel Agency and Tour Operator.

- **Additional careers**

Government sector: Jobs in tourism organisations such as Tourism Authority of Thailand, jobs in event organisations such as Thailand Convention and Exhibition Bureau (TCEB).

Business research: Research department of marketing research firm (on tourist behaviour, tourism trends).

- **Others:**

-

Set skills and knowledge gained from the curriculum also allow students to have opportunities in other service related business including cruise and hospital.

CURRICULUM STRUCTURE

Courses	Credits
General Education Courses	38
Core Courses	32
Major Required Courses	42
Major Elective Courses	12
Internship Courses	16
I-Design Electives	20
Free Elective Courses	8
Total	168

COURSE LIST

Foundation Courses

ICMA 100 Foundation Mathematics

ICME 100 English Resource Skills

Non-credit

0 (4-0-0)

0 (4-0-0)

Note I: Based on their achievement on the essay portion of the MUIC entrance exam, students whose English placement is below ICGC 101 Academic Writing and Research I will be placed into the “ERS Track”. These students will be required to take ICME 100 English Resource Skills and pass the course with the grade of “S” before moving to ICGC 101 Academic Writing and Research I.

General Education Courses

38 credits

English Communication

12-16 credits

ICGC 101 Academic Writing and Research I

4 (4-0-8)

ICGC 102 Academic Writing and Research II

4 (4-0-8)

ICGC 103 Public Speaking

4 (4-0-8)

ICGC 201 Global Realities

4 (4-0-8)

ICGC 202 Literary Analysis

4 (4-0-8)

ICGC 203 Creative Writing

4 (4-0-8)

ICGC 204 Advanced Oral Communication

4 (4-0-8)

ICGC 206 Literature Into Film

4 (4-0-8)

ICGC 208 Language and Culture	4 (4-0-8)
ICGC 210 First and Second Language Acquisition	4 (4-0-8)
ICGC 211 Topics in Comparative Literature A: Poetry	4 (4-0-8)
ICGC 212 Topics in Comparative Literature B: The Short Story and the Novel	4 (4-0-8)
ICGC 213 Topics in Comparative Literature C: Drama	4 (4-0-8)
ICGC 214 Literary Non-fiction	4 (4-0-8)
ICGC 215 Writing for Research	4 (4-0-8)

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

- **'ERS Track'** – Students who are placed into 'ERS Track' will be required to take ICME 100 (a non-credit course) and complete 16 credits in English Communication: ICGC 101, ICGC 102, ICGC 103 in order, and finally, any 200+ level English courses.
- **'GC Track'** – Students who are placed into 'GC Track' will be required to complete 16 credits in English Communication: ICGC 101, ICGC 102, ICGC 103 in order, and finally, any 200+ level English courses.
- **'GC2 Track'** – Students who are placed into 'GC2 Track' will be required to complete 12 credits in English Communication: ICGC 102, ICGC 103 in order, and finally, any 200+ level English courses.

Note II: Students in 'ERS Track' and 'GC Track' must take ICGC 101, ICGC 102 and ICGC 103 without interruption beginning in their first trimester of enrollment.

Note III: Students in 'GC2 Track' must take ICGC 102 and ICGC 103 without interruption beginning in their first trimester of enrollment.

Life Appreciation	4 credits
ICGH 113 Moving Pictures: A History of Film	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 119 Listen! Soundscapes, Well-Being and Musical Soul Searching	4 (4-0-8)
ICGN 105 Ecology, Ecosystems and Socio-Economics in Southeast Asia	4 (3-2-7)
ICGN 108 Essentials of Culinary Science for Food Business	4 (3-2-7)
ICGN 109 Food for Health	4 (4-0-8)
ICGN 110 Maker Workshop	4 (3-2-7)
ICGN 112 Stargazer	4 (3-2-7)
ICGN 113 Plants, People and Poisons	4 (4-0-8)
ICGN 115 Human Evolution, Diversity and Health	4 (4-0-8)
ICGN 120 Chemistry of Cosmetics and Dietary Supplements	4 (4-0-8)
ICGN 124 Climate Change and Human Society	4 (3-2-7)
ICGN 125 Games and Learning	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 117 Physical Fitness Plan	2 (2-0-4)
ICGS 102 Business Sustainability and the Global Climate Change	4 (4-0-8)
ICGS 111 Exploring Religions	4 (4-0-8)
ICGS 115 Sociology in the Modern World	4 (4-0-8)
ICGS 125 American History, Popular Media and Modern Life	4 (4-0-8)
ICGS 126 Introduction to Psychology	4 (4-0-8)
ICGS 127 Positive Psychology	4 (4-0-8)
ICGS 128 Global Gastronomy and Cuisines	4 (4-0-8)
ICGS 129 Tea Studies	2 (2-0-4)
ICGS 141 Coffee studies	2 (2-0-4)
ICGS 142 Contemporary Spirituality and Marketing	1 (1-0-2)
ICLL 100 Self Development	2 (2-0-4)

***Please see additional courses on page 290.

Global Citizenship	4 credits
ICGH 116 World Cinemas	4 (4-0-8)
ICGH 120 Thai and ASEAN Cinema	4 (4-0-8)
ICGH 121 The End of the World? Development and Environment	4 (4-0-8)
ICGH 122 Introduction to Asian Philosophy	4 (4-0-8)
ICGH 123 Faiths, Ecological Justice, and the Tropical Rainforests	2 (2-0-4)
ICGH 127 Rome: An Empire's Rise and Fall	4 (4-0-8)
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 170 Diversities in Multilingual Societies	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 126 Plant Society	2 (2-0-4)
ICGS 106 Fashion and Society	4 (4-0-8)
ICGS 112 Geography of Human Activities	4 (4-0-8)
ICGS 123 Tourism Concepts and Practices	4 (4-0-8)
ICGS 130 Political Science	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 143 Introduction to Air Transport and Tourism	4 (4-0-8)

***Please see additional courses on page 290.

Critical Thinking

4 credits

ICGH 101 Biotechnology: from Science to Business	4 (4-0-8)
ICGH 102 Famous Arguments and Thought Experiments in Philosophy	4 (4-0-8)
ICGH 103 Logic, Analysis and Critical Thinking: Good and Bad Arguments	4 (4-0-8)
ICGH 105 Technology, Philosophy and Human Kind: Where Are We Now?!	4 (4-0-8)
ICGH 106 The Greeks: Crucible of Civilization	4 (4-0-8)
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 Languages and Its Application	4 (4-0-8)
ICGH 124 Life Drawing and Anatomy	4 (2-4-6)
ICGH 125 How Can We Know What Is Good? Moral Reasoning and Behavior	4 (4-0-8)
ICGH 126 Behavioral Ethics: Why Good People Do Bad Things	2 (2-0-4)
ICGN 107 The Chemistry of Everyday Life	4 (4-0-8)
ICGN 111 Physics for CEO	4 (4-0-8)
ICGN 123 The Earth's Dynamic Structure	4 (3-2-7)
ICGN 127 Practical Mathematics	2 (2-0-4)
ICGS 103 Economics in Modern Business	4 (4-0-8)
ICGS 105 Personal Financial Management	4 (4-0-8)
ICGS 113 Perspectives on the Thai Past	4 (4-0-8)
ICGS 134 Is Democracy Good?	4 (4-0-8)
ICGS 135 Entrepreneurial Accounting	4 (4-0-8)

ICGS 144 Price Discrimination: Why Do We Pay More Than Others?

1 (1-0-2)

****Please see additional courses on page 290.***Leadership****4 credits**

ICGN 114 The Scientific Approach and Society

4 (4-0-8)

ICGN 128 Climate Emergency, Biodiversity Crisis, and Humanity at Risk

2 (1-2-3)

ICGS 104 Essentials of Entrepreneurship

4 (4-0-8)

ICGS 118 Skills in Dealing with People Across Cultures

4 (4-0-8)

ICGS 121 Abnormal Colleagues: How Do I Make This Work?

4 (4-0-8)

ICGS 136 Social and Health Issues in Thailand

4 (3-2-7)

ICGS 137 Witchcraft and Gender Representation

4 (4-0-8)

ICGS 138 Business Event Essentials

4 (4-0-8)

ICGS 139 Leadership and Change for a Global Society

4 (4-0-8)

ICGS 145 Service-Learning – Management of Community Service

4 (2-4-6)

Project ICGS 146 Service-Learning – Salaya Community Service Learning

4 (2-4-6)

Project ICGS 147 Women in Leadership

4 (4-0-8)

ICGS 148 Service Learning - Digital Campaign for Gender Issues

4 (2-4-6)

ICGS 149 Service Learning - Making Change

4 (2-4-6)

ICGS 150 Service Learning - Campaigning for a Cause

4 (4-0-8)

ICGS 151 Service Learning - The Art of Leadership in Practice

4 (2-4-6)

ICGS 152 Fantasy Literature's Environmental Message

4 (4-0-8)

ICGS 154 Introduction to Crisis Management in Service Businesses

4 (4-0-8)

ICGS 155 Pathway to Purpose: Life Design and Self-Exploration

4 (4-0-8)

ICLL 101 Professional Development

2 (2-0-4)

****Please see additional courses on page 290.***Digital Literacy****4 credits**

ICGH 111 Media Literacy: Skills for 21st Century Learning

4 (4-0-8)

ICGH 128 Internet Celebrity, Culture and the Media

4 (4-0-8)

ICGN 116 Understanding and Visualizing Data

4 (3-2-7)

ICGN 118 Everyday Connectivity

4 (4-0-8)

ICGN 119 Computer Essentials

4 (4-0-8)

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 131 Digital Search Literacy

2 (2-0-4)

ICGN 132 Digital Security and Privacy

2 (2-0-4)

ICGN 133 E-Business: Technology and Digital Strategies

4 (4-0-8)

ICGN 134 Introduction to Artificial Intelligence

2 (2-0-4)

ICGS 140 Fake News, Censorship and the Politics of Truth

4 (4-0-8)

ICGS 153 Social Media Management for Service Sector

2 (2-0-4)

ICLL 102 Skills for a Digital World

2 (2-0-4)

****Please see additional courses on page 290.***General Education Elective Courses****2-6 Credits**

Students need to take any GE courses to fulfill their 38 credits requirement of General Education: **2 credits** for students whose English Communication track are placed into 'ERS track' or 'GC Track' and **6 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**102 credits****Core Courses****32 credits****Core Courses in Management**

ICTB 202 Principles of Management	4 (4-0-8)
ICTB 301 People and Talent Management	4 (4-0-8)
ICTB 304 Service Management and Experience Design	4 (4-0-8)

Core Courses in Travel and Service Businesses Entrepreneurship

ICTB 201 Introduction to Travel and Service Businesses	4 (3-2-7)
ICTB 203 Consumer Behavior for Travel and Service Businesses	4 (4-0-8)
ICTB 204 Business Communication	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)

Major Required Courses**42 credits**

ICTB 211 Business Statistics and Data Management	2 (2-0-4)
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 215 Branding Strategy and Marketing Communication Channels	4 (4-0-8)
ICTB 216 Sustainable Development in Travel and Service Businesses	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 and Data Analysis 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)

Major Elective Courses**12 credits****Elective courses –Hotel Management Module**

ICTB 321 Room Division Operation Management	4 (4-0-8)
ICTB 322 Facility Management for Hotel Operations	4 (4-0-8)
ICTB 323 Hospitality Facilities Design	4 (3-2-7)
ICTB 324 Hotel Business Development and Management	4 (4-0-8)

Elective courses – Food & Restaurant Management Module

ICTB 331 Culinary Operation Management	4 (3-2-7)
ICTB 332 Baking and Pastry Business	4 (3-2-7)
ICTB 333 Gastronomy Exploration and Food's Experiences	4 (4-0-8)
ICTB 334 Restaurant Marketing and Branding Strategies	4 (4-0-8)
ICTB 335 Restaurant Business Planning and Operations	4 (4-0-8)

Elective courses - Tourism Management Module

ICTB 341 Travel Guide and Interpretation	4 (3-2-7)
ICTB 342 Tourism Package Management and Business	4 (3-2-7)

ICTB 343 Online Travel and Service Business	4 (4-0-8)
ICTB 344 Wine Studies and Wine Tourism	4 (3-2-7)
ICTB 345 Cultural Heritage Studies for Entrepreneurship	4 (4-0-8)

Elective courses - Event Management Module

ICTB 351 Event Planning and Operation	4 (4-0-8)
ICTB 352 Event and Experience Design	4 (3-2-7)
ICTB 353 Event Business Stakeholders Engagement	4 (4-0-8)
ICTB 354 Leisure and Sport Event	4 (3-2-7)
ICTB 355 Creative Event Production	4 (3-2-7)

Elective courses – Health & Wellness Management Module

ICTB 361 The Basics of Exercise Science and Wellness	4 (4-0-8)
ICTB 362 Principles and Practice of Sport management for Business	4 (4-0-8)
ICTB 363 Healthcare and Medical Business	4 (4-0-8)
ICTB 364 Spa and Wellness Business	4 (4-0-8)

Internship Courses

	16 credits
ICTB 291 Internship I	8 (0-40-8)
ICTB 292 Internship I	8 (0-24-8)
ICTB 491 Internship II	8 (0-40-8)
ICTB 492 Internship II	8 (0-24-8)

I-Design Elective Courses

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 and the Curriculum Administrative Committee.
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 and the Curriculum Administrative Committee.

Free Elective Courses

8 credits

Students can take any courses offered by MUIC and/or Mahidol University as free elective courses with the approval from the advisor. A course within the student's major that is too closely related or redundant to core/required/elective courses is discouraged and may be disapproved by an academic advisor.

Minor Courses

- Students may choose to take minor offered by other programs in MUIC. In order to obtain minor, students are required to complete all requirements as specifies by each minor.

Minor in Travel and Service Business Entrepreneurship

- To minor in Travel and Service Business Entrepreneurship, students need to complete minimum 20 credits comprising the compulsory subjects (3 subjects) and elective subjects (2 subjects)

Compulsory subjects

12 credits

ICTB 201 Introduction to Travel and Service Businesses

4 (3-2-7)

ICTB 304 Service Management and Experience Design

4 (4-0-8)

ICTB 315 Entrepreneurship and Business Plan Development

4 (4-0-8)

Elective subjects

8 credits

Students can choose two of the following subjects (also based on the availability of the course) amongst the following groups in Travel and Service Business Entrepreneurship Curriculum:

- 1) Core Courses in Management
- 2) Core Courses in Travel and Service Businesses Entrepreneurship
- 3) Required Courses
- 4) Major Elective Courses
- 5) Internship I

Minor in Food Service and Wine Business

- To minor in Food Service and Wine Business, students need to complete the following courses:

Compulsory subjects

20 Credits

ICTB 331 Culinary Operation Management

4 (3-2-7)

OR

ICTB 332 Baking and Pastry Business

4 (3-2-7)

ICTB 334 Restaurant Marketing and Branding Strategies

4 (4-0-8)

OR

ICFS 439 Food Product Innovation

4 (4-0-8)

ICTB 344 Wine Studies and Wine Tourism

4 (3-2-7)

ICFS 365 Food Safety and Sanitation Management

4 (4-0-8)

ICTB 335 Restaurant Business Planning and Operations

4 (4-0-8)

(Capstone course)

Remark: This minor must end with ICTB 335

Certificate

- **Event Planning and Design**

12 credits

*Level: Beginner, Pre - intermediate, Intermediate

ICTB 351 Event Planning and Operation

4 (4-0-8)

ICTB 352 Event and Experience Design

4 (3-2-7)

ICTB 353 Event Business Stakeholders Engagement

4 (4-0-8)

- **Hotel Design Perspectives**

12 credits

*Level: Beginner, Pre - intermediate, Intermediate

ICTB 321 Room Division Operation Management

4 (4-0-8)

ICCD 119 2D Design Principles

4 (2-4-6)

ICTB 323 Hospitality Facilities Design

4 (3-2-7)

Note:

- I. Students need to make sure they first pass prerequisites to the courses
- II. Please check the criteria and requirement before applying for the certificate

**Note: The contents are subject to change without prior notice. Students are advised to check for up-to-date information with the relevant offices or departments*



Course Descriptions

General Catalog
2022 - 2023

EGCI 113 Fundamental Computer Programming**3 (2-2-5)****Prerequisites: -**

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)****Prerequisite: -**

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)****Prerequisite:** EGCI 113 Fundamental Computer Programming

Programming techniques and concepts. Various techniques for Efficient Pointer; Structure; 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)****Prerequisite:** EGCI 113 Fundamental Computer Programming

An introduction to programming paradigms and programming languages; fundamental programming concepts: data types, basic programming statements, functions, memory management; object-oriented programming, concurrent programming, event-driven programming

EGCI 221 Data Structures and Algorithms**4 (4-0-8)****Prerequisite:** EGCI 211 Advanced Computer Programming

The analysis of algorithms; abstract data types; linear data structures: linked lists, stacks, queues; non-linear data structures: trees, hash tables, graphs; sorting and searching algorithms; recursion, divide-and-conquer algorithms, dynamic programming, greedy algorithms; an introduction to NP-completeness

EGCI 230 Electric Circuit Analysis**4 (4-0-8)****Prerequisite:** ICPY 102 Physics II

Circuit elements; Kirchhoff's laws; resistive circuits; node and mesh analysis; Thevenin and Norton theorems; Op-amp, 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; complex power; frequency responses

EGCI 231 Digital Circuit Design**4 (4-0-8)****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)****Prerequisite:** ICPY 102 Physics II

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)****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)****Prerequisite:** EGCI 211 Advanced Computer Programming

System programming; fundamental process management; concurrency and communication; signals, thread, thread synchronization, semaphores, inter-process communication

EGCI 301 Computer Graphics**4 (4-0-8)****Prerequisite:** EGCI 113 Fundamental Computer Programming

Principles of the computer graphics, graphics systems and models, graphics programming, graphic devices and their controls; color model, geometric objects and transformations, viewing, shading, clipping, and the hidden-surface removal

EGCI 305 Statistics for Research in Computer Engineering**4(4-0-8)****Prerequisite:** ICMA 213 Calculus II

The design of experiments; the collection and presentation of data; descriptive statistics; elementary probability and normal distributions; the estimation of parameters; hypothesis testing; the analysis of variance; regression and correlation; the analysis of frequencies and non- parametric methods

EGCI 319 Internship In Computer Engineering**2 (0-12-2)****Prerequisite:** Must complete 60 EGCI credits before register for this course

A minimum 156 hours practical training in an industrial factory or an organization with computer- related systems, computer control system, or systems using computer processing; the internship summary, including the report of the training outcome from the host organization; grading as either 'S' or 'U'

EGCI 321 Database Systems**4 (4-0-8)****Prerequisite:** EGCI 221 Data Structures and Algorithms

The entity-relationship model, the relational data model; logical and physical database design, a query language, data dependencies and normalization; the transaction, the crash recovery, the concurrency control; the internet databases

EGCI 330 Microprocessor and Interfacing**4 (4-0-8)****Prerequisite:** 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 331 Introduction to IC Design**4 (4-0-8)****Prerequisite:** EGCI 231 Digital Circuit Design

The N MOS and C MOS integrated circuit technologies; properties of N MOS and C MOS circuits; calculation of parameters in circuits, static and dynamic MOS circuits; system design; circuit drawing and testing; computer arithmetic; performance evaluation; synthesis of digital circuits from HDL models; modeling and simulation; fault models and testing the use of CAD tools in circuit design

EGCI 332 Embedded Systems**4 (4-0-8)****Prerequisite:** -

Embedded system designs and development processes; portable-battery operated embedded systems; high-level language programming for embedded system applications; real-time operating system; advanced peripheral interfacing; DAC and ADC converters; sensors and signal conditioners

EGCI 333 Computer Architecture**4 (4-0-8)****Prerequisite:** 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)****Prerequisite:** -

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) design; software architecture; Service-Oriented Architecture (SOA); microservices architecture; software project management

EGCI 341 Software Engineering**4 (4-0-8)****Prerequisite:** 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; documentation; management of software project; case studies of software system in the market

EGCI 351 Operating Systems**4 (4-0-8)****Prerequisite:** 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)****Prerequisite:** -

An introduction to the data communication; the network architecture; local and wide area networks; wired and wireless networks; network protocols; network applications; network management; data communications; performance evaluation; data security and integrity; vulnerabilities; secret and public key cryptography; message authentication codes; network and web security; authentication

EGCI 381 Introduction to Quantum Computing**4 (4-0-8)****Prerequisite:** -

A brief history of quantum computing and quantum technologies; mathematics for quantum theory; quantum bits (qubits); qubits superposition; entanglement; qubits manipulation; basic quantum and quantum-inspired algorithms; quantum logic gates; and quantum programming

EGCI 382 - 389 Special Topics in Computer Engineering (...)**4 (4-0-8)****Prerequisite:** -

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 - 399 Special Topics in Computer Engineering (...)**4 (3-2-5)****Prerequisite:** -

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 404 Theory of Computation**4 (4-0-8)****Prerequisite:** EGCI 201 Discrete Mathematics

An introduction to the structure of languages and the characteristic of languages: formal languages, regular languages and non-regular languages, the context-free grammar and context-free languages; describing the characteristic of state machines used to check the membership of languages: finite state machines, transducers, state transition machines, non-deterministic finite state machines, push-down

state machines, Turing machines; the advanced theory of computation: Kleene's Theorem, recursively enumerable languages, decision problems

EGCI 407 Human-Robot Interaction (HRI)

4 (4-0-8)

Prerequisite: -

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 425 Data Mining

4 (4-0-8)

Prerequisite: -

Knowledge discovery in databases; data preparation, data visualization, and data transformation; clustering, association analysis, classification and ensemble classification; metrics and evaluation; data warehouse, online analytical processing (OLAP); effects of data mining, current technology and trend, applications of data mining

EGCI 427 Web Programming

4 (4-0-8)

Prerequisite: -

Semi-structured data models for the Web (such as XML, etc.), the semi-structured data management, associated query languages and query systems for Web data, query processing and optimization over semi-structured data as well as over multiple distributed sources; data integration over the Web, warehousing of Web data; mappings from relational and object-oriented database servers to web data; discussions on some novel data-intensive applications on the Web such as electronic commerce, digital libraries, and distance education relating to web database issues

EGCI 428 Mobile Device Programming

4 (4-0-8)

Prerequisite: -

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)

Prerequisite: -

Fundamental concepts of web application development from a managerial perspective; extensible Markup Language (XML) and Hypertext Markup Language (HTML) technology; fundamental principles of architecture, process, and elements of web applications; Web services application development; mobile applications such as geographical information system and social networks

EGCI 431 Internet of Things

4 (4-0-8)

Prerequisite: -

IoT architectures, communication technologies for IoT, technologies behind IoT, IoT platform; how they are integrated to form IoT systems

EGCI 432 Distributed Systems**4 (4-0-8)****Prerequisite:** EGCI 113 Fundamental Computer Programming

Naming, consistency, concurrency, and security; reviewing some of the current best practices in distributed computing models: peer-to-peer, grid computing, and distributed object model

EGCI 451 Cloud Computing**4 (4-0-8)****Prerequisite:** -

Fundamental concepts of cloud computing; fundamental principles of the 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 461 Artificial Intelligence**4 (4-0-8)****Prerequisite:** 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; planning, the probabilistic reasoning systems; an introduction to Prolog, the natural language processing; the genetic algorithm, and machine learning techniques

EGCI 463 Pattern Recognition**4 (4-0-8)****Prerequisite:** 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)****Prerequisite:** -

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)****Prerequisite:** -

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 474 Internetworking Technologies I**4 (3-2-7)****Prerequisite:** EGCI 371 Computer Networks and Information Security

Theoretical and practical aspects of routing, including internetworking models, internet protocol, and routing technologies; required laboratory work

EGCI 475 Internetworking Technologies II**4 (3-2-7)****Prerequisite:** EGCI 474 Internetworking Technologies I

Theoretical and practical aspects of advanced routing and switching technologies, including hierarchical network design model, layer 2 switching, internet protocol version 6, spanning tree concepts, inter-virtual

local area network, wide area network technologies, network security, network services, and network troubleshooting; required laboratory work

EGCI 476 Cryptography and Computer Security

4 (4-0-8)

Prerequisite: 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)

Prerequisite: 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 from vulnerabilities

EGCI 478 Wireless Communication

4 (4-0-8)

Prerequisite: 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)

Prerequisite: Consent of instructor

The image processing system, an introduction to the digital image processing, the digital image fundamental, the image enhancement, the image transformation, the image restoration, color image processing, image compression, the morphological image processing, the image segmentation, the object recognition

EGCI 487 Computer Vision

4 (4-0-8)

Prerequisite: -

An introduction to programming for computer vision; fundamentals of the computer vision, 3D geometrical transformations; the stereo imaging, the perspective camera, the camera calibration, the camera imaging model, the image registration, the wavelet transform, the 3D modeling; image segmentation, feature detection and matching, the face recognition, the object recognition, the content-aware image resizing

EGCI 491 Computer Engineering Seminar

1 (0-2-1)

Prerequisite: Must complete 60 EGCI credits before register for this course

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)****Prerequisite:** EGCI 491 Computer Engineering Seminar

The computer engineering project supervised by the advisory committee; a complete project report and an oral examination

EGCI 493 Cooperative Education**8 (0-40-8)****Prerequisite:** EGCI 319 Internship In Computer Engineering

Integrating and adapting all classroom knowledge into the real practice in corporate environments, gaining working experiences and teamwork experiences under a supervision of mentors from the companies and advisors from the department, in order to prepare the students from transition from school to work after graduation; grading as either 'S' or 'U'

EGCI 494 Fundamental of Digital Forensics**4 (4-0-8)****Prerequisite:** -

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; collecting and analyzing the network traffic; data analysis and validation; digital forensic tools

EGCI 495 Regional Study Experience**1 (0-2-1)****Prerequisite:** 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)****Prerequisite:** 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 371 Strategic Choices of Consumers and Firms**4 (4-0-8)****Prerequisite:** ICMB 205 Microeconomics

A study of the behaviour of economic agents, individual and market demands, optimal choices, market structures, the collusion and cartels analysis; game theory, interaction of consumers and firms, partial and general equilibrium analysis, government intervention, market failures and externalities

ICBE 372 World Economy**4 (4-0-8)****Prerequisite:** ICMB 206 Macroeconomics

The international trade theories, the international trade policy, current issues of international trade, the international financial theories; fixed exchange rate, flexible exchange rate, macroeconomic policy under the different exchange rate systems, the role of international financial institutions

ICBE 373 Econometrics and Data Analysis**4 (4-0-8)****Prerequisite:** ICMB 201 Business Statistics

An introduction to the field of econometrics; the simple regression analysis; the multiple regression analysis; hypothesis testing; multicollinearity, heteroscedasticity; dummy variables; panel data models; time series models; applications of econometric methods to actual data using the econometric software packages

ICBE 471 Market Structures and Pricing Strategies**4 (4-0-8)****Prerequisite:** ICMB 205 Microeconomics

Firms behavior, different market structures, an economic analysis of game theory, firms decisions, competitive market, monopolistic and imperfect competitive markets; theories of pricing decision, pricing issues, pricing framework, value creation process, price structure, strategies and tactics; strategic firms entering mode, product differentiation, choice of vertical boundaries and procurement decisions, and the advertising investment

ICBE 472 Economic Policy Analysis**4 (4-0-8)****Prerequisite:** ICMB 205 Microeconomics, ICMB 206 Macroeconomics

Welfare economics theory; public goods; the distribution of income and wealth; an analysis of taxation; public policy analysis; monetary theory and policy; transmission of monetary policy; central bank operations; an evolution of monetary institutions

ICBE 481 Game Theory for Business**4 (4-0-8)****Prerequisite:** ICMB 205 Microeconomics

An application of game theoretic models to strategic situations, static games, dynamic games, sequential games; the role of complete and incomplete information, repeated interactions, behavioral games

ICBE 482 Economic Integration**4 (4-0-8)****Prerequisite:** ICMB 205 Microeconomics, ICMB 206 Macroeconomics

Theories, applications and effects of the economic integration; free trade areas; customs unions; common markets; the labor and capital mobility; economic union; monetary and fiscal unions; trade policy measures; current issues and challenges of the WTO, the European Union, ASEAN, APEC, NAFTA, and TPP

ICBE 484 Data Analytics for Business Strategy**4 (4-0-8)****Prerequisite:** ICMB 201 Business Statistics

Data analytics techniques to develop an empirical business research project; planning and collecting data; visualization of data; correlations and ANOVA; principal component analysis; regression analysis; categorical data and discrete response models; data presentation

ICBE 486 Special Topics in Business Economics**4 (4-0-8)****Prerequisite:** -

A study of contemporary issues, industry trends, theories, and best practices in business economics in response to the changing business environment

ICBI 101 Biology**4 (4-0-8)****Prerequisites:** -

Properties of life, classification, and scientific process; chemistry of life; cells and metabolism; genetics; mechanisms of evolution

ICBI 102 Integrated Laboratory in Biological Sciences I**2 (0-4-2)****Prerequisites:** -

Cell structure and function, tissue, cell division, ecology, movement of molecules, respiration, and photosynthesis

ICBI 103 Biology II**4 (4-0-8)****Prerequisites:** -

The diversity of life; plant forms and functions; animal forms and functions; ecology and behavior

ICBI 121 Biology I**4 (3-2-7)****Prerequisites:** -

Properties of life, classification, and scientific process; chemistry of life; cells and metabolism; genetics; mechanisms of evolution; diversity of life; plant forms and functions; animal forms and functions; ecology and behavior; practical exercises are included

ICBI 204 Developmental Biology**4 (4-0-8)****Prerequisites:** ICBI 221 Animal Biology

Embryogenesis; molecular and cellular aspects of differentiation morphogenesis in a variety of vertebrates and invertebrates; comparative study of normal and deviate development in well-known mammals

ICBI 207 Ethics for Bioscience**4 (4-0-8)****Prerequisites:** ICBI 121 Biology I

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 211 Genetics and Molecular Biology I**4 (4-0-8)****Prerequisites:** ICBI 121 Biology I

An introductory course to genetics and Molecular Biology, which provides a deeper information on genes/chromosome as inheritable elements, processes of Mitosis and Meiosis, DNA mutations, Mendelian Genetics and Central Dogma

ICBI 213 Genetics**4 (4-0-8)****Prerequisites:** ICBI 121 Biology I

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 121 Biology I**Co-requisite:** ICBI 271 General Microbiology Laboratory

Structures, physiology and ecology of viruses, bacteria, protozoa and fungi especially bacteria, aspects of microbiology importance in health, sanitation, food processing and industry

ICBI 216 Cell Biology**4 (4-0-8)****Prerequisites:** ICCH 225 Biochemistry

Analysis of the structures and functions of cellular organelles; cellular activities; cell-to-cell interaction and communication with environment

ICBI 221 Animal Biology**4 (3-2-7)****Prerequisites:** ICBI 121 Biology I

A survey of the animal kingdom; diversity and ecology of animals; animal structure, function and behavior; demonstrations and practical exercises included

ICBI 231 Plant Biology**4 (3-2-7)****Prerequisites:** ICBI 121 Biology I

A survey of the plant kingdom; diversity and ecology of plants; plant structure, function and behavior; demonstrations and practical exercises included

ICBI 262 Practical Field Ecology and Conservation**4 (3-2-7)****Prerequisites:** ICBI 121 Biology I

Reviewing ecological literature; formulating research questions; preparing for ecological investigations; characterizing sites; sampling strategies in different habitats; statistical techniques; objective interpretation of data; unambiguous communication of results; field work included

ICBI 271 General Microbiology Laboratory**2 (0-4-2)****Prerequisites:** ICBI 121 Biology I**Co-requisite:** ICBI 214 General Microbiology

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 301 Functional Histology**4 (3-2-7)****Prerequisites:** ICBI 221 Animal Biology

Microscopic characteristics of cells, tissues, and organs of the human body; systematic and sequential consideration of fundamental cytology; normal histology of basic tissues; embryological development and microscopic organization of the major organs and organ systems

ICBI 303 Basic Immunology**4 (4-0-8)****Prerequisites:** ICBI 214 General Microbiology, ICBI 216 Cell Biology

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 221 Animal Biology

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 221 Animal Biology

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 225 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 308 Molecular Biology**4 (4-0-8)****Prerequisites:** ICBI 213 Genetics

Critical thinking styles, brief of key instruments, reviews on basic functional interactions of macromolecules, molecular biology of genes and genomes, genetic engineering and genome analysis; group discussion included

ICBI 309 Pathobiology**4 (3-2-7)****Prerequisites:** ICBI 216 Cell Biology

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:** ICCH 225 Biochemistry

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 315 Microbial Physiology and Genetics**4 (4-0-8)****Prerequisites:** ICBI 214 General Microbiology

Microbial growth; metabolism; microbial structures and functions; gene structure regulation of microbial metabolism; microbial genetic structure; maintenance, expression, and exchange of genetic materials in microbial cells

ICBI 316 Environmental Microbiology**4 (3-2-7)****Prerequisites:** ICBI 214 General Microbiology

Fundamental aspect of microbial physiology and ecology; influence of environment on microorganisms; effect of microbial metabolic processes on the environment, biogeochemical cycle, microbial activity in augmentation

ICBI 324 Introduction to Medical Toxicology**4 (4-0-8)****Prerequisites:** ICCH 225 Biochemistry, ICBI 311 Human Physiology

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 328 Essential Pharmacology**4 (4-0-8)****Prerequisites:** ICCH 225 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 332 Medical Microbiology**4 (4-0-8)****Prerequisites:** ICBI 214 General Microbiology, ICCH 225 Biochemistry

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 333 Scientific Research and Presentations**2 (2-0-4)****Prerequisites:** ICBI 121 Biology I, ICMA 252 Biological Statistics Laboratory

Scientific method of discovery; developing a hypothesis and testing, interpretation of the result; synthesis of different published data to answer a single hypothesis; proper format for presenting papers in public and in a scientific forum; practical sessions and participation in scientific seminars included.

ICBI 341 Neurobiology**4 (3-2-7)****Prerequisites:** ICBI 221 Animal Biology

Developmental neurobiology, neuroanatomy, and neurophysiology; some clinical aspects as the results of neuropathological defects or lesions; practical exercises included

ICBI 355 Geographic Information Systems**2 (0-4-2)**

Prerequisites: ICMA 252 Biological Statistics Laboratory **OR** ICCS 161 Introduction to Data Science **OR** ICCS 261 Principles of Data Science

Basic concepts and techniques of Geographic Information Systems (GIS; applications of GIS

ICBI 372 Utilization of Water and Wastewater Treatment**4 (3-2-7)****Prerequisites:** ICBI 121 Biology I

Principles and methods in treatment and utilization of water and wastes; basic concepts of water and wastewater treatment; treatment of wastes from food and beverage industries

ICBI 380 Introduction to Systems Biology and Bioinformatics**4 (4-0-8)**

Prerequisites: ICBI 214 Genetics, ICMA 252 Biological Statistics Laboratory **OR** ICCS 161 Introduction to Data Science **OR** ICCS 261 Principles of Data Science

An introduction to computational and mathematical modeling of complex interaction within biological systems; biological databases; information archiving and retrieval and tools for molecular sequence analysis

ICBI 381 Evolutionary Biology**4 (4-0-8)****Prerequisites:** ICBI 221 Animal Biology, ICBI 231 Plant Biology

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 381 Evolutionary Biology

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 262 Practical Field Ecology and Conservation **OR** at the discretion of the instructor**Co-requisites:** ICBI 386 Practical Freshwater Ecology and Conservation

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 262 Practical Field Ecology and Conservation **OR** at the discretion of the instructor

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 262 Practical Field Ecology and Conservation **OR** at the discretion of the instructor**Co-requisites:** ICBI 388 Practical Terrestrial Ecology and Conservation

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 262 Practical Field Ecology and Conservation **OR** at the discretion of the instructor

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 391 Health Psychology**4 (4-0-8)****Prerequisites:** ICBI 121 Biology I, ICCH 225 Biochemistry

Individual psychology and the ways it affects adjustment to illness; prevention of illness through health promotion

ICBI 402 Epidemiology**4 (3-2-7)****Prerequisites:** ICBI 121 Biology I, ICMA 151 Statistics for Science I, ICMA 252 Biological Statistics Laboratory

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 403 Introduction to Tropical Medicine**4 (4-0-8)****Prerequisites:** ICBI 214 General Microbiology

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 404 Molecular Biology Laboratory**2 (0-4-2)****Prerequisites:** -**Co-requisites:** ICBI 213 Genetics, ICBI 308 Molecular Biology

A laboratory course focusing on the process of DNA cloning in bacteria; DNA transformation and purification; restriction endonuclease digest and ligation; PCR and gel electrophoresis

ICBI 405 Community Health**4 (3-2-7)****Prerequisites:** ICBI 207 Ethics for Bioscience

Survey of community health status; primary health care concept; health system analysis and health manpower development; practical sessions in local hospitals and field trips included

ICBI 406 Ergonomics**2 (2-0-4)****Prerequisites:** ICBI 121 Biology I

Physiological and psychological aspects in the workplace emphasizing raising efficiency of the human, machine and environment interaction; work station design; work posture; manual materials handling; work-rest cycle, and seating

ICBI 407 Occupational Health and Safety**4 (4-0-8)**

Prerequisites: ICBI 207 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 411 Psychopathology**4 (4-0-8)****Prerequisites:** ICBI 121 Biology I

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 414 Industrial Microbiology**4 (4-0-8)****Prerequisites:** ICBI 214 General Microbiology

Physiology, nutrition and growth of microorganisms important to various industries; control of microbial growth in industrial production process; application of microorganisms in production of cells, primary and secondary metabolites

ICBI 415 Biotechnology**4 (4-0-8)****Prerequisites:** ICBI 214 General Microbiology, ICBI 225 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 432 Plant Biotechnology**4 (4-0-8)****Prerequisites:** ICBI 231 Plant Biology

Concepts of plant biotechnology; quality and quantity improvement of plant and their products; technique for micropropagation, germplasm collection, bioactive compound from plants; technology for crop improvement

ICBI 433 Fermentation Technology**4 (4-0-8)**

Prerequisites: ICBI 214 General Microbiology or ICFS 213 General Microbiology for Food Science and technology, **OR** equivalent

Principle of biological fermentation process; submerged fermentation; solid state fermentation; disinfection of the equipment; factors affecting the process; raw material for fermentation; media design, optimization of fermentation condition; process control, downstream processing; quality control of products

ICBI 434 Food Biotechnology**4 (4-0-8)****Prerequisites:** ICCH 225 Biochemistry

Concept of food biotechnology; food components and qualities of food; chemical property of food; biochemical changes in food; condition and factors affecting the process and quality of food; food sanitation and hygiene; food preservation; industrial process for food production: e.g. flour, oil, meat, dairy, cereal products, etc.

ICBI 435 Molecular Techniques in Biotechnology**4 (4-0-8)****Prerequisites:** ICCH 226 Biochemistry Laboratory, ICBI 213 Genetics, ICBI 308 Molecular Biology

Current techniques in DNA manipulations; genomic; transcriptomic and proteomic; molecular techniques in real applications

ICBI 436 Industrial Enzymology**4 (3-2-7)****Prerequisites:** ICBI 214 General Microbiology, ICCH 225 Biochemistry

Industrial applications of enzyme in: alcohol production, analytic enzymes, animal feed, baking, brewing, cheese and whey, chemical biotransformation, detergents, effluent and waste treatment, fruit juices, immobilized enzymes, leather, olive and other edible oils, protein modification, pulp and paper, textiles, and wine; experimental practice imitates the research process to discover a new product of enzyme from bacteria: i.e. isolation and selection, optimization for growth and production, purification, immobilization of the enzyme, enzyme assay

ICBI 437 Current Issues in Biotechnology**2 (2-0-4)****Prerequisites:** ICBI 214 General Microbiology, ICCH 225 Biochemistry

Recent advances in biotechnology research and development; Bioinformatics; local and foreign expert guest speakers

ICBI 440 Marine Ecology and Conservation**4 (4-0-8)****Prerequisites:** ICBI 262 Practical Field Ecology and Conservation **OR** at the discretion of the instructor**Co-requisites:** ICBI 442 Practical Marine Ecology and Conservation

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 262 Practical Field Ecology and Conservation **OR** at the discretion of the instructor

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 231 Plant Biology

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 216 Cell Biology

Structure, growth and function of plant and animal cells; technology involved in cell and tissue culture; cell preservation; protoplast culture and fusion; cell cloning and fusion; monoclonal antibody production; breeding and genetic engineering; applications of stem cells for agriculture and therapeutic purposes

ICBI 464 Entrepreneurship and Innovation in Science**4 (4-0-8)****Prerequisites:** must complete at least 120 credits before register for this course

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 465 Internship in Biological Sciences A**4 (0-12-0)**

Prerequisites: Students must complete at least 120 credits and placement will be subjected to the internship policy of the Biological Science Program Internship in the area of biological sciences under supervision

ICBI 466 Internship in Biological Sciences B**12 (0-36-0)**

Prerequisites: Students must complete at least 120 credits and placement will be subjected to the internship policy of the Biological Science Program Internship in the area of biological sciences under supervision

ICBI 471 Special Topics in Biological Sciences A**4 (4-0-8)****Prerequisites:** -

Experience and knowledge equivalent to 4-trimester credits from biological science 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:** -

Experience and knowledge equivalent to 4-trimester credits from biological science 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:** -

Experience and knowledge equivalent to 4-trimester credits from biological science and related courses taken at other qualified universities and institutions; subject to approval by the Program Director of Biological Sciences

ICBI 474 Special Topics in Biological Sciences D**4 (4-0-8)****Prerequisites: -**

Experience and knowledge equivalent to 4-trimester credits from biological science and related courses taken at other qualified universities and institutions; subject to approval by the Program Director of Biological Sciences

ICBI 475 Special Topics in Biological Sciences E**4 (4-0-8)****Prerequisites: -**

Experience and knowledge equivalent to 4-trimester credits from biological science and related courses taken at other qualified universities and institutions; subject to approval by the Program Director of Biological Sciences

ICBI 481 Current Issues in Biological Sciences A**2 (2-0-4)****Prerequisites: -**

Experience and knowledge equivalent to 2-trimester credits from biological science and related courses taken at other qualified universities and institutions; subject to approval by the Program Director of Biological Sciences

ICBI 482 Current Issues in Biological Sciences B**2 (2-0-4)****Prerequisites: -**

Experience and knowledge equivalent to 2-trimester credits from biological science and related courses taken at other qualified universities and institutions; subject to approval by the Program Director of Biological Sciences

ICBI 483 Current Issues in Biological Sciences C**2 (2-0-4)****Prerequisites: -**

Experience and knowledge equivalent to 2-trimester credits from biological science and related courses taken at other qualified universities and institutions; subject to approval by the Program Director of Biological Sciences

ICBI 499 Research Project and Seminar in Biological Sciences**8 (0-16-8)****Prerequisites:** must complete 120 credits before register for this course

Small research project in biological sciences under supervision of an advisor; proposal and final presentations required to complete this course

ICCD 100 CD Seminar**0 (4-0-0)****Prerequisite: -**

Investigating the field of communication design and what it means to be a successful designer in the contemporary professional environment; lectures, visiting designers, topical discussions, and students' research

ICCD 103 Research Studio**4 (2-4-6)****Prerequisite: -**

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; an encouragement of experimentation, an exploration of self-developed concepts, and risk-taking

ICCD 112 Drawing Studio**4 (2-4-6)****Prerequisite: -**

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 related to each other and to the composition as a whole; fundamental skills in mark-making using the traditional black-and- white media

ICCD 119 2D Design Principles**4 (2-4-6)****Prerequisite: -**

Foundations and principles of the pictorial design; a focus on the concepts of the picture plane, figure/ground relationships, scale and proportional transformation, composition, and value; the development of a range of design vocabulary and repertoire of practical techniques; an introduction to formal design strategies

ICCD 121 Color for Design**4 (2-4-6)****Prerequisite: -**

A study of the additive and subtractive principles of the color theory as they apply to the communication design process; an emphasis placed on color mixing, color relationships, visual impact, as well as the psychological and symbolic uses of color

ICCD 130 3D Design Principles**4 (2-4-6)****Prerequisite: -**

A project based class in which students are challenged to apply the principles of design to the creation of the three-dimensional compositions using both simple linear and planar construction materials; an introduction to a variety of tools and techniques; stressing students' achievement in the design development, production methods and presentations of the finished works

ICCD 140 Digital Images and Processes**4 (2-4-6)****Prerequisite: -**

A focus on the digital photography; the 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 150 Art History**4 (4-0-8)****Prerequisite: -**

An introduction to basic elements of the 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 201 Conceptual Development**4 (2-4-6)****Prerequisite: -**

Processes relating to the generation and 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 202 Professional Ethics**4 (4-0-8)****Prerequisite:** ICCD 103 Research Studio

Ethical and legal issues; intellectual property; copyright, legal usage for illustration and photo images; client relationship; ethics for clients, public and social, colleagues, and oneself

ICCD 210 Communication Design Studio**4 (2-4-6)****Prerequisite:** ICCD 119 2D Design Principles

The communication design principles; communication design terminology; the design layout and concept; type, image and color; the technology software for design

ICCD 219 Typography**4 (2-4-6)****Prerequisite:** ICCD 119 2D Design Principles

The use of typography in communication design projects including design principles, processes and practices, organizational skills and the formative aspects of typographic symbols and arrangement

ICCD 221 Print Production**4 (2-4-6)****Prerequisite:** ICCD 119 2D Design Principles

The current process and practice of the publication design including the printing process (pre and post-production) in various applications and platforms with the understanding of design principles and techniques involved in the making of multiple-pages document

ICCD 222 Traditional Techniques Studio**4 (2-4-6)****Prerequisite:** -

An exploration of traditional techniques and methods relating to the 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 223 Current Issues in Design**4 (4-0-8)****Prerequisite:** -

Seminar for advanced students focusing on the 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.

ICCD 232 Moving Images by Design**4 (2-4-6)****Prerequisite:** -

An introduction, practice and application to the fundamental techniques and processes involved in the design and production of moving images for motion graphics, gifs and title sequences; including familiarity with key principles of design, aesthetics, and typography; basic understanding of simple narrative structure; applied contexts; technical proficiency with suitable software, technology and recording process for creating, editing and composition titles and motion graphics for various media platforms

ICCD 233 Storytelling by Design**4 (2-4-6)****Prerequisite:** -

Fundamentals of storytelling, the art of storytelling, elements and structures of a story, narrative re-techniques, the story development in multiple films and animation media platforms and/or design outcomes; features, shorts, television series, design products, adverts, news, online, media, vlogs, projection mapping, VR, 360, graphic novels, etc.

ICCD 236 Online Culture Communication and Application**4 (2-4-6)****Prerequisite:** ICCD 119 2D Design Principles

The digital communication process and practice including the principle of digital media, communication content and structure development, user interface (UI) and user experience (UX); various applications, techniques, and platforms with current technology are also introduced along with design principles

ICCD 250 Graphic Design History**4 (4-0-8)****Prerequisite:** -

A historical survey of the graphic design, presenting the work from various perspectives: cultural and cross-cultural, historical and timeless; focusing on shaping visual sensibilities and broadening the palette of references essential to the process of design thinking

ICCD 280 Study Trips: Regional**2 (0-4-2)****Prerequisite:** -

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; an exposure to designers in the region and to design trends in that locale

ICCD 281 Study Trips: International**2 (0-4-2)****Prerequisite:** -

A focus on experiential learning; a concentration on a particular location abroad in regards to cultural and historical aspects; an exposure to designers in other countries and to design trends in that locale

ICCD 290 Typeface Design**4 (2-4-6)****Prerequisite:** ICCD 220 Typography

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 300 Internship**4 (4-0-8)**

Prerequisite: ICCD 236 Online Culture Communication and Application, ICCD 322 Integrated Branding and ICCD 353 Advertising Campaign Development

Professional working knowledge and process; practicing professional conducts and responsibility in the workplace; time management; organizing the work flow; relations with co-workers; future career goals

ICCD 320 Environmental Graphics**4 (2-4-6)****Prerequisite:** ICCD 130 3D Design Principles

An introduction to professional design techniques, processes, and practices of The Environmental Graphics Design (EGD) including the usage of design principles, various applications, technologies, and platforms

ICCD 321 Infographics**4 (2-4-6)****Prerequisite:** ICCD 210 Communication Design Studio

Data visualization; data collection and analyzation; isotype; hierarchy; idea generation; design layouts; type, color and image; the technology software for design

ICCD 322 Integrated Branding**4 (2-4-6)****Prerequisite:** ICCD 210 Communication Design Studio

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 324 Package Design**4 (2-4-6)****Prerequisite:** ICCD 201 Conceptual Development

3-D form; package functioning; packaging patterns; research for marketing; materials usage and development; the printing process for packaging; the technology software for design

ICCD 325 Illustration**4 (2-4-6)****Prerequisite:** -

Studying the of basic illustration process from the production of thumbnails to finished artwork; projects requiring the response to brief given; the use of both traditional media and digital applications; fostering creativity and the concept development; emphasizing on visual research skills, craftsmanship, and professionalism

ICCD 326 Communication Design Practicum**4 (2-4-6)****Prerequisite:** ICCD 322 Integrated Branding

Professional practices; strategy planning and Implementation; advanced creative solutions; the client relationship; budget planning; teamwork development and collaborative workflow

ICCD 334 Animation Principles and Production**4 (2-4-6)****Prerequisite:** -

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 experiences in the development and construction processes of the animation production: hand-drawn and stop motion techniques; technical proficiency with the media and animation software; understanding copyrights and privacy issues in relation to contents, audiences and distributions of animation

ICCD 335 Character and Concept Design**4 (2-4-6)****Prerequisite: -**

An introduction, practice and application to the fundamental tools for designing and developing concepts and characters for narratives; including familiarity with key principles of design, aesthetics and the basic understanding of simple narrative structure; understanding the development and construction processes; technical proficiency with suitable media and software processes for designing concepts and characters bible for various media platforms and audiences

ICCD 336 Cinematic Languages and Its Application**4 (4-0-8)****Prerequisite: -**

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 craft approach

ICCD 337 Thai and ASEAN Cinemas**4 (4-0-8)****Prerequisite: -**

An introduction, practice and an application of languages to critical thinking and analysis of Thai and ASEAN film texts; 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

ICCD 342 New Media Design**4 (2-4-6)****Prerequisite:** ICCD 236 Online Culture Communication and Application

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 346 International Design Language and Culture**4 (2-4-6)****Prerequisite: -**

An introduction to the international design world; focusing on experiential learning an exposure to international designers; professional design cultures and challenges including the cultural heritage and contemporary design practice; design terminology; applications of the eco-friendly and sustainable design; new and innovative technologies and current design trends; digital, interactive, and online platforms

ICCD 351 Online Communication Execution Planning**4 (2-4-6)****Prerequisite:** ICCD 236 Online Culture Communication and 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 353 Advertising Campaign Design**4 (2-4-6)****Prerequisite:** ICCD 210 Communication Design Studio

Advertising strategy; the creative design development; creative copywriting; the idea and concept development; advertising mediums; advertising productions

ICCD 400 Thesis Research and Development**4 (4-0-8)****Prerequisite:** ICCD 326 Communication Design Practicum

An initiation to the process of the concept development of the senior thesis projects in both the written and visual forms; an engagement in various forms of traditional and non-traditional research in order to identify the thesis, and developing the parameters of the visual and written project; peer and the faculty support to engage students in the process of critical inquiry

ICCD 401 Thesis Writing Seminar**4 (4-0-8)****Prerequisite:** -

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 410 Thesis Design**4 (2-4-6)****Prerequisite:** ICCD 400 Thesis Research and Development

Thesis research and development; clarifying individual interest; professionalizing in the communication design; self-directed research projects; acceptable design solutions and techniques; the individual time management; precise media implementations

ICCD 411 Thesis Production**4 (2-4-6)****Prerequisite:** ICCD 410 Thesis Design

The thesis production to solve the design problem: clarifying individual interests; finalizing design solutions and techniques; the individual time management; precise media implementations; public installation and exhibition; written thesis report

ICCD 420 Portfolio Development**4 (4-0-8)****Prerequisite:** ICCD 210 Communication Design Studio

An 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 421 Exhibition and Planning**4 (2-4-6)****Prerequisite:** -

All facets of the production and 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 determining and realizing; details of presentations relating to publicity and display are determined and realized

ICCH 101 General Chemistry I**4 (4-0-8)****Prerequisites:** -

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:** MU LabPass **OR** lecturer permission

Laboratory practicals for general chemistry: measurements; stoichiometry; solids, liquids and solutions; gases; thermochemistry; equilibrium; acids and bases; electrochemistry; kinetics; chemical safety practice and regulations

ICCH 200 Analytical Chemistry A**4 (3-2-7)****Prerequisites:** ICCH 102 General Chemistry II

Separation techniques and concepts of modern analytical methods essential for quantitative and qualitative characterization; treatment of the analytical data; principles and applications of chemical equilibria; electrochemical methods; separation methods; practical exercises involving infrared spectrometry, UV-vis spectrometry, gas chromatography-mass spectrometry

ICCH 201 Analytical Chemistry B**4 (3-2-7)****Prerequisites:** ICCH 102 General Chemistry II

An introduction to the concepts of modern analytical methods for the quantitative and qualitative analyses and molecular structure characterisation; gas and liquid chromatography, molecular absorption and emission spectroscopy; atomic absorption and emission spectroscopy; an introduction to nuclear magnetic resonance; concept and standards of quality assurance

ICCH 202 Organic Spectroscopy**4 (4-0-8)****Prerequisites:** ICCH 222 Organic Chemistry II **OR** lecturer permission

Concepts and applications of spectroscopy used in organic molecular structure determination; mass spectrometry; UV-Visible spectroscopy; infrared spectroscopy; proton and carbon-13 nuclear magnetic resonance

ICCH 203 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 and acid-base theory in inorganic chemistry

ICCH 204 Inorganic Chemistry B**4 (4-0-8)****Prerequisites:** ICCH 102 General Chemistry II

The structure of crystalline solids, 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

ICCH 205 Inorganic Chemistry Laboratory**2 (0-4-2)****Prerequisites:** ICCH 103 Integrated Laboratory in Chemistry

Experiments related to the structure of crystalline solids, chemistry of the main group elements, chemistry of coordination compounds

ICCH 206 Physical Chemistry A**4 (4-0-8)****Prerequisites:** ICCH 102 General Chemistry II

Concepts of classical physical chemistry; behavior of gases; the first law of thermodynamics, the second and the third laws of thermodynamics; chemical equilibrium; phases and solutions; phase equilibria; electrochemical cells; kinetics; composite reaction mechanisms

ICCH 207 Physical Chemistry B**4 (4-0-8)****Prerequisites:** ICCH 102 General Chemistry II

Concepts of modern physical chemistry; quantum mechanics; atomic structure and chemical bonding; computational and theoretical chemistry

ICCH 208 Physical Chemistry Laboratory**2 (0-4-2)****Prerequisites:** ICCH 103 Integrated Laboratory in Chemistry

Laboratory practicals for physical chemistry; thermodynamics laws and enthalpy; kinetics and rate laws; molecular spectroscopy; atomic absorption spectrometry; infrared spectrometry; UV- vis spectrometry; gas chromatography-mass spectrometry; titration; electrochemistry

ICCH 209 Polymer Science and Technology**2 (2-0-4)****Prerequisites:** ICCH 102 General Chemistry II

An introduction to polymers, syntheses, applications and implications to industry of polymers; polymerization reactions; the structures and properties of polymers; common polymers and their applications

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 223 Organic Chemistry Laboratory**2 (0-4-2)**

Prerequisites: ICCH 103 Integrated Laboratory in Chemistry and ICCH 222 Organic Chemistry II **OR** lecturer permission

Supplementary organic laboratory practicals for those interested in developing more and advanced organic laboratory techniques through running more advanced organic reactions; Grignard synthesis; Friedel-Crafts; Diazonium salts; Diels-Alder and the spectroscopic analysis

ICCH 225 Biochemistry**4 (4-0-8)**

Prerequisites: ICBI 101 Biology and ICCH 221 Organic Chemistry I, or lecturer permission Biomolecules, structure, conformation, and functions of proteins and DNA, controls and processes of metabolism at the cellular and molecular levels

ICCH 226 Biochemistry Laboratory**2 (0-4-2)**

Prerequisites: ICBI 101 Biology, ICCH 103 Integrated Laboratory in Chemistry and ICCH 221 Organic Chemistry I, **OR** lecturer permission

Laboratory practicals in biochemistry: physical and chemical properties of biological molecules; DNA protein extractions; enzyme kinetic and activity analysis; buffers; carbohydrate metabolism mechanism

ICCH 309 Scientific Research and Presentations**4 (4-0-8)**

Prerequisites: ICCH 102 General Chemistry II

Literature search and review, research design and ethics, data collection and analyses, scientific writing, oral and poster presentations; scientific work critiques

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 400 Seminar and Research Project in Chemistry**7 (2-10-9)****Prerequisites:** in final year of study **OR** lecturer permission

Current topics of interest in the frontier of chemical research discussed with an emphasis on searching the chemical database for research papers for in-class discussions; 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 401 Chemical Unknown Detective**2 (0-4-2)****Prerequisites:** in final year of study **OR** lecturer permission

Selected techniques of substance identification and substance quantification; case studies or field study and laboratory practice

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 102 General Chemistry II

Field study on commercial operations in chemistry-related organizations

ICCH 404 Field study B**1 (0-3-1)****Prerequisites:** ICCH 102 General Chemistry II

Field study on fundamental research or public service in chemistry-related organizations

ICCH 405 Internship A**4 (0-12-4)****Prerequisites:** lecturer permission

Practising chemistry-related work in no more than two trimesters as an actual employee, accomplishing the work report and/or work presentation under the supervision of the work supervisor and/or academic supervisor

ICCH 406 Internship B**2 (0-6-2)****Prerequisites:** lecturer permission

Practising chemistry-related work in no more than 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

ICCS 101 Introduction to Computer Programming**4 (3-2-7)****Prerequisites:** -

Roles of algorithms in problem solving; concepts of data types, including integers, floating-point numbers, and strings; statements and expressions; simple input/output; conditionals and control-flow; iteration, including loops and recursion; functions; basic collections, including resizable arrays and dictionaries; classes and mechanics of object-oriented programming

ICCS 121 System Skills and Low-level Programming**4 (4-0-8)****Prerequisites:** ICCS 101 Introduction to Computer Programming

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 161 Introduction to Data Science**4 (3-2-7)****Prerequisites:** ICMA 151 Statistics for Science I

Overview of data science; software stack for data scientists; acquiring data from online sources; data cleansing and simple manipulation; exploratory data analysis and visualization; statistical inference and modeling; basic machine learning algorithms; classification and its applications; clustering and its applications; brief introduction to natural language processing; data science and ethical issues

ICCS 205 Numerical Computation**4 (4-0-8)****Prerequisites:** ICCS 101 Introduction to Computer Programming; ICMA 213 Calculus II

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 I

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 208 Data Structures and Abstraction**4 (3-2-7)****Prerequisites:** ICCS 101 Introduction to Computer Programming **OR** ICPY 221 Computer Programming for Physics**Co-requisites:** ICCS 206 Discrete Mathematics

Principles of object-oriented design and problem solving; objects and classes; encapsulation, abstraction, and information hiding; inheritance and polymorphism; unit testing; abstract data types and data structures, including stacks, queues, linked lists, hash tables, ordered dictionaries, binary search trees, priority queues, and heaps; upperbound efficiency analysis using big-O; elements of Java programming; the use of an integrated development environment

ICCS 225 Database Foundations**4 (4-0-8)****Prerequisites:** ICCS 121 System Skills and Low-level Programming; ICCS 208 Data Structures and Abstraction

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 101 Introduction to Computer Programming **OR** ICPY 221 Computer Programming for Physics; 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; Bayesian modeling; linear modeling

ICCS 271 Interaction Design**4 (4-0-8)****Prerequisites:** ICCS 208 Data Structures and Abstractions

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 302 Human Computer Interaction and Visualization**4 (4-0-8)****Prerequisites:** ICCS 271 Interaction Design

Design and evaluation of information systems and interfaces; user-centered design methods and skills; developing requirements through personas and scenarios; sketching, rapid prototyping and iterations; evaluation techniques: heuristics, cognitive walkthrough, user testing; usability and accessibility; visual design using principles of human perception and cognition; structured design and evaluation of visualizations; web-based interactive visualizations

ICCS 303 Competitive Programming**4 (4-0-8)****Prerequisites:** ICCS 208 Data Structures and Abstractions

Introduction to competitive programming; differences from non-competitive programming; getting started with online contests; teamwork and contest strategies; problem solving paradigms including complete search, divide and conquer, greedy and dynamic programming; graph problems; data structure problems; string algorithms; computational geometry algorithms; search heuristics; ad-hoc problems

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 208 Data Structures and Abstractions

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 208 Data Structures and Abstraction; ICMA 213 Calculus II

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 208 Data Structures and Abstractions

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 208 Data Structures and Abstractions; 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 370 Software System Construction**4 (4-0-8)****Prerequisites:** ICCS 208 Data Structures and Abstractions

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 383 Work-Integrated Education (Trimester)**6 (0-0-216)****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 384 Work-Integrated Education (Summer)**2 (0-0-72)****Prerequisites:** Completed at least 96 credits

Working as an actual employee from previous trimester under guidance of course coordinator and supervisors for at least 4 continuous weeks

ICCS 402 Senior Project in Computer Science I**4 (0-8-4)****Prerequisites:** ICCS 309 Scientific Research and Presentations; Completed at least 96 credits

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

ICCS 403 Senior Project in Computer Science II**4 (0-8-4)****Prerequisites:** ICCS 402 Senior Project 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 208 Data Structures and Abstractions; ICMA 223 Linear Algebra A

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 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 444 E-Commerce**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, domain names, content management systems, merchant systems, system design and sizing, enterprise integration, payment mechanisms, personalisation and internationalisation, search engine interaction, driving and analysing traffic; dynamic pricing models, logs and audit, collaborative filtering and affinity marketing brand value, funding Internet ventures

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; single- view 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 463 Special Topics in Machine Learning I**4 (4-0-8)****Prerequisites:** ICCS 261 Principles of Data Science; ICCS 205 Numerical Computation

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 261 Principles of Data Science; ICCS 205 Numerical Computation

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 491 Topics in Computer Science I**4 (4-0-8)****Prerequisites:** Approval of the instructor

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:** Approval of the instructor

Topic(s) from areas of computer science chosen according to current research and industrial trends

ICCS 493 Topics in Computer Science III**4 (4-0-8)****Prerequisites:** Approval of the instructor

Topic(s) from areas of computer science chosen according to current research and industrial trends

ICCS 494 Topics in Computer Science IV**4 (4-0-8)****Prerequisites:** Approval of the instructor

Topic(s) from areas of computer science chosen according to current research and industrial trends

ICCS 495 Topics in Computer Science V**4 (4-0-8)****Prerequisites:** Approval of the instructor

Topic(s) from areas of computer science chosen according to current research and industrial trends

ICCT 101 Mathematics for Creative Technology I**4 (4-0-8)****Prerequisites:** Placement Test **OR** ICMA 100 Foundation Mathematics

Algebra review, logarithmic and exponential functions, matrix algebra, differential calculus, integral calculus, computational tools

ICCT 102 Mathematics for Creative Technology II**4 (4-0-8)****Prerequisites:** ICCT 101 Mathematics for Creative Technology I

Discrete structures, including sets, trees, and graphs; basic analytical geometry and trigonometry; statistical ideas and concepts; probability and conditional probability; distribution functions; expected value; applications and integrated programming exercises

ICCT 102 Mathematics for Creative Technology II**4 (4-0-8)****Prerequisites:** ICCT 101 Mathematics for Creative Technology I

Discrete structures, including sets, trees, and graphs; basic analytical geometry and trigonometry; statistical ideas and concepts; probability and conditional probability; distribution functions; expected value; applications and integrated programming exercises

ICCT 441 Capstone Project for Creative Technology**6 (0-12-6)****Prerequisites:** Must complete 120 credits before register for this course

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 442 Term Internship**6 (0-36-6)****Prerequisites:** Completed at least 120 credits

Working as an actual employee in an organization that is approved by the program under the guidance of course coordinator and supervisors for at least 12 continuous weeks

ICCT 443 Summer Internship**2 (0-12-2)****Prerequisites:** Students must complete at least 120 credits

An internship in the area of creative design and technology approved by the program under a supervision during the summer

ICFS 112 Principle of Food Science and Technology**2 (2-0-4)****Prerequisites:** -

The concept of food science and technology, the relationship between the science of food and the well-being of humans; chemistry underlying properties and reactions of various food components; applying of basic principles of microbiology to food processing and safety; basic principles of large scale food production and its quality control

ICFS 171 Discovering Culinary Arts Techniques**4 (2-4-6)****Prerequisites:** Being FS students, **OR** being 3rd year student or higher

Principles of mise en place (preparation before cooking), proper culinary terminology; developing standardized recipes, basic cooking method both with dry heat and moist heat; developing knife skills, the proper use of ingredients

ICFS 172 World Cuisines**4 (2-4-6)****Prerequisites:** ICFS 171 Discovering Culinary Arts Techniques

Global history of food, gastronomy and culture, menus and meals preparations of classical, Western, Eastern, Mediterranean, and Oriental cuisines; identifying culinary trends, principles of the menu layout, food presentation techniques; the proper cost control and appropriate technology

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 101 Biology

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 Techniques in Chemistry I, ICCH 200 Analytical Chemistry A

Principles of chemical and instrumental methods for the qualitative and quantitative analysis of food components and additives, chemical and instrumentals methods, practical exercises in laboratory

ICF S317 Food Chemistry**4 (3-2-7)****Prerequisites:** ICFS 112 Principle 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 318 Food Ingredients Functionality**2 (2-0-4)****Prerequisites:** ICFS 317 Food Chemistry

Chemistry and functionality of food ingredients in the food product; utilization and challenges of food ingredients in food industries; case studies from scientific literature and food industry

ICFS 320 Food Chemistry and Quality**4 (3-2-7)****Prerequisites:** ICFS 317 Food Chemistry

Chemical and physical properties of other food components and additives; chemical reactions and changes taking place during the processing and storage; their impact on food quality

ICFS 323 Foods for Sports and Exercises**4 (4-0-8)****Prerequisites:** Being 2nd year student or higher

Energy sources and energy expenditures of human locomotions; food sources and roles of carbohydrates, protein, dietary fats, micronutrients, fluid, electrolytes, and dietary supplement in sports and exercises, basic nutrition guidelines for high-intensity sports, endurance sports, weight and body-focused sports

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:** -**Co-requisites:** 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

ICFS 341 Food Processing**4 (3-2-7)****Prerequisites:** ICFS 112 Principle 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; processing factors influencing quality

ICFS 342 Food Storage and Shelflife Extension**4 (3-2-7)****Prerequisites:** ICFS 112 Principle of Food Science and Technology and ICFS 217 Physical Chemistry for Food Science and Technology

Fundamentals of food preservations; raw material preparations; non-thermal methods, refrigeration, freezing, chemical preservations, including various packaging materials

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, environmental-friendly manufacturing technologies; fundamentals of the plant design, clean technology, sources and uses of water, agro-industry waste management; biological treatment methods

ICFS 345 Food Product and Process Design**4 (4-0-8)****Prerequisites:** -

Food processing; design new food product processing; evaluation of the new product characteristics to target consumers

ICFS 351 Food Engineering Principles**3 (3-0-6)****Prerequisites:** ICMA 213 Calculus II

Principles of the various unit operations used in the food processing and the manufacturing industry; topics covered including units, dimensions, fluid properties, fluid flow, rheology, energy loss in flow, velocity and the pressure measurement and unit operations such as pump, mixing, and the 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 the food processing and manufacturing industry such as dryer, heat exchanger, evaporation, gas absorption; the effects of the input and operational parameters on the performance and food quality; thermal processing, mass transfer and heat transfer, psychometrics

ICFS 361 Principles of Quality Assurance in Food Processing**4 (4-0-8)****Prerequisites:** ICFS 341 Food Processing

Methods of the quality control and management in food processing; the total quality control management, HACCP, ISO 9000 and 14,000 series, Halal; the control of raw materials, process, and finished products; sampling, an evaluation of sensory properties, and other factors; a statistical analysis for the quality control

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); the hygienic design of equipment and facilities, cleaning and sanitization, the pest control, personal hygiene, hygienic food handling

ICFS 364 Food Law and Standards**3 (3-0-6)****Prerequisites:** ICFS 317 Food Chemistry

Food law and standards and standard of foods and food products in the Thailand; international food regulations; labeling of the food products; the regulation of irradiated foods, biotechnology and genetic modified foods, dietary supplements, functional foods and nutraceuticals

ICFS 365 Food Safety and Sanitation Management**4 (4-0-8)****Prerequisites:** -

Basic knowledge of food safety and sanitation including food borne illness, element of safe food, personal hygiene, hygienic food handling; food safety and sanitation approaches

ICFS 366 Consultancy and Auditing in Food Quality and Safety Management**4 (4-0-8)****Prerequisites:** -

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 373 Food Safety for Food Service Industry**2 (2-0-4)****Prerequisites:** Being FS students, **OR** being 3rd year student or higher

Foodborne illnesses and causes of illness; microorganisms causing foodborne illness; contamination and food allergens; safe food handling and personal hygiene; cross-contamination and the temperature control; purchasing considerations and the storage of foods; preparations and cooking; safe holding temperature and service; cleaning and sanitizing; food safety management systems and the safe operation; an integrated pest management; food safety regulations and standards; staff food safety training

ICFS 374 Experimental Design in Food Product Development**2 (1-2-3)****Prerequisites:** ICMA 151 Statistics for Science I

An integration of chefs and food scientists' tasks through the design of the experiments foundation, regression, and correlation, basic understanding of multivariate data-analysis techniques, screening designs, the response surface model, optimization experimental designs

ICFS 375 Integrated Sensory and Consumer Sciences for Product Development**4 (3-2-7)****Prerequisites:** ICFS 374 Experimental Design in Food Product Development, ICFS 432 Sensory Evaluation of Food Products

Physical stimulants and human sensory perception, understanding consumer behaviors and preferences, identifying consumer insights for concepts and product improvement; the relationships between instrumental data of food properties - sensory perception – and the data on consumer preference, formulation optimization

ICFS 376 Science of Thai Culinary Arts**4 (3-2-7)****Prerequisites:** Being 2nd year student or higher

Chemical, physical, and microbiological aspects of Thai foods, design and analysis for the sensory evaluation, flavors and flavors pairing, nutraceutical potentials of Thai cuisines; laboratory sessions on techniques of Thai cuisine processing for dishes such as stir-fried, steamed, spicy salads, chili paste, curry, fermented food, and deserts; scientific explanation behind local wisdoms of these techniques

ICFS 391 Scientific Research and Presentation**2 (2-0-4)****Prerequisites:** -

Scientific interpretation of the results; proper format for presenting papers in public and in a scientific forum; practical sessions and participation in scientific seminars included

ICFS 411 Food Product Development**4 (4-0-8)****Prerequisites:** ICFS 318 Food Ingredients Functionality

Principles and steps used in a new product-developing process: formulation, lab-scale production, quality control, and commercial feasibility study; sensory evaluation of food products; the data and statistical analysis of sensory test results; practical exercises

ICFS 413 Marketing of Food Product and Services**2 (2-0-4)****Prerequisites:** Being FS students, **OR** being 3rd year student or higher

Principles of marketing with an emphasis on food product; market research and analysis, consumer behavior and marketing strategies; basic economic principles, marketing analytical tools, trends in processed food and food service industries

ICFS 414 Operations Management in Food Business**2 (2-0-4)****Prerequisites:** Being FS students, **OR** being 3rd year student or higher

The main factors affecting the performance in food industry, matching of supply and demand, eliminating inefficiencies, increasing productivity and utility, cost control including the return of the investment (ROI) and the cost of goods sold (COGS) calculation

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

ICFS 419 Meat, Poultry and Marine Product Technology**4 (3-2-7)****Prerequisites:** ICFS 317 Food Chemistry, ICFS 341 Food Processing

Ready-to-eat meat products, meat fermentation, the control of the meat quality, meat structure manipulation, meat processing technologies (high pressure, pulsed electric field, irradiation, ultrasound), meat by- products, meat packaging, meat sensory attributes

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

ICFS 423 Beverage Technology**4 (3-2-7)****Prerequisites:** ICFS 317 Food Chemistry, ICFS 341 Food Processing

Ingredients, processing, and packaging technologies for beverages, high-pressure processing, carbonation, alcoholic beverages, fruit juices and soft drinks, extended shelf-life beverages dilutable beverages, ready-to-drink products, novel concepts of functional drinks and bioactive compounds, market trends

ICFS 424 Fat and Oil Technology**4 (3-2-7)****Prerequisites:** ICFS 318 Food Ingredients Functionality, 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; quality, safety, and nutritional aspects of fat and oil products

ICFS 426 Bakery Product Technology**4 (3-2-7)****Prerequisites:** ICFS 318 Food Ingredients Functionality, 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; the skill development in bread, cake and pastry making

ICFS 427 Confectionary and Chocolate Technology**4 (3-2-7)****Prerequisites:** ICFS 318 Food Ingredients Functionality, ICFS 341 Food Processing

The candy processing technology, crystalline and non-crystalline candy, sugar and corn syrup chemistry; aerated confection, chocolate properties, chocolate processing, tempering, panning and shell molding; regulations such as sugar taxes, food safety and quality aspects

ICFS 432 Sensory Evaluation of Food Products**4 (3-2-7)****Prerequisites:** ICFS 318 Food Ingredients Functionality

Sensory evaluation theories and practices through descriptive analysis; analytical instrumental methods of sensory evaluation and correlation with the consumer sensory evaluation; anatomy and physiology of the sensory systems (sight, taste, smell, touch, and hearing); physiological and psychological factors affecting performance on sensory tests

ICFS 436 Food Fermentation Technology**4 (3-2-7)****Prerequisites:** ICFS 333 Food Microbiology

The principle of biological fermentation process; submerged fermentation; solid state fermentation; disinfection of the equipment; factors affecting the process; raw materials for fermentation; the media design, the optimization of fermentation conditions; the process control, downstream processing; the quality control of products

ICFS 437 Application of Modern Biotechnology to Food Products**4 (3-2-7)****Prerequisites:** ICFS 231 General Microbiology

Potential benefits and the risk of biotechnology in foods; GMOs, GM foods and the food security; the current use, research and development of foods produced through modern biotechnology

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

ICFS 439 Food Product Innovation**4 (4-0-8)****Prerequisites:** -

The agrifood system innovation; an innovation in the food product development including novel products, product improvements, functional ingredients and functional foods; an innovation in the food industry processing such as technologies and packaging; an innovation in the cooking sector in regards to the molecular gastronomy and science based cooking

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 Shelflife 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

ICFS 463 Field Trip**2 (0-6-2)****Prerequisites:** -

Visits and industrial plant studies of food manufacturing industry or related organizations

ICFS 464 Work Integrated Education**8 (0-24-0)****Prerequisites:** ICFS 318 Food Ingredients Functionality, ICFS 341 Food Processing

Work-based experience for 16 weeks with specific goals needed to achieve, with the academic supervision and assessment from both faculty and industry supervisors

ICFS 471 Trends and Novel Techniques of World Foods and Cuisines**4 (3-2-7)****Prerequisites:** ICFS 318 Food Ingredients Functionality

Current issues, emerging tools and technology in food science, food processing and the food service industry; the prediction of trends of world foods; guest lecturers from academic, industry, and culinary arts with some hands-on sessions

ICFS 491 Seminar in Food Science and Technology**2 (2-0-4)****Prerequisites:** Seniors

Senior student presentations, discussions of research, and reviews of the topics of current interest; staff and invited speakers from Mahidol University and from other universities or the food processing industry

ICFS 497 Senior Project in Food Science and Technology**4 (0-8-4)****Prerequisites:** Senior Student

Small research projects in food science and technology or related fields under the supervision of a research advisor

ICGC 101 Academic Writing and Research I**4 (4-0-8)****Prerequisites:** Placement Writing Test

An introduction to the academic writing process through the development of the writer's voice through sentencings, 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 102 Academic Writing and Research II**4 (4-0-8)****Prerequisites:** ICGC 101 Academic Writing and Research I

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 103 Public Speaking**4 (4-0-8)****Prerequisites:** ICGC 102 Academic Writing and Research II

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/persuade audiences; utilization of Academic Writing and Research I and II to create and deliver speeches to a professional standard

ICGC 201 Global Realities**4 (4-0-8)****Prerequisites:** ICGC 103 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 202 Literary Analysis**4 (4-0-8)****Prerequisites:** ICGC 103 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; an analysis of short stories, poetry and drama; scaffolding of strategies for students to understand the function of a variety of literary forms

ICGC 203 Creative Writing**4 (4-0-8)****Prerequisites:** ICGC 103 Public Speaking

An examination of fictions, poetry, drama, and the media production through readings, speeches and films; comparisons of writing in different genres; a creation of the work of publishable quality by means of the consideration of audience and genre

ICGC 204 Advanced Oral Communication**4 (4-0-8)****Prerequisites:** ICGC 103 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 206 Literature In to Film**4 (4-0-8)****Prerequisites:** -

An introduction to the technical aspects of translating literature into films; an exploration of the interplay between literature and films through an analysis of short stories, novels, and plays and their film versions; an exploration of the challenges merging both mediums

ICGC 208 Language and Culture**4 (4-0-8)****Prerequisites:** ICGC 103 Public Speaking

An examination of the interplay between language and culture; having texts and class discussions to focus on the importance of understanding the link between culture and languages; a completion of a research paper on the topic

ICGC 210 First and Second Language Acquisition**4 (4-0-8)****Prerequisites:** ICGC 103 Public Speaking

An introduction to 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 of theories

ICGC 211 Topics in Comparative Literature A: Poetry**4 (4-0-8)****Prerequisites:** ICGC 103 Public Speaking

An in-depth study of poetry, including: metrics, forms, themes, ethnic voices, throughout history; an evaluation of poetry from different genres through a series of discussions, workshops and a term research paper

ICGC 212 Topics in Comparative Literature B: The Short Story and the Novel**4 (4-0-8)****Prerequisites:** ICGC 103 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 213 Topics in Comparative Literature C: Drama**4 (4-0-8)****Prerequisites:** ICGC 103 Public Speaking

An exploration of ways to understand and appreciate drama by reading, watching, and analyzing theatrical performances; staging and enactment of a theatrical production; readings, essays, and theater workshop activities to prepare students for a final stage performance

ICGC 214 Literary Non-fiction**4 (4-0-8)****Prerequisites:** ICGC 103 Public Speaking

Exploration of creative 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 215 Writing for Research**4 (4-0-8)****Prerequisites:** ICGC 103 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 101 Biotechnology: from Science to Business**4 (4-0-8)****Prerequisites:** -

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 102 Famous Arguments and Thought Experiments in Philosophy**4 (4-0-8)****Prerequisites:** -

An examination of the most striking argumentative moves in Philosophy from Plato's Allegory of the Cave to Searle's Chinese Room and beyond; a transfer and an application of paradigmatic philosophical thinking to current open questions in politics and science

ICGH 103 Logic, Analysis and Critical Thinking: Good and Bad Arguments**4 (4-0-8)****Prerequisites: -**

Basic formal tools from sentential and predicate logic; logical structures of arguments used in the everyday contexts of life; an analysis of their strengths and weaknesses; common fallacies in reasoning, including reasoning involving determining probabilities; a construction of good arguments using the principles of informal reasoning

ICGH 105 Technology, Philosophy and Human Kind: Where Are We Now?!**4 (4-0-8)****Prerequisites: -**

An examination of major technological and scientific innovations across the globe and their effects on human life and thought; a focus on agriculture, steel, the printing press, the mechanical clock, magnifying lenses, antibiotics, electricity, steam and combustion engines, and transistor

ICGH 106 The Greeks: Crucible of Civilization**4 (4-0-8)****Prerequisites: -**

An introduction to an overview of the philosophy and thought of Ancient Greece and its influence on contemporary civilization; theories about knowledge, propaganda, truth, art, psychology, happiness, justice and democracy

ICGH 107 Contemporary Art and Visual Culture**4 (4-0-8)****Prerequisites: -**

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: -**

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: -**

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 111 Media Literacy: Skills for 21st Century Learning**4 (4-0-8)****Prerequisites: -**

An integration of the media literacy, the media production, and the media ethics; accessing, analyzing, evaluating, questioning, and producing media texts; social, cultural, and political implications of the media; representations in the media; the media as political economy; the media aesthetics; the media and influence; audiences negotiating meaning

ICGH 113 Moving Pictures: A History of Film**4 (4-0-8)****Prerequisites: -**

An investigation of European, American and Asian film as art, philosophy, social commentary, propaganda, self-expression, well-being and social harmony; a focus not only on techniques, style and technological advances but on interpretation, comparison and criticism

ICGH 115 Cinematic Languages and Its Application**4 (4-0-8)****Prerequisites: -**

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: -**

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, post- structuralism, 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: -**

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: -**

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 119 Listen! Soundscapes, Well-Being and Musical Soul Searching**4 (4-0-8)****Prerequisites: -**

An examination of sound and music as sources of pleasure, aesthetic experience, well-being as well as stress; discussion of music's expressivity and the emotions it induces; cases studies linking music experience to aspects of perceptual training, personal development, public health and the appreciation of nature

ICGH 120 Thai and ASEAN Cinema**4 (4-0-8)****Prerequisites: -**

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 121 The End of the World? Development and Environment**4 (4-0-8)****Prerequisites: -**

An integrated and system oriented view on applied ethics with an eye on development, the environment and technology; emphasis on the intersection between the central notions of justice, nature and technology, particularly under consideration of sustainability; critical analysis of current states of affairs in terms of diverse political traditions, the history of colonialism and the dialectic between globalization and segregation; examples and cases studies include issues of public health, education, food technology, global institutionalization, energy management, the international monetary system, trade, labor migration, and violations of human rights

ICGH 122 Introduction to Asian Philosophy**4 (4-0-8)****Prerequisites: -**

A differentiation between the main schools of Asian philosophy, including Buddhism, Hinduism, Confucianism, Taoism, Jainism, among others; summaries of foundational concepts and themes; the influences of these philosophies on the beliefs and cultures as well as the politics, economics and legal frameworks around the world

ICGH 123 Faiths, Ecological Justice, and the Tropical Rainforests**2 (2-0-4)****Prerequisites: -**

Biological diversity; ecological justice; environmentally ethical actions; environmental justice; faiths; indigenous peoples; impacts; interconnection; interdependence; religions; religious diversity; social equity; social justice; threats; tropical rainforests

ICGH 124 Life Drawing and Anatomy**4 (2-4-6)****Prerequisites: -**

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 125 How Can We Know What Is Good? Moral Reasoning and Behavior**4 (4-0-8)****Prerequisites:** -

A survey of philosophical, psychological and scientific contributions to the understanding of moral values and agency; hands-on construction, scrutiny and analysis of ethical argument regarding burning issues in applied ethics

ICGH 126 Behavioral Ethics: Why Good People Do Bad Things**2 (2-0-4)****Prerequisites:** -

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 127 Rome: An Empire's Rise and Fall**4 (4-0-8)****Prerequisites:** -

The study of Ancient Rome, from its humble beginnings in the 8th Century BCE to its decline in the 5th Century CE; a review of the mythological, philosophical, cultural, literary and artistic traditions that developed during the civilization's rise and fall

ICGH 128 Internet Celebrity, Culture and the Media**4 (4-0-8)****Prerequisites:** -

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, selfbranding 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

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, 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

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

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:** -

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 170 Diversities in Multilingual Societies**2 (2-0-4)****Prerequisites:** -

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; foreign visitors to Thailand; working with Thai people

ICGL 201 Pre-intermediate German I**4 (4-0-8)****Prerequisites:** ICGL 103 Elementary German III **OR** Placement Test

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:** ICGL 201 Pre-Intermediate German I **OR** Placement Test

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:** ICGL 202 Pre-Intermediate German II **OR** Placement Test

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

ICGL 211 Pre-intermediate Japanese I**4 (4-0-8)****Prerequisites:** ICGL 113 Elementary Japanese III **OR** Placement Test

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:** ICGL 211 Pre-Intermediate Japanese I **OR** Placement Test

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:** ICGL 212 Pre-Intermediate Japanese II **OR** Placement Test

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:** ICGL 123 Elementary French III **OR** Placement Test

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: ICGL 221 Pre-Intermediate French I **OR** Placement Test

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: ICGL 222 Pre-Intermediate French II **OR** Placement Test

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: ICGL 133 Elementary Chinese III **OR** Placement Test

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: ICGL 231 Pre-intermediate Chinese I **OR** Placement Test

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: ICGL 232 Pre-intermediate Chinese II **OR** Placement Test

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:** ICGL 143 Elementary Spanish III **OR** Placement Test

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:** ICGL 241 Pre-Intermediate Spanish I **OR** Placement Test

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:** ICGL 242 Pre-Intermediate Spanish II **OR** Placement Test

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 105 Ecology, Ecosystems and Socio-Economics in Southeast Asia**4 (3-2-7)****Prerequisites:** -

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:** -

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:** -

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 109 Food for Health**4 (4-0-8)****Prerequisites:** -

Knowledge of general human nutritional requirements; the health benefits of various foods; quality and safety of the various types of food including processing; health and nutritional value

ICGN 110 Maker Workshop**4 (3-2-7)****Prerequisites:** -

Mechanical design consideration, 3D drawing, safety in design; motion in 1 and 2 Dimension; sound and oscillation motion, mechanical properties of materials; basic electronics, circuit analysis, soldering; microcontroller, basic programming

ICGN 111 Physics for CEO**4 (4-0-8)****Prerequisites: -**

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 112 Stargazer**4 (3-2-7)****Prerequisites: -**

Basic ideas of astronomy, astrophysics and cosmology; the progress of human understanding of the universe; the impact of scientific method on astronomical observation; the Earth & Moon; the Solar System; the lifecycle of stars; Black Holes; galaxies; and the current understandings about the origins and future of the universe

ICGN 113 Plants, People and Poisons**4 (4-0-8)****Prerequisites: -**

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: -**

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: -**

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: -**

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 118 Everyday Connectivity**4 (4-0-8)****Prerequisites: -**

The Internet, computer networks, and the World Wide Web (W3) in the daily life and organizations; troubleshooting small network problems; identifying threats and avoiding dangers online; finding credible information on the Web; online communication tools, such as the social media and email, for professional branding; the basic e-business concepts and tools

ICGN 119 Computer Essentials**4 (4-0-8)****Prerequisites: -**

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 120 Chemistry of Cosmetics and Dietary Supplements**4 (4-0-8)****Prerequisites: -**

Chemistry of cosmetic products; basic sciences behind common aesthetic medical procedures; basic biochemistry of human skins; basic functioning of vitamins, minerals, and specialty supplements

ICGN 123 The Earth's Dynamic Structure**4 (3-2-7)****Prerequisites: -**

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: -**

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: -**

History of games, combinatorial games, games of chance, game theory

ICGN 126 Plant Society**2 (2-0-4)****Prerequisites: -**

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: -**

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: -**

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: -**

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: -**

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: -**

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: -**

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 133 E-Business: Technology and Digital Strategies**4 (4-0-8)****Prerequisites: -**

The Landscape of technologies in the digital enterprise and e-business; internet-based staples such as web hosting, domain-name acquisition, the social media, the payment systems; electronic business models and digital strategies; emerging trends in technology; legal and ethical issues

ICGN 134 Introduction to Artificial Intelligence**2 (2-0-4)****Prerequisites: -**

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: -**

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

ICGP 101 American Flag Football**1 (0-2-1)****Prerequisites: -**

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: -**

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: -**

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: -**

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: -**

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: -**

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: -**

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: -**

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: -**

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: -**

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: -**

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: -**

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: -**

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: -**

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: -**

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: -**

A ball sport course emphasizing passing, setting, serving, developing strategies, positions, game play, teamwork management, and communication

ICGP117 Physical Fitness Plan**2 (2-0-4)****Prerequisite: -**

Concepts and practices of Physical Fitness design for a lifelong healthy lifestyles; basic exercise principles and elements of a workout; improvement of cardiorespiratory system and muscular endurance through strength and flexibility training; nutrition for physical activities; practical way to successfully achieve a physical fitness plan with the help of technology

ICGS 102 Business Sustainability and the Global Climate Change**4 (4-0-8)****Prerequisites: -**

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 103 Economics in Modern Business**4 (4-0-8)****Prerequisites: -**

Forces of demand and supply, elasticity, opportunity cost; market structures, pricing strategy, business enterprise, consumers behavior; Thai economy, world economy, globalization and technology, profit maximizing, firm and organization, government policies; business analysis and managerial decision-making, competitive advantage, dynamic business environment

ICGS 104 Essentials of Entrepreneurship**4 (4-0-8)****Prerequisites: -**

Creating new businesses, capturing new markets, enhancing organizational effectiveness; entrepreneurship theories and frameworks, practices of promoting and managing start-ups; the life-cycle of an entrepreneurial venture, concept implementation; entrepreneurial pathway, customer analysis, integrated marketing, funding, securing and managing capital, human capital management under the disruptive environment

ICGS 105 Personal Financial Management**4 (4-0-8)****Prerequisites: -**

Personal finance and investment, financial goals and planning process, financial statements and budgets, tax preparation, cash and savings management, investment planning, investing in stocks and mutual funds, making automobile and housing decisions, life insurance, protecting the property, retirement planning

ICGS 106 Fashion and Society**4 (4-0-8)****Prerequisites: -**

Design elements of fashion, fashion terminology, fashion reflecting its temporal and spatial context, fashion and the development of art, fashion is a cultural expression, fashion is creativity, fashion needs customers' approval and endorsements, fashion and consumer behaviour, fashion and consumerism, and ethical issues of fashion

ICGS 111 Exploring Religions**4 (4-0-8)****Prerequisites: -**

Major religions in the world: Hinduism, Buddhism, Sikhism, Chinese religions, Shinto, Judaism, Christianity, and Islam; origins of the three religious groups, religions arising in India, religions of China and Japan, and the religions of the family of Abraham; similarities and differences; contemporary new religious developments and related issues; religious diversities present in the world

ICGS 112 Geography of Human Activities**4 (4-0-8)****Prerequisites: -**

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 113 Perspectives on the Thai Past**4 (4-0-8)****Prerequisites: -**

The origins of the Thai people in pre-historic times to the late twentieth century; an alternative view incorporating the different regions and various ethnic groups making up present-day Thailand; key issues in Thai history; an analysis of the classics of Thai historiography; an evaluation and interpretation of a range of primary sources dealing with the Thai past; an understanding of how history is written

ICGS 115 Sociology in the Modern World**4 (4-0-8)****Prerequisites: -**

Sociology as a principle for understanding the modern world, life appreciation; a field of study explaining social, political, and economic phenomena; social interactions and social organizations; sociological perspectives; methodologies and sociological insights; topics relevant to the modern world including culture, socialization process, family, social inequality, gender relations, racism, ageism, modern media, and social change; global social problems; evaluation of societies; influencing and improving life's quality

ICGS 118 Skills in Dealing with People Across Cultures**4 (4-0-8)****Prerequisites: -**

The development of skills in dealing with people across cultures, covering topics such as: identity formation and conflict; ethics and moral behavior; values and communication across cultures; culture and tourism; culture and work motivation; culture in educational institutions

ICGS 121 Abnormal Colleagues: How Do I Make This Work?**4 (4-0-8)****Prerequisites: -**

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 123 Tourism Concepts and Practices**4 (4-0-8)****Prerequisites: -**

Biological diversity; ecological justice; environmentally ethical actions; environmental justice; faiths; indigenous peoples; impacts; interconnection; interdependence; religions; religious diversity; social equity; social justice; threats; tropical rainforests

ICGS 125 American History, Popular Media and Modern Life**4 (4-0-8)****Prerequisites: -**

Exploring modern American history through the lense of popular media and the state's power projection through hard and soft power; introducing the concept of life in the roaring twenties and the Great Depression, investigating available media sources during the war time from World War I, World War II, and the Cold war; understanding historical events impacting the American life including feminist and LGBT movement, the Vietnam War, African-American civil rights movement; discussing the importance modern digital media platforms and social media

ICGS 126 Introduction to Psychology**4 (4-0-8)****Prerequisites: -**

Human behaviour and mental functioning; the nervous system; consciousness; sensation and perception; psychogenetics, life-span development; thinking, memory, language, conditioning and learning, motivation, personality, and stress

ICGS 127 Positive Psychology**4 (4-0-8)****Prerequisites: -**

Concepts of success; societies emphasis on financial wealth and the accumulation of material things versus the importance of having a loving family, developing rewarding relationships with friends and colleagues; career achievement and the respect of others; regularly feeling positive emotions, developing morally and spiritually, engaging in worthwhile activities; staying physically fit; success as a multi-faceted and intensely personal concept; the exploration of well-being from the field of positive psychology; developing understanding of what comprises a successful life with an emphasis on greater self-expression and overall well-being

ICGS 128 Global Gastronomy and Cuisines**4 (4-0-8)****Prerequisites: -**

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 129 Tea Studies**2 (2-0-4)****Prerequisites: -**

What is tea, main tea varieties, main tea types, climatic conditions for sustainable growth of tea, important tea growing countries and regions, tea processing, tea and health, tea tasting and evaluation, tea utensils and preparation, tea and food pairing

ICGS 130 Political Science**4 (4-0-8)****Prerequisites: -**

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; collecting information, organizing information, organizing in groups, analyzing information, presenting clearly and concisely on political phenomenon, state typology, political taxonomy, ideological persuasion, voting systems and outcomes

ICGS 131 Introduction to International Studies**4 (4-0-8)****Prerequisites: -**

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: -**

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: -**

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 civilisation; 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: -**

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: -**

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: -**

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: -**

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 138 Business Event Essentials**4 (4-0-8)****Prerequisites: -**

An introduction to business event industry, meetings, incentive travels, conventions, exhibitions; decision making criteria, special events, business event organization management, venue management, logistics for business event industry, stakeholders in business event industry and local community engagement, standards in business event industry, ethics for business event professionals

ICGS 139 Leadership and Change for a Global Society**4 (4-0-8)****Prerequisites: -**

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 for the efficient management

ICGS 140 Fake News, Censorship and the Politics of Truth**4 (4-0-8)****Prerequisites: -**

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 141 Coffee Studies**2 (2-0-4)****Prerequisites: -**

What is coffee, history of coffee, main coffee varieties, main coffee types, climatic conditions for sustainable coffee growth, important coffee growing countries and regions, coffee processing, coffee roasting, coffee grinding; coffee brewing; coffee tasting and evaluation; coffee utensils; coffee culture; coffee and health

ICGS 142 Contemporary Spirituality and Marketing**1 (1-0-2)****Prerequisites: -**

Faiths in different cultures, the role of faith in modern-day living, superstitious beliefs, impacts of superstitious beliefs on the economy, consumer psychology and behavior, superstition and consumer's characteristics, faith marketing, superstitions and marketing

ICGS 143 Introduction to Air Transport and Tourism**4 (4-0-8)****Prerequisites: -**

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 144 Price Discrimination: Why Do We Pay More Than Others?**1 (1-0-2)****Prerequisites: -**

The classification of consumers into different groups allowing producers to charge different prices and maximize profits, including rationale and conditions of price discrimination, and the ethical perspective of the price discriminating strategy. Evaluation and interpretation of real-life pricing examples according to the price discrimination, particularly the use of demographics, behavioral traits, signals, and other invented tools to classify consumers

ICGS 145 Service-Learning – Management of Community Service Project**4 (2-4-6)****Prerequisites: -**

Project Management Bodies of Knowledge (PMBOK); the application of the project management knowledge and skills to various types of community services projects including, educational, re-source development, health and well-being, corporate social responsibility, and the environmental or other selected community projects

ICGS 146 Service-Learning – Salaya Community Service Learning Project**4 (2-4-6)****Prerequisites: -**

Application of project development skills on various types of community services projects including, educational, resource development, health and well-being, CSR, environmental or other selected community projects approved by the academic advisor and Curriculum Administrative Committee (CAC); credit for developing and participating in projects that are already underway and/or nearing completion

ICGS 147 Women in Leadership**4 (4-0-8)****Prerequisites: -**

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 148 Service Learning - Digital Campaign for Gender Issues**4 (2-4-6)****Prerequisites: -**

Factors that drive gender inequalities and Gender-Based violence in society; ways that gender discrimination delays societal development; how new technological devices and applications become influential in people's everyday lives; how Gender activists now use technologies as accessibility to reach out to people for help; working with others to raise awareness of gender violence and abuse; use of social media to condemn violent acts; raising awareness of ways gender discrimination and violence results in a lack of human rights are equality; organizing collaborative work and discovering creative solution to gender issues; use of social media to offer policy solutions to public and private sectors

ICGS 149 Service Learning - Making Change**4 (2-4-6)****Prerequisites: -**

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 150 Service Learning - Campaigning for a Cause**4 (4-0-8)****Prerequisites: -**

Develop self-awareness, confidence and value through teamwork applied to utilise an individual's potential and benefit to the broader community. Research, analyse, evaluate, present and produce media campaigns for selected community / Non-Governmental Organizations / Charitable Organization(s)

ICGS 151 Service Learning - The Art of Leadership in Practice**4 (2-4-6)****Prerequisites: -**

Examining virtue ethics and philosophical conceptions of living well and acting well in the context of contemporary political, socio-economic, and environmental issues; exercising virtues through self-development and hands-on cooperative engagement at the community level; developing leadership skills by planning and implementing practical measures, action directives, and policy models to respond to concrete social challenges

ICGS 152 Fantasy Literature's Environmental Message**4 (4-0-8)****Prerequisites: -**

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 creating artworks and through community service

ICGS 153 Social Media Management for Service Sector**2 (2-0-4)****Prerequisite: -**

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 154 Introduction to Crisis Management in Service Businesses**4 (4-0-8)****Prerequisite:** -

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 containment, crisis recovery, crisis communication

ICGS 155 Pathway to Purpose: Life Design and Self-Exploration**4 (4-0-8)****Prerequisite:** -

Assessment of personal strengths, weaknesses, and areas for improvement; individual values, beliefs, and life goals; goal setting; self-awareness and emotional intelligence; life design

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 “了” (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:** -

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:** -

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:** -

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: -**

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 not only be 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: -**

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:**

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: -**

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: -**

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; expression 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:** -

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 352 Postcolonialism: Diverse English Speaking Cultures**4 (4-0-8)****Prerequisites:** -

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 353 Comparative Literature and Civilization**4 (4-0-8)****Prerequisites: -**

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: -**

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: -**

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: -**

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: -**

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: -**

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: -**

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: -**

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: -**

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: -**

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: -**

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: -**

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: -**

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: -**

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: -**

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: -**

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: -**

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: -**

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: -**

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: -**

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: -**

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: -**

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 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

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

Co-requisite: 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 253 Value Studies, ICIC 254 History of Ideas I and ICIC 255 History of Ideas II To be taken in the final year of the program

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

ICIR 101 Approaches to International Relations and Global Affairs**4 (4-0-8)****Prerequisites:** -

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, defence 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; learning to discuss, analyze, assess, international structures, methods, interactions of actors in international politics

ICIR 102 Approaches to Comparative Politics and Systems**4 (4-0-8)****Prerequisites: -**

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; understanding, examining, assessing various forms of the political systems, both in theory, principle and practice

ICIR 201 The Formation of the Modern World: From the Industrial Revolution to High Imperialism**4 (4-0-8)****Prerequisites: -**

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; discussing, assessing, examining a range of primary sources from the period and developing skills in the critical analysis of texts and images

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 II; the USA and the USSR as superpowers; the Cold War; the UN system; decolonization 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; discussing, examining, assessing, identifying, changes over time and interpreting primary sources, introduced in ICIR 201 The Formation of the Modern World

ICIR 203 Foundations of Political Thought**4 (4-0-8)****Prerequisites: –**

A historical survey of the major paradigms in the social sciences (history, political science, economics, sociology, anthropology, geography, psychology) during the twentieth century; understanding, analyzing, assessing concepts and paradigms of political thought

ICIR 204 Perspectives on International Relations**4 (4-0-8)****Prerequisites: –**

Theories of international relations; sovereignty; globalization and change; security; realism; anarchism; liberalism; neoliberal institutionalism; Marxism; constructivism; post-structuralism; identifying, comparing, and evaluating critical approaches to international relations

ICIR 211 Globalization and Social Change**4 (4-0-8)****Prerequisites: –**

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; understanding, analyzing and assessing global structures and transformations in the world

ICIR 212 Social Institutions of the Modern World**4 (4-0-8)****Prerequisites: –**

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; describing, explaining, and analyzing significant social and political institutions

ICIR 213 Conflict, War and Peace Studies**4 (4-0-8)****Prerequisites: –**

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; describing, explaining, analyzing, and assessing major approaches to conflict, war and peace in comparative global perspectives

ICIR 214 Perspectives on Thailand**4 (4-0-8)****Prerequisites: –**

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; describing, explaining, analyzing, and assessing major approaches to perspectives on Thailand in international relations

ICIR 215 Thai Foreign Policy**4 (4-0-8)****Prerequisites: –**

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; a discussion on the 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: –**

Religious diversity in Asia; types of religious movements and cults; genders and the changing religious traditions; understanding, analyzing, and assessing the importance of religious movements and diversity in Asia with the help of selected case studies

ICIR 217 Culture and Power**4 (4-0-8)****Prerequisites: –**

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: –**

The rapid rise of authoritarian populism and its attendant forces in recent years providing challenging new dynamics to both established democracies of the West as well as less established democracies across Asia and Latin America, United States, United Kingdom; unstable political orders; Thailand; Venezuela; Turkey; the Philippines; Brazil; reversing democratization; exploring what factors have contributed to the rise of authoritarian populist forces; what might be implications of this rise; what can be done to both resist and reverse these trends

ICIR 219 Genders and Sexual Diversity in the Globalized World**4 (4-0-8)****Prerequisites: –**

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: –**

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; remembering, understanding, applying, and analyzing the historical development towards a peaceful world order

ICIR 222 International Organizations**4 (4-0-8)****Prerequisites: –**

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; remembering; understanding; analyzing; assessing organizations from a comparative perspective

ICIR 223 Democracy as a Political System**4 (4-0-8)****Prerequisites: –**

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; understanding, analyzing, and assessing the historical development, principles and practices of democracy

ICIR 224 Security and Conflict in a Global Perspective**4 (4-0-8)****Prerequisites: –**

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; understanding, analyzing, and examining why some methods of conflict resolution are more effective than others

ICIR 225 Global Media, Social Change and International Relations**4 (4-0-8)****Prerequisites: –**

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; understanding, analyzing, and assessing the importance of global opinions and discursive politics in shaping debates and policies

ICIR 226 The History and Concept of Diplomacy**4 (4-0-8)****Prerequisites: –**

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; remembering, understanding, analyzing, and assessing the conceptual foundations in understanding diplomacy

ICIR 227 Approaches to Culture and Society**4 (4-0-8)****Prerequisites: –**

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; describing, explaining, and analyzing approaches to culture and society

ICIR 228 Europe and the 'West' in the Contemporary World**4 (4-0-8)****Prerequisites: –**

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; understanding, analyzing, and assessing the contemporary situation and issues in Europe

ICIR 229 Environment and Natural Resources in Global Affairs**4 (4-0-8)****Prerequisites: –**

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; understanding, analysing, and assessing the environment and its impact on international relations

ICIR 231 Imperial Legacies in Asia**4 (4-0-8)****Prerequisites: –**

A concise history of the region from the beginning of the modern colonial period through to independence; liberalism, nationalism, communism, democratization and globalization; understanding, assessing, and analysing both primary and secondary sources related to imperialism in Asia

ICIR 232 Tradition and Modernity Asia**4 (4-0-8)****Prerequisites: -**

The meanings of tradition, modernity, living space, identity, nation-building, modernization, in the Asian context; discussing, assessing, understanding, and analyzing a range of topics such as the family, religion, identity politics and urbanism

ICIR 235 Strategic Networks in Asia-Pacific**4 (4-0-8)****Prerequisites: –**

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; understanding, assessing, and analyzing historical and contemporary issues of significance in the Asia-Pacific region

ICIR 236 Politics and Identity in Cold War Europe, 1945-1991**4 (4-0-8)****Prerequisites: –**

A political and economic history of Europe since 1945; devastation of World War II; the Marshall Aid and the economic recovery; the impact of the Cold War; early development of the European Economic Community; foreign policies of Britain, France, and Germany; 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; describing, analyzing, assessing, and explaining themes in post-World War 2 Europe

ICIR 237 International Economic Relations**4 (4-0-8)****Prerequisites: –**

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; understanding, analyzing, and assessing the importance of international economic relations in the world

ICIR 239 Nations and Nationalisms**4 (4-0-8)****Prerequisites: –**

Introducing the concepts of nation, race and identity in relationship to language, religion, race and culture; introducing theories on ethnicity, identity politics and ethno-genesis; outlining processes of nation-building in selected countries; critically reviewing the most important theories on different types of nationalisms; examining the emergence of minorities and majorities within states; analyzing the processes of displacement, migrations and diasporas and the impact of this mobility on the resilience of the state and the economy; critically exploring political and cultural aspects of ethno-religious and ethno-linguistic nationalisms in the form of case studies; exploring selected secessionist, separatist or federalist nationalist movement in selected countries

ICIR 301 Research Methods**4 (4-0-8)****Prerequisites: –**

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; assessing, analyzing, evaluating world events; disciplinary research methods in international relations

ICIR 302 ASEAN and Southeast Asian Regionalism**4 (4-0-8)****Prerequisites: –**

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; assessing, analyzing and evaluating ASEAN regionalism

ICIR 303 Transnational Movements and Migration**4 (4-0-8)****Prerequisites: –**

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; understanding, analyzing, examining, and evaluating the movement and migration of people globally; impacts and responses of international organizations and states

ICIR 304 Transnational Crime**4 (4-0-8)****Prerequisites: –**

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; cyber-crime; terrorism; crimes against humanity; understanding, examining, and evaluating the networks and effects of transnational criminal networks; responses by state and non-state actors

ICIR 305 Conflict Resolution**4 (4-0-8)****Prerequisites: –**

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; analyzing, examining, and critically assessing why some methods of conflict resolution are more effective than others

ICIR 306 Intelligence, Data and Surveillance**4 (4-0-8)****Prerequisites: –**

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: –**

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 facing in the contemporary world politics; strengths and weaknesses of the UN's role

ICIR 308 Political Islam**4 (4-0-8)****Prerequisites: –**

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: –**

Public Diplomacy as a cross-section of international communication and diplomacy; a new paradigm; international relations; practice of diplomacy; unlike traditional diplomacy; multifaceted international communications; by individual citizens; NGO's; governmental agents; agencies; Public Diplomacy focusing on the strategies; techniques; practice; influencing public attitudes; opinions; Nation and/or State Branding as an emerging field which is multidisciplinary in nature; modern management; marketing; public administration; differentiating themselves; competing in a globalized world and marketplace

ICIR 311 Foreign Policy Analysis**4 (4-0-8)****Prerequisites: –**

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; analyzing, assessing, and evaluating comparative foreign policies

ICIR 312 International Law and International Relations**4 (4-0-8)****Prerequisites: –**

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; understanding, analyzing, and evaluating the key concepts of international law in an international relations context

ICIR 313 Human Rights and International Relations**4 (4-0-8)****Prerequisites: –**

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; understanding, analyzing, and evaluating human rights from an interdisciplinary perspective

ICIR 314 International Development Studies**4 (4-0-8)****Prerequisites: –**

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; discussing, analyzing, and evaluating international development and its impacts

ICIR 315 Devolution, Privatization and State Failure**4 (4-0-8)****Prerequisites: –**

A critical examination of the factors leading to the devolution and decentralization in government; the popularity of local autonomy and regionalism in politics; the parallel trend of de-regulation and privatization in business and government; re-defining the role of national and central governments and their responsibilities to citizens; autonomy and regionalism; discussing, and evaluating the effects of neoliberalism; its relationship to state failure; changing trends in international relations

ICIR 321 Political Risk, Business and International Relations**4 (4-0-8)****Prerequisites: –**

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; analyzing, assessing, and evaluating how to anticipate; manage; mitigate political risks

ICIR 322 The Politics and Economics of Non-Governmental Organizations**4 (4-0-8)****Prerequisites: –**

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; analyzing, assessing, and evaluating the role of NGOs in international affairs

ICIR 323 The Practice of Diplomacy**4 (4-0-8)****Prerequisites: -**

The uses of diplomacy; negotiation; conflict resolution; political and commercial disputes; describing the role; function; methods of diplomats and negotiators in international relationships; developing, understanding, assessing, evaluating, and practicing methods to identify problems and develop innovative solutions

ICIR 324 Society and Technology in the Modern World**4 (4-0-8)****Prerequisites: –**

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; analyzing, assessing, and evaluating impacts of new media in international affairs

ICIR 325 Migration, Diasporas and the Politics of Space**4 (4-0-8)****Prerequisites: –**

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; examining, assessing, and evaluating the cultural impact of the movement of peoples

ICIR 326 Contemporary China: Global, Regional, and Local Perspectives**4 (4-0-8)****Prerequisites: –**

Contemporary politics, economy, society and culture in the People's Republic of China, Hong Kong and Taiwan; international relations in a Chinese perspective; assessing, analyzing, and evaluating China's impact on the region and world

ICIR 327 Ethnicity and Representation in International Affairs**4 (4-0-8)****Prerequisites: –**

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 socio-cultural aspects of ethnicity; ethnic conflicts; ethnic cleansing and genocide; explaining, discussing, and evaluating the relationship of ethnicity; the state; in international affairs

ICIR 331 Religion and Politics in the Contemporary World**4 (4-0-8)****Prerequisites: –**

Religion and society; types of religious organizations and movements and their social role and impact; secularization and counter-secularization; religion; politics; and the state; examining, analyzing, and evaluating; case studies the contemporary role of religion in selected societies

ICIR 332 Comparative Regionalism**4 (4-0-8)****Prerequisites: –**

Discussing, interpreting, analyzing, evaluating regionalism theoretical viewpoints; examining, understanding, analyzing, and evaluating major regional organizations, foundations, purposes, functions, institutional designs, methods of interaction in a global perspective

ICIR 333 Politics of Memory in Asia**4 (4-0-8)****Prerequisites: –**

Ethnicity in relationship with language, religion, 'race', and culture; ethnic groups in Southeast Asia; minorities and majorities in the various Southeast Asian states; political and cultural issues; the development of national identity; assessing, analyzing, and examining, memory; ethnic groups; minorities in Asia

ICIR 334 Terrorism, Counterterrorism and Political Violence**4 (4-0-8)****Prerequisites: -**

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; understanding, analyzing, and evaluating terrorism in the contemporary world

ICIR 341 Current Issues in International Relations and Global Affairs**4 (4-0-8)****Prerequisites: –**

Selected topics of contemporary relevance for International Relations and Global Affairs; examining, analyzing, and evaluating; synthesizing case studies to appraise; interpret; recent developments in World politics

ICIR 342 Current Issues in Asia**4 (4-0-8)****Prerequisites: –**

Selected topics of contemporary relevance for International Relations and Global Affairs; examining, analyzing, evaluating, and synthesizing case studies to appraise; interpret; recent developments in World and Asian politics

ICIR 343 The Creative Job Search**4 (4-0-8)****Prerequisites: –**

How to find a job, create a CV, personal branding; prepare, perform effectively for interviews; explaining how to evaluate the application experience; assessing, arrange, and appraise methods and means to find jobs in a competitive marketplace.

ICIR 401 Internship**12 (0-36-12)**

Prerequisites: Have completed all International Relations and Global Affairs program courses lower than 400 level

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**12 (0-0-68)**

Prerequisites: Have completed all International Relations and Global Affairs program courses lower than 400 level

The opportunity of carrying out empirical research projects under the close supervision; demonstrating initiative, creativity, systematic problem-solving, persistence, attention to detail; preparing a thesis proposal in consultation with their prospective supervisor; evaluating, analyzing, and creating a unique contribution to an academic discipline of their choosing under the lecturer's supervision

ICLL 100 Self Development**2 (2-0-4)****Prerequisites: -**

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: -**

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: -**

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 100 Foundation Mathematics**0 (4-0-0)****Prerequisites:** Placement test

Expressions and equations; linear functions; polynomials and nonlinear functions; radical and rational functions; data analysis

ICMA 106 Calculus I**4 (4-0-8)****Prerequisites:** Placement test **OR** ICMA 100 Foundation Mathematics

Brief review of trigonometry; limits and continuity; differentiation and its techniques; derivatives of algebraic 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 100 Foundation Mathematics

Statistical ideas and concepts; probability, conditional probability; distribution functions; expected value; estimators, good estimators; hypothesis testing

ICMA 213 Calculus II**4 (4-0-8)****Prerequisites:** ICMA 106 Calculus I

Derivatives of logarithmic and exponential functions; techniques of integration; improper integrals and indeterminate forms; applications of the derivative and integration; infinite series; functions of several variables; limits and continuity; partial derivatives

ICMA 214 Ordinary Differential Equations**4 (4-0-8)****Prerequisites:** ICMA 106 Calculus I

Introduction to ordinary differential equations, linear first order equations, nonlinear first order equations, applications of first order equations, second order linear equations, applications of second order linear equation, higher order linear equations

ICMA 216 Calculus IIIA**2 (2-0-4)****Prerequisites:** ICMA 213 Calculus II

Vector, dot product, cross product, parametric equations, plane, surface in 3D, arc length, partial derivative, tangent plane

ICMA 217 Calculus IIIB**2 (2-0-4)****Prerequisites:** ICMA 213 Calculus II

Lagrange multipliers, double integrals, triple integrals, line integrals, Green's theorem, surface integrals

ICMA 222 Introduction to Mathematical Software**4 (4-0-8)****Prerequisites:** -

Introduction to the use of several software packages which are useful to mathematics students; software for symbolic computing, software for numerical computing, software for mathematical documents, introduction to spreadsheets

ICMA 223 Linear Algebra A**2 (2-0-4)****Prerequisites:** -

Linear equations, system of linear equations, matrices, Euclidean spaces, traces, determinants

ICMA 224 Linear Algebra B**2 (2-0-4)****Prerequisites:** -

General vector spaces, linear transformations, eigenvalues and eigenvectors, Inner product spaces

ICMA 242 Discrete Mathematics**4 (4-0-8)****Prerequisites: -**

Basic logic, set theory, relations, functions, integers, counting technique, algorithms, methods of proof, Boolean algebra, topics from graph theory, tree, modeling computation

ICMA 252 Biological Statistics Laboratory**2 (0-4-2)****Prerequisites:** ICMA 151 Statistics for Science I

Statistical softwares; probability; hypothesis testing; linear regression; non-parametric statistics

ICMA 253 Statistics for Science II**4 (4-0-8)**

Prerequisites: ICMA 151 Statistics for Science I Non-parametric statistics, categorical data analysis, simple linear regression, correlation, ANOVA

ICMA 322 Advanced Calculus**4 (4-0-8)****Prerequisites: -**

Real and complex number systems; functions; continuity; convergence; differentiation; integration

ICMA 323 Partial Differential Equations**4 (4-0-8)****Prerequisites: -**

Heat equation, method of separation of variables, Fourier series, wave equation, Laplace's equation

ICMA 335 Complex Variables**4 (4-0-8)****Prerequisites: -**

Complex numbers, analytic functions; Cauchy-Riemann equations; conformality; Cauchy's theorems, maximum modulus principle, Liouville's theorem, residue theorem and evaluation of real integrals, principle of arguments, Rouché's Theorem

ICMA 338 Numerical Methods**4 (4-0-8)**

Prerequisites: ICCS 101 Introduction to Computer Programming, 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 338 Numerical Methods or ICCS 205 Numerical Computation Introduction to the theory and algorithms of linear and nonlinear programming, linear programming, simplex method, duality theory and sensitivity analysis, large-scale linear programming, unconstrained nonlinear optimization, constrained optimization problems

ICMA 350 Probability**4 (4-0-8)**

Prerequisites: ICMA 216 Calculus IIIA and ICMA 217 Calculus IIIB

Sample spaces; basic axioms of probability; conditional probability and independence, random variables, expectation and moment-generating functions, discrete and continuous distributions, multidimensional distributions and transformations, central limit theorem, sampling distribution theory

ICMA 353 Actuarial Mathematics I**4 (4-0-8)**

Prerequisites: -

Stochastic approach to life insurance models using the life table and mathematics of finance; calculation of net premiums and reserves for life insurance; types of annuity products

ICMA 354 Actuarial Mathematics II**4 (4-0-8)**

Prerequisites: ICMA 353 Actuarial Mathematics I

Survival probability; joint life probabilities; last survivor and compound status functions; premiums; life insurance for other status; annuities; annuities paid after death

ICMA 356 Decision Analysis**4 (4-0-8)**

Prerequisites: ICMA 151 Statistics for Science I

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: -

Topics of current interest

ICMA 395 Special Topics in Applied Mathematics II**4 (4-0-8)**

Prerequisites: -

Topics of current interest

ICMA 424 Abstract Algebra**4 (4-0-8)**

Prerequisites: -

Partitions and equivalence relations, binary operations, groups, subgroups, permutations, cyclic groups, isomorphism, direct products, cosets, normal subgroups, factor groups, homomorphism, rings, fields, integral domains

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: -	
Student presentations and discussions of research; review of topics of interest	
ICMA 447 Research Project in Applied Mathematics A	3 (0-6-3)
Prerequisites: -	
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	
Small research project in mathematics or related fields under the supervision of an advisor; detailed analysis; main results	
ICMA 484 Special Topics in Applied Mathematics III	4 (4-0-8)
Prerequisites: -	
Topics of current interest	
ICMA 485 Special Topics in Applied Mathematics IV	4 (4-0-8)
Prerequisites: -	
Topics of current interest	
ICMA 486 Special Topics in Applied Mathematics V	4 (4-0-8)
Prerequisites: -	
Topics of current interest	
ICMA 487 Special Topics in Applied Mathematics VI	4 (4-0-8)
Prerequisites: -	
Topics of current interest	
ICMB 200 Business Mathematics	4 (4-0-8)
Prerequisite: ICMA 100 Foundation Mathematics OR Placement test	
A Review of algebra, logarithmic and exponential functions, matrix algebra, differential calculus, integral calculus	
ICMB 201 Business Statistics	4 (4-0-8)
Prerequisite: ICMB 200 Business Mathematics	
Basic statistics, probability distribution of random variables, the estimation of hypothesis testing, a variance analysis, a probability distribution, chi-square test, correlation analysis and regression equation; programming application for statistics, and the use statistics to make business decisions	

ICMB 205 Microeconomics**4 (4-0-8)****Prerequisite:** ICMB 200 Business Mathematics

An introduction to microeconomics principles; economic scarcity; opportunity cost; demand and supply; elasticity; consumer behavior; producer behavior; production costs; pricing theory; market structure; utility analysis

ICMB 206 Macroeconomics**4 (4-0-8)****Prerequisite:** ICMB 200 Business Mathematics

Data of macroeconomics, problems and issue related to economic environment, the Gross Domestic Product (GDP), the Consumer Price Index (CPI), multiplier, unemployment, inflation, money market, interest rate, fiscal and monetary policies, IS-LM Model, AS-AD Model, international trade, exchange rate, the Mundell-Fleming Model

ICMB 207 Management of Business Information**4 (4-0-8)****Prerequisite:** -

Managing business data and models, connecting data, shaping data, combining data, characterizing data, building data models, scenario management, goal seek, data tables and DAX, pivot tables, columns and measures calculations, visualization of data, reports, visualizers, dashboards

ICMB 213 Financial Accounting**4 (4-0-8)****Prerequisite:** -

Preparations of financial statements, recording and classifying financial transactions, characteristics of various types of accounts, accounting principles, and usefulness and limitation of accounting information

ICMB 214 Managerial Accounting**4 (4-0-8)****Prerequisite:** ICMB 213 Financial Accounting

Basic cost concepts; the cost accounting systems; using of management accounting for planning, control, performance evaluation and decision making purposes

ICMB 215 Business Finance for Entrepreneurs**4 (4-0-8)****Prerequisite:** ICMB 200 Business Mathematics

An introduction to the principles of financial management, the role of finance with the firm and its objectives; topics including time value of money; the valuation of financial assets; capital budgeting techniques; risk and return calculations; methodologies for determining the cost of capital; as estimation and forecasting of cash flows; and the project evaluation

ICMB 216 Business Communication**4 (4-0-8)****Prerequisite:** -

Accuracy and logic in writing, presentation of business development project, interpersonal communication, intercultural communication, conflict management, negotiation, written communication, oral communication

ICMB 222 Principle of Marketing**4 (4-0-8)****Prerequisite: -**

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 235 Management and Organizational Behavior**4 (4-0-8)****Prerequisite: -**

The role of managers in an organization; behavioral and administrative theories and concepts needed to succeed in the modern organization; organization structures; organizational changes; motivations; leadership; managing work and team; teamwork

ICMB 236 Human Resources Management**4 (4-0-8)****Prerequisite: -**

The HR trends and challenges in the modern workplace; investment perspective of HRM; social responsibility perspective of HRM; roles of a strategic human resource manager; comparative industrial relations; organizational analysis and work design; HR planning, recruiting, selection, evaluation, training and development, compensation and benefits; workforce diversity

ICMB 237 International Business Management**4 (4-0-8)****Prerequisite:** ICMB 235 Management and Organizational Behavior

International business operations; organization structure; finance and accounting systems; taxation systems; marketing strategy; cultural differences; global trade; capital markets and economic growth; the impact of regional trading blocs; corporate global competitiveness; global strategies

ICMB 310 Business Law**4 (4-0-8)****Prerequisite: -**

Introduction to laws, contract law, tort law, personal income tax, corporate income tax, other taxes and duties, company and partnership laws, property law, sales, service, lease laws, loan, mortgage, pledge, guarantee laws, agency laws and employment laws, intellectual property laws

ICMB 311 Business Ethics and Sustainability**4 (4-0-8)****Prerequisite:** ICMB 235 Management and Organizational Behavior, ICMB 310 Business Law

Analysis of ethical and sustainability concepts, implications of ethics and sustainability in business decisions, social and business-related environments, application of ethical principles, ethical issues in the organization and external environments

ICMB 312 Management Science**4 (4-0-8)****Prerequisite:** ICMB 201 Business Statistics, ICMB 207 Management of Business Information

An application of quantitative analysis techniques, linear programming, network models, decision analysis, business simulation

ICMB 314 Operations and Project Management**4 (4-0-8)****Prerequisite:** ICMB 201 Business Statistics, ICMB 207 Management of Business Information

Modern concepts, models and tools for planning, organizing, staffing, leading and controlling the production, distributing of goods and services

ICMB 401 Business Innovation and Entrepreneurship**4 (4-0-8)****Prerequisite:** -

A study of entrepreneurial business strategy and innovation; the development of business plan; the new business ideas generation; the new business model; vision and mission, organizational plan, marketing plan, human resource plan, financial plan, risk management plan, action plan

ICMB 402 Business Strategy**4 (4-0-8)****Prerequisite:** -

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 490 Career Preparation**1 (1-0-2)****Prerequisite:** -

The use of design thinking approach to develop self-awareness skills and prototype future career; self-assessment of knowledge, skills, people, and conditions; self-inventory of lifestyle and value; conducting effective career experiment; career vision, and life mapping exercise, and action plan to pursue the target career

ICMB 496 Practical Business Training – On Campus**8 (2-32-10)****Prerequisite:** ICMB 490 Career Preparation

An on-campus internship program at the Brew & Bev Bistro providing a 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 497 Practical Business Training – Off Campus**8 (0-40-8)****Prerequisite:** ICMB 490 Career Preparation

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 the management knowledge and skills

ICMC 101 Introduction to Media and Communication**4 (4-0-8)****Prerequisite: -**

An introduction to communication, its meaning, theories, content and processes; studies on the face-to-face human interaction, the mass media, and the contemporary digitized format; including the media literacy e.g. fake news, media ethics and, its justification; analysing evolving concepts in the entertainment, private recreation, leisure activity, and the entertainment industry from around the world

ICMC 102 Man and Arts for Media and Communication**4 (4-0-8)****Prerequisite: -**

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)****Prerequisite: -**

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: -**

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 109 Photo Representation in the 21st Century**4 (4-0-8)****Prerequisite: -**

Examining the visual representation drawn from the diverse genres of the cellphone photography, portrait photography, art photography, and myriad images saturating our society published on social media platforms including Instagram, Facebook, Twitter or Tinder; empowering students to critically read and analyze images they or others have created; and exploring how these images shape visual representation in the 21st century

ICMC 110 Mediating Your Life**4 (4-0-8)****Prerequisite: -**

Writing and self-presentation in writing for communication in the digital media and platforms; communicative strategies, tools, techniques, voice, and visual style of the digital writing and platforms; establishing and communicating credibility in digital spaces; ethically serving your audience; blending text, graphics, multimedia, hypertextual, and interactive elements when curating mediated information; applying various levels of digital citizenship to the use of the digital media and platforms

ICMC 111 Convergence Media Culture**4 (4-0-8)****Prerequisite: -**

Examining the relationship between the media convergence, the participatory culture, and the collective intelligence; technological, industrial, cultural, and social changes in the ways of creating and circulating the media; the fluid flow of content across multiple media platforms; the cooperation between media industries and the intersections among different media systems; migratory behavior of media audiences in viewing, collaborating, and seeking media experiences; social logics and cultural practices of the spreadable media

ICMC 201 Media and Communication Regulations and Ethics**4 (4-0-8)****Prerequisite: -**

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 Cultural Theory**4 (4-0-8)****Prerequisite: -**

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)****Prerequisite: -**

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)****Prerequisite: -**

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)****Prerequisite: -**

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)****Prerequisite: -**

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)****Prerequisite: -**

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)****Prerequisite: -**

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)****Prerequisite:** ICMC 110 Mediating Your Life

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)****Prerequisite:** ICMC 110 Mediating Your Life

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)****Prerequisite: -**

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)**Prerequisite:** 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)****Prerequisite:** ICMC 208 Transmedia Storytelling

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 228 Essentials in Pre-Production**4 (4-0-8)****Prerequisite:** -

The study of the preparation process before shooting, preparing a script for shooting, storyboarding, planning with regard to logistics, shooting locations, film equipment lists, budget, crew, props, cast members, costumes, makeup, special effects and visual effects; focusing on the creation and development of a detailed shooting schedule, a production plan, storyboard and shot list using key techniques in the script visualization, combining cinematic storytelling skills with drawing, through the application of the film language and narratives, and the study of the script interpretation for films, televisions, and broadcast media

ICMC 229 Digital Media Production**4 (2-4-6)****Prerequisite:** ICMC 108 Visual Culture and Sociology

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)****Prerequisite:** -

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 231 Integrated Media Campaigns**4 (4-0-8)****Prerequisite:** ICMC 209 Creativity and Digital Communication

Planning, executing, and evaluating digital campaigns; researching, designing, and producing campaign messages and content; medium, message, audience, and platform analysis; applying persuasion and influence in campaigns; campaign management functions of the motivation, the impact control, setting priorities of target groups, the media mix, and fundraising; campaign ethics

ICMC 232 Branded Storytelling**4 (4-0-8)****Prerequisite:** ICMC 209 Creativity and Digital Communication

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 Strategy, Execution and Trends**4 (4-0-8)****Prerequisite:** ICMC 209 Creativity and Digital Communication

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)****Prerequisite:** ICMC 209 Creativity and Digital Communication

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 313 Film Screenwriting**4 (4-0-8)****Prerequisite:** ICMC 110 Mediating Your Life

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 314 Style and Presentation in Writing**4 (4-0-8)****Prerequisite:** ICMC 110 Mediating Your Life

Examining the principle of targeting readers and communicating ideas in selecting suitable writing styles; an analysis of various styles and formats for written presentations: editorial news columns, film scripts, TV documentaries, public policy announcements, etc

ICMC 315 Series and Dramatic Writing**4 (4-0-8)****Prerequisite:** ICMC 110 Mediating Your Life

Basic principles of dramatic construction writing (story and plot development, building and developing characters, creating themes and conflicts, weaving story lines etc.); an examination of case studies on writing in play scripts and TV drama series, from conception to final scripts

ICMC 325 Acting I: the Fundamentals**4 (2-4-6)****Prerequisite:** 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)****Prerequisite:** 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)****Prerequisite:** ICMC 210 Basic Acting

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 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 210 Basic Acting

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 342 Film Criticism**4 (4-0-8)****Prerequisite:** -

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 345 Genre Movies and Media**4 (4-0-8)****Prerequisite: -**

Lectures, project tutorials and project workshops: learning about many aspects of genre films, various types of films from commercial to world cinemas focusing on a key film text; mixed genre/story styles both in theory and practice; old and new directors; genres form by conventions that change over time as new genres are invented and the use of old ones is discontinued; often, works fit into multiple genres by way of borrowing and recombining these conventions; history and social history, ideology, style, form, propaganda, and film fashions

ICMC 346 “New Waves” Cinema**4 (4-0-8)****Prerequisite: -**

Acquainting the students with the principal critical methods and theoretical debates in film studies; theoretical perspectives including structuralism, semiology, Marxism, feminism, psychoanalysis, post-structuralism, and cultural studies; some of the theoretical issues covered including questions of narrative and narration, realism, formalism, modernism, postmodernism, post-colonialism, gender, sexuality, and ideology all in relation to the “New Wave cinemas”

ICMC 347 Cinema: Beyond the New Waves**4 (4-0-8)****Prerequisite: -**

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 354 Movement and Human Body**4 (2-4-6)****Prerequisite: -**

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)****Prerequisite: 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)****Prerequisite: 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 364 Essentials in Production**4 (2-4-6)****Prerequisites:** ICMC 229 Digital Media Production **OR** ICMC 227 New Media Content Creation

A series of lectures and teacher / student-led workshops and briefs involving both practice and research-led initiatives; exploring all aspects of the film production from the point of view of the director, producer, and the director of photography; discussing about key cinematographers, directors, and film movements as well as an extensive grounding in the core techniques for a smooth production process

ICMC 365 Essentials in Post-Production**4 (2-4-6)****Prerequisite:** -

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 366 Essentials in Post-Production II**4 (2-4-6)****Prerequisite:** ICMC 365 Essentials in 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 375 Art of Persuasion**4 (4-0-8)****Prerequisite:** -

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)****Prerequisite:** 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 and Media Planning, Funding and Administrating**4 (4-0-8)****Prerequisite:** -

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 381 Field Study in Media and Communication**4 (4-0-8)****Prerequisite: -**

Local or international field study focusing on expanding knowledge in the field of entertainment media and communication

ICMC 382 Independent Study in the Media and Communication**4 (4-0-8)****Prerequisite: -**

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)****Prerequisite: -**

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)****Prerequisite: -**

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 390 Documentary Photography / Still Images in a Moving World**4 (2-4-6)****Prerequisite: -**

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)****Prerequisite: -**

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)****Prerequisite: -**

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)****Prerequisite: -**

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 399 Professional Internship in the Media and Communication**8 (0-24-8)****Prerequisite: -**

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)****Prerequisite: -**

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)****Prerequisite: 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)**

Prerequisite: 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 100 English Resource Skills**0 (4-0-0)****Prerequisites:** Placement test

A remedial course preparing students to read and write academic English at a level suitable for entering the Intermediate English Communication I

ICMF 316 Financial Management**4 (4-0-8)****Prerequisite:** ICMB 215 Business Finance for Entrepreneurs

Goal of financial management, financial markets and yields, the concept of corporate governance in financial management, the corporate valuation model, financial statement analyses, working capital management, long-term financial planning and forecasting, risk and return for stand-alone assets and the portfolio, the capital market theory, capital structure theories and practice, distributions to shareholders

ICMF 317 International Financial Markets**4 (4-0-8)****Prerequisite:** ICMB 215 Business Finance for Entrepreneurs

International financial markets from the macro-finance perspective; theme on the role of money, interest rates and fixed income assets; the main focus on monetary policy; understanding the monetary system from the macro-finance perspective; the revision to be up to date; looking at disruptive technologies, innovations and their impacts on monetary finance

ICMF 318 Investments Analysis and Portfolio Management**4 (4-0-8)****Prerequisite:** ICMF 316 Financial Management

Types of investors; types of investment vehicles in the investible universe; the investment policy statement; different investment strategies for different types of investors; quantitative and qualitative aspects of risk and return associated with investment decisions; portfolio optimization techniques; the portfolio performance evaluation against pre-defined benchmarks and investment objectives

ICMF 319 Multinational Corporate Finance**4 (4-0-8)****Prerequisite:** ICMB 215 Business Finance for Entrepreneurs

An examination of international finance from a standpoint of a company; the international monetary system and currency regimes; foreign exchange markets including spot and derivative markets; international parity conditions and applications; foreign exchange rate risk and exposure; operational and financial hedging; raising capital from international capital markets; the formulation of investment and financial strategies for foreign operations

ICMF 320 Business Taxation**4 (4-0-8)****Prerequisite:** ICMB 215 Business Finance for Entrepreneurs

Corporate taxation, partnership taxation, withholding tax, value added tax (VAT), tax computation, tax return, tax planning and ethics, tax accounting, and tax effects on the financial analysis

ICMF 321 Intermediate Accounting**4 (4-0-8)****Prerequisite:** ICMB 215 Business Finance for Entrepreneurs

A study of accounting principles and procedures essential to the preparation of financial statements with a particular emphasis on the in-depth asset, liability and shareholder's equity, for example, revenue recognition, asset valuation, contingent liability, lease, earnings per share, deferred taxes, and all related disclosures

ICMF 322 Risk Management and Derivatives**4 (4-0-8)****Prerequisite:** ICMF 316 Financial Management

An introduction to the risk management concept for corporation; overview of fundamental knowledge of derivative instruments—forward, future, and option; quantitatively and qualitatively analyzing the risk for the corporate; controlling the risk with appropriate hedging techniques

ICMF 323 Banking and Financial Institutions Management**4 (4-0-8)****Prerequisite:** ICMF 317 International Financial Markets

Modern financial institutions from a bank management perspective; topics including the risk of financial institutions, commercial banks, and methods through which these risks are managed; innovations in the banking industry and the decentralization of banking

ICMF 324 Big Data and Financial Analytics**4 (4-0-8)****Prerequisite:** ICMB 201 Business Statistics

Understanding the data analysis process with a big data analysis; the financial/economic problem formulation based on sound business landscape analyses; internal and external data identification and preparation; applying appropriate data analytics tools and algorithms for descriptive, predictive and prescriptive analytics; generating informed business insights, strategies and plans for solving key financial/economic problems

ICMF 420 Financial Analysis and Modeling**4 (4-0-8)****Prerequisite:** ICMF 316 Financial Management

The capstone course for students majoring or minoring in finance; a formulation of financial models for the financial and investment decision making; a financial statement analysis, corporate valuation, risk modeling, a sensitivity analysis and financial simulation using the spreadsheet-based financial models; Visual Basic (VBA) applications in Finance, financial modeling project for real-world corporations

ICMF 425 Corporate and Alternative Asset Valuations**4 (4-0-8)****Prerequisite:** ICMF 318 Investment Analysis and Portfolio Management

Valuation on public firms and any cash flow producing assets such as real estates, private companies, and divisions; relative valuation approach, such as P/E, P/B, P/CF, EV/EBITDA on different types of industries or companies; factors involved in valuation such as CAPM, WACC, and the un-levering and re-levering of Beta; the valuation of non-producing cash flows such as cryptocurrencies and blockchain technology

ICMF 426 Special Topics in Finance**4 (4-0-8)****Prerequisite:** -

A study of contemporary issues, industry trends, theories, and best practices in finance in response to the changing business environment.

ICMF 427 Financial Theory and Innovation in a Disruptive World**4 (4-0-8)****Prerequisite:** ICMF 316 Financial Management

Understanding financial and disruptive innovation theories, the 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, and modern portfolio theories with the disruptive innovation concept

ICMI 331 Global Logistics and Supply Chain Management**4 (4-0-8)****Prerequisite:** ICMB 237 International Business Management

International logistics management; upstream and downstream business activities; procurement; demand forecasting; operations and production; warehouse and distribution center; logistics network design; supply chain technologies; transportation mode; inventory management

ICMI 332 Diversity, Cross Culture and Expatriate Management**4 (4-0-8)**

Prerequisite: ICMB 236 Human Resource Management, ICMB 237 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; an 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 333 Global Trade, Policies, and Regulations**4 (4-0-8)**

Prerequisite: ICMB 237 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 334 Regional Business Study**4 (4-0-8)**

Prerequisite: ICMB 237 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 335 Legal Issues in International Business**4 (4-0-8)**

Prerequisite: ICMB 237 International Business Management, ICMB 310 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 336 Leadership and Change Management in Global Business**4 (4-0-8)**

Prerequisite: ICMB 237 International Business Management

Models and approaches for managerial behavior; developing managerial and leadership skills; dimensions, and challenges of change in global organizations; the need, vision, strategies, and initiation for change; politics of change; change resistance and transition management

ICMI 337 Management and Governance in Multinational Enterprises**4 (4-0-8)**

Prerequisite: ICMB 237 International Business Management

Theories and concept of corporate governance of multinational company; roles of director; corporate culture; control monitoring, and evaluation, the legal environment; stakeholder management; corporate governance implementation; current issues of governance from the global and local perspectives

ICMI 431 Risk Management in International Business**4 (4-0-8)**

Prerequisite: ICMB 215 Business Financial, ICMB 237 International Business Management
Risks in international business; political, economic and financial risks; Identification of strategies to identify, assess, manage and mitigate risk associate with global business operation

ICMI 432 Internationalization Strategy**4 (4-0-8)**

Prerequisite: ICMI 333 Global Trade, Policies, and Regulations, ICMI 431 Risk Management in International Business Internationalization strategies for SME and family businesses; management of functional areas of business for internationalization; motivation and model for international expansion; the international expansion mode and strategy; managing cost and risk of internationalization; barriers for internationalization; the role of decision maker for international expansion; creating a meaningful internationalization strategy for SMEs

ICMI 436 Special Topics in International Business**4 (4-0-8)**

Prerequisite: ICMB 237 International Business Management, ICMB 235 Management and Organizational Behaviour, ICMI 432 International Strategy

Contemporary issues; industry trends; theories and best practices in international business in response to the changing business environment

ICMK 351 Consumer Insights - A Qualitative Approach**4 (4-0-8)**

Prerequisite: ICMB 222 Principles of Marketing

The 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, in-depth interview, observation, projective techniques; data collection and fieldwork; data coding, qualitative data analysis methods; interpreting insights, turning insights into marketing ideas

ICMK 352 Market Intelligence - A Quantitative Approach**4 (4-0-8)**

Prerequisite: ICMB 201 Business Statistics, ICMB 222 Principles of Marketing

Marketing research tools, techniques, and process to arrive at conclusion; identifying and collecting information, analyzing and interpreting the data, using data to make decision

ICMK 353 Consumer Behaviours and Decision Making**4 (4-0-8)**

Prerequisite: ICMB 222 Principles of Marketing

A 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 the consumer decision behavior

ICMK 354 New Products Management**4 (4-0-8)**

Prerequisite: ICMB 222 Principles of Marketing

An examination of managing the new product development process of bringing new products and services to the market within a strategic content; sources for identifying opportunities; techniques for idea generation; methods for concept development and evaluation; creation of perceptual maps; approaches for product and marketing development; conducting business analysis for a new product; strategies to position new products; types of market testing; formulation of new product launch strategies; assessing product line impacts

ICMK 355 Integrated Marketing Communications**4 (4-0-8)****Prerequisite:** ICMB 222 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 361 Digital Marketing**4 (4-0-8)****Prerequisite:** ICMB 222 Principles of Marketing

An overview of digital marketing, online marketplace analysis—macro and micro environment; online customer personas and decision journey; the digital marketing process; objective and budgeting for digital marketing program; digital marketing tools; developing a digital marketing program; evaluation of digital marketing project

ICMK 362 Strategic Brand Management**4 (4-0-8)****Prerequisite:** ICMB 222 Principles of Marketing

A strategic planning perspective to explore theories, concepts and tools applicable to the management of a brand; perspectives of consumer-based brand equity; types of brand strategy; coordination of brand marketing programs; mapping of brand associations; the development of a brand audit; measurement and interpretation of brand performance; management and growth of brand equity; approaches for brand expansion; alternative brand architectures; strategies for brand reinforcement and revitalization

ICMK 451 Distribution and Retail Channels**4 (4-0-8)****Prerequisite:** ICMB 222 Principles of Marketing

The accessibility of product and service through the distribution channel; setting up distribution strategy, designing distribution structure, and managing distribution channel from manufacturer's and retailer's perspectives by answering channel members' and consumers' needs; the impact of marketing channel decisions on marketing strategy

ICMK 452 Business Marketing and Selling Strategy**4 (4-0-8)****Prerequisite:** ICMB 222 Principles of Marketing

Understanding the nature of organization buyers and its buying behavior; business buyer segmentation, customer relationship management, pricing, and product development; basic components of selling function; tools for selling process

ICMK 453 Global Marketing Strategy**4 (4-0-8)****Prerequisite:** ICMB 222 Principles of Marketing, ICMB 237 International Business Management

Differences between single country marketing and international marketing; global economic and trade environment, global social and cultural environment, global political and legal environment; emerging markets' characteristics, developed markets' characteristics; segmentation, targeting, and positioning in the global market; market selection process; mode of entry; the marketing strategy in foreign markets

ICMK 456 Special Topics in Marketing**4 (4-0-8)****Prerequisite:** -

A study of contemporary issues, industry trends, theories, and best practices in marketing in response to the changing business environment

ICMK 461 Marketing Strategy for Sustainability**4 (4-0-8)****Prerequisite:** ICMB 222 Principles of Marketing

A macro-environment analysis, an opportunity and challenge analysis, vision and mission; branding strategy, product strategy, pricing strategy, distribution strategy, communication strategy, innovation strategy, growth strategy, defensive strategy; sustainability concept, sustainability impact assessment

ICPY 101 Physics I**4 (4-0-8)****Prerequisites:** -

Measurement, units and dimensions; vectors, linear motion, Newton's law 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

Oscillations and wave; light and sound; Thermodynamics; electricity and magnetism; Modern 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 200 Modern Physics**4 (4-0-8)****Prerequisites:** ICPY 101 Physics I

Modern physics; special theory of relativity, Quantum theory, the Uncertainty Principle, wave and particle duality; Schrodinger's Equation, atomic and nuclear theories, nuclear instability and decay, Bohr's picture of atom

ICPY 221 Computer Programming for Physics**4 (3-2-7)****Prerequisites:** ICMA 106 Calculus I

Fundamental principles of computer programs; Basic Three Programming constructs, namely Sequence, Conditions, and Iterations; logic of programs in the problem solving process; object- oriented programming fundamentals

ICPY 231 Mathematical Methods for Physics IA**2 (2-0-4)****Prerequisites:** ICMA 213 Calculus II

Vector, dot product, cross product, parametric equations, plane, surface in the 3D, arc length, partial derivative, tangent plane

ICPY 232 Mathematical Methods for Physics IB**2 (2-0-4)****Prerequisites:** -

Linear equations, system of linear equations, matrices, Euclidean Spaces, traces, determinants

ICPY 233 Mathematical Methods for Physics IIA**2 (2-0-4)****Prerequisites:** ICMA 213 Calculus II

Lagrange Multipliers, double integrals, triple integrals, line integrals, Green's Theorem, surface integrals

ICPY 234 Mathematical Methods for Physics IIB**2 (2-0-4)****Prerequisites:** -

General vector spaces, linear transformations, eigenvalues and eigenvectors, inner product spaces

ICPY 309 Scientific Research and Presentation**4 (4-0-8)****Prerequisites:** -

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 321 Intermediate Mechanics**4 (4-0-8)****Prerequisites:** ICPY 101 Physics I

Newton's laws, linear and rotational dynamics, Euler angles and rigid body dynamics, small oscillation

ICPY 322 Electricity and Magnetism**4 (4-0-8)****Prerequisites:** ICPY 102 Physics II

The Coulomb force, electric fields and potential, Gauss's Law, dielectrics, the Biot-Savart Law, Ampere's Law, the magnetic field and magnetic induction, scalar and vector potential, Faraday's Law

ICPY 323 Electrodynamics**4 (4-0-8)****Prerequisites:** ICPY 322 Electricity and Magnetism

Maxwell's Equations, Wave Equations, field, guided wave, resonance cavity, radiation from dipoles and moving charges

ICPY 324 Wave and Optics**4 (4-0-8)****Prerequisites:** ICPY 102 Physics II

Wave and vibration, mechanical wave, reflection and refraction, geometric optics, Maxwell's Equations, EM waves, guided wave

ICPY 333 Mathematical Methods for Physics III**4 (4-0-8)****Prerequisites:** -

Heat equation, method of separation of variables, Fourier Series, wave equation, Laplace's Equation

ICPY 334 Numerical Methods**4 (4-0-8)****Prerequisites:** ICPY221 Computer Programming for Physics, ICMA 213 Calculus II

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 355 Special Topics in Physics I**4 (4-0-8)****Prerequisites:** -

Topics of current interest

ICPY 356 Special Topics in Physics II**4 (4-0-8)****Prerequisites:** -

Topics of current interest

ICPY 357 Special Topics in Laboratory Physics I**4 (3-2-7)****Prerequisites:** -

Topics of current interest

ICPY 361 Quantum Mechanics I**4 (4-0-8)****Prerequisites:** ICPY 102 Physics II

The development of the quantum mechanics theory, Schrodinger's Equation, the uncertainty principle, statistical interpretation, the wave function, the momentum operator, Hermitian Operators, infinite square well, harmonic oscillator, free particles, delta function potential, finite square well, observables, commutator, Hilbert Space, eigenfunctions and Dirac Notation

ICPY 371 Thermal Physics**4 (4-0-8)****Prerequisites:** -

The laws of thermodynamics, heat engines, entropy, the axiomatic formulation of thermodynamics

ICPY 441 Senior Project in Physics**6 (0-12-6)****Prerequisites:** Student must complete at least 48 credits (out of 62) of major required class before register for the course

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 451 Analytical Mechanics**4 (4-0-8)****Prerequisites:** ICPY321 Intermediate Mechanics

Lagrangian Mechanics, the minimum action principle, constraints, constraint forces and constraint dynamics, D'Alembert's Principle, generalized potentials, Hamiltonian Mechanics; Theory of Small Oscillations; the rotating coordinate system and rigid body, Euler Angles, Coriolis Effect

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: -**

Topics of current interest

ICPY 456 Special Topics in Physics IV**4 (4-0-8)****Prerequisites: -**

Topics of current interest

ICPY 457 Special Topics in Laboratory Physics II**4 (3-2-7)****Prerequisites: -**

Topics of current interest

ICPY 461 Quantum Mechanics II**4 (4-0-8)****Prerequisites:** ICPY 361 Quantum Mechanics I

Schrodinger Equation in spherical coordinates, the hydrogen atom, the angular momentum, spin, identical particles, two-particle systems; the quantum statistical mechanics, Time-Independent Perturbation Theory, fine structure of hydrogen; the Zeeman Effect, hyperfine splitting, the variational principle

ICPY 463 Quantum Mechanics III**4 (4-0-8)****Prerequisites:** ICPY 461 Quantum Mechanics II

The Time-Independent Perturbation Theory, variational principle, the WKB Approximation, the Time-Dependent Perturbation Theory, the EPR Paradox, the Bell's Theorem, the No-Cloning Theorem

ICPY 471 Atomic and Molecular Physics**4 (4-0-8)****Prerequisites: -**

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: -**

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: -**

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: -**

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: -**

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: -**

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: -**

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: -**

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: -**

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: -**

Ordinary differential equations: stability, order and chaos in the two- dimensional motion; the boundary value and eigenvalue problems: stationary solutions of the one-dimensional Schrödinger Equation; partial differential equations with different types of boundary conditions: the time-dependent 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 I

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 112 Introduction to Psychology**4 (4-0-8)****Prerequisites: -**

Human behaviour and mental functioning. The nervous system, consciousness, psychoactive drugs, sensation and perception, psychogenetics, life-span development, thinking, memory, language, conditioning and learning, motivation, personality, and stress

ICSP 250 History and Systems of Psychology**4 (4-0-8)****Prerequisites: -**

The historical development of psychology. Philosophical perspectives. The social and political implications of psychological perspectives

ICSP 251 Introduction to Developmental Psychology I**4 (4-0-8)****Prerequisites: -**

The life-span perspective of individual human development from conception through infancy and childhood to adolescence; processes of physical, cognitive, and psychological growth, including language and social development; child abuse and childhood psychopathology

ICSP 252 Introduction to Developmental Psychology II**4 (4-0-8)****Prerequisites: -**

An introduction to the life-span perspective of individual human development from adolescence through adulthood to old age. The processes of physical, cognitive, and psychological growth and change, including sexuality, adult relationships, social development, and issues related to aging

ICSP 253 Introduction to Social Psychology **4 (4-0-8)**

Prerequisites: -

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: -

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: -

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: -

Work-related attitudes. Social influences at work. Job satisfaction. Work groups. Matching workers with jobs

ICSP 257 Educational Psychology **4 (4-0-8)**

Prerequisites: -

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: -

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 350 Evolutionary Psychology **4 (4-0-8)**

Prerequisites: -

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 351 Introduction to the Freudian and Psychodynamic Traditions **4 (4-0-8)**

Prerequisites: -

The work of Sigmund Freud and his successors; Freud's theories; criticisms; Jung; Adler; later neo-Freudians

ICSP 352 Prosocial and Antisocial Behaviour **4 (4-0-8)**

Prerequisites: -

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: -

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: –**

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 355 Drug Use and Behavior**4 (4-0-8)****Prerequisites: –**

An analysis of the psychology of drug use and addiction; types of psychoactive drugs, their use, and neurological impact

ICSP 356 Psychology of Emotion**4 (4-0-8)****Prerequisites: –**

The experience of emotion; English biological, developmental, social and cognitive aspects of emotion; specific emotions in psychological perspective: happiness, sadness, fear, anger, shame, guilt, disgust, love, empathy/sympathy

ICSP 357 Psychology of Motivation**4 (4-0-8)****Prerequisites: –**

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 358 Psychology of Economics**4 (4-0-8)****Prerequisites: –**

An introduction to different conceptual and empirical models related to preferences; choice heuristics; motivation; social influence; decision making; spending behavior; perception and emotions of different economic actors

ICSP 359 Foundations of Counseling Skills**4 (4-0-8)****Prerequisites: –**

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

ICTB 201 Introduction to Travel and Service Businesses**4 (3-2-7)****Prerequisites:** 24 credits of General Education

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 food service 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 202 Principles of Management**4 (4-0-8)****Prerequisites:** 24 credits of General Education

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 201 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 211 Business Statistics and Data Management**2 (2-0-4)****Prerequisites:** -

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 212 Marketing for Travel and Service Businesses**4 (4-0-8)****Prerequisites:** 24 credits of General Education

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 211 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:** 24 credits of General Education

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 215 Branding Strategy and Marketing Communication Channels**4 (4-0-8)****Prerequisites:** ICTB 212 Marketing for Travel and Service Businesses

Core concept of branding strategy and the communication channels in practice both online and off-line approach; brand positioning; brand associations; understanding branding in the digital era; media planning design; IMC; digital marketing concepts and practices; content marketing; trends of the new media and branding 4.0 with sustainability and quality assessment

ICTB 216 Sustainable Development in Travel and Service Businesses**4 (4-0-8)****Prerequisites:** ICTB 201 Introduction to Travel and Service Businesses

Concepts of tourism and sustainable development goals; 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 geo- cultural context – urban and rural settings; the Global Code of Ethics

ICTB 291 Internship I**8 (0-40-8)****Prerequisites:** 70 credits

Providing hands-on experience and practical opportunity on hotel operation of four departments which are front office, housekeeping, food and beverage and kitchen; providing hotel and service related basic knowledge and skill in four departments; grooming the interns on formality, professionalism, attitude and team work aspects so as to build a competitive advantage as a quality hotelier

ICTB 292 Internship I**8 (0-24-8)****Prerequisites:** 70 earned credits

Providing hands-on experience and practical opportunity on travel 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 so as to build a competitive advantage and a highly 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 201 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 201 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 201 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; ethical challenges in service management

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

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 321 Room Division Operation Management**4 (4-0-8)****Prerequisites: -**

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 322 Facility Management for Hotel Operations**4 (4-0-8)****Prerequisites: -**

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 323 Hospitality Facilities Design**4 (3-2-7)****Prerequisites: -**

Understanding fundamental of the hospitality facility design and layout emphasizing different types of lodging in the perspectives of managements and owners; understanding different types of hospitality facilities; basic understanding of architectural plan reading and specifications; how to communicate with professional designers; exploring flow patterns and relationships among functional areas, facilities, service and management (using bubble diagram); hospitality space design: guestroom design; understanding phases in the planning and design process; recognizing possible key factors, theme or concept, and trends influencing hospitality facilities design in terms of the investment

ICTB 324 Hotel Business Development and Management**4 (4-0-8)**

Prerequisites: ICTB 321 Room Division Operation Management **OR** ICTB 322 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 331 Culinary Operation Management**4 (3-2-7)****Prerequisites: -**

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 332 Baking and Pastry Business**4 (3-2-7)****Prerequisites: -**

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 333 Gastronomy Exploration and Food's Experiences**4 (4-0-8)****Prerequisites: -**

Understanding the contexts of gastronomy related to food and culture, where the food experiences are related to several dimensions; understanding the gastrodiploacy 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; Discussion 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 334 Restaurant Marketing and Branding Strategies**4 (4-0-8)****Prerequisites: -**

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 335 Restaurant Business Planning and Operations**4 (4-0-8)**

Prerequisites: ICTB 331 Culinary Operation Management **OR** ICTB 332 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 341 Travel Guide and Interpretation**4 (3-2-7)****Prerequisites: -**

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 342 Tourism Package Management and Business**4 (3-2-7)****Prerequisites: -**

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 343 Online Travel and Service Business**4 (4-0-8)****Prerequisites: -**

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 344 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 345 Cultural Heritage Studies for Entrepreneurship**4 (4-0-8)****Prerequisites: -**

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 351 Event Planning and Operation**4 (4-0-8)****Prerequisites: -**

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 352 Event and Experience Design**4 (3-2-7)****Prerequisites: -**

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 353 Event Business Stakeholders Engagement**4 (4-0-8)****Prerequisites: -**

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, multi- purpose facility, unusual venue); supporting infrastructure (i.e, Convention and Visitor Bureau (CVB), international associations, domestic associations), communities, and service providers

ICTB 354 Leisure and Sport Event**4 (3-2-7)****Prerequisites: -**

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 355 Creative Event Production**4 (3-2-7)****Prerequisites:** ICTB 351 Event Planning and Operation or ICTB 352 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 361 The Basics of Exercise Science and Wellness**4 (4-0-8)****Prerequisites: -**

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 362 Principles and Practice of Sport management for Business**4 (4-0-8)****Prerequisites: -**

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 363 Healthcare and Medical Business**4 (4-0-8)****Prerequisites: -**

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 364 Spa and Wellness Business**4 (4-0-8)****Prerequisites: -**

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; programme 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; ethical issues in spa and wellness industry; self-help plan for a healthy lifestyle

ICTB 491 Internship II**8 (0-40-8)****Prerequisites: Final trimester only**

Work experience at a hospitality / tourism / event-related organization; gaining insight in its management and operations; 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, demonstrating an ability to understand their roles in the work of the organization by implementing instructions, directing, understanding, assuring appropriate actions, and carrying out tasks assigned to you successfully; developing interpersonal and technical skills, as well as competencies necessary for successful completion of your work; considering and discussing with work colleagues and supervisors the relationship between the theoretical concepts and the practical situations encountered; applying careful thoughts to ways in which this experience may help you to plan your future

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 management and operations; 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, demonstrating an ability to understand their roles in the work of the organization by implementing instructions, directing, understanding, assuring appropriate actions, and carrying out tasks assigned to you successfully; developing interpersonal and technical skills, as well as competencies necessary for successful completion of your work; considering and discussing with work colleagues and supervisors the relationship between the theoretical concepts and the practical situations encountered; applying careful thoughts to ways in which this experience may help you to plan your future

ITCT 101 Computing Technologies**4 (4-0-8)****Prerequisites:** -

Current trends and applications of computing technologies in various areas of computer systems; networking and security; artificial intelligence; data engineering and science; interactive and multimedia computing; information systems development

ITCT 111 Programming for Creative Technology**4 (4-0-8)****Prerequisites:** ITCT 101 Computing Technologies

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

ITCT 201 Multimedia Systems Lab**2 (0-4-2)****Prerequisites:** ITCT 101 Computing Technologies

Practices on applying a variety of techniques for developing multimedia systems; development of web interfaces; 2D image creation; putting special effects on 2D images; adaptation and scaling for web graphics; published media and video; image processing software; audio and video encoding; writing software for creating animation; adoption of new technology in the multimedia system and the interest of faculties and students

ITCT 241 Computational Problem Solving**4 (4-0-8)****Prerequisites:** ITCT 111 Programming for Creative Technology, ICCT 101 Mathematics for Creative Technology I

Basic problem solving skills and techniques; problem identification and inductive reasoning; Plan- Do-Check-Act (PDCA) in problem solving; abstractions and representations; algorithm design and verbal reasoning; quantifying speed and size; sorting and searching; data structuring layouts, including lists, trees, and tables

ITCT 301 Digital Storytelling and Machinima**4 (4-0-8)**

Prerequisites: ITCT 111 Programming for Creative Technology, ITCT 201 Multimedia Systems Lab
Principles and technologies of storytelling; Influences and impact of stories; storyboard and scripting; camera setup; film making; tools for digital storytelling; visual novels; introduction to Machinima; Machinima production tools; scripting motion and animation

ITCT 311 Computer Animation**4 (4-0-8)**

Prerequisites: ITCT 111 Programming for Creative Technology, ITCT 201 Multimedia Systems Lab Concepts and theories in computer animation; concepts and theories in lighting and processing; key-frame animation; camera animation; scripting systems; motion capture; procedural animation; deformation; guidelines for presenting through storyboards; applications of 3D program; the object model formation; object crafting in different granularities; character animation; material and surface setting; surface covering or touching on models; rendering; simple scene formations and composites

ITCT 318 Internet of Things and Its Application**4 (4-0-8)**

Prerequisites: ITCT 241 Computational Problem Solving

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 321 Computer Graphics**4 (4-0-8)**

Prerequisites: ITCT 111 Programming for Creative Technology, ICCT 101 Mathematics for Creative Technology I
Computer graphics applications; graphics hardware technology; color models; 2D scan conversion; geometric models; transformations; 3D viewing; lighting and shading; texture mapping; visible surface determination; global illumination; particle systems; curves and surfaces; graphics programming

ITCT 322 Virtual Reality**4 (4-0-8)**

Prerequisites: ITCT 111 Programming for Creative Technology, ICCT 101 Mathematics for Creative Technology I
Sense of presence; virtual reality applications; 3D interaction techniques; input and output technology; human perception; VR toolkits; designing and developing a VR system; human factors

ITCT 323 Augmented Reality**4 (4-0-8)**

Prerequisites: ITCT 111 Programming for Creative Technology, ICCT 101 Mathematics for Creative Technology I
Augmented reality applications; hardware; software; tracking, calibration, and registration; computer vision for augmented reality; interaction; designing and developing AR systems

ITCT 331 Game Design and Development**4 (4-0-8)**

Prerequisites: ITCT 111 Programming for Creative Technology, ICCT 101 Mathematics for Creative Technology I
Game development cycle; game design; game engine; graphics, animation, sound, music, and the user input; game testing; morals and ethics of game design and development; game marketing; game analytics

ITCT 332 Data Visualisation**4 (4-0-8)**

Prerequisites: ITCT 111 Programming for Creative Technology, ICCT 101 Mathematics for Creative Technology I
Examples of visualization; visualization hardware; tools; a process of data visualization; working with data; color theory; human perception; visualization techniques; visual analytics; immersive visualization

ITCT 341 Agile Software Development**4 (4-0-8)**

Prerequisites: ITCT 241 Computational Problem Solving

Agile values, principles and practices; managing an agile team, roles and responsibilities; agile product discovery; agile planning for software products; the agile development process; testing with agile; agile metrics; practicing the agile development to the real-world software development project

ITCT 342 Database Management Systems**4 (4-0-8)****Prerequisites:** ITCT 241 Computational Problem Solving

The basic database management; data models; database design cycles; the relational database design; data normalization; data organization in normalized forms; data description languages; data query; data consistency; data recovery and synchronization control; data security; data integrity and reliability

ITCT 343 of Technology Entrepreneurship**4 (4-0-8)****Prerequisites:** ITCT 241 Computational Problem Solving

Electronic commerce fundamentals; e-business models; value chain analysis; technology architectures for the electronic business; the supply chain management; consumer behavior within the electronic environment; legal and ethical issues; privacy and security of the electronic information

ITCT 344 Human-Computer Interaction**4 (4-0-8)****Prerequisites:** ITCT 241 Computational Problem Solving

Principles of graphical user interfaces; graphical user interfaces toolkits; interaction styles and techniques including the screen design, layout, color, fonts, labeling and visual programming; HCI tools; multimedia and the web communication; the human-centered development and evaluation; human performance models: perception, movement, cognition, culture, communication, and organizations; accommodating the human diversity; principles of good design and good designers; engineering tradeoffs; an introduction to usability tests

ITCT 361 Advanced Artificial Intelligence**4 (4-0-8)**

Prerequisites: ITCT 241 Computational Problem Solving, ICCT 102 Mathematics for Creative Technology II
History and evolution of artificial intelligence; fundamental concepts, principles and techniques of artificial intelligence; searching methods; solving problems by solution searching; symbolic computation; expert systems; uncertainty handling in expert systems; intelligent systems; computational intelligence techniques; fuzzy logic; neural networks; genetic algorithms; case studies of artificial intelligence applications

ITCT 362 Data Science Essentials and Applications**4 (4-0-8)**

Prerequisites: ITCT 241 Computational Problem Solving, ICCT 102 Mathematics for Creative Technology II
An introduction to the data science and its related technology; handling data including the data representation, data understanding, data cleansing, data transformation, dimension reduction, high dimensional data, and data visualization; applications of machine learning models such as regression, classification, and clustering methods; evaluation methodologies; case studies of data analytics from problem understanding to deployment

ITCT 391 Special Topics in Multimedia Systems**4 (4-0-8)****Prerequisites:** ITCT 111 Programming for Creative Technology, ICCT 101 Mathematics for Creative Technology 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 101 Music Appreciation**2 (2-0-4)****Prerequisites:** -

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:** -

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

RSDE 215 Learning Management and Classroom Management for Students with Special Needs **4 (3-2-7)****Prerequisites:** -

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

RSGE 210 Introduction to the Thai Sign Language**4 (2-4-6)****Prerequisites:** -

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

Additional General Education Courses for Students ID63xxxxx

Life Appreciation (4 credits)

ICGH 143	Flowers and Fragrances for Health	2 (2-0-4)
ICGH 147	Myth and the Masks of the Divine	2 (2-0-4)
ICGN 141	Life in the Sea	2 (1-2-3)
ICGN 143	Gaia: Life on Earth	2 (1-2-3)
ICGN 145	Food Integrity and Food Fraud: When a Food Product Is Not What It Seems	2 (2-0-4)
ICGP 120	Mind and Body: Navigating the Interplay of Brain, Behavior, and Well-being	2 (2-0-4)
ICGS 168	Faith a Lifestyle	2 (2-0-4)
ICGS 179	Health and Society	2 (2-0-4)
ICGS 184	Healthy Habits, Happy Shoppers: Exploring Health Literacy in Consumer Decisions	2 (2-0-4)
ICGT 107	Innovation: Inside Out	2 (2-0-4)

Global Citizenship (4 credits)

ICGB 114	Cultural Strategies for Success: Unveiling Eastern Business Dynamics	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 148	Quest for Global Justice: A Philosophical Inquiry	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)
ICGL 164	Thai Writing for Specific Purposes in Workplace *for native Thai students	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)
ICGN 142	Energy and the Environment	2 (2-0-4)
ICGS 175	Social Innovation and Sustainability	2 (2-0-4)
ICGS 176	Sustainable Cooking	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)

Critical Thinking (4 credits)

ICGH 135	The Horror Film	2 (2-0-4)
ICGH 144	A Candle in the Dark: How to Tell Fact from Fiction	2 (2-0-4)
ICGN 144	Environmental Ethics	2 (2-0-4)
ICGS 178	Unmasking Human Behaviour: Exploring Psychological Truths about Behaviour	2 (2-0-4)

Leadership (4 credits)

ICGB 116	Managing Self and Working with Others	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 174	The Art of Leadership in Practice: Inspiration	2 (2-0-4)
ICGS 177	Social Innovation: Empowering Sustainable Communities	2 (2-0-4)
ICGS 183	Media and Community	2 (2-0-4)

Digital Literacy (4 credits)

ICGB 115	Money: Deciphering Currencies of Value	2 (2-0-4)
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 105	No-Code Application Development	2 (2-0-4)
ICGT 106	Data and Spreadsheets	2 (2-0-4)

Course Descriptions

Additional General Education Courses for ID.63

ICGB 114 Cultural Strategies for Success: Unveiling Eastern Business Dynamics 2 (2-0-4)

Prerequisites: -

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: -

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: -

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

ICGH 116 World Cinemas 4 (4-0-8)

Prerequisites: -

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, post-structuralism, and cultural studies; questions of narrative and narration, realism, formalism, modernism, postmodernism, postcolonialism, gender, sexuality, and ideology

ICGH 120 Thai and ASEAN Cinema 4 (4-0-8)

Prerequisites: -

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 135 The Horror Film 2 (2-0-4)

Prerequisites: -

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 143 Flowers and Fragrances for Health**2 (2-0-4)****Prerequisites: -**

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: -**

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: -**

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: -**

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: -**

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: -**

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: -**

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: -**

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 164 Thai Writing for Specific Purposes in Workplace *for native Thai students**2 (2-0-4)****Prerequisites: -**

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 172 Chinese Influence in Thai Society**2 (2-0-4)****Prerequisites: -**

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: -**

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: -**

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

ICGN 141 Life in the Sea**2 (1-2-3)****Prerequisites: -**

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: -**

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: -**

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: -**

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: -**

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 120 Mind and Body: Navigating the Interplay of Brain, Behavior, and Well-being 2 (2-0-4)**Prerequisites: -**

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 168 Faith a Lifestyle**2 (2-0-4)****Prerequisites: -**

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 171 Digital Campaign for Gender Issues**2 (2-0-4)****Prerequisites: -**

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 activism & 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: -**

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: -**

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: -**

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: -**

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: -**

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: -**

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: -**

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: -**

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: -**

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: -**

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: -**

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: -**

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: -**

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 101 Technology-Enhanced Learning: Harnessing AI & Digital Tools for Academic Success**2 (2-0-4)****Prerequisites: -**

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: -**

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 105 No-Code Application Development**2 (2-0-4)****Prerequisites: -**

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: -**

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: -**

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



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