BS CHEMICAL ENGINEERING

Course number	Course name	Course Description	No. of units	No. of hours
BCHE 211/D	Chemical Engineering Calculations 1	An introduction to the basic principles in material balances associated with chemical engineering operations and processes.	3 units	112
BCHE 212/L	Organic Chemistry	A course covering the nomenclature, occurence, and preparation as well as the physical and chemical properties of organic compounds. It also includes an overview of the basic concepts of biochemistry.	5 units	168
BCHE 311/D	Heat and Mass Transfer	This course discusses the Fourier Heat Transport equation and its application of heat flow by conduction, convection, and radiation. Heat transfer and process analysis are studied for heat exchangers, evaporators, and crystallizers. This course also discusses the principles of mass transport and its application in unimolecular and equimolar counter diffusion, simultaneous heat and mass transfer processes, and equipment design for gas absorption, gas-liquid contact operations, drying, and adsorption.	3 units	112
BCHE 313	Chemical Engineering Thermodynamics	This course discusses the applications of the laws of thermodynamics to closed and open systems involving physical and chemical transformations of ideal and real fluids. This course also discusses the thermodynamic analysis of power, refrigeration, and liquefaction cycles.	3 units	56
BCHE 312L	Physical Chemistry for Engineers 2	This is a continuation of Physical Chemistry for Engineers 1 starting with ternary liquid equilibrium with focus on liquid-liquid extraction and the application of Nernst Disttribution Law. The course covers chemical equilibrium, solutions of electrolytes and extension of equilibrium principles to electrochemistry. It also includes and introduction to chemical kinetics and colloidal chemistry. These topics provide a firm foundation for understanding the physical principles that govern physical systems.	3 units	112
BCHE 224	Advanced Engineering Mathematics in ChE	This course is a continuation of Differential Equations and is a combination of selected analytical and numerical methods of solutions to problems commonly encountered in chemical engineering. Laplace transforms and Fourier series are discussed to as a tool in solving ordinary and partial differential equations analytically. Numerical methods are applied in determining roots of non-linear equations, integration, differentiation and solutions of ordinary and partial equations. Knowledge of computer programming or the use of commercial softwares is essential to facilitate repetitive numerical calculations.	3 units	56

Course number	Course name	Course Description	No. of units	No. of hours
BCHE 321/L	Chemical Reaction Engineering	This course introduces to undergraduate students the fundamentals of chemical reaction engineering, kinetics and their mathematical description, and the key operational and design aspects of reactors normally encountered in the chemical industry. It starts with the interpretation of batch reactor data followed by the design equations of the three ideal reactor types (batch, CSTR, plug flow). Reaction systems studied include liquid and gaseous homogeneous reactions, heterogeneous catalytic reactions, and temperature effects.	3 units	112
BCHE 417/L	Plant Inspections and Seminars	This course deals with a series of lectures and seminars on selected topics that are highly relevant to chemical engineering but are not covered in any of the other formal courses. It covers recent advances in chemical engineering. Visits to industrial plants are also conducted during the term.	2 units	112

BS ELECTRONICS ENGINEERING

Course number	Course name	Course Description	No. of units	No. of hours
BECE 211/L	Electronic Devices and Circuits	This course is an introduction to the quantum mechanics of solid state electronics. Characteristics of diode and transistors (BJT and FET) are modeled, as well as biasing and circuit applications. The study of the transistors' small signal response in signal amplification and switching networks.	3 units lecture, 1 unit lab.	108
BECE 314/L	Modulation and Coding Techniques	This course discusses how communication system works. It discusses how the information transfers from one source to another. It includes random variables, bit error rate; matched filter; Digital modulation techniques; ASK, FSK, QAM, PSK/QPSK, CDMA and W-CDMA systems; signal space; generalized orthonormal signals; information measures-entropy; channel capacity; efficient encoding; error-correcting codes information theory; data compression; coding theory.	3 units lecture, 1 unit lab.	108
BECE 221/L -	Advanced Engineering Mathematica for ECE	This course deals with the study of selected topics in mathematics and their applications in advanced courses in engineering and other allied sciences. It covers the study of complex numbers and complex variables, Laplace and Inverse Laplace Transforms, Power series, Fourier series, Fourier Transforms, z-transforms, power series solution of ordinary differential equations, partial differential equations and numerical methods in engineering.	3 units lecture, 1 unit lab.	108

BS MECHANICAL ENGINEERING

Course number	Course name	Course Description	No. of units	No. of hours

Course number	Course name	Course Description	No. of units	No. of hours
BME 313	Heat Transfer	This course is deals with the different modes of heat and mass transfer; laws governing conduction, convection and radiation and its application to the design of common heat exchangers such as condenser, cooling coils and evaporators; and the environmental impact of their operation.	3 units lecture	54 hours
BME 317	Fluid Mechanics	The course deals with the nature and physical properties of fluids as well as the identification and measurement of fluid properties. It emphasizes the application of conservation laws on mass, energy and momentum to fluid systems either incompressible or compressible flow, inviscid or viscous flow as well as head loss calculation on pipes and fittings.	3 units lecture	54 hours
BME 211	Thermodynamics	A course dealing with the thermodynamic properties of pure substances, ideal and real gases and the study and application of the laws of thermodynamics in the analysis of processes and cycles. It includes introduction to vapor and gas cycles.	3 units lecture	54 hours

BS ELECTRICAL ENGINEERING

Course number	Course name	Course Description	No. of units	No. of hours
BEE 415/L	Instrumentation and Control	This course discusses the principles of controls and test measurements involving sensors, pneumatic controls, actuators, thermal detectors, thermocouples, thermistors, transducers, PID controllers, etc. The laboratory component of this course allows students to verify theoretical concepts pertaining to the study on control and testing; R, L and C measurements; detectors for the measurements of process variables; analysis of performance characteristics of control systems; electronics, magnetic, hydraulic and mechanical control	2 units lecture 1 unit laboratory	90
BECE 315/L	Logic Circuits and Switching Theory	This course in an introduction to digital electronics, which covers the fundamentals of digital logic circuit and switching theory. A review of number systems specifically the binary numbers and binary logic. The study of theorems and properties of Boolean algebra, Boolean functions, logic operations, digital logic gates, and gating networks. Gate-level minimization, combinational and sequential logic, race conditions, algorithmic state machines, and design of digital subsystems are also included.	3 units lecture 1 unit laboratory	108
BEE 313/L	ELECTRICAL Machines 1	Covers the basic principles of electromechanical energy conversion, generalized machine model, and the operating characteristics of DC motors and DC generators. The course also covers the speed regulation, parallel operation of the DC generators, variable load torque of DC motor, resistances of the armature and field windings, the applications of the series and compound DC motor and the straight line characteristics of the multiple generators connected in parallel connection.	2 units lecture 1 unit laboratory	90

BS COMPUTER ENGINEERING

Course number	Course name	Course Description	No. of units	No. of hours
CpE 112/L	Programming Logic and Design	This course introduces students on computer programming logic and design principle. The student will learn algorithms applicable to all programming languages, including: identifiers, data types, arrays, control structures, modular programming, generating reports, and computer memory concepts. The student will learn to use charts commonly used in business and information processing. Program logic will be developed using flowcharts and pseudo code. Programs will be written using any programming language	2 units lab	108
CEE 115	Technopreneurship	This course introduces the philosophy of building a career or perspective in life. The course covers the value of professional and life skills in entrepreneurial thought, investment decisions, and action that students can utilize in starting technology companies or executing R&D projects in companies as they start their careers. The net result is a positive outlook towards wealth creation, high value adding, and wellness in society.	3 units lecture	54
CpE 224/L	Logic Circuits and Design	The course includes design and analysis of digital circuits. This course covers both combinational and sequential (synchronous and asynchronous) logic circuits with emphasis on solving digital problems using hardwired structures of the complexity of medium and large-scale integration.	3 units lecture 2 units lab	162

BS CIVIL ENGINEERING

COURSE CODE	COURSE NAME	COURSE DESCRIPTION	No. of Units
BCE 211/F	Fundamentals of Surveying	This course deals with the use of principle surveying instruments, surveying measurements and error theory, basic plane surveying operations and computational method of positions, horizontal and vertical distance measurements, traverse and areas, horizontal and vertical curves, earthworks, and global positioning system. The overall course is designed to make the students able to learn and understand the theory and practice of basic survey measurements and to impact awareness on the various fields of surveying and types of instruments.	5
CEE 117	Statics of Rigid Bodies	A basic engineering science course of solid mechanics dealing with bodies that are or remain at rest. It is designed to provide fundamental concepts about forces, moments and couples and their systems. The concept of resultants and equilibrium of forces and moments is utilized to enable solution of statically determinate problems.	3

CEE 109	Engineering Economics	This course emphasizes the systematic evaluation of the costs and benefits associated with proposed technical projects. The students will be exposed to the concepts of the time value of money and equivalence; basic economy study methods; decisions under certainty; decisions recognizing risk; and decisions admitting uncertainty. It also presents the framework for selecting among alternative designs, for managing technologies over their life cycles, and for evaluating the finances of new ventures/projects.	3
DRAW 102/L	Computer Aided Drafting	This course deals with the concepts of computer-aided drafting (CAD); introduction to the CAD environment; terminologies; and the general operating procedures and techniques in entering and executing basic CAD commands.	2