Course Description

A0111101 Mathematics (1) {3} [3-3]

Functions and Models: Four ways to represent a function, Trigonometric Functions, Exponential Functions, Inverse Functions and Logarithms; Limits and Derivatives : The Limit of a Function, Continuity, Limits at Infinity, Horizontal Asymptotes, Derivatives of Polynomials and Exponential Functions, Hyperbolic Functions; Applications of Differentiations : L'Hospital's Rule and Indeterminate Forms, Maximum and Minimum Values, Optimization Problems; Integrals and Applications : The Definite and Indefinite Integrals, The Substitution Rule, Areas between Curves, Volumes, Volumes by Cylindrical Shells.

Prerequisite: None

A0111102 Mathematics (2) {3}[3-3]

Techniques of Integration: Integration by Parts, Integration, Trigonometric Integrals, Trigonometric Substitution, Integration by Partial Fractions, Strategy for Integration, Improper Integrals; Polar Coordinates and its Applications; Sequences and Series: Sequences and Series Convergence Tests, Maclaurin's and Taylor's Formulas, Applications on Sequences and Series.

Prerequisite: A0111101 Mathematics (1)

A0111201 General Physics (1){3} [3-3]

Units Physical Quantities; Vectors; Motion in One Dimension; Motion in Two Dimensions; The Laws of Motion: Force and Interaction, Newton's laws, Mass and Weight, Friction; Energy of a System: Work, Kinetic Energy, Potential Energy, Power; Momentum Impulse and Collisions; Dynamics of Rotational Motion: Torque, static, Conditions for Equilibrium, Center of Gravity; Fluid Mechanics: Static Fluid, Dynamic Fluid; Oscillatory Motion; Wave Motion.

Prerequisite: None

A0111202 General Physics (2) {3} [3-3]

Electrostatics: Electric Charges, Coulomb's Law, Electric fields; Gauss's law; Electric potential; Capacitance and Dielectrics; DC-Circuits: Current, Resistance, Electromotive Force; Magnetostatics: Magnetic Field, Magnetic Forces; Sources of Magnetic Field; Electromagnetic Induction; Inductance; Alternating Current Circuits; Electromagnetic Waves.

Prerequisite: A0111201 General Physics (1)

A0111203 General Physics Lab. {1} [1-2]

Experimental error and data analysis; Measurements; Force Table; Motion in One and Two Dimensions; Newton's Second Law; Friction; Work and Energy; Simple Harmonic Motion: Simple Pendulum, Spring Mass system; Electricity: Ohm's Law, and Kirchhoff's Law.

Co-requisite: A0111201 General Physics (1)

A0111301 General Chemistry [3-3] {3}

Matter Classification and Properties: Elements, Atoms, Ionic and Covalent Compounds; Measurements and Dealing with Numbers; Periodic Table Chemical Calculations; Chemical Reactions in Solutions; Redox Reactions; Electronic Structure of Atoms; Basics of Chemical Bonding and Structure of Molecules; Properties of Gases, Liquid and Solid State; Intermolecular Forces; Solutions and Concentrations; Physical Properties of Solutions; Kinetics: To Study The Rates of Reactions, Acid-Base Equilibrium, pH Measurements, Thermo Chemistry and Thermodynamics, Energy and Chemical Changes.

Prerequisite: None

A0112101 Linear Algebra {3} [3-3]

Linear algebra: Matrices, Vectors, Determinants, Solution of Linear Systems of Equations, Inverse of a Matrix; Matrix Eigenvalues Problems: Eigenvalues, Eigenvectors, and Diagonalization; Complex Analysis: Complex Numbers and Functions, Analytic and Harmonic Complex Functions, Exponential, Trigonometric and Logarithmic Complex Functions.

Prerequisite A0111102 Mathematics (2)

A0811201 Computer Skills (Engineering) {3} [3-3]

The Basic Concepts of Programming using C++ language: C++ Programming; Controls Structures; Functions; Arrays; Pointers; An introduction to Classes and Objects.

Prerequisite: A0331700 Computer Skills (Remedial)

A0811202 Engineering Workshops {1} [1-2]

Workplace safety and use of tools; Basic skills of measuring and machining; Basic skills of welding; Household electric circuit installation; Basics of carpentry and its tools.

Prerequisite: None

A0812201 Communication Skills Engineering and Ethics {3} [3-3]

Basics of Communication Skills: Communication Process, Verbal and Non-Verbal Communication, Barriers to Communication; Listening Skills, Types of Listening, Speaking Skills: Strategies for Developing Speaking Skills, types of Speaking, Effective Presentation Strategies; Reading Skills: Reading Techniques, Reading Comprehension; Writing Skills: Attributes of Technical Writing, Benefits of Technical Writing, Types of Writing, Research Papers, Technical Reports, Job Application.

Engineering ethics: applied engineering ethics and moral principles; engineer's right's responsibilities and obligations towards society, clients and his engineering profession; engineering code of ethics.

Prerequisite: A0161201 English Communication Skills

A0831201 Engineering Drawing {2} [1-3]

Use of instruments; lettering; Drawing of basic views and projection method; orthographic; isometric drawing and sketching; sectional views; computer aided design applications using AutoCAD (2D & 3D) in all engineering aspects.

Prerequisite: None

A0832101 Differential Equations {3} [3-3]

Different methods of solving ordinary differential equations applicable to the first, second and higher-order DEs, modeling of some engineering, physical, and social problems. Series Solutions of ODEs. Laplace Transforms, Transforms of Derivatives, solving ODEs by Laplace method.

Prerequisite: A0111102 Mathematics (2) (to be passed)

A0832102 Engineering Statistics {3} [3-3]

Applications of statistics in engineering; Introduction to descriptive statistics, presentation and treatment of data; introduction to probability theory and probability distribution (discrete and continuous); counting techniques; sampling theory; statistical estimation; statistical hypothesis testing; correlation; finding regression equations and regression analysis.

Prerequisite: A0111101 Mathematics (1)

A0833101 Numerical Analysis {3} [3-3]

General numerical methods: equation solving via iteration, interpolation; numerical integration, and numerical differentiation; numerical methods in linear algebra, Gauss elimination, least squares method, numerical methods for differential equations.

Prerequisite: A0112101 Linear Algebra

A0812101 Discrete Mathematics {3} [3-3]

Introduction to Discrete Mathematics: Logic, Relations, Functions, Basic Set Theory, Countability and Counting Arguments, Proof Techniques, Mathematical Induction, Graph Theory, Combinatorics, Discrete Probability, Recursion, Recurrence Relations, and Number Theory; The Fundamental Mathematical Tools Used in Computer Engineering as: Sets, Relations, and Functions; Propositional Logic: Predicate Logic, and Inductive Proofs, Summations, Recurrences, and Elementary Asymptotic; Counting and Discrete Probability; Undirected and Directed Graphs; Introductory Linear Algebra with Applications in Computer Engineering.

Prerequisite: A0111101 Mathematics (1)

A0812301 Object Oriented Programming {3} [3-3]

Introduction to Object Oriented Programming; Classes; Objects; Strings; Control Statements; Methods Arrays; Parameter Passing, Encapsulation, Inheritance, Polymorphism and an Introduction to The Graphical User Interface (GUI).

Prerequisite: *A0811201 Computer Skills (Engineering(Pass)

A0812302 Object Oriented Programming Lab {1} [1-2]

The object oriented programming laboratory reinforces understanding of basic object oriented programming concepts and techniques (objects, classes and subclasses, methods) and their expression. The lab provides practice using object creation, initialization, message passing, class hierarchies, inheritance, polymorphism and templates. It also provides practice using non-object aspects such as loops and conditionals

Co-requisite: A0812301 Object Oriented Programming

A0812303 **Data Structure {3} [3-3]**

Design and Analysis of Diverse Basic Data Structures both Sequentially and by Using Linked Representation for: Stacks, Queues, Lists, Trees, Graphs, Hashing; Recursion; Design and Analysis of Different Searching and Sorting Algorithms, Studying the Computational Complexities of these Algorithms.

Prerequisite: A0812301 Object Oriented Programming

A0812401 Digital Logic Circuit {3} [3-3]

Numbering System and Information Representation: Arithmetic Operations, Decimal and Alphanumeric Codes, Binary Logic; Boolean Algebra: Identities, Functions and Manipulation, Standard Forms, Simplification, Logic Gates, , Integrated Circuits; Combinational Logic Design: Circuits (Gate Level), Design Hierarchy and Procedures, Computer-Aided Design, Combinational Two-Level and Multi-Level Implementations, Arithmetic (Add, Subtract, Multiply) and Other Popular Modules (Multiplexers, Encoders, Decoders); Sequential Logic Design: Latches, Flip-Flops, State Machine Design and Minimization (Mealy Digital and Moore Models); Design Problems.

Prerequisite: A0111101 Mathematics (1)

A0812402 Digital Logic Circuits Lab {1} [1-2]

The Digital Logic Circuits laboratory develops students with the ability of identifying the digital logic gates and combinational logic circuits such as adders, decoders. Students are also conducting experiment with memory elements (flip-flops) and sequential logic circuits.

Co-requisite : A0812401 Digital Logic Circuits

A0813201 Engineering Economy and Management {3} [3-3]

Engineering Project Development; Decision Making; Basic Concepts of Capital Investment: Formulas and Applications, Rates of Return, Economic Feasibility of Projects (Net Future Value, Net Present Value, and Equivalent Uniform Cash Flow); Comparison of Mutually Exclusive Proposals; Benefit-Cost Ratio Method; Depreciation; Corporate Taxation; Resource Allocation.

Prerequisite: A0111101 Mathematics (1)

A0813301 Database Systems {3} [3-3]

Database Concepts; Introducing Database Management Systems; Database Architecture; The Relational Data Model; Database Integrity; Functional Dependencies and Normalization; Entity-Relationship Diagrams; Relational Algebra; SQL.

Prerequisite: A0812301 Object Oriented Programming

A0813302 Software Engineering {3} [3-3]

Full Cycle of a Software System Development Effort: Including Requirements Definition, System Analysis, Design, Implementation, and Testing; Special Emphasis is Placed on System Analysis and Design; The Design Phase Includes Development of a User Interface; A large Term Project Incorporates the Full Software Life Cycle.

Prerequisite: A0812303 Data Structure

A0813401 Advanced Digital Design {3} [3-3]

Overview of Digital Design; Two Level Minimization and Implementation Using PLAs/PALs; Combinational Logic Implementation Technologies; CAD Tools for Logic Minimization and Synthesis; Arithmetic Logic Circuits: Adders, Multipliers; Memory Elements and Clocking; Registers, Counters, Shifters; Memory: Random Access Memory, Read Only Memory; Synchronous Sequential Logic Design; Asynchronous Sequential Logic Design.

Passing prerequisite: *A0812401 **Digital Logic Circuits(Pass)**

A0813402 Microprocessors {3} [3-3]

Introduction to the Microprocessor and Microcomputer; The Microprocessor and its Architecture; Addressing Modes; Instruction Set; Programming the Microprocessor using Assembly Languages; 8086 and 8088 Hardware Specifications: Memory Interface, Basic I/O Interface, Interrupts, Keyboard and Printer Interface, PPI 82C55, ADC, DAC and DMA Interface.

Prerequisite: A0812401 Digital Logic Circuits

A0813404 Microprocessors Lab {1} [1-3]

In Microprocessor's laboratory, students are introduced to a detailed explanation of the Intel Microprocessor 8086 and 8088 instruction sets, and how to develop programs by using assembly language which communicates directly with peripheral devices. As well as, how to apply and validate those codes using TASM Turbo Assembler Program, DOS and BIOS Function Call. In addition to that, the lab offers other facilities by being one of the computer labs which available to help students in projects preparation

Co-requisite: A0813402 Microprocessors

A0813501 Computer Networks [3-3] {3}

Uses and classification of computer networks, Multiple access methods, Layered network structure, OSI and TCP/IP Reference models, Network standardization, Physical layer, Basic definitions related to digital data transmission, Functions of data link layer: Framing, Flow control, Error control, HDLC, SLIP and PPP protocols, MAC sub layer, Repeaters, LAN, MAN and WAN protocols, Bridges, Routers, Gateways and introduction to routing algorithms

Prerequisite: A0812401 Digital Logic Circuits

A0814301 Algorithms {3} [3-3]

Topics include Functions Growth: asymptotic notation, standard notations; Sorting: Heap sort, Quick sort, Merge Sort; Bubble sort. Graph algorithms: Searching a Graph, shortest path; String Matching; NP Completeness.

Prerequisite: A0812301 Object Oriented Programming

A0814401 **Embedded Systems {3} [3-3]**

Introduction to Embedded Systems; Introducing PIC 16 Series: Architecture Overview of PIC16F84A, The 16F84A Memory, Power Up and Reset; Building Assembly Programs: Introduction to Assemblers, 16 Series Instruction Set; Parallel Ports; PIC 16F87XA: Architecture Overview, Special Memory Operations; The physical interface; Interrupts, Counters and Timers: Working with Interrupts, Counters and Timers, Watchdog Timer, Sleep Mode, Capture Mode, Compare Mode, PWM Module; Serial Communication; Data Acquisition.

Prerequisite: A0812401Digital Logic Circuits

A0814402 Embedded Systems Lab {1} [1-2]

Introduction to Microcontroller-Based Embedded Systems; Introduction to PIC Microcontrollers; Input Output Ports; Software Generated Delays; Hardware Generated Delays (Timers); Interrupts; Physical Interface: Keypads, Motors, Seven-Segment Displays, LCDs; Pulse Width Modulation (PWM); Serial Communication; Analog to Digital Converters; Running the Experiments includes Connecting Electronic Circuits and Writing the Related Programs Using Assembly Language.

Co-requisite A0814401 Embedded Systems

A0814404 Computer Architecture and Organization

Computer architecture and design include topics such as RISC instruction set architectures. Data path design. Control unit design. Pipelining. Memory systems. Hierarchical Memory Design. Virtual memory. Instruction level parallelism (ILP), dynamic scheduling, and branch prediction. Limits on ILP and software approaches to exploit more ILP. Introduction to Parallel Processing. Flynn's classification. Symmetric Multiprocessors. Cache coherence.

Prerequisite: A0812401Digital Logic Circuits

A0814405 Computer Architecture and Organization Lab {1} [1-2]

Practical applications on some topics covered in architecture and computer organization course to implement basic MIPS using VHDL and FPGA.

Co-requisite: A0814404 Computer Architecture and Organization

A0814406 Operating Systems {3} [3-3]

General Introduction to the Techniques used to Implement Operating Systems and Related Kinds of Systems Software; Process Management: Creation, Synchronization and Communication; Processor Scheduling; Deadlock: Prevention, Avoidance, and Recovery; Main Memory Management; Virtual Memory Management: Swapping, Paging, Segmentation and Page-Replacement Algorithms; Control of Disks and other Input/output Devices; File System Structure and Implementation; Protection and Security; Distributed Systems.

Prerequisite: A0812401 Digital Logic Circuits

A0814601 Field Training {1} [8 continuous Weeks]

A practical experience to be gained through working for eight continuous weeks in accredited establishments.

Prerequisite*:* Completion of 115 credit hours

A0815301 Intelligent Systems and Neural Networks {3} [3-3]

Introduction: Intelligent Systems, Terms and Concepts; Search; Agent Architectures; Machine Learning; Genetic Algorithms; Perception and Understanding: Vision, Speech, Natural Language Processing; Representation and Reasoning: Predicate Logic, Frames, Production Systems, Resolution Theorem Proving; Learning: connectionist Models, Symbolic Learning; Neural Networks: Feedback Neural Networks, Learning Methods, Classification Methods, Cellular Neural Networks.

Prerequisite: A0814301 Algorithms

A0815401 Distributed Systems and Parallel Processing {3} [3-3]

How to Distribute the Processing Across Platforms Using Remote Library Services; Distribute Data and Programs to Remote Machines; Take Advantage of Multiple Processers on a Single Machine and Manage Remote Tasks.

Prerequisite*:* A0814406 Operating Systems

A0815501 Computer Networking Protocols {3} [3-3]

Addressing (MAC address, IP address, and Port Number); IP Routing: Static Routing, RIP Routing, Load Balancing, Routing Table; OSPF: Single-Area, Multi-Area; EIGRP; IS-IS; BGP; IPv6: IPv6 Addressing, Obtaining IPv6, IPv4 and IPv6 Coexistence; Connecting to WAN: WAN Technologies, PPP protocol, Frame Relay, MPLS.

Prerequisite: *A0813501 Computer Networks (Pass)

A0815502 Computer Networks Lab [1-2] {1}

Contemporary Network Protocols and Experience in Using Automated Tools or Other Techniques to Analyze and Evaluate Security Mechanisms; Understanding Security Properties and Requirements: Authentication, Key establishment, and Fairness; Several Models and Tools Used in Security Analysis and Examine their Advantages and Limitations: Constraint Solving, Process Algebras, Protocol Logics, Probabilistic Model Checking, Game theory; Models Based on Logic Programming: Privacy Systems, Web Security, and Trusted Computing Architectures.

Co-requisite: A0815501 Computer Networking Protocols

A0815503 Networks and Data Protection Systems {3} [3-3]

Recent advances in computer networks and system security; fast and secure network systems; secure storage systems; rapid intervention detection systems; effective systems of misuse, basic concepts in computer security and current application in current identification; the privacy preservation in modern operating systems.

Prerequisite: A0815501 Computer Networking Protocols

A0815601 Graduation Project (1) [1} [1-2]

Students work in groups to conduct a graduation project in two phases, graduation project (1) is the first phase which includes developing proposal, literature review, problem identification, and data collection.

Prerequisite: * A0814601 field training(pass)

A0815602 Graduation Project (2) {2}2 -4]

This Project completes and implements the work undertaken in project (1); after full implementation of the graduation project's goals, the student must present a comprehensive report and he must present his findings to an examination panel.

Prerequisite: A0815601Graduation Project (1)

A0822502 Electronics {3} {3-3}

Introduction to Electronics; Semiconductors: Intrinsic and Extrinsic Semiconductors, Electrical Properties of Semiconductors, Diffusion Process in Semiconductors; The PN Junction Diode: Forward, Reverse Biased Junction, V/I Static Characteristics, Diode Types: Zener, LED, and Photodiode; Diode Applications: Rectification, Clipper, and Clamper Circuits, Voltage Multipliers; Bipolar Junction Transistors: CB and CE Characteristics, DC Biasing and Analysis; BJT Applications: BJT as a Switch, and Amplifier; Field-Effect Transistor: V/I Characteristics of JFET and MOSFET, DC Biasing and Analysis; Biasing of Transistor (BJT and FET); Single-Stage Amplifier; Cascaded BJT and FET Amplifiers; Composite Transistor Stages; Operational Amplifiers and Applications; Differential Amplifier; Operational Amplifier Architectures; Frequency Response of Amplifiers; Negative-Feedback Amplifiers.

Prerequisite: A0872303 Electrical circuits

A0823502Electronics Lab. {1} {1-2}

Diode characteristics: clipping and clamping circuits, half-wave and full-wave rectification, Zener diode, and voltage regulation; BJT characteristics and biasing circuits; FET characteristics and biasing circuits; transistor amplifiers; frequency response of single-stage and multi-stage transistor amplifiers, transfer characteristics of cascade amplifier; differential amplifier; operational amplifiers and applications; oscillators; passive and active filter.

Co-requisite: A0822502Electronics

A0823401Signals and Systems {3} [3-3]

Classification of signals, basic concepts of sampling, basic continuous-time and discrete-time signals; signal processing using MATLAB; classification of systems, properties of continuous-time LTI systems, proprieties of discrete-time LTI systems, convolution processes, Laplace transform, transfer function; Fourier series; Fourier transform and applications, power spectral density ,frequency response.

Prerequisite: A0872303Electric circuits

A0823402Communications Systems {3} [3-3]

Review of Fourier transforms; spectra, filters, and Hilbert transform; analog modulation techniques: AM, FM, and PM; band-pass noise representation: noise performance of analog modulation; FDM; Nyquist criteria; matched filter and noise performance;   inter symbol interference (ISI) and ways to address this problem;   binary   band-pass transmission:

BASK, BFSK, BPSK, and DPSK; geometric representation of signals: orthogonal signals, correlation receivers and signal constellations; M-ary band-pass digital transmission: ASK, PSK, FSK, and QAM; noise performance and bandwidth efficiency; synchronization.

Prerequisite: A0823401Signals and Systems

A0823503 Digital Electronics {3} {3-3}

Digital electronic signals and switches: digital signal, clock waveform, serial and parallel representation, applications of relay, diode and BJT as a switch; digital logic families: RTL, DTL, TTL, ECL, MOS and CMOS logic family, interfacing between families; timing circuits: bistable, monostable, astable circuits and 555-timers; interfacing to the analog world: DAC and ADC circuits, sample and hold circuits; memory concepts: RAM, ROM, magnetic and optical storage.

Prerequisite: A0822502Electronics (pass)

A0823504 Digital Electronics Lab {1} {1-2}

Characteristics of switching devices, characteristics of logic gates: RTL, TTL, and COMS, interfacing of TTL & CMOS gates; analysis and design of multivibrators circuit; application of 555 timers; DAC and ADC circuits.

Co-requisite: A0823503Digital Electronics

A0872303Electrical Circuits {3} [3 – 3]

Basic components and electric circuits: units and scales, current, voltage, power, voltage and current sources, ohm's law; voltage and current laws: Kirchhoff's voltage, Kirchhoff's current laws; nodal and mesh analysis; techniques of circuit analysis: linearity and superposition, source transformations, Thevenin and Norton equivalent circuits, maximum power transfer; energy storage elements: capacitor, inductor; basic RL and RC circuits: the source free RL Circuit, The source free RC circuit, The Unit-Step Function; The RLC circuit: the source free parallel circuit, the over damped parallel RLC circuit, complete response analysis; introduction to ac Circuits.

Prerequisite: A0111202General Physics (2) (Engineering)

A0872304Electrical Circuits Lab. {1} [1 – 2]

DC circuits: Kirchhoff's voltage and current laws, network theorems, maximum power transfer; transient circuits: RL, RC, RLC; resonant circuits; magnetically coupled circuits; two-port networks.

Co-requisite: A0872303Electric Circuit

A0873501 Machines and Electrical Power {3} [3 – 3]

Principles of electromagnetic circuit; single-phase transformers: ideal, practical transformer, equivalent circuit, auto-transformer; three-phase transformer: types, connection; AC machinery fundamentals: principle of work, rotating magnetic field; three phase induction motors: principle of work, properties an performance, starting, speed control; synchronous machines: construction, internal generated voltage, equivalent circuit; operation modes: alone, parallel; synchronous motors: steady state operation, starting.

Prerequisite: A0872303 Electrical Circuits

A0874501 Control Systems {3} [3-3]

Concept of control systems; open-loop and closed-loop systems; mathematical modeling of physical systems; transfer function and system modeling diagrams; response characteristics of control systems; specifications of system performance; stability analysis of linear control systems; Routh's stability criterion; time-domain analysis of control systems; design of controllers and compensators

Prerequisite: A0823401 Signals and Systems

A0814302 Mobile Applications Development {3} [3-3]

Understand Mobile Application Platform; Develop a User Interface Using Certain Types of Controls; Explore User Input, Variables, and Operations; Using Lists, Arrays, and Web Browsers in Mobile Applications; Adding Audio Such as Music; Create Applications that Requests Data, stores it, and then Modifies that Data to Produce a Result Throughout Multiple Activities.

Prerequisite: A0812303 Data Structure

A0814303 Requirements Engineering[3-3] {3}

Introduction to requirements engineering: Types of requirements, Specifying and measuring internal and external qualities: performance, reliability, availability, safety, security, etc.; Techniques for discovering and eliciting requirements, Analyzing requirements; Requirements specification and system modeling; Requirements validation techniques; Requirements management: Traceability, Handling requirements changes.

Prerequisite: A0813302Computer Skills (Engineering)

A0814602 Selected Topics in Computer Engineering [3-3] {3}

The most recent technological topics in computer science that are not covered in other courses in the program plan.

Prerequisite: Department Approval

A0815303Cloud Computing {3} [3-3]

Cloud computing technologies: Software as a Service (SaaS), Amazon Elastic Cloud, Microsoft Azure, Google App Engine, and a few other offerings. Cloud protocols: APIs used in the Amazon and Microsoft Clouds, RESTful Web

services, and Cloud-based messaging and workflow services to construct new applications. Migrate existing applications into the Cloud, by navigating through phases such as creation of a private Cloud; attaching, in a secure fashion, the private Cloud to the public Cloud; and provisioning and mainta**in**ing resources in the public Cloud.

Prerequisite: A0815401 Distributed Systems and Parallel Processing

A0815302 Systems Quality Assurance and Testing [3-3] {3}

Software Quality: How to Assure it and Verify it, and the Need for a Culture of Quality; Avoidance of Errors and Other Quality Problems; Inspections and Reviews; Testing; Verification and Validation Techniques; Process Assurance vs. Product Assurance; Quality Process Standards; Product and Process Assurance; Problem Analysis and Reporting; Statistical Approaches to Quality Control.

Prerequisite: A0813302 Embedded Systems

A0815201Engineering Project Management [3-3] {3}

Basics and importance of project management, planning and management of project specifications and scope, comprehensive planning of all necessary tasks over the life cycle of the project, planning and management of project time using critical path (PERT, CPM, GERT), planning and management of and the project budget, use of Gantt chart, stock chart method, scheduling time, expenses, and resources, managing communication between project stakeholders; project team management.

Prerequisite: A0814401 Embedded Systems

A0835402 Medical Digital Image Processing [3-3] {3}

This course begins with the processing of digital images at the initial level and continues until the image is interpreted and dealt with at the higher level. This course explains two-dimensional discrete systems, designing 2D filters, digital image processing, human perception of images, color models, data compilation and compression, image optimization, data recovery and analysis, and hardware and software implementation. Students are required to apply their understanding of topics that have been theoretically learned by using the appropriate software package (such as Matlab).

Prerequisite: A0823401Signals and Systems

A0834401Date Mining and Pattern Recognition [3-3] {3}

This course focuses on data collection and extraction of useful information. It also provides an explanation of the methods used in: data visualization, data analysis and identification of patterns. It gives an overview of data mining algorithms, models, and patterns, and includes synthesis methods such as those based on Bayes theory and other prediction techniques.

Prerequisite: A0812301Object Oriented Programming

A0834403Bioinformatics [3-3] {3}

This course covers the sources of health information systems and their relation to health agencies. A study is made of the origin and purpose, content, assembly, analysis and use of medical records. The course will introduce software applications used in HCIS. The student will develop an understanding of the implications of integrated versus interfacing disparate HCIS application, database management and patient privacy issues. The course will examine emerging technology in the areas of health care, access to Electronic Medical Records, and Regional Health Information Organizations. Methods of compiling, numbering, filing and retention of health information.

Prerequisite: A0813301 Database Systems

A0161100Arabic Language (Remedial) {3} [3 – 3]

The concept of language and its levels, comprehension and speaking; grammar exercises; nominal sentences, verbal sentences, kana and its sisters, inna and its sisters, masculine plural, feminine plural, singular, dual, numbers, appositives; punctuation marks, exercises in morphology (present and past participles); spelling issues (hamza/glottal stop writing): conjunctive hamza (hamzatwasl) and hamzaqat', alef following group waw, aliflayyinah ('flexible alif') and nunation (tanwin).

Prerequisite: None

A0161200English Language (Remedial) {3} [3-3]

Grammar: auxiliary verbs, the English tenses; vocabulary: relationships, media, places, appliances, activities; Writing Skills: paragraph writing, distinguishing between formal and informal letters; basic reading skills; basic listening skills; verbal skills: oral presentations, arguments, formal phone calls, restaurants recommendation.

Prerequisite: None

A0331700Computer Skills (Remedial) {3} [3-3]

IT Essentials: Introduction to Personal Computer, Computer Assembly, An Overview of Preventive Maintenance; Operating System (WINDOWS 10): Settings, Managing Folders and Files, Search; Basics Skills in Microsoft Word 2016; Basics Skills in Microsoft PowerPoint 2016; Basics Skills in Microsoft Excel 2016.

Prerequisite: None