

Food Science and Technology

ICBI 101 Biology

4

Prerequisites: -

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

ICCH 210 General Chemistry I

4

Prerequisites: -

Concepts of general chemistry; matters, atoms, compounds, reactions, gases, thermodynamics, electrons in atoms, periodic table, chemical bonding; intermolecular forces, and spontaneous changes

ICCH 211 General Chemistry II

4

Prerequisites: ICCH 210

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 221 Organic Chemistry I

4

Prerequisites: ICCH 211

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 224 Integrated Laboratory Techniques in Chemistry I

2

Prerequisites: ICCH 210

or

Corequisites: ICCH 210

Laboratory practicals for general chemistry: measurements; stoichiometry; solids, liquids and solutions; gases; thermochemistry; equilibrium; acids and bases; electrochemistry; kinetics

ICCH 311 Analytical Chemistry

4

Prerequisites: ICCH 211

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 the use of spectroscopic analytical equipment

ICCS 161 Introduction to Data Science

4

Prerequisites: ICMA 151

An 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; a brief introduction to natural language processing; data science and ethical issues

ICFS 111 Introduction to Food Science and Technology

4

Prerequisites: -

The concept of food science and technology, relationship between the science of food and the well-being of humans; chemistry underlying properties and reactions of various food components; applying of basic principles of microbiology to food processing and safety; basic principles of large scale food production and its quality control

ICFS 171 Discovering Culinary Arts Techniques

4

Prerequisites: -

Principles of mise en place (preparation before cooking), proper culinary terminology; developing standardized recipes, basic cooking method both with dry heat and moist heat; developing knife skill, the proper use of ingredients

ICFS 172 World Cuisines**4****Prerequisites: ICFS 171**

Global history of food, gastronomy and culture, menus and meals preparation of classical, Western, Eastern, Mediterranean, and Oriental cuisines; identifying culinary trends, principles of menu layout, food presentation techniques; proper cost control and appropriate technology

ICFS 214 Elements of Physical Chemistry and Biochemistry for Food Science and Technology 4**Prerequisites: ICCH 210**

The principles of physicochemical and biochemical aspects of foods, topics including thermodynamics, thermal and mass transfer, physicochemical properties, the structure and function of biomolecules with emphasis on water, carbohydrates, proteins, nucleic acids, lipids and enzymes, metabolism and bioenergetics

ICFS 215 Human Nutrition**4****Prerequisites: ICFS 214**

Elements of human nutrition including vitamins, minerals, micronutrients, and antioxidants including sources, metabolism, and functions in the human body; nutritive values of foods; requirements for human health, nutraceuticals, and functional foods and their effects on human health beyond basic nutrition

ICFS 231 General Microbiology**4****Prerequisites: ICBI 101**

Basic knowledge related to structure, physiology and ecology of microorganisms such as viruses, bacteria, and fungi, aspects of microbiology importance in food science and technology; practical exercises

ICFS 314 Food Analysis**4****Prerequisites: ICCH 224, ICCH 311**

Principles of chemical and instrumental methods for the qualitative and quantitative analysis of food components and additives, chemical and instrumentals methods, practical exercises in laboratory

ICFS 317 Food Chemistry**4****Prerequisites: ICFS 111, ICCH 211, ICCH 221**

Chemical and physical properties of water, proteins, lipids, carbohydrates, vitamins and minerals; their interactions and functional roles in foods; practical exercises included

ICFS 318 Food Ingredients Functionality**2****Prerequisites: ICFS 317**

Chemistry and functionality of food ingredients in the food product; utilization and challenges of food ingredients in food industries; case studies from scientific literature and food industry

ICFS 319 The Chemistry of Food and Quality**2****Prerequisites: ICFS 317**

Chemistry of plant based raw materials; chemical composition of food products; chemical reactions and changes taking place during the processing and storage; parameters influencing food quality

ICFS 321 Principles of Quality Assurance in Food Processing**4****Prerequisites: ICFS 315 and ICSC 303**

Methods of quality control and management in food processing; Total Quality Control Management, HACCP, ISO 9000 and 14,000 series; control of raw materials, process, and finished products; sampling, evaluation of sensory properties, and other factors; statistical analysis for quality control.

IFS 323 Foods for Sports and Exercises	4
Prerequisites: Being 2nd year student or higher	
Energy sources and energy expenditure of human locomotions; food sources and roles of carbohydrates, protein, dietary fats, micronutrients, fluid, electrolytes, and dietary supplement in sports and exercises, basic nutrition guidelines for high-intensity sports, endurance sports, weight and body-focused sports	
 ICFS 333 Food Microbiology	4
Prerequisites: ICFS 231	
Sources of microorganisms; factors affecting the growth of microorganisms in food; important pathogenic microorganisms in food; Spoilage microorganisms; control and inactivation of pathogenic and spoilage microorganisms in foods; effect of food processing on microorganisms and control; beneficial microorganisms in food; Food fermentation and preservation	
 ICFS 334 Food Microbiology Laboratory	2
Prerequisites: -	
Co-requisites: ICFS 333	
Basic microbiological techniques and standard plate counts; microscopic examination of yeast, mold, and bacteria; the enumeration of microorganisms in foods; most probable number method; the detection and identification of important foodborne pathogens and spoilage microorganisms in foods; Inactivation of pathogens in foods; Food fermentation and beneficial microorganisms; sanitary practices; microbial standards and regulation	
 ICFS 341 Food Processing	4
Prerequisites: ICFS 111 and ICFS 214	
Fundamental of the food processing industry; thermal processing, and preservation of food materials by blanching, pasteurization, sterilization, evaporation, dehydration; processing factors that influence quality	
 ICFS 342 Food Storage and Shelf Life Extension	4
Prerequisites: ICFS 111 and ICFS 214	
Fundamentals of food preservation; raw material preparations; non-thermal methods, refrigeration, freezing, chemical preservation, including various packaging materials	
 ICFS 343 Integrated Approach to Smart and Green Agro-Industry	4
Prerequisites: ICFS 341	
Concepts of smart agriculture for high quality raw materials, environmental-friendly manufacturing technologies, fundamental of plant design, clean technology, sources and uses of water, agro-industry waste management; biological treatment methods	
 ICFS 351 Food Engineering Principles	3
Prerequisites: ICMA 213	
Principles of the various unit operations used in the food processing and manufacturing industry; topics covered including units, dimensions, fluid properties, fluid flow, rheology, energy loss in flow, velocity and pressure measurement and unit operations such as pump, mixing, and mechanical separation as applied to food processing and manufacturing operations	
 ICFS 352 Unit Operations in Food Engineering	3
Prerequisites: ICFS 351	
Unit Operations in Food Engineering, major unit operations used in the food processing and manufacturing industry such as dryer, heat exchanger, evaporation, gas absorption; the effects of the input and operational parameters on performance and food quality; thermal processing, mass transfer and heat transfer, psychometrics	
 ICFS 361 Principles of Quality Assurance in Food Processing	4
Prerequisites: ICFS 341, ICMA 252	

Methods of quality control and management in food processing; total quality control management, HACCP, ISO 9000 and 14,000 series, Halal; control of raw materials, process, and finished products; sampling, evaluation of sensory properties, and other factors; a statistical analysis for quality control

ICFS 362 Food Safety and Sanitation

4

Prerequisites: ICFS 231

Principles of food safety and food plant sanitation; hazards and sources, Good Manufacturing Practices (GMPs), Sanitation Standard Operating Procedures (SSOPs), Hazard Analysis Critical Control Point (HACCP); hygienic design of equipment and facilities, cleaning and sanitization, pest control, personal hygiene, hygienic food handling

ICFS 363 Food Law and Standard of Commercial Food Product

4

Prerequisites: ICFS 317

Food Law and standard of foods and food products in the Thailand; international food regulation; labeling of food product; the regulation of irradiated Foods, biotechnology and genetic modified foods, dietary supplements, functional foods and nutraceuticals

ICFS 373 Food Safety for Food Service Industry

2

Prerequisites: ICFS 333

Foodborne illnesses and causes of illness; microorganisms causing foodborne illness; contamination and food allergens; safe food handling and personal hygiene; cross-contamination and temperature control; purchasing considerations and storage of foods; preparation and cooking; safe holding temperature and service; cleaning and sanitizing; food safety management systems and safe operation; an integrated pest management; food safety regulation and standards; staff food safety training

ICFS 374 Experimental design in Food Product Development

2

Prerequisites: ICCS 161

An integration of chef and food scientist's tasks through the design of experiments foundation, regression and correlation, basic understanding of multivariate data-analysis techniques, screening designs, the response surface model, the optimization experimental designs

ICFS 375 Integrated Sensory and Consumer Sciences for Product Development

4

Prerequisites: ICFS 374, ICFS432

Physical stimulants and human sensory perception, understanding of consumer behavior and preference, identifying consumer insights for concept and product improvement; the relationships between instrumental data of food properties - sensory perception – and the data on consumer preference, formulation optimization

ICFS 376 Science of Thai Culinary Arts

4

Prerequisites: Being 2nd year student or higher

Chemical, physical, and microbiological aspects of Thai foods, design and analysis for sensory evaluation, flavors and flavors pairing, nutraceutical potentials of Thai cuisines; laboratory session on techniques of Thai cuisine processing for dishes such as stir-fried, steamed, spicy salads, chili paste, curry, fermented food, and deserts; scientific explanation behind local wisdoms of these techniques

ICFS 411 Food Product Development

4

Prerequisites: ICFS 318

Principles and steps used in a new product-developing process: formulation, lab-scale production, quality control, and commercial feasibility study; sensory evaluation of food products; the data and statistical analysis of sensory test results; practical exercises

ICFS 413 Marketing of Food Product and Services

4

Prerequisites: ICFS 341

Principles of marketing with an emphasis on food product; market research and analysis, consumer behavior and marketing strategies; basic economics principles, marketing analytical tools, trends in processed food and food service industries

ICFS 414 Operations Management in Food Business**2****Prerequisites: ICFS 341**

The main factors affecting the performance in food industry, matching of supply and demand, eliminating inefficiencies, increasing productivity and utility, cost control including the return of investment (ROI) and cost of goods sold (COGS) calculation

ICFS 418 Fruits and Vegetables Technology**4****Prerequisites: ICFS 317, ICFS 341**

Characteristics, composition, and the nutritional importance of fruit and vegetables; characteristics, composition and nutritional importance of fruit and vegetables; post-harvest handling and changes and in product quality; preservation and processing technologies applied to fruits and vegetables; the production of fresh and manufactured food products and ingredients from fruits and vegetables; by-products utilization and waste management of fruit and vegetables processing

ICFS 419 Meat, Poultry and Marine Product Technology**4****Prerequisites: ICFS 317, ICFS 341**

Ready-to-eat meat products, meat fermentation, the control of meat quality, meat structure manipulation, meat processing technologies (high pressure, pulsed electric field, irradiation, ultrasound), meat by-products, meat packaging, meat sensory attributes

ICFS 422 Dairy Product Technology**4****Prerequisites: ICFS 317, ICFS 341**

The composition and properties of milk, physical and chemical changes occurring in milk during processing and storage, milk processing i.e. fluid milk; fermented products, concentrated and dried dairy products, butter, cream frozen dairy desserts; milk microbiology and microbial transformations of milk, food safety aspects, functional health benefits

ICFS 423 Beverage Technology**4****Prerequisites: ICFS 317, ICFS 341**

Ingredients, processing, and packaging technologies for beverages, high-pressure processing, carbonation, alcoholic beverages, fruit juices and soft drinks, extended shelf-life beverages, dilutable beverages, ready-to-drink products, novel concepts of functional drinks and bioactive compounds, market trends

ICFS 424 Fat and Oil Technology**4****Prerequisites: ICFS 318, ICFS 341**

Processing and technologies of edible fats and oils; physical and chemical properties of both raw materials and finished products such as salad dressing, margarines, butters; quality, safety, and nutritional aspects of fat and oil products

ICFS 426 Bakery Product Technology**4****Prerequisites: ICFS 318, ICFS 341**

Properties and chemistry of flour, ingredients technology and selection, science of mixing and baking; functional bakery products, sensory attributes of bakery products, packaging and shelf-life extension of finished products; skill development in bread, cake and pastry making

ICFS 427 Confectionary and Chocolate Technology**4****Prerequisites: ICFS 318, ICFS 341**

The candy processing technology, crystalline and non-crystalline candy, sugar and corn syrup chemistry; aerated confection, chocolate properties, chocolate processing, tempering, panning and shell molding; regulations such as sugar taxes, food safety and quality aspects

ICFS 432 Sensory Evaluation of Food Products**4****Prerequisites: ICFS 318**

Sensory evaluation theory and practices through descriptive analysis; analytical instrumental methods of sensory evaluation and correlation with consumer sensory evaluation; anatomy and physiology of the sensory systems (sight, taste, smell, touch, and hearing); physiological and psychological factors that affect performance on sensory tests

ICFS 436 Food Fermentation Technology

4

Prerequisites: ICFS 333

The principle of biological fermentation process; submerged fermentation; solid state fermentation; disinfection of the equipment; factors affecting the process; raw material for fermentation; media design, optimization of fermentation condition; process control, downstream processing; quality control of products

ICFS 437 Application of Modern biotechnology to Food Products

4

Prerequisites: ICFS 231

Potential benefits and risk of biotechnology in foods; GMOs, GM foods and food security; current use, research and development of foods produced through modern biotechnology

ICFS 438 Cereal and Starch Technology

4

Prerequisites: ICFS 317

Fundamental structure, chemistry, functional properties of cereal and starches; cereal and starch based human food products; their utilization in applications of healthy and functional foods

ICFS 451 Internship in Food Science and Technology

4

Prerequisites: ICFS 341

Industrial work-internship program in the food manufacturing industry, the industrial internship program focusing on the actual work and on-the-job training at production line, process control, quality control of process and product, laboratory work; chemical, physical, microbiological analysis

ICFS 452 Food Packaging

4

Prerequisites: ICFS 342

Materials, systems, and applications of food packaging materials and methods; properties, fabrication, and function of metal, glass, paper and plastic packaging, sanitation of packaging materials, forming, filling, joining and enclosure operations and related equipment for packaging systems and equipment; selected topics for food packaging applications including aseptic packaging, food-package interactions, sealing integrity, handling of packages, and modified atmospheric packaging

ICFS 453 Internship in Culinary Science

4

Prerequisites: ICFS 172, ICFS 373

Food service operation internship program focussing on culinary arts skills

ICFS 461 Cooperative Education Preparation

2

Prerequisites: ICFS 318, ICFS 341

Goal setting for work integrated education in agreement with the private company, the design of the experiment and/or road map of the 16-week industrial daily work experience, discussions of all requirements including safety rules, ergonomic workplace, specific skills needs for the project, and work ethics

ICFS 462 Cooperative Education

8

Prerequisites: ICFS 461

Work-based experience for 16 weeks with specific goals needed to achieve, with the academic supervision and assessment from both faculty and industry supervisors

ICFS 463 Field Trip

2

Prerequisites: -

Visits and industrial plant studies of food manufacturing industry or related organizations

ICFS 471 Trends and Novel Techniques of World Foods and Cuisines

4

Prerequisites: ICFS 318

Current issues, emerging tools and technology in food science, food processing and food service industry; the prediction of trends of world foods; guest lecturers from academic, industry, and culinary arts with some hands-on sessions

ICFS 489 Culinary Product Development Project**2****Prerequisites: ICFS 318, ICFS 374**

Ideation techniques, prototype development, cost controls, recipe development and conversion to formula ratios

ICFS 491 Seminar in Food Science and Technology**2****Prerequisites: Seniors**

Senior student presentations, discussion of research, and reviews of topics of current interest; staff and invited speakers from Mahidol University and from other universities or the food processing industry

ICFS 495 Senior Project in Food Science and Technology I**2****Prerequisites: Seniors**

Study and research in food science and technology at the Bachelor's degree level, experimental design, preliminary experiments, research proposal writing

ICFS 496 Senior Project in Food Science and Technology II**4****Prerequisites: ICFS 495**

Small research projects in food science and technology or related fields under the supervision of a research advisor

ICMA 106 Calculus I**4****Prerequisites: Placement test or ICMA 100**

Brief review of trigonometry; limits and continuity; differentiation and its techniques; derivatives of algebraic and trigonometric functions; graph sketching; applications of the derivatives; antiderivative and integration; area under a curve and between curves.

ICMA 151 Statistics for Science I**4****Prerequisite: Placement test or ICMA 100**

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

ICMA 213 Calculus II**4****Prerequisites: ICMA 106 Calculus I**

Derivatives of logarithmic and exponential functions; techniques of integration; improper integrals and indeterminate forms; applications of the derivative and integration; infinite series; functions of several variables; limits and continuity; partial derivatives.

ICMA 252 Biological Statistics Laboratory**2****Prerequisite: ICMA 151**

Statistical softwares; probability; hypothesis testing; linear regression; non-parametric statistics

ICPY 101 Physics I**4****Prerequisites: -**

Measurement, units and dimensions; vectors; linear motion; Newton's laws of motion; rotational motion; energy, momentum, static equilibrium, fluid mechanics

ICSC 302 Scientific Research and Presentations**4****Prerequisites: ICBI 101, ICMA 252**

Scientific methods of discovery including developing a hypothesis and testing, experimentation, interpretation of the results; proper format for presenting papers in public and in a scientific forum; practical sessions and participation in scientific seminars included



Mahidol University International College

Foundation Courses

(For all 618xxxx students, except ICCI, ICCU and ICMC students)

ICID 100 Freshman Seminar 0
Prerequisites: -
Compulsory for all freshmen; time management skills, study plan, adjustment to college's life, and teachers' expectation

ICMA 100 Foundation Mathematics 0
Prerequisites: Placement test
Expressions and equations; linear functions; polynomials and nonlinear functions; radical and rational functions; the data analysis

ICME 100 English Resource Skills 0
Prerequisites: Placement test
A remedial course preparing students for reading and writing academic English at a level suitable for entering the Intermediate English Communication I

General Education Courses

(For all 618xxxx students, except ICCI, ICCU and ICMC students)

English Communication

ICGC 101 Academic Writing and Research I 4
Prerequisites: Placement Writing Test or ICME 100
An introduction to the academic writing process through the development of the writer's voice through sentencing, structure, and rhetorical devices; a focus on strategies for using and integrating researched sources; methods to compose well-structured essays based on themes relevant to the world today

ICGC 102 Academic Writing and Research II 4
Prerequisites: ICGC 101
The integration of skills in academic research and writing to analyze and create persuasive compositions; techniques to identify strengths and weaknesses in argument; the development of students' knowledge and preconceptions of global issues through a progressive series of essays and journal assignments

ICGC 103 Public Speaking 4
Prerequisites: ICGC 102 Academic Writing and Research II
Fundamentals of key skills for confident and effective public speaking through a series of prepared and unprepared speeches; an introduction and application of techniques to inform/persuade audiences; the utilization of Academic Writing and Research I and II to create and deliver speeches to a professional standard

ICGC 111 Academic Writing and Research I (Advanced) 4
Prerequisites: Placement Writing Test
Theories and practical methods to enhance students' creative and descriptive abilities; an emphasis on the development of a writer's voice through sentencing, structure, and rhetorical devices; strategies for using and integrating researched sources introduced by means of explaining theories, concepts, and writing conventions

ICGC 112 Academic Writing and Research II (Advanced)

4

Prerequisites: ICGC 111

A focus on high levels of academic literacy and presentation skills in reading, writing, and public speaking for experts or near-expert users of English; the utilization of advanced strategies to exploit secondary research and argumentation; an application of advanced skills in critical thinking and rhetorical knowledge through class discussions and written and oral assignments

ICGC 201 Global Realities

4

Prerequisites: ICGC 103 or ICGC 112

An exploration and a critical analysis of key texts on poetry, literature, and legislative documents in order to understand the complexity and challenges of the world we live in; themes encouraging students to consider values, human rights and government; class discussions, journal writing, and presentation activities to demonstrate how students can contribute to the betterment of society

ICGC 202 Literary Analysis

4

Prerequisites: ICGC 103 or ICGC 112

A review of literary works from selected literary genres; an exploration of how literature informs our perceptions of the world by way of analytical and critical thinking; an analysis of short stories, poetry and drama; scaffolding of strategies for students to understand the function of a variety of literary forms

ICGC 203 Creative Writing

4

Prerequisites: ICGC 103 or ICGC 112

An examination of fictions, poetry, drama, and the media production through readings, speeches and films; comparisons of writing in different genres; a creation of the work of publishable quality by means of the consideration of audience and genre

ICGC 204 Advanced Oral Communication

4

Prerequisites: ICGC 103 or ICGC 112

Theories of persuasion, non-verbal techniques, and voice control for advanced presenters; strategies to develop high levels of voice control and expressions; activities including debates, stage, and sales strategies; the development of students' abilities to express themselves confidently in a variety of academic and professional environments through impromptu and prepared speeches

ICGC 205 Linguistics

4

Prerequisites: ICGC 103 or ICGC 112

An introduction to major features and components of the human languages; a focus on power and complexity of languages, its influence on interactions and its contributions to understanding; an exploration of definitions and applications of syntax, semantics, pragmatics, and other related topics

ICGC 206 Literature Into Film

4

Prerequisites: ICGC 103 or ICGC 112

An introduction to the technical aspects of translating literature into films; an exploration of the interplay between literature and films through an analysis of short stories, novels, and plays and their film versions; an exploration of the challenges merging both mediums

ICGC 207 Diverse English Speaking Cultures

4

Prerequisites: ICGC 103 or ICGC 112

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

ICGC 208 Language and Culture	4
Prerequisites: ICGC 103 or ICGC 112	
An examination of the interplay between language and culture; having texts and class discussions to focus on the importance of understanding the link between culture and languages; a completion of research paper on the topic	
 ICGC 209 The Story of English	4
Prerequisites: ICGC 103 or ICGC 112	
The development of English traced from its origins; the/a demonstration through texts, films, and media of the growth and spread of English; an introduction to methods of understanding a variety of linguistic progressions in the language	
 ICGC 210 First and Second Language Acquisition	4
Prerequisites: ICGC 103 or ICGC 112	
An introduction to how children develop their first language; comparing and contrasting of the second language development; theories of language development from behaviorism to more recent cognitive and functional approaches; the implications of theories	
 ICGC 211 Topics in Comparative Literature A: Poetry	4
Prerequisites: ICGC 103 or ICGC 112	
An in-depth study of poetry, including: metrics, forms, themes, ethnic voices, throughout history; an evaluation of poetry from different genres through a series of discussions, workshops and a term research paper	
 ICGC 212 Topics in Comparative Literature B: The Short Story and the Novel	4
Prerequisites: ICGC 103 or ICGC 112	
A study of elements of fictions in short stories and novels through class workshops on characters, dialogue, plot and atmosphere; class discussions to analyze the effect of historical and social developments on selected themes	
 ICGC 213 Topics in Comparative Literature C: Drama	4
Prerequisites: ICGC 103 or ICGC 112	
An exploration of ways to understand and appreciate drama by reading, watching, and analyzing theatrical performances; staging and enactment of a theatrical production; readings, essays, and theater workshop activities to prepare students for a final stage performance	
Natural Science	
• Scientific and Environmental Literacy	
 ICGN 101 Decision Mathematics	4
Prerequisites: -	
Graphs and networks; linear programming; transportation problems; game theory	
 ICGN 102 Essential Mathematics	4
Prerequisites: Placement test	
Real numbers, algebraic expressions, percentages, ratio, proportion; linear functions; the systems of linear equations	
 ICGN 103 Essential Statistics	4
Prerequisites: ICGN 102	
Statistical ideas and concepts; probability and conditional probability; distribution functions; expected value; estimators; hypothesis testing; a linear regression analysis	

ICGN 104 Mathematics and Its Contemporary Applications	4
Prerequisites: Placement test or ICMA 100	
A review of algebra, logarithmic and exponential functions, matrix algebra, differential calculus, integral calculus	
ICGN 105 Ecology, Ecosystems and Socio-Economics in Southeast Asia	4
Prerequisites: -	
Human impacts on Southeast Asian ecology; human impacts on Southeast Asian's biodiversity and natural resources; fundamental ecological and resource management principles; current sustainable development issues; sustainable development practices for Southeast Asia	
ICGN 106 Climate Change and Human Society	4
Prerequisites: -	
Human activities and the global climate; consequences for human society; consequences for the essential life support systems; perspectives on human health and diseases; adapting to global climate change; mitigating global climate change; an optional field visit included	
ICGN 107 The Chemistry of Everyday Life	4
Prerequisites: -	
The air we breathe; ozone hole; water quality; acid-base and everyday chemicals; energy and fuels; battery; portable electronics; pharmaceuticals from nature; polymer and plastics; nutrition and modern life; genetic engineering; forensics and the DNA technology	
ICGN 108 Essentials of Culinary Science for Food Business	4
Prerequisites: -	
Changes during the preparation, heating, and storage of raw materials and finished products, food service and commercial packaged food industries; chemical, sensory, and nutritional natures of food, food safety concepts, changing trends and interests, legal requirements of the food establishment	
ICGN 109 Food for Health	4
Prerequisites: -	
Human nutritional requirements; health benefits of various foods; quality and safety of foods; food additives; food production and preservation; health and nutritional value	
ICGN 110 Maker Workshop	4
Prerequisites: -	
A mechanical design consideration, 3D drawing, safety in design; motion in 1 and 2 dimension; the sound and the oscillation motion, mechanical properties of materials; basic electronics, a circuit analysis, soldering; microcontroller, basic programming	
ICGN 111 Physics for CEO	4
Prerequisites: -	
Basic concepts of physics impacting individuals and society on a daily basis: physical quantities, the Newtonian mechanics and dynamics, energy and heat, electricity and magnetism, light and sound, and the electromagnetic spectrum	
ICGN 112 Stargazer	4
Prerequisites: -	
Basic ideas of astronomy, astrophysics, and cosmology; the progress of human understanding of the universe; the impact of the scientific methods on the astronomical observation; the earth and the moon; the solar system; the lifecycle of stars; Black Holes; galaxies; and the current understandings about the origins and the future of the universe	

ICGN 113 Plants, People and Poisons	4
Prerequisites: -	
The plant world; the way plants grow and reproduce; modern technologies used for improving agricultural methods; the basics of plant biology; the distinctions among major groups of plants; the social implications of plant use and abuse	
ICGN 114 The Scientific Approach and Society	4
Prerequisites: -	
Scientific literacy; the process of science discovery; verification, its limitation, and the influence on various disciplines; human research and animal research ethics; the critical analysis of current scientific articles; life cycle of scientific knowledge; modeling in science	
ICGN 115 Human Evolution, Diversity and Health	4
Prerequisites: -	
The Hominid evolution; primate societies; the origins of human species; the Order Primates; human distinctiveness and diversity; the scientific advancements and the human body; the scientific advancements and the modern society	
<ul style="list-style-type: none"> • ICT and Digital Literacy 	
ICGN 116 Understanding and Visualizing Data	4
Prerequisites: -	
An introduction to data analytics; roles and examples of the data-driven decision making; technology landscape; data kinds and types; data sources and collection techniques; data storage and standard formats; data processing workflow; summary from data; different types of visualization; data visualization tools	
ICGN 117 Technology behind E-Business and Digital Strategies	4
Prerequisites: -	
Landscape of technologies in the digital enterprise and e-business; internet-based staples such as web hosting, domain-name acquisition, the social media, the payment systems; electronic business models and digital strategies; emerging trends in technology; legal and ethical issues	
ICGN 118 Everyday Connectivity	4
Prerequisites: -	
The Internet, computer networks, and the World Wide Web (W3) in daily life; troubleshooting small network problems; identifying threats and avoiding dangers online; finding credible information on the Web; online communication tools, such as the social media and email, for professional branding; the basic e-business concepts and tools; the e-payment systems	
ICGN 119 Computer Essentials	4
Prerequisites: -	
Digital literacy relating to computer literacy and information literacy; the computer hardware and its general functions; the operating systems; software packages and their daily use; computer security; the ethical use of the intellectual property	

Humanities

<ul style="list-style-type: none"> • Logical and Ethical Literacy 	
ICGH 101 Biotechnology: from Science to Business	4

Prerequisites: -

Biotechnology, bioethics, and the law, biotechnology and the regulatory framework, genetic testing, patenting life, biobanks and modern genomics research; genetically modified organisms; human and animal testing, bioterrorism; biological weapons laws, bio-prospecting, pharmaceutical pricing; the future of the human beings and post-humanism

ICGH 102 Famous Arguments and Thought Experiments in Philosophy

4

Prerequisites: -

An examination of the most striking argumentative moves in philosophy from Plato's Allegory of the Cave to Searle's Chinese Room and beyond; a transfer and an application of paradigmatic philosophical thinking to current open questions in politics and science

ICGH 103 Logic, Analysis and Critical Thinking: Good and Bad Arguments

4

Prerequisites: -

Basic formal tools from sentential and predicate logic; logical structures of arguments used in the everyday contexts of life; an analysis of their strengths and weaknesses; common fallacies in reasoning, including reasoning involving determining probabilities; a construction of good arguments using the principles of informal reasoning

ICGH 104 Moral Reasoning: How can we know what is good?

4

Prerequisites: -

A survey of philosophical, psychological, and scientific contributions to the understanding of moral values; a hands-on construction and an analysis of ethical argument regarding burning issues in applied ethics

ICGH 105 Technology, Philosophy and Human Kind: Where Are We Now?!

4

Prerequisites: -

An examination of major technological and scientific innovations across the globe and their effects on human life and thought; a focus on agriculture, steel, the printing press, the mechanical clock, magnifying lenses, antibiotics, electricity, steam and combustion engines, and the transistor

ICGH 106 The Greeks: Crucible of Civilization

4

Prerequisites: -

An introduction to and an overview of the philosophy and thought of Ancient Greece and its influence on contemporary civilization; theories about knowledge, propaganda, truth, art, psychology, happiness, justice, and democracy

- **Arts and Media Literacy**

ICGH 107 Contemporary Art and Visual Culture

4

Prerequisites: -

Current issues in society; the new media in art today; an analysis of images; social and historical contexts of contemporary art; creative thinking; the effects of globalization on the visual world; an investigation of broader social and cultural matters; subject matters related to ideology, gender, race, and ethnicity

ICGH 108 Creative Drawing Expression

4

Prerequisites: -

Drawing in a variety of medium; drawing as creativity; re-presenting, expressing, texturizing, sublimating, juxtaposing, appropriateness, redefining, constructing, illustrating, and describing; drawing from life: human form; developing cognitive learning skills; utilizing visual communication, the design and art principles (experimentation, exploration, application, techniques for mark making, proportion, gesture, contour, action,

weight, line, value, texture, composition); researching, interpreting, evaluating, and analysing contemporary artists; personal evaluation; personal expression

ICGH 109 Creative Thinking Through Art and Design

4

Prerequisites: -

Combining a hands-on studio experience with demonstrations, lectures and discussions; developing creativity and gaining confidence in communicating one's own unique vision; exploring a variety of art and design mediums; understanding the elements of the visual language; implementing the creative process and creative thinking; developing individual solutions to open-ended problems

ICGH 110 Drawing as Visual Analysis

4

Prerequisites: -

Developing creativity and cognitive learning skills; utilizing visual communication, the/a design and art principles; mark making; observing, analyzing, recording, representing plant and still life forms; practicing and applying, and using techniques for conventional pencil drawing tools (shape, form, perspective, lines, shading, value, negative space, texture, composition); scientific illustration; a realistic representational observation

ICGH 111 Media Literacy: Skills for 21st Century Learning

4

Prerequisites: -

An integration of the media literacy, the media production, and the media ethics; accessing, analyzing, evaluating, questioning, and producing media texts; social, cultural, and political implications of the media; representations in the media; the media as political economy; the media aesthetics; the media and influence; audiences negotiating meaning

ICGH 112 Photography

4

Prerequisites: -

An integration of visual literacy, photography techniques, and ethics; analyzing, evaluating, and authoring photographs; visual aesthetics; visual storytelling and narrative building techniques; the decisive moment; influencing audiences; maximizing the audience engagement; the ethical publications and the dissemination of photographs

ICGH 113 Moving Pictures: A History of Film

4

Prerequisites: -

An investigation of European, American, and Asian films as art, philosophy, social commentary, and propaganda; a focus not only on techniques, styles, and technological advances but on the interpretation, comparison, and criticism

ICGH 114 The Sound of Music: Form, Emotion, and Meaning

4

Prerequisites: -

A survey of a musical expressions and an analysis of its communicative force in light of current research; examples from a wide range of musical styles with a focus on classical music

Foreign Languages

- **German**

ICGL 101 Elementary German I

4

Prerequisites: Placement test

Greetings, introducing oneself or others; German alphabets and phonemes; personal information, numbers from 1 – 100 and price quotations; expressing wishes, telling the time and making appointments; the quality of items, measurements; verb forms, pronouns, sentence structure, gender of nouns, accusative case and plural forms, negation

ICGL 102 Elementary German II	4
Prerequisites: Placement test or ICGL 101	
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
Prerequisites: Placement test or ICGL 102	
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	
 • Japanese	
ICGL 111 Elementary Japanese I	4
Prerequisites: Placement test	
The Hiragana and Katakana characters; fundamentals of the 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); the description of Japan; the design of written products in the target language; expressing existence, preferences, and agreement; comparing cultures	
 ICGL 112 Elementary Japanese II	4
Prerequisites: Placement test or ICGL 111	
The Kanji characters (approximately 50); fundamentals of the 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; the design of written products in the target language; expressing simple points of view, describing people and daily life activities; comparing cultures	
 ICGL 113 Elementary Japanese III	4
Prerequisites: Placement test or ICGL 112	
The Kanji characters (approximately 50); fundamentals of the basic Japanese grammar concepts (verb conjugation (masu-form, te-form, nai-form, and dictionary form), and related sentence patterns; the polite style of speech, and the plain style of speech, particles); scaffolding of basic vocabulary; basic communication about various topics; the design of written products in the target language; expressing points of view, describing people and various activities; comparing cultures	
 • French	
ICGL 121 Elementary French I	4
Prerequisites: Placement test	
Fundamentals of the basic French grammar (pronouns, present tense conjugation, gender/number, adjectives, prepositions); scaffolding of basic vocabulary; basic communication about personal topics (self and others); an identification and a description of French speaking countries; the design of written products in the target language; expressing existence, preferences and agreement; comparing cultures	
 ICGL 122 Elementary French II	4
Prerequisites: Placement test or ICGL 121	
Fundamentals of the simple French grammar (present and future tense, adjective gender, place and agreement, more complex prepositions, more complex questions); scaffolding of simple vocabulary; simple communication about daily life topics (in France and in their country); the design of 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****Prerequisites: Placement test or ICGL 122**

Fundamentals of the more complex French grammar (present and future tense, adjective gender, place and 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); the design of written products in the target language; expressing point of view, describing people and daily life activities; comparing cultures

- **Chinese**

ICGL 131 Elementary Chinese I**4****Prerequisites: Placement test**

The Chinese phonetic system (Pinyin), the Chinese basic writing system (Stroke order), the Chinese characters (approximately 100) and fundamentals of the basic Chinese grammar (interrogative pronouns, particle “de”, Yes/No questions with “ma”, demonstrative pronouns, classifiers, adverb “ye”也, “dou”都); scaffolding of basic vocabulary; basic communication about personal topics (self and others); the description of China; the design of written product in the target language; expressing existence, preferences and agreement; comparing cultures

ICGL 132 Elementary Chinese II**4****Prerequisites: Placement test or ICGL 131**

The Chinese phonetic system (Pinyin), the Chinese writing system, the Chinese characters (approximately 100); fundamental Chinese grammar concepts (interrogative pronouns, classifiers, “de” particles, “de” phrase, adverbials, the continuation of an act sentence structures and the reduplication of verbs); scaffolding of basic vocabulary; basic communication about daily life topics; the design of written products in the target language; expressing simple points of view, describing people and daily life activities; comparing cultures

ICGL 133 Elementary Chinese III**4****Prerequisites: Placement test or ICGL 132**

The Chinese phonetics (Pinyin); The Chinese characters (approximately 150); Fundamentals of the basic Chinese grammar concepts (interrogative pronouns, modal verbs, complex sentence, modal particle “le” (了), complement of state, complement of result, complement of duration); scaffolding of basic vocabulary; basic communication about various topics; the design of written products in the target language; expressing points of view, telling direction, describing oneself and other people’s abilities; comparing cultures

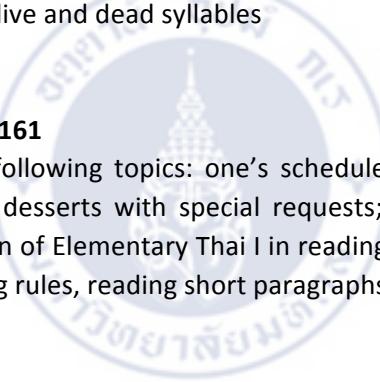
- **Spanish**

ICGL 141 Elementary Spanish I**4****Prerequisites: Placement test**

Fundamentals of the basic Spanish grammar (pronouns, present tense conjugation, gender/number, adjectives, prepositions); scaffolding of basic vocabulary; basic communication about personal topics (self and others); an identification and a description of Spanish speaking countries; the design of written products in the target language; expressing existence, preferences and agreement; comparing cultures

ICGL 142 Elementary Spanish II**4****Prerequisites: Placement test or ICGL 141**

Fundamentals of the 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); an identification and a description of Spanish speaking countries; the design of written products in the TL; expressing existence, preferences and agreement; talking about daily habits

ICGL 143 Elementary Spanish III	4
Prerequisites: Placement test or ICGL 142	
Towns, quarters and cities; directions; past experience; 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	
• Thai	
ICGL 160 Introduction to Thai Language and Culture	4
Prerequisites: -	
A communication in basic situations such as introducing oneself, asking for and giving directions, ordering food and drinks, asking for prices and bargaining at the same time, understanding selected topics of Thai culture in daily life	
ICGL 161 Elementary Thai I	4
Prerequisites: Placement test	
Listening and speaking skills on the following topics: introducing oneself, one's friend and family, basic food and drink ordering, places, directions, transportation, buying tickets, clothing items, colours, and sizes; bargaining, counting and using classifiers; reading and writing Thai consonants; vowels placed after, before, above, and below the consonants; Thai numbers; live and dead syllables	
ICGL 162 Elementary Thai II	4
Prerequisites: Placement test or ICGL 161	
Listening and speaking skills on the following topics: one's schedule, making appointments, favourite leisure activities, ordering food, drinks, and desserts with special requests; presentation of one's plan for activities during the school break; a continuation of Elementary Thai I in reading and writing skills; the consonant clusters, tone marks, words with special spelling rules, reading short paragraphs	
ICGL 163 Elementary Thai III	4
Prerequisites: Placement test or ICGL 162	
Communication of the four skills on the following topics: booking or renting accommodation, symptoms of illness and visiting a doctor; selected holidays and festivals; a presentation of a selected province in Thailand; a continuation of Elementary Thai II in reading and writing skills, writing short paragraphs and reading long passages on selected topics	
 Social Sciences	
• Financial, Economic, Business and Entrepreneurial Literacy	
ICGS 101 Accounting for Young Entrepreneurs	4
Prerequisites: -	
Fundamental accounting concepts; the basic accounting process used in small enterprises; the preparation of financial statements; the break-even analysis; business taxation	
ICGS 102 Business Sustainability and the Global Climate Change	4
Prerequisites: -	
A study of the role of business in the society; the basic concept of sustainability; global governance; sustainable development; social inequalities and social inclusion; environment sustainability; climate change; climate change mitigation; climate change adaptation; green marketing; business sustainability	
ICGS 103 Economics in Modern Business	4
Prerequisites: -	

Forces of demand and supply, elasticity, opportunity cost, market structures, pricing strategy, business enterprise, consumers' behavior; the Thai economy, the world economy, globalization and technological, profit maximizing, firm and organization, government policies, a business analysis and managerial decision-making, competitive advantage; the social media economy, innovation-based economy, digital sharing economy, aging society and dynamic business environment

ICGS 104 Essentials of Entrepreneurship

4

Prerequisites: -

Creating new businesses, capturing new markets, enhancing organizational effectiveness; entrepreneurship theories and frameworks, practices of promoting and managing start-ups; the life-cycle of an entrepreneurial venture; concept implementation, entrepreneurial pathway; the customer analysis, integrated marketing, funding, securing and managing capital, the human capital management under the disruptive environment

ICGS 105 Personal Financial Management

4

Prerequisites: -

Personal finance and investment; financial goals and planning process; financial statements and budgets; tax preparation; cash and savings management; investment planning; investing in stocks and mutual funds; making automobile and housing decisions; life insurance; protecting the property; retirement planning

ICGS 106 Fashion and Society

4

Prerequisites: -

The design elements of fashion, fashion terminology, fashion reflecting its temporal and spatial context, fashion and the development of art; fashion as a cultural expression, fashion as creativity; fashion requiring customers' approval and endorsements, fashion and consumer behaviour, fashion and consumerism, and ethical issues of fashion

ICGS 107 MICE 101

4

Prerequisites: -

An introduction to MICE industry; meetings; incentive travels; convention; exhibitions; decision-making criteria; special events; MICE event management; the venue management; logistics for MICE industry; service providers in MICE industry; standards in MICE industry; ethics for MICE

ICGS 108 Money Matters

4

Prerequisites: -

Financial issues related to money, rational choices, income and success; managing personal finances; markets and their functions; challenges in hard economic times; financial responsibility and basic money management skills

- **Global and Multicultural Literacy**

ICGS 109 American History, Film and Modern Life

4

Prerequisites: -

The history of modern America from the post reconstruction to the present; a survey history of the American political economy, society and international relations available in the modern media such as arts, film; influential thinking and writing; television channels and the social media; the state's power projection through hard and soft power; the American Innovative Industrialists; the Progressive Reformers; World War I; the Roaring Twenties; the Great Depression; Isolationism in the interwar years; Women's Suffrage; World War II; the Cold War; the Vietnam War; Racial Tensions; the Bush, Obama, Trump administrations and the future U.S. foreign policy

ICGS 110 Development and Conflicts

4

Prerequisites: -

Concepts of political and economic development; policies; production, and investment priorities; the consequences of economic transformation in poor countries; developmental failure since the 1980s; four development traps, including the conflict trap; the natural resource trap; the bad governance trap; and being landlocked with bad neighbours; solutions of how countries can achieve positive changes; the environmental and social development; the appropriateness and sustainability of the existing conventional development and growth trajectory

ICGS 111 Exploring Religions**4****Prerequisites:** -

Major religions in the world, Hinduism, Buddhism, Sikhism, Chinese religions, Shinto, Judaism, Christianity, and Islam; the origins of the three religious groups, religions arising in India, China, and Japan, and of the family of Abraham; contemporary new religious developments; religious diversities present in the world

ICGS 112 Geography of Human Activities**4****Prerequisites:** -

The interrelationship between humans and the spaces they create; human activities as interdisciplinary by nature; the physical and socially instructed environment people live in; human interactions shaping the human understanding of the environment; the utility of resources; the phenomena on the earth's surface related to human actions; concepts and geographical methodologies used to examine social organizations and environmental consequences

ICGS 113 Perspectives on the Thai Past**4****Prerequisites:** -

The origins of the Thai people in pre-historic times to the late twentieth century; an alternative view incorporating the different regions and various ethnic groups making up present-day Thailand; key issues in Thai history; an analysis of the classics of Thai historiography; an evaluation and an interpretation of a range of primary sources dealing with the Thai past; understanding of how history is written

ICGS 114 Power, Money and Behavior of Powerful States**4****Prerequisites:** -

Understanding the motives behind the inter-state relations; the increase of power, wealth and international prestige; tools states use to achieve objectives and the challenges of decision-making; foreign policies of the great power states having permanent seats and veto power on the UN Security Council; middle-power states including economically and politically advanced countries; critical issues such as nuclear weapons in North Korea; the war in Afghanistan; democratization or terrorism in failing states; and world trade; patterns and trends of foreign policy making of powerful states during the last century individually and in comparison with other states; case studies illustrating the policy decision-making to meet the contemporary international challenges

ICGS 115 Sociology in the Modern World**4****Prerequisites:** -

Sociology as a field of study explaining social, political, and economic phenomena; social interactions and social organizations; sociological perspectives; methodologies and sociological insights; topics relevant to the modern world including culture, social groups, socialization process, deviance, family, religion, social inequality, gender, economic, politics, the media, and social change

ICGS 116 Power and Politics**4****Prerequisites:** -

The understanding of the politics and the political systems of the current world; interactions and connections of different ideas; systems of thought and conflict in contemporary society; an analysis of political phenomenon

ICGS 117 Overcoming Stereotypes, Prejudice and Discrimination**4**

Prerequisites: -

An 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

ICGS 118 Skills in Dealing with People Across Cultures

4

Prerequisites: -

The development of skills in dealing with people across cultures, covering topics such as: communication across cultures; parenting in different cultures; understanding consumers from different cultural backgrounds; emotions and motivation across cultures as well as approaches to deal with cultural diversity at work

ICGS 119 World Politics

4

Prerequisites: -

Different disciplinary perspectives on world politics; historical, geographical, anthropological, economic, and political approaches; specific regions in the world politics

ICGS 120 Global Awareness

4

Prerequisites: -

The state of the world: key facts and trends of geography, economy, society, politics and the environment; global relationships: key economic, political, and environmental relations and trends; Thailand in the world: how Thailand impacts the world, and vice versa

- **Psychological Literacy**

ICGS 121 Abnormal Colleagues: how do I make this work?

4

Prerequisites: -

The stigma of psychological issues; the fear of the workplace gossips and job security; an avoidance of getting treatment and counseling; a recognition of various disorders and devising strategies to effectively communicate and work with people; improving the workplace productivity and relationships

ICGS 122 Propaganda, Nudge Theory and Marketing: How to resist?

4

Prerequisites: -

An examination of the science behind the 'mind control' and its implementation in the current society; an investigation of real and possible counter-strategies; a detailed psychological and socio-economic analysis of subtle oppressions of human autonomy in institutional, social, political, and economic practices

Physical Education

ICGP 101 American Flag Football

1

Prerequisites: -

A ball based sport course emphasizing techniques; non-contact game play, including dodging, throwing, and catching and the development of teamwork management, communication, and terminology

ICGP 102 Badminton

1

Prerequisites: -

A racket based sport course stressing technique, strategies, grip, serving, positioning and movement; game play in both singles and doubles

ICGP 103 Basketball

1

Prerequisites: -

A ball based sport course emphasizing attentiveness, dribbling, passing, shooting, rebounding, ball control, game play, and the development of game strategies

ICGP 104 Body Fitness	1
Prerequisites: -	
A comprehensive course in one or more exercise techniques: strength/resistance, cardio, plyometric, stretching, high-intensity interval training, and calisthenics; to maintain health and wellness	
ICGP 105 Cycling	1
Prerequisites: -	
A course designed on cycling instruction for safety, fitness, riding techniques, posture, communication, knowledge of the equipment and hazards, for recreational and commuter cycling	
ICGP 106 Discover Dance	1
Prerequisites: -	
A dance based course of current forms and techniques in one or more categories: African/Jazz, Worldwide Dances/Latin Dances, Professional Performance Dance, Modern Dance, Hip-hop/Funk	
ICGP 107 Golf	1
Prerequisites: -	
A club based game course designed on developing correct grip, stance, posture, swing, and the knowledge of equipment, rules, regulations, and etiquette	
ICGP 108 Mind and Body	1
Prerequisites: -	
A course stressing meditation postures, techniques, movement, and breathing to achieve the positive mental state	
ICGP 109 Selected Topics in Sports	1
Prerequisites: -	
Learning concepts, rules and strategies through planned and structured movements by way of sport or activity to enhance a healthy lifestyle	
ICGP 110 Self Defense (Striking)	1
Prerequisites: -	
An external martial arts (striking) course emphasizing hard physical impact and exertion, muscular strength and tension, maximizing speed and power, through the body coordination	
ICGP 111 Self Defense (Grappling)	1
Prerequisites: -	
An internal martial arts (grappling) course stressing timing, awareness, precision, and techniques, using the body leverage for throwing, take downs, pins, and submissions	
ICGP 112 Soccer	1
Prerequisites: -	
A ball based sport course stressing alertness, ball control, including dribbling, passing, trapping, shooting, ball movement, game play, and development of strategies through drills and competitive play	
ICGP 113 Social Dance	1
Prerequisites: -	
A dance based social sport or activity course of choreographed movements, styles and regulations from the International Ballroom (Standard) and the International Latin dances	

ICGP 114 Swimming**1****Prerequisites:** -

A water based sport course stressing swimming techniques, breathing, and knowledge of buoyancy, propulsion, and water safety

ICGP 115 Tennis**1****Prerequisites:** -

A racket based sport course of techniques, strategy, grip, serve, game play, ball tracking, timing, shot control, through drills, live ball hitting sessions, and competition

ICGP 116 Volleyball**1****Prerequisites:** -

A ball sport course emphasizing passing, setting, serving, developing strategies, positions, game play, teamwork management, and communication



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