

Fundamental Courses and General Education

Code	Name	Course Description and strengths
CHM 103	Fundamental Chemistry	Stoichiometry. Basic of the atomic theory and electronic structures of atoms. Periodic properties. Chemical bonds. Representative elements. Nonmetal and transition metals. Properties of gas, solid liquid and solution. Chemical equilibrium. Ionic equilibrium, ionic equilibrium, chemical kinetics and electrochemistry.
CHM 160	Chemistry Laboratory	Practice on basic laboratory techniques in topics concurrent with CHM 103
MTH 101	Mathematics 1	<p>Limits and Continuity : The concept of limit, computation of limits, Limits involving infinity, continuity, Limits and continuity of trigonometric functions The Derivative : Slopes and rates of change, The derivative, The chain rule, Higher order derivatives, Derivatives of transcendental functions (Trigonometric, Inverse trigonometric, Logarithmic, Exponential, and Hyperbolic functions, Implicit differentiation, Differentials, Linear approximations, The mean value theorem Applications of Differentiation : maximum and minimum values, Applied maximum and minimum problems, Increasing and decreasing functions, Concavity and inflexion points, Overview of curve sketching, Related rates, Indetermined forms and L'Hopital's rule Integration : Antiderivatives and indefinite integrals, The definite integrals, Average values and the fundamental theorem of calculus, Integration by substitution, Techniques of integration 9integration by parts, Integration of rational functions using partial fractions, Trigonometric techniques of integration : Integrals involving powers of trigonometric functions, Trigonometric substitution Applications fo the Definite Integral : Area between curves, Volume of solids of revolution (Disc method, Cylindrical shell method, Length of plane curves, Area of surfaces of revolution Improper Integraals : improper integrals with infinite intervals of integration, Improper integrals with infinite discontinuities in the interval of integration, Improper integrals with infinite discontinuities over intervals of integration Numerical integration ; Trapezoidal rule and simpson's rule</p> <p>Function of several variables : Graph of equation, Limit and continuity, Partial derivative, Differentials, Chain rule, Critical points, Second order partial derivative, Relative extrema, Maxima and minima, Saddle points</p>
MTH 102	Mathematics 2	Scalars and vectors, Inner product, Vectors product, Scalar triple product, Line and Plane in 3-space Mathematical induction, Sequences, Series, The integral test, The comparison test, The ratio test, The alternating series and absolute convergenc tests, Binomial expansion, Power series, Taylor's formula Periodic functions, Fourier series, Polar coordinates, Areas in polar coordinates, Definite integral over plane and solid regions, Double integrals, Double integrals, Double integrals in polar form, Transformation of variabl in multiple integrasl, trpl integrals in rectangular coordinates, Triple integrals in cylindrical and spherical coordinates
MTH 201	Mathematics 3	Basic concepts : types, order, degree First order equations : separation of variable, homogeneous equations, exact & non-exact equations, integrating factor, first order linear equations, Bernoulli's equations Higher order equations : linear equation, solution of linear equation with constant coefficients and with variable coefficients, Applications of first and second order equations Laplace transforms, Introduction to partial differential equations Vectors : vector function, curves, tangent, velocity and acceleration, curvature and torsion of a curve, directional derivative, gradient of scalar fild, divergence of a vector field, curl of a vecor field Vector integration : line integrals, surface integrals, volme integrals
MTH 303	Numerical Methods	Computer number representation and roundoff, interpolation, numerical integration the solution of nonlinear equations, the solution of system of linear equations; function approximation and data fitting, the solution of ordinary and partial differential equations

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PHY 103	General Physics for Engineering Students I	Emphasized on the applications of the laws of physics. Vectors. Motions in 1-, 2-, and 3- dimensions. Newton's laws of motion. Energy and work. Linear momentum. Roration. Torque and angular momentum. Equilibrium and elasticity. Fluids. Oscillations. Waves and sound. Thermodynamics. The kinetic theory of gases.
PHY 104	General Physics for Engineering Students 2	Emphasized on the applications of the laws of physics. Electric fields. Gauss's law. Electric potential. Capacitance. Current and resistance. Circuits. Magnetic fields due to currents. Induction and inductance. Maxwell's equations. Electromagnetic oscillations and Ampere's law. Alternating current. Electromagnetic waves. Interference. Diffraction. Photon and matter waves. Atoms.
PHY 191	General Physics Laboratory I	A laboratory course that accompanies the topics covered in PHY 101/PHY 103.
PHY 192	General Physics Laboratory 2	A laboratory course that accompanies the topics covered in PHY 102/ PHY 104.
Gen 101	Physical Education	This course aims to study and practice sports for health, principles of exercise, care and prevention of athletic injuries, and nutrition and sports science, including basic skills in sports with rules and strategy from popular sports. Students can choose one of several sports provided, according to their own interest. This course will create good health, personality and sportsmanship in learners, as well as develop awareness of etiquette of playing, sport rules, fair play and being good spectators.
Gen 111	Man and Ethics of Living	This course studies the concept of living and working based on principles of religion, philosophy, and psychology by fostering students' morality and ethics through the use of knowledge and integrative learning approaches. Students will be able to gain desirable characteristics such as faithfulness, social responsibility, respect of others, tolerance, acceptance of differences, self- discipline, respect for democracy, public awareness, and harmonious co-existence.
Gen 121	Learning and Problems Solving Skills	This course aims to equip students with the skills necessary for life-long learning. Students will learn how to generate positive thinking, manage knowledge and be familiar with learning processes through projects based on their interest. These include setting up learning targets; defining the problems; searching for information; distinguishing between data and fact; generating ideas, thinking creatively and laterally; modeling; evaluating; and presenting the project.
Gen 231	Miracle of Thinking	This course aims to define the description, principle, value, concept and nature of thinking to enable developing students to acquire the skills of systematic thinking, systems thinking, critical thinking and analytical thinking. The Six Thinking Hats concept is included. Moreover, idea connection/story line and writing are explored. Examples or case studies are used for problem solving through systematic thinking using the knowledge of science and technology, social science, management, and environment, etc.
Gen 241	Beauty of Life	This course aims to promote the understanding of the relationship between humans and aesthetics amidst the diversity of global culture. It is concerned with the perception, appreciation and expression of humans on aesthetics and value. Students are able to experience learning that stimulates an understanding of the beauty of life, artwork, music and literature, as well as the cultural and natural environments
Gen 341	Thai Indigenous Knowledge	This is a study of indigenous knowledge in different regions of Thailand with a holistic approach, including analyses from scientific, technological, social science and anthropological perspectives. Students will learn how to appreciate the value of indigenous knowledge and recognize the ways in which such knowledge has been accumulated—lifelong learning of indigenous people and knowledge transfer between generations. Students will learn to become systematic, self-taught learners.

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Gen 351	Modern Management and Leadership	This course examines the modern management concept including basic functions of management—planning, organizing, controlling, decision-making, communication, motivation, leadership, human resource management, management of information systems, social responsibility—and its application to particular circumstances.
LNG 221	Academic English in International Contexts	The course aims at developing the confidence and academic English skills necessary for learners in an international program. The learning and teaching involves the integration of the four language skills, thinking skills and autonomous learning. In terms of reading, the course focuses on reading for main ideas, summarizing skills, critical reading and interpretation skills through the use of real-world content. In terms of writing, the emphasis is on process writing and academic writing to enable learners to effectively use the information gained from reading to support their statements. In terms of speaking, the focus is on sharing opinion and exchanging information on issues related to the learners' content areas or their field of interest. In terms of listening, the focus is on listening to English talks and taking notes from authentic input.
LNG 222	Academic Listening and Speaking in International Contexts	This course aims at developing confidence and academic listening and speaking skills necessary for learners in an international program. The teaching and learning styles involve an integration of English into learners' content areas to enable them to think critically and communicate effectively. Learners will be able to listen to extended speech and lectures in their fields, share ideas and express opinions, conduct an interview for professional, collect data and present a survey project.
LNG 321	Academic Reading and Writing in International Contexts	The course aims at developing confidence and academic reading and writing skills necessary for learners in an international program. The teaching and learning styles involve an integration of English into learners' content areas to enable them to read academic articles in their chosen fields. Learners will be able to extract main points from the text, purposefully select required information to support their writing, write different forms of reports in their fields, use information obtained from reading and their own experience in writing an essay, and effectively use references and citations throughout the writing process.
LNG 201	Content-based Language Learning II (*Only for SIT's exchange student)	This course addresses the real language problems of students by providing a language adjunct for a content course. While learning a content-area English-medium course, the students also take LNG 201 which deals with the problems they have in the content-area course. This course, then, focuses on the students' real language, cognitive and affective problems as they arise in the content-area course. Through close cooperation with the content-area teacher, problems are dealt with both through classroom instruction and through teacher-guided self-instruction, thus fully preparing students for learning further content courses in an English medium.
LNG 211	Effective Listening	The aim of the course is to provide additional practice in English-language listening, in support of students' existing core discipline. The class concentrates on listening tips and strategies, with particular focus on note-taking skills. Emphasis is given to topics in the students' core discipline and the use of realistic recordings of conversations and lectures in their field of study.

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LNG 303	Oral Presentation Skills	The aim of the course is to reinforce knowledge of the basic elements of effective oral presentation. Importance of verbal and non-verbal communication will be highlighted throughout the course. Training on pronunciation, the use of transition signals and effective use of visual aids will also be focused. Self and peer assessment will also be encouraged to foster further improvement.
LNG 213	Laboratory Report Writing	The aim of the course is to reinforce knowledge of the basic elements of writing at the sentence, paragraph and essay level as well as to enable students to write a report in a format appropriate to their content-area courses e.g. a lab report. Grammar and organization will be combined with student practice at every step. In addition, the class will cover an introduction to summarizing and paraphrasing skills in order to reinforce students' awareness of problems about plagiarism.
LNG 260	Survival Thai for Foreign Students	Learn how to make basic conversations in Thai with appropriate words, sentence structures, grammar structures, with an understanding of Thai cultures.
LNG 261	Reading Thai for International Students	History of Thai language, Thai alphabet, compound letters, reading word, Reading phrases, Reading sentences, Reading short texts and Language and culture.
LNG 262	Conversational Thai for Foreign Students	Greetings and introductions, asking for and giving directions, making appointments and invitations, telephone conversations, giving opinions, narrating events, describing places, role-plays and simulations.
LNG 331	English for Employment	This course aims to train students in the skills necessary for gaining employment and in basic communication skills required in the workplace. The pre-employment objectives include interpreting advertisements, writing letters of application, preparing curricula vitae, telephoning for employment, and performing effectively in interviews. Preparation for interviews includes simulated one-to-one interviews, making pertinent concise statements and asking relevant questions. The course also includes speaking skills necessary for effective performance in an occupational environment, including: expressing opinions, agreement and disagreement; making requests, giving suggestions and drawing comparisons; asking for and giving clarifications; and accepting and opposing ideas.