Mahidol University
International College

MINORS & CERTIFICATES

Prepared for
Students with I.D.

63xxxxx - 67xxxxx







As of 23rd November, 2026

VISION

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

MUIC MISSION





Enriching lives

Expanding potentials

Shaping futures

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BUSINESS

Business Economics

Minors

- Minor in Business Administration - for non-Business Administration Program

To minor in Business Administration, students need to complete the following **FIVE courses** (20 Credits):

ICMB 205 Microeconomics **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 **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)
	4 (4-0-8)
ICMB 200 Business Mathematics	4 (4-0-8)
ICMB 201 Business Statistics	4 (4-0-8)
ICMB 207 Management of Business Information	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 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)
ICMB 402 Business Strategy	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.

- Minor in Business Economics

To minor in Business Economics, students need to complete the following **FIVE courses** (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 Market Structures and Pricing Strategies	4 (4-0-8)
ICBE 472 Economic Policy Analysis	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.

Finance

Minor

- Minor in Finance

To minor in Finance, students need to complete the following **FIVE courses** (20 Credits):

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)

International Business

Minor

- Minor in International Business

To minor in International Business, students need to complete the following **FIVE courses** (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)

Marketing

Minor

- Minor in Marketing

To minor in Marketing, students need to complete the following **FIVE courses** (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)



FINE AND APPLIED ARTS

Communication Design

Minors

- Minor in Creative Animation

To minor in Creative Animation, students need to complete the following **FIVE courses** (20 Credits):

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 111 /ICFA 336 Cinematic Language and Its Application	4 (4-0-8)

Note I: Student with I.D. 63 and 64 should register ICFA 336
Student with I.D. 65 onwards should register ICFA 111

- Minor in Film Arts

To minor in Film Arts, students must complete any **FIVE** of the following courses (totaling 20 credits):

ICFA 233 Storytelling by Design	4 (4-0-8)
ICFA 111/ICFA 336 Cinematic Language and Its Application	4 (4-0-8)
ICFA 112 Darkroom Photography	4 (2-4-6)
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)

Note I: Student with I.D. 63 and 64 should register ICFA 336
Student with I.D. 65 onwards should register ICFA 111

Certificates

- ## Certificate in 2D Animation

The course offers fundamental tools for designing and developing concepts of 2D animation including character for narratives with key principles of design, basic terminology and software tools for basic 2D animation production process (**12 Credits - Intermediate Level**):

ICCD 232 Moving Image by Design	4 (2-4-6)
ICCD 334 Animation Principle and Production	4 (2-4-6)
ICCD 335 Character and Concept Design	4 (2-4-6)

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

- ## Certificate in Creative Illustration

Study of illustration process from production of thumbnails to finished artwork. Also focus on an exploration of traditional techniques and methods relating to illustration and use of multiple techniques, applications, and platforms with current technology to create quality projects (**12 Credits - Advanced Level**):

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)

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

- ## Certificate in Integrated Advertising Design

Study the development and the creation of advertising campaign. Also focus on digital media principles, current techniques, applications, and platforms in designing basic digital promotional tools and topical exploration of issues, questions or challenges facing Communication Design Professionals (**12 Credits - Advanced Level**):

ICCD 223 Current Issue in Design	4 (4-0-8)
ICCD 351 Online Communication Execution Planning	4 (2-4-6)
ICCD 353 Advertising Campaign Design	4 (2-4-6)

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

Certificate in International Design Experience

An experiential learning for a relatively short duration learning focuses on professional design culture and challenges including cultural heritage and contemporary design practice; design terminology; applications of ecofriendly and sustainable design; new and innovative technologies and current design trends; digital, interactive, and online platforms (**12 Credits - Advanced Level**):

ICCD 280 Study trips: Regional **OR** ICCD 281 Study Trips: International	4 (2-4-6)
ICCD 346 International Design Language	4 (4-0-8)
Partner Institution Course	

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

Certificate in UI in Practice

The advance design course about digital communication process and practice including the principle of digital media, communication content and structure development focuses on user interface (UI), which involves graphics composition and new media design process which includes various applications, techniques, and platforms (**12 Credits - Advanced Level**):

ICCD 236 Online Culture Communication and Application	4 (2-4-6)
ICCD 321 Infographics	4 (2-4-6)
ICCD 342 New Media Design	4 (2-4-6)

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

Media and Communication

Minor

- Minor in Media and Communication - for non-Media and Communication Program

To minor in Media and Communication, students need to complete at least **FIVE 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)



HUMANITIES AND LANGUAGES

Intercultural Studies and Languages

Minors

- Minor in Applied Ethics, Behavioral Analysis and Social Engineering

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 (20 Credits):

1. Students who wish to obtain a minor in 'Applied Ethics and Behavioral Science' need to first complete the following **TWO 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 **THREE 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)

- Minor in Cognitive Science: Language, Mind, and Brain - for non-Intercultural Studies and Languages Program

The Intercultural Studies and Languages program (ICIC) offers a minor in 'Cognitive Science: Language, Mind, and Brain' to students from all majors in Mahidol University International College. Students who wish to obtain a minor in 'Cognitive Science: Language, Mind, and Brain' need to complete courses as follows (**20 Credits**):

1. Students who wish to obtain a minor in 'Cognitive Science: Language, Mind, and Brain' need to first complete the following **FOUR compulsory courses** (16 Credits):

ICSP112 Introduction to Psychology	4 (4-0-8)
ICIC252 Formal Reasoning: Human and Artificial	4 (4-0-8)
ICIC258 Language: The Human Essence	4 (4-0-8)
ICIC453 Research Seminar*	4 (4-0-8)

Pre-requisite: ICIC252 Formal Reasoning: Human and Artificial

**To be taken as the last course in the minor*

2. Students who wish to obtain a minor in 'Cognitive Science: Language, Mind, and Brain' need to complete the following **ONE elective course** (4 Credits):

ICSP251 Introduction to Developmental Psychology I	4 (4-0-8)
ICSP257 Evolutionary Psychology	4 (4-0-8)
ICIC371 Minds and Machines	4 (4-0-8)
ICIC376 Information, Knowledge, Representation	4 (4-0-8)
ICBI341 Neurobiology	4 (4-0-8)

- Minor in Cognitive Science: Language, Mind, and Brain - for Intercultural Studies and Languages Program

The Intercultural Studies and Languages program (ICIC) offers a minor in 'Cognitive Science: Language, Mind, and Brain' to students from all majors in Mahidol University International College. Students who wish to obtain a minor in 'Cognitive Science: Language, Mind, and Brain' need to complete courses as follows (**20 Credits**):

1. Students who wish to obtain a minor in 'Cognitive Science: Language, Mind, and Brain' need to first complete the following **TWO compulsory courses** (8 Credits):

ICSP112 Introduction to Psychology	4 (4-0-8)
ICIC453 Research Seminar*	4 (4-0-8))

Pre-requisite: ICIC252 Formal Reasoning: Human and Artificial

**To be taken as the last course in the minor*

2. Students who wish to obtain a minor in 'Cognitive Science: Language, Mind, and Brain' need to complete the following **THREE elective courses** (12 Credits):

ICSP251 Introduction to Developmental Psychology I	4 (4-0-8)
ICSP257 Evolutionary Psychology	4 (4-0-8)
ICIC371 Minds and Machines	4 (4-0-8)
ICIC376 Information, Knowledge, Representation	4 (4-0-8)
ICBI341 Neurobiology	4 (4-0-8)

Minor in Critical Cultural Literacy

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 **FIVE courses** from the list below (20 Credits):

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)

Minor in Foreign Language – Chinese

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 **FIVE courses** listed below (20 Credits):

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 I: 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.
Note II: 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.

Minor in Foreign Language – French

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 **FIVE courses** listed below (20 Credits):

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 I: 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.
Note II: 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.

• Minor in Foreign Language – German

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 **FIVE courses** listed below (20 Credits):

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 I: 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.
Note II: 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.

• Minor in Foreign Language – Japanese

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 **FIVE courses** listed below (20 Credits):

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 I: 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.
Note II: 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.

• Minor in Foreign Language – Spanish

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:

ICIC 341 Intermediate Spanish I – Language and Culture	4 (4-0-8)
ICIC 342 Intermediate Spanish I – 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 I: 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.
Note II: 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.

• Minor in Human and Artificial Intelligence

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 (**20 Credits**):

1. Students who wish to obtain a minor in 'Human and Artificial Intelligence' need to first complete the following **TWO compulsory courses** (8 Credits):

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 **THREE courses** from the list below (12 Credits):

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)

Certificates

- ## Certificate in Elementary Chinese

This module develops the abilities to conduct basic communication exchanges about personal topics in Chinese in consideration of the cultural and social aspects (Reference of the HSK Level 2 – Chinese Language Proficiency Test) (**12 Credits - Beginner Level**):

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)

- ## Certificate in Elementary French

This module develops the abilities to conduct basic communication exchanges about personal topics in French in consideration of the cultural and social aspects. (Level A1 of the Common European Framework of Reference for Languages) (**12 Credits - Beginner Level**):

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)

- ## Certificate in Elementary German

This module develops the abilities to conduct basic communication exchanges about personal topics in German in consideration of the cultural and social aspects. (Level A1 of the Common European Framework of Reference for Languages) (**12 Credits - Beginner Level**):

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)

- ## Certificate in Elementary Japanese

This module develops the abilities to conduct basic communication exchanges about personal topics in Japanese in consideration of the cultural and social aspects. (Reference of the N4 Level of the Japanese Language Proficiency Test) (**12 Credits - Beginner Level**):

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)

• Certificate in Elementary Spanish

This module develops the abilities to conduct basic communication exchanges about personal topics in Spanish in consideration of the cultural and social aspects (**12 Credits - Beginner Level**):

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)

• Certificate in Elementary Thai - for foreign students only

This module develops the abilities to conduct basic communication exchanges about personal topics in Thai in consideration of the cultural and social aspects. (Beginner Level of the Thai Competency Test for Foreigners) (**12 Credits - Beginner Level**):

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)

• Certificate in Pre-intermediate Chinese

This module develops the abilities to conduct simple and effective communication exchanges about personal and routine topics in Chinese in consideration of cultural and social aspects. (Reference of the HSK Level 3 – Chinese Language Proficiency Test) (**12 Credits - Pre-intermediate Level**):

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)

• Certificate in Pre-intermediate French

This module develops the abilities to conduct simple and effective communication exchanges about personal and routine topics in French in consideration of cultural and social aspects. (Level A2 of the Common European Framework of Reference for Languages) (**12 Credits - Pre-intermediate Level**):

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)

• Certificate in Pre-intermediate German

This module develops the abilities to conduct simple and effective communication exchanges about personal and routine topics in German in consideration of cultural and social aspects. (Level A2 of the Common European Framework of Reference for Languages) (**12 Credits - Pre-intermediate Level**):

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)

• Certificate in Pre-intermediate Japanese

This module develops the abilities to conduct simple and effective communication exchanges about personal and routine topics in Japanese in consideration of cultural and social aspects. (Reference of the N4 Level of the Japanese Language Proficiency Test) (**12 Credits - Pre-intermediate Level**):

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)

• Certificate in Pre-intermediate Spanish

This module develops the abilities to conduct simple and effective communication exchanges about personal and routine topics in Spanish in consideration of cultural and social aspects. (Level A2 of the Common European Framework of Reference for Languages) (**12 Credits - Pre-intermediate Level**):

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)



SOCIAL SCIENCE

International Relations and Global Affairs

Minors

The Social Science Division offers three minor programs:
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 in International Relations and Global Affairs can only take the Psychology minor offered by the Social Science Division.

• Minor in International Relations

The International Relations minor allows students to add value to their major degree studies by understanding an interdisciplinary approach to a specialized field that intersects with their primary studies. Students can choose **FIVE courses** (20 Credits) from the following to complete the International Relations minor:

ICIR 101 Approaches to International Relations and Global Affairs*	4 (4-0-8)
is Required for all International Relations minors	
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 may choose any **FOUR courses** (12 Credits) in addition to ICIR 101 to complete the International Relations minor.

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

- ## Minor in Global Affairs

The Global Affairs minor allows students to add depth to their major degree studies by understanding an interdisciplinary approach to a specialized field that intersects with their primary studies. Students can choose **FIVE courses** (20 Credits) from the following to complete the 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 213 Conflict, War and Peace Studies	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 212 Social Institutions of the Modern World	4 (4-0-8)
ICIR 214 Perspectives on Thailand	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)

- Minor in Psychology - **For Student with I.D. 63 - 65**

The Psychology minor allows students to pursue interests in psychology that can be applied and add value to their major degree. Students can choose **FIVE courses** (20 Credits) from the following to complete the Psychology minor:

ICSP 112 Introduction to Psychology*	4 (4-0-8)
**is required for all Psychology minors*	
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)

- Minor in Psychology - **For Student with I.D. 66 - 67**

ICSP 112 Introduction to Psychology	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 259 Developmental Psychology	4 (4-0-8)
ICSP 260 Psychology of Memory	4 (4-0-8)
ICSP 261 Paranormal Psychology	4 (4-0-8)
ICSP 262 Coaching Psychology	4 (4-0-8)
ICSP 350 Evolutionary Psychology	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 357 Psychology of Motivation	4 (4-0-8)
ICSP 359 Foundations of Counseling Skills	4 (4-0-8)
ICSP 360 Psychology of Marketing and Consumer Behavior	4 (4-0-8)
ICSP 361 Overcoming Stereotypes, Prejudice and Discrimination	4 (4-0-8)
ICSP 362 Psychology of Emotional Well-being	4 (4-0-8)

Certificate

- ## Certificate in Marketing for Politics

This module combines knowledge and skills in marketing and politics. The Certificate brings together hard skills of data collection and strategies used for analyzing data applicable to marketing strategies to reach target groups as well as analytical tools to study of politics (**12 Credits - Beginner Level**):

ICMB 222 Principles of Marketing	4 (4-0-8)
ICIR 102 Approaches to Comparative Politics and Systems **OR** ICIR 223 Democracy as a Political System*	4 (4-0-8)
ICIR 309 Public Diplomacy and Nation Branding – Capstone course (project-based learning)	4 (4-0-8)

Note: *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.



SCIENCE

Applied Mathematics

Minors

- 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):

ICMA 214 Ordinary Differential Equations	4 (4-0-8)
ICMA 216 Calculus III A	2 (2-0-4)
ICMA 217 Calculus III B	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)

Note: 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):

ICMA 151 Statistics for Science I **OR** ICMB 201 Business Statistics	4 (4-0-8)
ICMA 356 Decision Analysis	4 (4-0-8)
ICIC 355 Judgment and decision making	4 (4-0-8)
ICIC 358 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):

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)

Certificate

Certificate in Actuarial Mathematics

To earn certificate in actuarial mathematics, students need to complete the following 12 credits (**Beginner Level**):

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)

Biological Sciences

Minor

- Minor in Biological Sciences

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 (**20 Credits**):

1. Compulsory course (4 Credits):

ICBI 121 Biology I	4 (3-2-7)

2. Elective courses (16 Credits):

ICBI 207 Ethics for Bioscience	4 (4-0-8)
ICBI 213 Genetics	4 (4-0-8)
ICBI 214 General Microbiology	4 (4-0-8)
ICBI 216 Cell Biology	4 (4-0-8)
ICBI 219 Design Thinking in Biological Sciences	2 (2-0-4)
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 271 General Microbiology Laboratory	2 (0-4-2)
ICBI 308 Molecular Biology	4 (4-0-8)
ICBI 381 Evolutionary Biology	4 (4-0-8)
ICBI 383 Systematic Biology and Biodiversity	2 (0-4-2)
ICBI 416 Community Health Innovation	4(4-0-8)
ICBI 417 Design Thinking in Health Innovation	4(4-0-8)
ICBI 418 Case Studies in Health Innovation	4(4-0-8)
ICBI 419 Cutting-Edge Technology for Biodesign	4(2-4-6)
ICBI 420 Entrepreneurship and Innovation in Science	4(4-0-8)
ICBI 499 Research Project and Seminar in Biological Sciences	8 (0-16-8)
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)

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

To minor in Bioinformatics, students need to take at least **FIVE courses** (20 Credits) 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)

• Minor in Designing Health Innovation

To minor in Designing Health Innovation, students need to take at least **FIVE courses** (20 Credits) from the below list:

ICBI 416 Community Health Innovation	4 (4-0-8)
ICBI 417 Design Thinking in Health Innovation	4 (4-0-8)
ICBI 418 Case Studies in Health Innovation	4 (4-0-8)
ICBI 419 Cutting-Edge Technology for Biodesign	4 (2-4-6)
ICBI 420 Entrepreneurship and Innovation in Science	4 (4-0-8)

Note: Students are required to complete the prerequisite before enrolling in the course.

Chemistry

Minor

- Minor in Chemistry - for non-Chemistry Program

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:

1. 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)

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)
CCH 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 (0-4-2)
ICCH 221 Organic Chemistry I	4 (4-0-8)
ICCH 222 Organic Chemistry II	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 (2-0-4)
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 (1-0-2)
ICCH 401 Chemical Unknown Detective	2 (0-4-2)

ICCH 402 Undergraduate Thesis	6 (0-12-6)
ICCH 403 Field study A	1 (0-3-1)

Note: 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

- ## Certificate in Chemistry - for non-Chemistry Program

To receive a certificate in Chemistry, students need to complete at least **12 credits** chemistry courses in additional to their existing requirement(s) for their respective major(s), minor(s) or certificate(s). The list of available courses is the same as for minor:

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 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 (0-4-2)
ICCH 221 Organic Chemistry I	4 (4-0-8)
ICCH 222 Organic Chemistry II	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 (2-0-4)
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 (1-0-2)
ICCH 401 Chemical Unknown Detective	2 (0-4-2)
ICCH 402 Undergraduate Thesis	6 (0-12-6)
ICCH 403 Field study A	1 (0-3-1)

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

Computer Science

Minors

- Minor in Applied Data Science

To obtain a minor, the students must complete **FIVE courses** (20 Credits) as specified below:

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)

- Minor in Computer Science - for non-Computer Science Program

To obtain a minor, the students must complete **FIVE courses** (20 Credits) as specified below:

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 by following courses:	4 (x-x-x)
ICCS 205 Numerical Computation	4 (4-0-8)
ICCS 225 Database Foundations	4 (4-0-8)
ICCS 227 Principles of Computer Systems and Architecture	4 (4-0-8)
ICCS 261 Principles of Data Science	4 (4-0-8)
ICCS 271 Interaction Design	4 (4-0-8)
ICCS 302 Human Computer Interaction and Visualization	4 (4-0-8)
ICCS 303 Competitive Programming	4 (4-0-8)
ICCS 309 Scientific Research and Presentations	4 (4-0-8)
ICCS 311 Functional and Parallel Programming	4 (4-0-8)
ICCS 312 Algorithms and Tractability	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 370 Software System Construction	4 (4-0-8)
ICCS 371 Scalable Systems	4 (4-0-8)
ICCS 372 Software Engineering	4 (4-0-8)
ICCS 383 Work-Integrated Education	6 (0-0-216)
ICCS 384 Work-Integrated Education	2 (0-0-72)
ICCS 402 Senior Project in Computer Science I	4 (4-0-8)
ICCS 403 Senior Project in Computer Science II	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)

- # Minor in Web/Mobile Developer

To obtain a minor, the students must complete **FIVE courses** (20 Credits) as specified below:

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 **OR** ICCS 448 Mobile Application Programming	4 (4-0-8)

Certificates

- ## Certificate in AI and Analytics

Using machine learning techniques to discover insights, patterns, and relationships in the data (**12 Credits - Advanced Level**):

ICCS 361 Data Mining	4 (4-0-8)
ICCS 371 Scalable Systems	4 (4-0-8)
ICCS 461 Machine Learning	4 (4-0-8)

- ## Certificate in Computer Science Foundation

Building strong knowledge as skills necessary for pursuing a career in computing fields, such as software engineer and data scientist (**12 Credits - Beginner Level**):

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)

- ## Certificate in Software Platform Engineers

Learn to manage infrastructure components in organizations and get systems adapted to a wider user base (**12 Credits - Advanced Level**):

ICCS 320 Networks	4 (4-0-8)
ICCS 322 Operating Systems Design and Implementation **OR** ICCS 324 Computer Architectures	4 (4-0-8)
ICCS 371 Scalable Systems	4 (4-0-8)

- ## Certificate in UX, UI, and How to Make It Work

Learn to make beautiful app designs that are also functional and practical towards the user's experience (**12 Credits - Advanced Level**):

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 **OR** ICCS 448 Mobile Application Programming	4 (4-0-8)

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

Food Science and Technology

Minor

- Minor in Food Innovation and Design - for non-Food Science Program

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)

Certificate

- Certificate in Food Innovation and Design

This certificate is aimed to offer to students who are interested in innovation of food product. Students will gain knowledge on developing innovative food product, processing technologies, food quality, safety, and marketing of food products and service industries. Students must complete these following courses:

ICFS 327 Food Quality	2 (2-0-4)
ICFS 345 Food Product and Process Design	4 (4-0-8)
ICFS 413 Marketing of Food Product and Services	2 (2-0-4)
ICFS 439 Food Product Innovation	4 (4-0-8)

Physics

Minor

- Minor in Physics - for non-Physics Program

To minor in Physics, students need to complete the following courses (**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

- Certificate in Gadget Developer

The physics program offers a certificate in gadget developer. Students are required to complete 12 credits (**Beginner Level**) from the following courses:

ICPY 102 Physics II **OR** ICPY 322 Electricity and Magnetism	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.
Note II: Please check the criteria and requirement before applying for the certificate



TOURISM AND HOSPITALITY MANAGEMENT

Travel and Service Business Entrepreneurship

Minors

- Minor in Travel and Service Business Entrepreneurship - for non-Travel and Service Business Entrepreneurship Program

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):

1. 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)

2. Elective subjects (8 Credits):

ICTB 202 Principles of Management	4 (4-0-8)
ICTB 203 Consumer Behavior for Travel and Service Businesses	4 (4-0-8)
ICTB 204 Business Communication	4 (4-0-8)
ICTB 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 291 Internship I	8 (0-40-8)
ICTB 292 Internship I	8 (0-24-8)
ICTB 301 People and Talent Management	4 (4-0-8)
ICTB 302 Business Laws for Travel and Service Businesses	4 (4-0-8)
ICTB 303 Digital Transformation for Travel and Service Businesses	4 (4-0-8)
ICTB 304 Service Management and Experience Design	4 (4-0-8)
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)
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)
ICTB 325 Special Topic in Hotel Management	4 (4-0-8)
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)
ICTB 336 Special Topic in Food and Restaurant Management	4 (4-0-8)
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)
ICTB 346 Special Topic in Tourism and Management	4 (4-0-8)
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)
ICTB 356 Special Topic in Event Management	4 (4-0-8)
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)
ICTB 365 Special Topic in Health and Wellness Management	4 (4-0-8)

- Minor in Event Management, Design and Production

ICCD 201 Conceptual Development	4 (2-4-6)
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 355 Creative Event Production	4 (3-2-7)

• Minor in Food Service and Wine Business

To minor in Food Service and Wine Business, students need to complete the following courses (**20 Credits**):

ICFS 365 Food Safety and Sanitation Management	4 (4-0-8)
ICFS 439 Food Product Innovation **OR** ICTB 334 Restaurant Marketing and Branding Strategies	4 (4-0-8)
ICTB 331 Culinary Operation Management **OR** ICTB 332 Baking and Pastry Business	4 (3-2-7)
ICTB 344 Wine Studies and Wine Tourism	4 (3-2-7)
ICTB 335 Restaurant Business Planning and Operations*	4 (4-0-8)

**Note: ***This minor must end with ICTB 335 Restaurant Business Planning and Operations

• Minor in Hospitality Design Perspectives

ICCD 119 2D Design Principles	4 (2-4-6)
ICCD 210 Communication Design Studio	4 (2-4-6)
ICTB 321 Room Division Operation Management	4 (4-0-8)
ICTB 331 Culinary Operation Management	4 (3-2-7)
ICTB 323 Hospitality Facilities Design	4 (3-2-7)

**Note: ***This minor must end with ICTB 323 Hospitality Facilities Design

Certificates

• Certificate in Event Planning and Design

Students are required to complete **12 credits** (**Beginner, Pre - intemediate, Intermediate Level**) from the following courses:

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)

Certificate in Hotel Design Perspectives

Students are required to complete **12 credits** (**Beginner, Pre - intemediate, Intermediate Level**) from the following courses:

ICCD 119 2D Design Principles	4 (2-4-6)
ICTB 321 Room Division Operation Management	4 (4-0-8)
ICTB 323 Hospitality Facilities Design	4 (3-2-7)

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

COURSE

MINORS & CERTIFICATES FOR I.D. 63 - 67

descriptions

...Short course descriptions, including prerequisites for each course, are available in the academic catalog. Students must thoroughly review the course prerequisites to ensure they possess the necessary background knowledge and skills for successful participation....

Course Descriptions

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

ICBE 371 Strategic Choices of Consumers and Firms **4 (4-0-8)**

Prerequisite: -

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

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

Prerequisite: -

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 207 Ethics for Bioscience **4 (4-0-8)**

Prerequisite: 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 213 Genetics **4 (4-0-8)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: ICCH 225 Biochemistry

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

ICBI 219 Design Thinking in Biological Sciences **2 (2-0-4)**

Prerequisite: ICBI 121 Biology I

Principles and practices of design thinking as applied to biological sciences; creative problem-solving and innovation; structured approach to identifying, analyzing, and addressing complex biological challenges; stages of design thinking—empathize, define, ideate, prototype, and test; concepts to real-world biological problems

ICBI 221 Animal Biology **4 (3-2-7)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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 308 Molecular Biology **4 (4-0-8)**

Prerequisite: 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 325 Special Topics in Bioinformatics and Molecular Genetics **4 (4-0-8)**

Prerequisite: ICBI 211 Genetics and Molecular Biology I

Exploration of specific topics in bioinformatics and molecular genetics and/or a specific sub discipline in bioinformatics; class/group discussion on peer-review articles

ICBI 341 Neurobiology **4 (3-2-7)**

Prerequisite: ICBI 211 Genetics and Molecular Biology I

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

ICBI 381 Evolutionary Biology **4 (4-0-8)**

Prerequisite: 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 **4 (4-0-8)**

Prerequisite: 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 416 Community Health Innovation **4 (4-0-8)**

Prerequisite: ICBI 219 Design Thinking in Biological Sciences

Survey of community health status; primary health care concept; health system analysis and health manpower development; biodesign; needs identifications; product and/or process to address health problems; health innovations and prototyping

ICBI 417 Design Thinking and Health Innovation **4 (4-0-8)**

Prerequisite: ICBI 219 Design Thinking in Biological Sciences

Designing idea thinking ideas; customers' problems related to biodesigning solutions for healthcare and wellness models; the intellectual property; customers and customers' problem validation; the Customer Journey Map; the Stakeholder Map; the Lean Canvas; showcases with entrepreneurial experts

ICBI 418 Case Studies in Health Innovation **4 (4-0-8)**

Prerequisite: ICBI 219 Design Thinking in Biological Sciences

Case studies in health; problem identification; stakeholder and SWOT analyses; problem solving in health; knowledge transfer and innovative solutions in health; innovation gaps and alternative solutions; translation and commercialization of ideas

ICBI 419 Cutting-Edge Technology for Biodesign **4 (2-4-6)**

Prerequisite: ICBI 219 Design Thinking in Biological Sciences

Specific skills for bio innovation and prototype designs in health

ICBI 420 Entrepreneurship and Innovation in Science **4 (4-0-8)**

Prerequisite: ICBI 219 Design Thinking in Biological Sciences

Developing the entrepreneur mindset through life science and innovation; from academia to entrepreneur, current trends in biomedical industry; how to do a startup project; find opportunities and passion driving innovation; considering factors for successful entrepreneurship, including business plans, finding funds, regulatory requirements, market needs; ethics and professionalism; intellectual property and risks

ICBI 499 Research Project and Seminar in Biological Sciences **8 (0-16-8)**

Prerequisite: 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 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 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 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 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 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 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 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 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 334 Animation Principle 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 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 **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

ICCH 101 General Chemistry I **4 (4-0-8)**

Prerequisite: -

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)**

Prerequisite: 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)**

Prerequisite: MU LabPass **OR** lecturer permission

Laboratory practicals for general chemistry: measurements; stoichiochemistry; 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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 (0-4-2)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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 Techniques **2 (0-4-2)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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 340 Current Topics in Chemistry A **4 (4-0-8)**

Prerequisite: ICCH 102 General Chemistry II

The frontier in analytical chemistry, applied chemistry or multidisciplinary chemistry

ICCH 345 Special Topics in Chemistry A **2 (0-4-2)**

Prerequisite: ICCH 102 General Chemistry II

The frontier in analytical chemistry, applied chemistry or multidisciplinary chemistry

ICCH 350 Contemporary Topics in Chemistry A **1 (1-0-2)**

Prerequisite: ICCH 102 General Chemistry II

The frontier in analytical chemistry, applied chemistry or multidisciplinary chemistry

ICCH 355 Special Practice in Chemistry A **1 (0-2-1)**

Prerequisite: ICCH 103 Integrated Laboratory in Chemistry

The frontier laboratory techniques in analytical chemistry, applied chemistry or multidisciplinary chemistry

ICCH 401 Chemical Unknown Detective **2 (0-4-2)**

Prerequisite: : 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)**

Prerequisite: 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)**

Prerequisite: 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

ICCS 101 Introduction to Computer Programming **4 (3-2-7)**

Prerequisite: -

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 161 Introduction to Data Science **4 (3-2-7)**

Prerequisite: 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 204 Data Structure and Object-Oriented Programming **4 (3-2-7)**

Prerequisites: ICCS 101 Introduction to Computer Programming **OR** ICPY 221 Computer Programming for Physics

Corequisites: 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 205 Numerical Computation **4 (4-0-8)**

Prerequisite: 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)**

Prerequisite: 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 Abstractions **4 (3-2-7)**

Prerequisite: 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; upper bound efficiency analysis using big-O; elements of Java programming; the use of an integrated development environment

ICCS 225 Database Foundations **4 (4-0-8)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: ICCS 208 Data Structures and Abstractions

Protocols for web-based application; HTML; DOM; CSS; JavaScript; authentication; authorization; singlepage 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: Completed at least 96 credits

Working as an actual employee under guidance of course coordinator and supervisors for at least 12 continuous weeks

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

Prerequisite: 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 research/development project proposed in the prerequisite course under supervision of the advisor; delivery of a written report and an oral presentation of the senior project proposal

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

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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 **4 (4-0-8)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: Approval of the instructor

Topic(s) from areas of computer science chosen according to current research and industrial trends

ICFA 112 Darkroom Photography **4 (2-4-6)**

Prerequisite: -

Introduction, practice, application of foundational photography darkroom, craft procedure; photo development; hands-on photo print-making; non-digital, traditional photography

ICFA 232 Moving Images by Design **4 (4-0-8)**

Prerequisite: -

An introduction to the international design world; focusing on the 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

ICFA 233 Storytelling by Design **4 (4-0-8)**

Prerequisite: -

An introduction, practice and an application of storytelling languages and structured craft approach; including the art of storytelling, elements and structure of a story, narrative techniques, the story development in multiple films and media-related platforms; the creative application to any of the following screenwriting, short films, televisions, and/or design related outcomes, such as campaigns, posters, adverts, applications, products, etc.

ICFA 334 Animation Principles and Production **4 (4-0-8)**

Prerequisite: -

An introduction, practice and application to the twelve principles of animation; including familiarity with key principles of design and animation and an understanding of simple narrative structure; practical creative experience in the development and construction processes of the animation production: hand-drawn and stop motion techniques; technical proficiency with the media and animation software; understanding copyright and privacy issues in relation to the content, audience and distribution of animation

ICFA 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 character for narratives; including familiarity with key principles of design, aesthetics and the basic understanding of the simple narrative structure; understanding the development and construction processes; technical proficiency with suitable media and software processes for designing concepts and character bibles for various media platforms and audiences

ICFA 336 Cinematic Language 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

ICFA 337 Thai and ASEAN Cinema **4 (4-0-8)**

Prerequisite: -

An introduction, practice and an application of languages to critical thinking and analyzing 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

ICFA 338 Short Film Production **4 (4-0-8)**

Prerequisite: -

An introduction, practice and an application of short film languages and the structured craft approach; including narrative storytelling, film making techniques, and production practices, hands-on film pre-production, production and post; short films, research, analysis, presentation

ICFA 339 Film Genre and Gender **4 (4-0-8)**

Prerequisite: -

The critical thinking and analysis practice of reading and decoding genre film texts; examining key film languages and textual examples to discuss issues of gender and gender representations, including genre theories; gender theories and film feminism; an analysis of key film texts; the development of skills in research, writing and analytical thinking

ICFS 327 Food Quality **2 (2-0-4)**

Prerequisite: -

Food Quality, pigment in food; food additives; parameters influencing food quality

ICFS 345 Food Product and Process Design **4 (4-0-8)**

Prerequisite: -

Food processing; design new food product processing; evaluation of the new product characteristics to target consumers

ICFS 365 Food Safety and Sanitation Management **4 (4-0-8**

Prerequisite: -

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)**

Prerequisite: -

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; ethicsin conducting consultancy and auditing as perthe food safety management system

ICFS 413 Marketing of Food Product and Services **2 (2-0-4)**

Prerequisite: 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 439 Food Product Innovation **4 (4-0-8)**

Prerequisite: -

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

ICGL 101 Elementary German I **4 (4-0-8)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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 productsin 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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 161 Elementary Thai I **4 (4-0-8)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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 201 Pre-intermediate German I **4 (4-0-8)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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 222 Pre-intermediate French II **4 (4-0-8)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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 232 Pre-intermediate Chinese II **4 (4-0-8)**

Prerequisite: 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 233 Pre-intermediate Chinese III **4 (4-0-8)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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

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

Prerequisite: -

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)**

Prerequisite: -

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)**

Prerequisite: -

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

ICIC258 Language: The Human Essence **4 (4-0-8)**

Prerequisite: -

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)**

Prerequisite: -

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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: : 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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, plusque 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: -

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)**

Prerequisite: -

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 354 Women and Gender Studies **4 (4-0-8)**

Prerequisite: -

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)**

Prerequisite: -

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)**

Prerequisite: -

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)**

Prerequisite: -

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)**

Prerequisite: -

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 364 Literary Theory and Criticism **4 (4-0-8)**

Prerequisite: -

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 366 Popular Culture **4 (4-0-8)**

Prerequisite: -

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)**

Prerequisite: -

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)**

Prerequisite: -

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 371 Minds and Machines **4 (4-0-8)**

Prerequisite: -

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)**

Prerequisite: -

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)**

Prerequisite: -

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 375 Behavior, Ethics and Technology **4 (4-0-8)**

Prerequisite: -

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)**

Prerequisite: -

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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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 453 Research Seminar **4 (4-0-8)**

Prerequisite: 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)**

Prerequisite: -

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)**

Prerequisite: -

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)**

Prerequisite: -

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)**

Prerequisite: 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; decolonialization and the 'Third World'; major regional powers; the Soviet collapse and its repercussions; regional conflicts in the Middle East, South Asia, and the Balkans; economic, technological and scientific developments; the great consumer boom; OPEC and oil prices; the World Bank and IMF; the EU and other economic regionalisms; world poverty; new political movements: Civil Rights, feminism, radical Islam; Ethnic conflicts and nationalism; 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)**

Prerequisite: -

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)**

Prerequisite: -

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)**

Prerequisite: -

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)**

Prerequisite: -

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)**

Prerequisite: -

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)**

Prerequisite: -

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)**

Prerequisite: -

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 midnineteenth century to the present day; with a particular focus on analysing the decision-making process in a selected case study

ICIR 217 Culture and Power **4 (4-0-8)**

Prerequisite: -

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)**

Prerequisite: -

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)**

Prerequisite: -

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)**

Prerequisite: -

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)**

Prerequisite: -

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)**

Prerequisite: -

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)**

Prerequisite: -

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)**

Prerequisite: -

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)**

Prerequisite: -

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)**

Prerequisite: -

Culture in the modern world; the study of symbol; how culture is defined and created; modernity, postmodernity, 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)**

Prerequisite: -

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)**

Prerequisite: -

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 237 International Economic Relations **4 (4-0-8)**

Prerequisite: -

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 238 Politics and Identity in Cold War Europe, 1945-1991 **4 (4-0-8)**

Prerequisite: -

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 239 Nations and Nationalisms **4 (4-0-8)**

Prerequisite: -

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 302 ASEAN and Southeast Asian Regionalism **4 (4-0-8)**

Prerequisite: -

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)**

Prerequisite: -

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)**

Prerequisite: -

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)**

Prerequisite: -

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)**

Prerequisite: -

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)**

Prerequisite: -

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)**

Prerequisite: -

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)**

Prerequisite: -

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)**

Prerequisite: -

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)**

Prerequisite: -

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)**

Prerequisite: -

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)**

Prerequisite: -

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)**

Prerequisite: -

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)**

Prerequisite: -

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)**

Prerequisite: -

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)**

Prerequisite: -

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)**

Prerequisite: -

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)**

Prerequisite: -

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 327 Ethnicity and Representation in International Affairs **4 (4-0-8)**

Prerequisite: -

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)**

Prerequisite: -

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)**

Prerequisite: -

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 334 Terrorism, Counterterrorism and Political Violence **4 (4-0-8)**

Prerequisite: -

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

ICMA 151 Statistics for Science I **4 (4-0-8)**

Prerequisite: Placement test OR ICMA 100 Foundation Mathematics

Statistical ideas and concepts; probability, conditional probability; distribution functions; expected value; estimators, good estimators; hypothesis testing

ICMA 214 Ordinary Differential Equations **4 (4-0-8)**

Prerequisite: -

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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: -

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)**

Prerequisite: -

Linear equations, system of linear equations, matrices, Euclidean spaces, traces, determinants

ICMA 224 Linear Algebra B **2 (2-0-4)**

Prerequisite: -

General vector spaces, linear transformations, eigenvalues and eigenvectors, Inner product spaces

ICMA 242 Discrete Mathematics **4 (4-0-8)**

Prerequisite: -

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

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: -

Real and complex number systems; functions; continuity; convergence; differentiation; integration

ICMA 323 Partial Differential Equations **4 (4-0-8)**

Prerequisite: -

Heat equation, method of separation of variables, Fourier series, wave equation, Laplace's equation

ICMA 335 Complex Variables **4 (4-0-8)**

Prerequisite: -

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, Rouche's Throrem

ICMA 338 Numerical Methods **4 (4-0-8)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: ICMA 216 Calculus III A **AND** ICMA 217 Calculus III B

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)**

Prerequisite: -

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)**

Prerequisite: 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)**

Prerequisite: 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 435 Regression Analysis **4 (4-0-8)**

Prerequisite: ICMA 151 Statistics for Science I

Simple and multiple regression, diagnostics, model selection, models with categorical variables

ICMA 424 Abstract Algebra **4 (4-0-8)**

Prerequisite: -

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)**

Prerequisite: 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

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 Principles 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

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 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 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

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 Investment 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 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

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 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

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 Behavior 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 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 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 102 Physics II **4 (4-0-8)**

Prerequisite: ICPY 101 Physics I

Oscillations and wave; light and sound; Thermodynamics; electricity and magnetism; Modern Physics

ICPY 200 Modern Physics **4 (4-0-8)**

Prerequisite: 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 (4-0-8)**

Prerequisite: 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 321 Intermediate Mechanics **4 (4-0-8)**

Prerequisite: 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)**

Prerequisite: 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 361 Quantum Mechanics I **4 (4-0-8)**

Prerequisite: 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 452 Statistical Mechanics **4 (4-0-8)**

Prerequisite: ICPY 361 Quantum Mechanics I

Statistical physics, distributions and probability, Boltzmann's Factor, partition and grand partition functions, Ising's Model, quantum statistics

ICPY 492 Electronics **4 (4-0-8)**

Prerequisite: ICPY 102 Physics II

Microcontroller and programming, circuit design and analysis, electrical components, networking, and analog circuit

ICSP 112 Introduction to Psychology **4 (4-0-8)**

Prerequisite: -

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)**

Prerequisite: -

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)**

Prerequisite: -

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)**

Prerequisite: -

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)**

Prerequisite: -

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)**

Prerequisite: -

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)**

Prerequisite: -

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)**

Prerequisite: -

Work-related attitudes. Social influences at work. Job satisfaction. Work groups. Matching workers with jobs

ICSP 257 Educational Psychology **4 (4-0-8)**

Prerequisite: -

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)**

Prerequisite: -

The role of culture in the study of behaviour. Psycho-social development, social behaviour, personality and cognition in cross-cultural perspective. Theoretical and methodological issues

ICSP 259 Developmental Psychology **4 (4-0-8)**

Prerequisite: -

Fundamental principles of developmental psychology, with a focus on a lifespan perspective; development is considered to be lifelong, multidimensional, multidirectional and influenced by a variety of factors; the course explores theories, perspectives and research methods commonly used in developmental psychology; students will explore the research into the physical, cognitive, emotional, and social aspects of development from conception to death, as well as practical applications in their everyday lives

Remarks: *Students who have taken ICSP 251 Introduction to Developmental Psychology I are **NOT** allowed to take this course as it covers content from Introduction to Developmental Psychology I

ICSP 260 Psychology of Memory **4 (4-0-8)**

Prerequisite: -

Theories, research, and application of the psychology of memory; different types of memory; cognitive and neural mechanisms of memory; factors influencing memory and memory performance; techniques and strategies for enhancing memory performance; the application of knowledge and research of memory in clinical and educational practices

ICSP 261 Paranormal Psychology **4 (4-0-8)**

Prerequisite: -

Definition and classification of types of parapsychological phenomenon; research methods used in investigating the paranormal; historical approaches to understanding paranormal beliefs across cultures; anomalous experiences; states of consciousness; exceptional experiences in psychology ; individual and cultural factors influencing paranormal beliefs

ICSP 262 Coaching Psychology **4 (4-0-8)**

Prerequisite: -

An introduction to theoretical frameworks that guide coaching; coaching skills; the relationship between coach and coachee; and coaching applications for personal development, relationship development, career development, health and well-being, and mindfulness

ICSP 350 Evolutionary Psychology **4 (4-0-8)**

Prerequisite: -

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)**

Prerequisite: -

The work of Sigmund Freud and his successors; Freud's theories; criticisms; Jung; Adler; later neoFreudians

ICSP 352 Prosocial and Antisocial Behaviour **4 (4-0-8)**

Prerequisite: -

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)**

Prerequisite: -

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)**

Prerequisite: -

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)**

Prerequisite: -

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)**

Prerequisite: -

An analysis of the psychology of drug use and addiction; types of psychoactive drugs, their use, and neurological impact

ICSP 357 Psychology of Motivation **4 (4-0-8)**

Prerequisite: -

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)**

Prerequisite: -

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)**

Prerequisite: -

An overview of the basic concepts; history; process of counseling; skills in CBT; mechanisms of change; and applications of the major schools of counseling and psychotherapy

ICSP 360 Psychology of Marketing and Consumer Behavior **4 (4-0-8**

Prerequisite: -

The psychology of motivation; emotions; social influence; cognition; learning; memory; and ethics in marketing and economic decision-making; practical skills in market research; data analysis; and digital marketing tools and technologies

ICSP 361 Overcoming Stereotypes, Prejudice and Discrimination **4 (4-0-8)**

Prerequisite: -

Analysis of psychological theories; psychological approaches to stereotypes, discrimination and prejudice; the emotional, behavioral and cognitive implications; the impact on our behavior and society; debiasing and metacognition

ICSP 362 Psychology of Emotion Well-being **4 (4-0-8)**

Prerequisite: -

The experience of emotion well-being; Biological, developmental, social and cognitive aspects of emotion well-being; specific emotionsin psychological perspective: happiness,sadness, fear, anger, shame, guilt, disgust, love, empathy/sympathy

ICTB 201 Introduction to Travel and Service Businesses **4 (3-2-7)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: -

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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: 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)**

Prerequisite: -

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)**

Prerequisite: -

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)**

Prerequisite: -

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)**

Prerequisite: 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)**

Prerequisite: -

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)**

Prerequisite: -

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)**

Prerequisite: -

Understanding the contexts of gastronomy related to food and culture, where the food experiences are related to several dimensions; understanding the gastrodiplomacy strategies to support from "Farm to the World" and "Thai Kitchen to the World Kitchen Campaign"; Thai food popularity leading to food tourism destination; exploring the relationships of Thai food from the supply side to the demand side; tourist's engagement in a different food supply chain with sustainable development; 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)**

Prerequisite: -

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)**

Prerequisite: 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)**

Prerequisite: -

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)**

Prerequisite: -

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)**

Prerequisite: -

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)**

Prerequisite: 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)**

Prerequisite: -

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)**

Prerequisite: -

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 (4-0-8)**

Prerequisite: -

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)**

Prerequisite: -

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)**

Prerequisite: -

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)**

Prerequisite: 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)**

Prerequisite: -

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)**

Prerequisite: -

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)**

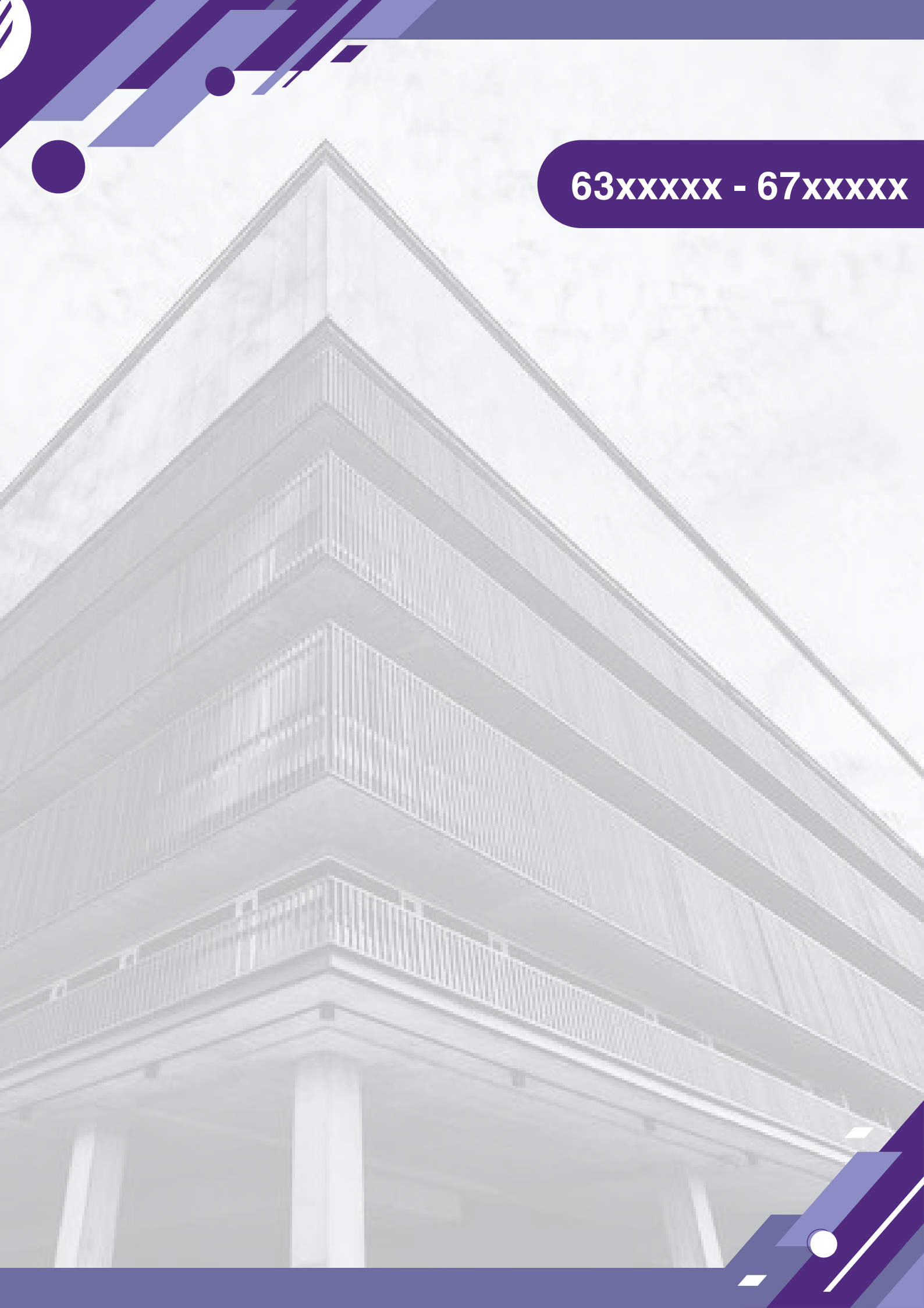
Prerequisite: -

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)**

Prerequisite: -

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; selfhelp plan for a healthy lifestyle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