

SUMMARY OF COURSE DESCRIPTIONS

BACHELOR OF SCIENCE IN ELECTRONICS & COMMUNICATIONS ENGINEERING

A. MATHEMATICS

COLLEGE ALGEBRA (MATH 115) - A course in algebra covering such topics as introductory set theory, real number system, relations, functions, operations, algebraic expressions, linear equations, quadratic equations, systems of equations, theory of equations, elementary matrix theory, combinatorial mathematics, etc.

CREDIT UNITS : 4 Units

PLANE AND SPHERICAL TRIGONOMETRY (MATH 113) - A course in trigonometry covering such topics as generalised trigonometric functions, fundamental trigonometric identities, logarithms, solutions of right and oblique triangles, application of trigonometric functions, solutions of right and oblique spherical triangles, application of terrestrial mensuration.

CREDIT UNITS : 3 Units

PLANE AND SOLID ANALYTIC GEOMETRY (MATH 123) - A course in plane and solid analytic geometry covering such topics as plane coordinate systems, equations and their loci, straight lines, conic sections, higher place curves, transformation of coordinates, coordinates in space, space loci, planes, quadratic surfaces, etc.

CREDIT UNITS : 3 Units

PRE-REQUISITE : College Algebra, Plane & Spherical Trigo

PLANE AND SOLID MENSURATION (MATH 122) - A course in plane and solid mensuration covering such topics as mensuration of the area, perimeter and centroid of plane figures, mensuration of the volume, surface area and center of gravity of solids, proofs and applications of Cavalieri's Theorem, Pappus Theorem and the Prismoidal Theorem.

CREDIT UNITS : 2 Units

PRE-REQUISITE : College Algebra, Plane & Spherical Trigo

DIFFERENTIAL CALCULUS (MATH 215) - A course in differential calculus covering such topics as derivatives, application of derivatives to extreme values of functions, related time rates, higher derivatives, curve tracing, differentials and its application, curvature of plane curves, indeterminate forms, and differentiation of vector - valued functions.

CREDIT UNITS : 5 Units

PRE-REQUISITE : Analytic Geometry

INTEGRAL CALCULUS (MATH 225) - A course in integral calculus covering such topics as anti-derivatives, integration methods, definite integrals, application of the fundamental theorem of integral calculus, vectors in three-dimensional space, partial derivatives, multiple integrals, and series expansion of functions.

CREDIT UNITS : 5 Units

PRE-REQUISITE : Differential Calculus

DIFFERENTIAL EQUATIONS (MATH 313) - Ordinary differential equations of the first order, linear differential equations with constant coefficients; simultaneous linear differential equations; applications.

CREDIT UNITS : 3 Units

PRE-REQUISITE : Integral Calculus

METHODS OF RESEARCH WITH PROBABILITY AND STATISTICS (STAT 003) - A technical research work accompanying the basic principles of statistics, charts, graphs, presentations and analysis of data averages, median mode, deviations, probability normal curves and applications.

CREDIT UNITS : 3 Units

PRE-REQUISITE : Integral Calculus

ECE MATHEMATICS (ECE 453) - Determinants and matrices; power series expansion; Fourier series; Fourier transform; Laplace transform; Hilbert transform; z-transform; complex variables; random variables; stochastic processes.

CREDIT UNITS : 3 Units

PRE-REQUISITE : Differential Equations

B. PHYSICAL SCIENCES

GENERAL & INORGANIC CHEMISTRY 1 LEC (CHEM 113) - Basic concepts of matter and energy, fundamentals of the wave mechanical theory of atoms and molecules, periodic arrangement of elements, chemical bonding, and calculations involving chemical changes.

CREDIT UNITS : 3 Units

CO-REQUISITE : Gen. & Inorganic Chem 1 Lab

GENERAL & INORGANIC CHEMISTRY I LAB (CHEM 113L) - A laboratory course to accompany Chem 113.

CREDIT UNITS : 1 Unit

CO-REQUISITE : Gen. & Inorganic Chem 1 Lec

GENERAL & INORGANIC CHEMISTRY II LEC (CHEM 123) - Deals with the study of the preparation, properties and importance of hydrogen, oxygen and water; also deals with the principles behind the 3 states of matter, solutions, and colloidal states of matter and properties of solutions.

CREDIT UNITS : 3 Units

PRE-REQUISITE : Gen. & Inorganic Chem 1

CO-REQUISITE : Gen. & Inorganic Chem 2 Lab

GENERAL & INORGANIC CHEMISTRY II LAB (CHEM 123L) - A laboratory course to accompany Chem 123.

CREDIT UNITS : 1 Unit
PRE-REQUISITE : Gen. & Inorganic Chem 1
CO-REQUISITE : Gen. & Inorganic Chem 2 Lec

PHYSICS I LEC (PHYS 213) - A course in general physics covering the study of standards of measurement and conversion of units; review of trigonometry; composition and resolution of vectors, conditions of equilibrium, friction, Kinematics, Newton's Second Law of Motion, and gravitation; uniform circular motion, work, energy, power, impulse and momentum, rotation of rigid bodies, elasticity, and vibratory motion.

CREDIT UNITS : 3 Units
PRE-REQUISITE : Algebra, Plane & Spherical Trigo,
Gen. & Inorganic Chem 2
CO-REQUISITE : Physics 1

PHYSICS I LAB (PHYS 213L) - A laboratory course to accompany PHYS 213.

CREDIT UNITS : 1 Unit
PRE-REQUISITE : Algebra, Plane & Spherical Trigo,
Gen. & Inorganic Chem 2
CO-REQUISITE : Physics 1

PHYSICS II LEC (PHYS 223) - electrical charges and fields, electric potential, electric current, direct current circuits, magnetism, and magnetic properties of current; magnetic forces and torques, induced electromotive force, capacitance, inductance, alternating currents, electromagnetic waves.

CREDIT UNITS : 3 Units

PRE-REQUISITE : Physics 1
CO-REQUISITE : Physics 2 Lab

PHYSICS II LAB (PHYS 223L) - A laboratory course to accompany Phys 223.

CREDIT UNITS : 1 Unit
PRE-REQUISITE : Physics 1
CO-REQUISITE : Physics 2 Lec

C. BASIC ENGINEERING SCIENCES

ENGINEERING DRAWING I (DRAW 111) - An introductory course to engineering drawing designed to teach students about the use of drafting instruments and materials, scale and units of measure, geometric constructions for defining points, lines, planes, and solids in space, orthographic projections, auxiliary views, and lettering. The three-hour laboratory time will be used to discuss the fundamentals of engineering drawing and to apply them on the given drafting exercises.

CREDIT UNITS : 1 Unit

ENGINEERING DRAWING II (DRAW 121) - A course that will develop the student's knowledge and abilities in the reading and preparation of engineering and mechanical drawings, technical sketching, the constructing and dimensioning of orthographic projections, isometrics, and sectional views and recognising and using standard engineering drawing symbol.

CREDIT UNITS : 1 Unit
PRE-REQUISITE : Engineering Drawing 1

ENGINEERING DRAWING III (DRAW 211) - A course that will develop drawings through computer software using Autocad R14.

CREDIT UNITS : 1 Unit
PRE-REQUISITE : Engineering Drawing 2

COMPUTER FUNDAMENTALS AND PROGRAMMING LEC (CS 002) - Introduction to computer systems; fundamentals of algorithms and flowchart; high level language; programming application.

CREDIT UNITS : 2 Units
PRE-REQUISITE : 2nd year standing

COMPUTER FUNDAMENTALS AND PROGRAMMING LAB (CS 002L) - Hands-on application on the computer to supplement CS 002; includes basic operations of DOS, Windows and Microsoft Office. High level language programming using C language.

CREDIT UNITS : 1 Unit
PRE-REQUISITE : 2nd year standing

ENGINEERING MECHANICS (MECH 315) - Statics and dynamics: Operations with the free body concept; equilibrium of coplanar and non-coplanar force systems; analysis of frames and trusses; friction; centroids and moments of inertia; motion of particles and rigid bodies; force, mass and acceleration; work and energy; impulse and momentum.

CREDIT UNITS : 5 Units
PRE-REQUISITE : Integral Calculus, Physics 2

STRENGTH OF MATERIALS (MECH 323) - Axial stress and strain; stresses for torsion and bending; combined stresses; beam deflections; determinate and indeterminate beams; elastic instability.

CREDIT UNITS : 3 Units
PRE-REQUISITE : Engineering Mechanics

THERMODYNAMICS (ME 313) - Laws of thermodynamics; energy and property relationships; ideal gas laws; thermodynamic processes and cycles; heat transfer basics.

CREDIT UNITS : 3 Units

PRE-REQUISITE : Integral Calculus, Physics 2

MATERIAL SCIENCE (ECE 403) - Physics of materials, properties of engineering materials (polymers, ceramics, glasses, semiconductors) including mechanical acoustical, electrical, magnetic, chemical, optical and thermal properties.

CREDIT UNITS : 3 Units

PRE-REQUISITE : Gen. & Inorganic Chem 2

ENGINEERING ECONOMY (EEcon 003) - Principles of accounting; time value of money; capital investments decision criteria; applications.

CREDIT UNITS : 3 Units

PRE-REQUISITE : Probability & Statistics

ENGINEERING MANAGEMENT (Eman 003) - Industrial organisation and management concepts, theories, principles, functions practices; human behaviour, introductions to decision making tools; PERT-CPM; case studies.

CREDIT UNITS : 3 Units

PRE-REQUISITE : Engineering Economy

ENVIROMENTAL SCIENCE (CE 323) - Effects of engineering works on the environment; ecology, environmental laws and policies; waste treatment; water and energy management; environmental engineering practices; international policies on electromagnetic interference.

CREDIT UNITS : 3 Units
PRE-REQUISITE : 5th year standing

D. PROFESSIONAL COURSES

ELECTRICAL CIRCUITS 1 LEC (EE 311) - Fundamental relationships in circuit theory; mesh and node equations; resistive networks; network theorems; solution of network problems using Laplace transform; transient analysis; methods of circuit analysis.

CREDIT UNITS : 3 Units
CO-REQUISITE : Electrical Circuits 1 Lab
PRE-REQUISITE : Integral Calculus, Physics 2

ELECTRICAL CIRCUITS I LAB (EE 311L) - An accompanying laboratory subject of EE 313. Involves experiments in the building of basic electrical circuits verifying the theories and principles of circuit analysis.

CREDIT UNITS : 1 Unit
CO-REQUISITE : Electrical Circuits 1 Lec
PRE-REQUISITE : Integral Calculus, Physics 2

ELECTROMAGNETICS (EE 333) - Vector analysis; steady electric and magnetic fields; dielectric and magnetic materials; coupled circuits; magnetic circuits; time-varying fields; Maxwell's equations; field and circuit relationships.

CREDIT UNITS : 3 Units
PRE-REQUISITE : Integral Calculus, Physics 2

ELECTRONICS 1 LEC (ECE 313) - Elementary semi-conductor theory; diode and transistor models; diode circuit analysis and applications; transistor biasing; small signal analysis; large

signal analysis; differential amplifiers; transistor amplifiers; Boolean logic; transistor switch combinational logic circuits.

CREDIT UNITS : 3 Units
CO-REQUISITE : Electronics 1 Lab
PRE-REQUISITE : Integral Calculus, Physics 2

ELECTRONICS 1 LAB (ECE 313L) - An accompanying laboratory subject of ECE 313. Involves experiments on solid state diode familiarizations and applications, transistor familiarizations and application, JFET and BJT characteristics curves, and preamplifiers.

CREDIT UNITS : 1 Unit
CO-REQUISITE : Electronics 1 Lec
PRE-REQUISITE : Integral Calculus, Physics 2

ELECTRICAL CIRCUITS 2 LEC (EE 321) - Complex algebra and phasors; simple AC circuits, AC network theorems; power in AC circuits; resonance; three-phase circuits; transformers; two-port network parameters and transfer functions.

CREDIT UNITS : 3 Units
CO-REQUISITE : Electrical Circuits 2 Lab
PRE-REQUISITE : Electrical Circuits 1

ELECTRICAL CIRCUITS 2 LAB (EE 321L) - An accompanying laboratory subject of EE 321. Involves experiments applied in alternating current, three-phase systems, two-port networks, power measurement, and transformers.

CREDIT UNITS : 1 Unit
CO-REQUISITE : Electrical Circuits 2 Lec
PRE-REQUISITE : Electrical Circuits 1

ELECTRONICS 2 LEC (ECE 323) - High frequency transistor models; analysis of transistor circuits; Feedback and operational amplifiers; combinational and sequential devices for logic circuits; integrated circuit families.

CREDIT UNITS : 3 Units
CO-REQUISITE : Electronics 2 Lab
PRE-REQUISITE : Electronics 1

ELECTRONICS 2 LAB (ECE 323L) - An accompanying laboratory subject of ECE 323. It involves experiments on frequency response of a transistor amplifier, cascaded transistor amplifier, differential amplifier, operational amplifier, transistor as a switch, digital as a circuit familiarizations, and filters.

CREDIT UNITS : 1 Unit
CO-REQUISITE : Electronics 2 Lec
PRE-REQUISITE : Electronics 1

LOGIC CIRCUITS AND SWITCHING THEORY LEC (ECE 343) - Review of number systems, coding and Boolean algebra; inputs and outputs; gates and gating networks; combinational circuits; standard form; minimization; sequential circuits; state and machine equivalence; asynchronous sequential circuits; race conditions; algorithmic state machines; design of digital sub-systems.

CREDIT UNITS : 3 Units
CO-REQUISITE : Logic Circuits & Switching Theory Lab
PRE-REQUISITE : Electronics 1

LOGIC CIRCUITS & SWITCHING THEORY LAB (ECE 343L) - Accompanying laboratory of ECE 343.

ELECTRONICS 3 LEC (ECE 413) - Switching operation of transistors; basic circuits for digital networks; passive and active wave shaping; pulse and digital circuits; clock circuits.

CREDIT UNITS : 3 Units
CO-REQUISITE : Electronics 3 Lab
PRE-REQUISITE : Electronics 2

ELECTRONICS 3 LAB (ECE 413L) - An accompanying laboratory subject of ECE 413. It involves experiments on passive and active waveshaping circuit, basic logic circuit, digital integrated circuits logic gates, advanced digital integrated circuits, flip flops, clock circuits, monostable and astable multivibrators.

CREDIT UNITS : 1 Unit
CO-REQUISITE : Electronics 3 Lec
PRE-REQUISITE : Electronics 2

COMMUNICATIONS 1 LEC (ECE 433) - Bandwidth; linear modulation circuits; angle modulation circuits; phase locked loop; pulse modulation; multiplexing; noise.

CREDIT UNITS : 3 Units
CO-REQUISITE : Communications 1 Lab
PRE-REQUISITE : Probability & Statistics Math 323

COMMUNICATIONS 1 LAB (ECE 433L) - An accompanying laboratory subject of ECE 433. It involves experiments on passive, active filters, tuned circuits; AM transmitter; frequency modulation; pulse amplitude modulation; diode detection; time division multiplexing; and frequency division multiplexing.

CREDIT UNITS : 1 Unit
CO-REQUISITE : Communications 1 Lec
PRE-REQUISITE : Probability & Statistics

COMMUNICATIONS 2 LEC (ECE 443) - Review of random variables, bit error rate; matched filter concept; Digital and other modulation techniques, ASK, FSK, PSK systems; signal space concepts; generalized orthonormal signals; information measures-entropy; channel capacity concept; efficient encoding; error correcting codes information theory; data compression; telephony fundamentals.

CREDIT UNITS : 3 Units

CO-REQUISITE : Communications 2 Lab

PRE-REQUISITE : Communications 1

COMMUNICATIONS 2 LAB (ECE 443L) - An accompanying laboratory subject of ECE 443. It involves experiments on PAM, noise, FSK (ASK, PSK), PCM, error detection and correction, telephony.

CREDIT UNITS : 1 Unit

CO-REQUISITE : Communications 2 Lec

PRE-REQUISITE : Communications 1

ENERGY CONVERSION LEC (EE 414) - Principles of energy conversion: electromechanical, photoelectric, photovoltaic, electrochemical, etc., motors, generators, and transformers; dynamic analysis.

CREDIT UNITS : 3 Units

CO-REQUISITE : Energy Conversion Lab

PRE-REQUISITE : Electrical Circuits 2, Electromagnetics

ENERGY CONVERSION LAB (EE 414L) - An accompanying laboratory subject of EE 414. It involves experiments on starting and speed control of a shunt motor; load characteristics of DC generators; parallel operation of separately excited generators; single-phase transformer; three-phase connection; three-phase alternator.

CREDIT UNITS : 1 Unit

CO-REQUISITE : Energy Conversion Lec

PRE-REQUISITE : Electrical Circuits 2, Electromagnetics

SIGNALS, SPECTRA, AND SIGNAL PROCESSING LEC (ECE 423) - Review of z transform; convolution; chirp-Z transform; wavelet transform; FIR filter; IIR filter; random signal

analysis; correlation functions; DFT; FFT; spectral analysis; applications of signal processing to speech, image, etc.

CREDIT UNITS : 3 Units
CO-REQUISITE : Signals, Spectra & Signal Processing Lab
PRE-REQUISITE : Probability & Statistics, ECE Math, Communications 1

SIGNALS, SPECTRA, AND SIGNAL PROCESSING LAB (ECE 423L) - An accompanying laboratory subject of ECE 423. It involves experiments on periodic and non-periodic signals; computation of transforms; sampling and quantization; measurements on filter response; FIR and IIR filter analysis and design.

CREDIT UNITS : 1 Unit
CO-REQUISITE : Signals, Spectra & Signal Processing Lec
PRE-REQUISITE : Probability & Statistics, ECE Math, Communications 1

MICROPROCESSOR / MICROCONTROLLER SYSTEMS LEC (ECE 463) - Survey of microprocessor / microcontroller organizations, microcomputer architecture; microprocessor programming; interfacing techniques; bus standards; microcomputer development systems and other tools for design; student project.

CREDIT UNITS : 3 Units
CO-REQUISITE : Microprocessor/Microcontroller Systems Lab
PRE-REQUISITE : Logic Circuits & Switching Theory

MICROPROCESSOR/MICROCONTROLLER SYSTEMS LAB (ECE 463L) - A laboratory course accompanying KOFT 513. Involves experiments in directly manipulating the microprocessor and design of I/O circuits directly interfaced in the microprocessor. A project culminates the course.

CREDIT UNITS : 3 Units
CO-REQUISITE : Microprocessor/Microcontroller Systems Lec
PRE-REQUISITE : Logic Circuits & Switching Theory

CONTROL SYSTEMS LEC (ECE 483) - Transfer functions; block diagrams; signal flow graphs; root Locus; Bode, Nyquist and polar plots; sensitivity and stability criteria; linear feedback systems; compensation techniques; PLC.

CREDIT UNITS : 3 Units

CO-REQUISITE : Control System Lab

PRE-REQUISITE : Electronics 2, Logic Circuits & Switching Theory

CONTROL SYSTEMS LAB (ECE 483L) - A laboratory course accompanying ECE 483. Involves experiments on time & main response of first and second order systems; modeling and simulation using Matlab; frequency response design using Matlab; root locus design using Matlab; characteristics and applications, PD, PI, PID controllers to simulated control system; PLC.

CREDIT UNITS : 1 Unit

CO-REQUISITE : Control Systems Lec

PRE-REQUISITE : Electronics 2, Logic Circuits & Switching Theory

ELECTRONICS DESIGN (ECE 501D) - This subject deals with the methodical approach in the design of different electronic apparatus, equipment, and systems.

CREDIT UNITS : 1 Unit

PRE-REQUISITE : Electronics 3, Industrial Electronics

INDUSTRIAL ELECTRONICS LEC (ECE 513) - Theory and operating characteristics of electronic devices and control circuits for industrial processes; industrial control applications; electronic instrumentation; transducers; data acquisition systems.

CREDIT UNITS : 3 Units

CO-REQUISITE : Industrial Electronics Lab

PRE-REQUISITE : Energy Conversion, Control Systems

INDUSTRIAL ELECTRONICS LAB (ECE 513L) - A laboratory course accompanying ECE 513. It includes experiments on SCR, triac, FET, three-phase rectifier, UJT, single-phase inverter, PLC and sensors.

CREDIT UNITS : 1 Unit

CO-REQUISITE : Industrial Electronics Lec

PRE-REQUISITE : Energy Conversion, Control Systems

BROADCAST ENGINEERING AND ACOUSTICS LEC (ECE 523) - Mixers and oscillators; radio frequency power amplifiers; mixers; modulation and demodulation circuits; transmitters; studio acoustics; recording and reproduction of audio and video by tape, disc and film.

CREDIT UNITS : 3 Units

CO-REQUISITE : Broadcast Engineering & Acoustic Lab

PRE-REQUISITE : Communications 3

BROADCAST ENGINEERING AND ACOUSTICS LAB (ECE 523L) - A laboratory course dealing with experiments with TV receivers (color and black/white), CRT circuits, sync circuits, RF video amplifiers, and IF sections of closed circuit TV, in relation to broadcasting theories.

CREDIT UNITS : 1 Unit

CO-REQUISITE : Broadcast Engineering & Acoustics Lec

PRE-REQUISITE : Communications 3

COMMUNICATIONS 3 LEC (ECE 533) - Transmission media; radiowave propagation wire and cable transmission systems; transmission lines and antenna systems.

CREDIT UNITS : 3 Units
CO-REQUISITE : Communications 3 Lab
PRE-REQUISITE : Communications 2

COMMUNICATIONS 3 LAB (ECE 533L) - An accompanying laboratory subject of ECE 533. It involves experiments on transmission lines; antennas; measurement of frequency, wavelength, and phase velocity in waveguides; generation of microwaves; detection of microwaves; attenuation measurement; optical fiber system.

CREDIT UNITS : 1 Unit
CO-REQUISITE : Communications 3 Lec
PRE-REQUISITE : Communications 2

COMMUNICATIONS 4 (ECE 543) - Signal transmission modes; spread spectrum modulation system; terrestrial microwave; satellite systems; switching and handling systems; and mobile systems and standards; paging systems; cellular radio systems; PSTN; OSI; ISO.

CREDIT UNITS : 3 Units
PRE-REQUISITE : Communications 3

COMMUNICATIONS 5 (ECE 563) – Communication systems analysis and design; operating performance and interface standards for voice and data circuits; private communication systems planning and design.

CREDIT UNITS : 3 Units
PRE-REQUISITE : Communications 3

ECE COMPUTER APPLICATIONS LEC (ECE 553) - Computer -aided applications in circuit, communication, electronics, or other principles and programs by students in C language; use of computers using available software (Matlab, Electronic Workbench, PSPICE, etc.).

CREDIT UNITS : 3 Units
CO-REQUISITE : ECE Computer Applications Lab
PRE-REQUISITE : Computer Fund. & Prog., Electronics 3

ECE COMPUTER APPLICATIONS LAB (ECE 553L) - A laboratory course accompanying ECE 553. It includes exercises using C-language programming and using softwares such as Matlab, Electronic Workbench, PSPICE, MICROCAP, etc.

CREDIT UNITS : 1 Unit
CO-REQUISITE : ECE Computer Applications Lec
PRE-REQUISITE : Computer Fund. & Prog., Electronics 3

DATA COMMUNICATIONS (ECE 573) - Data communications systems; terminals, modems; terminal control units; multiplexers; concentrators; front-end processors; common carrier services; data communication system design; networking.

CREDIT UNITS : 3 Units
PRE-REQUISITE : Communications 1

ECE LAWS, CONTRACTS AND ETHICS (ECE 583) - Contracts; warranties; liabilities; patents; bids; insurance; other topics on the legal and ethical positions of the professional engineer.

CREDIT UNITS : 3 Units
PRE-REQUISITE : 5th year standing

ECE SEMINARS AND FIELD TRIPS (ECE 591) - Seminars and lectures on current topics on electronics and communications engineering development; field trips to different companies and plants dealing with electronics and communications facilities.

CREDIT UNITS : 1 Unit
PRE-REQUISITE : 5th year standing

ECE SAFETY (ECE 082) - Chemical safety; electrical safety to include TVSS and grounding electrostatic discharge; Personnel Safety/ Health including Worker Protection and Introduction to Ergonomics; environmental related safety measures such as water and energy consumption; EMI/EMC; SOLAS.

CREDIT UNITS : 2 Units

PRE-REQUISITE : 5th year standing

PRACTICUM / PROJECT STUDY (ECE 001/ECE 502) - Industry exposure of students for them to match school acquired competencies and knowledge to the realities and problems of industry. This may include involvement in industry's energy and manpower requirements, development and research concerns, training, application of principles, environmental concerns, ethical and behavioural concerns, decision-making, equipment and materials management. Project study related to the industry is an alternative; methods of research and principles of electronic design.

CREDIT UNITS : 3 units

PRE-REQUISITE : Probability & Statistics

ENGINEERING FOUNDATION (CE 521) - plant design and construction to include foundations and structure; outside plant engineering; surveying.

CREDIT UNITS : 1 Unit

PRE-REQUISITE : Strength of Materials

E. ELECTIVE COURSES:

COMPUTER SYSTEMS ARCHITECTURE (ECE 013) - Von Neumann machines instructions set interpretation; control structures; interrupts; addressing techniques; I/O memory systems; mainline computers; pipeline computers; multiple address machines; character machines;

protection and performance; multiprocessors and networks; micro-programming; non-Von neumann machines.

CREDIT UNITS : 3 Units

PRE-REQUISITE : Microprocessor Systems

NUMERICAL METHODS (ECE 022) - An introduction to those parts of numerical analysis of usefulness in the solution of engineering problems, numerical methods for linear and non-linear systems of equations, matrix, eigen-value problems, polynomials approximation and interpolation, numerical integration with application on solution of different equations.

CREDIT UNITS : 2 Units

PRE-REQUISITE : ECE Math, Computer Fund. & Prog.

ELECTRONIC NAVIGATIONAL AIDS & DEVICES (ECE 043) - A course in the theory of electronic navigational aids and devices for air and sea navigation; the problems in navigation and the principles of electromagnetic wave theory and electronic circuitry techniques, as well as problems of modern navigation, principles and theories of such devices as radar, instrument landing systems, omnirange facilities, long range navigation (LORAN) facilities, automatic direction finder (ADF), distance measuring equipment (DME), and radio beacons.

CREDIT UNITS : 3 Units

PRE-REQUISITE : Communications 3

MEDICAL AND BIOMEDICAL ELECTRONICS (ECE 063) – Medical and bio-medical applications of Electronics; sensor, devices, equipment and systems.

CREDIT UNITS : 3 Units

PRE-REQUISITE : Electronics 3