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Course Name	Course ID	Course Description
Computer Skills	0102120	This course is designed to provide basic knowledge of computers and their applications. It will also emphasize the use of computers and technology during their university and future careers. The course discusses a variety of computer applications, including Word processing, spreadsheet, and multimedia presentations. Towards the end of the course, the students explore computer hardware, software, internet generations and their applications. Moreover, ethical issues related to computers software and Internet-based applications will be delivered.
Introduction to Programming	0102220	This course introduces principles of computer programming using Java as a programming language. The course introduces the concept of algorithms and trains students to compile, run and debug java programs. Also, the course includes topics such as simple data types; operators and expressions; variables; input and output; control structures (conditional and repetition statements); methods; libraries; arrays and some of their applications.
Object-Oriented Programming	0102221	This course provides students with deep understanding of object oriented programming concepts. Topics covered include classes, objects, Instantiation, methods, and instance variables, I/O, encapsulation, static fields and static methods, overloading, constructors, scope of declarations, overriding, composition, Java API packages, inheritance, garbage collection, polymorphism, final methods and final classes abstract classes and methods, interfaces, and introduction to GUI.
Computer Organization	0102240	This course introduces the fundamentals of computer organization and machine architecture. It covers logical components and circuits, data representations, register transfer, bus and memory transfers, arithmetic microoperations, logic microoperations and shift microoperations, instruction codes, registers, common bus system, timing and control, instruction cycle, register-reference instructions, memory-reference instructions, I/O instructions, design control logic circuits for Basic computer, programming the Basic computer, addressing modes, stack, organization main memory, DMA, I/O, pipelined datapath, execution of pipeline microoperations, pipelined control, RISC, and CISC.
Data Structures and Algorithms	0102270	This course introduces the basics of data structures such as Bags, Abstract Data Type, trees, heaps, stacks and queues. Students will also learn how to design new algorithms for each new data structure studied, create and perform simple operations using Recursion, sorting techniques, and ADT list. The efficiency of algorithms is also covered by discussing many topics such as motivation to measuring an algorithm's efficiency, big Oh notation, and picturing the efficiency.
Introduction to Artificial Intelligence	0102308	This course covers the nature of intelligence; Problem solving; Knowledge and Reasoning; Uncertain Knowledge and Reasoning; and some concepts about learning in real life.
Database Systems	0102330	This course introduces the basic concepts of databases, which include database system architecture; entity-relationship model; hierarchical, network, and relational data models; functional dependencies and normal forms. Design, implementation, and optimization of SQL query languages; and security and integrity. Explore XML, the de-facto standard to exchange data in the internet. Introduce students to usage of databases through the Internet by using specific languages for purpose such as PHP.
System Analysis & Design	0102331	This course introduces the object-oriented analysis design using Unified Modeling Language (UML), which includes the unified process development cycle; use case analysis; , dynamic and static diagrams; object oriented principles (encapsulation, inheritance, polymorphism),

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Course Name	Course ID	Course Description
		design principles (coupling and cohesion) and design patterns. The course includes a large-scale software-development project.
Operating Systems	0102340	This course covers the basics of operating system concepts starting from its history. The course covers the Processes including process and threads scheduling, inter-process communication, critical section problem, and CPU scheduling It also covers the concepts of Input/output including principles of I/O hardware and software, disk arm scheduling and deadlocks; Memory management including swapping, paging, virtual memory and page replacement algorithms; File systems including File system structures, access, protection and i-nodes. Some examples of operating systems will be introduced.
Formal Languages and Automata Theory	0102341	This course introduces fundamental concepts in automata theory and formal languages including finite automata (deterministic and non-deterministic finite accepters), regular expressions, regular grammar, regular and non-regular languages, pushdown automata, context-free languages and Turing machine.
Web Development	0102420	This course introduces the basics programming and scripting languages for the Web development. It covers basic concepts of the World Wide Web (WWW), HTML 5, CSS 4, JavaScript 1.8, XML, and PHP 7.
Programming Languages and Compliers	0102421	This course introduces students to the fundamental concepts of compilers. It covers compiler architectures, data types and representation, grammatical production process, properties of grammars, grammar formalism, lexical analysis, lexical versus syntactic analysis, creating a lexical analyzer, transition table compression, symbol tables, bottom-up parsing, top-down parsing, exception handling, symantec analysis, code generation, preprocessing the intermediate code, optimization techniques, general optimization, code size reduction, and power reduction and energy saving.
Computer Networks	0102450	This course introduces computer network uses, computer network components and classifications. Further this course covers computer network architectures, network Layers; network access; physical layer and data link layer, network layer, transport layer and application layer. Furthermore, the course will introduce IP Addressing, sub-netting and computer network security.
Introduction to Distributed Systems	0102451	This course introduces the theory of distributed systems and networks, including distributed systems and network characteristics, Models of distributed computation, Inter-process communication techniques, Client-server applications, Synchronization issues, logical clocks, vector clocks, direct dependency clocks, matrix clocks, Global property evaluation and Global computation, Middleware software, types of network interaction, fault tolerance and recovery from failure.
Computer Ethics	0102453	This course addresses a definition of ethics, provides a framework for making ethical decisions, and analyzes in detail several areas of ethical issues that computer professionals are likely to encounter in the workplace. Topics include philosophical, business and professional ethics, software reliability, intellectual property, copyrights, privacy, data mining, and computer security.
Introduction to Computer Graphics	0102460	This course introduces basic concepts of computer graphics. It includes graphics geometry, primitives, and two- and three-dimensional representations. It also covers geometric transformations, window clipping, and computer animation. OpenGL is used to illustrate the techniques and algorithms covered in the course.
Simulation and	0102480	This course covers Modeling and Simulation Process principles; data collection and analysis;

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Modeling		Monte Carlo simulation; event scheduling; dealing with uncertainty; confidence intervals; Terminating and steady state analysis; and Input Distribution Modeling. The course will use MATLAB to conduct the modeling and simulation techniques and learned algorithms.
Data and Web Mining	0102481	This course introduces principles and techniques of (Web) data mining. Topics include: different data mining techniques such as classification, prediction, clustering and reasoning. The course goes through the cycle of data mining starting from collecting the data all the way to evaluating and interpretation the results. Some challenges are covered that are concern with Web data mining in particular such as data integration for e-commerce, Web data warehousing, and Web personalization and recommender systems. The course will use Weka as a data mining tool.
BSCS Internship	0102490	This course is designed to let students apply their knowledge of mathematics, software engineering, and programming in real world professional situations. The students work as interns with multidisciplinary employees and experience real-world applications of their learned skills. The course offers an opportunity to the students to understand the differences between classroom and professional life, which in return can help them in choosing their career path.
CS Capstone I	0102491	This course covers the first phase of the student final year project. The capstone project should include solving a substantial problem with knowledge gained from different areas in computer science. This phase starts with constructing a team to agree and select a topic. A literature review should be prepared to develop the problem statement. The team should develop the project management plan and perform the needed analysis at this stage. At the end of this course, a proposal should be submitted to cover interdisciplinary contents. Proposal should live up to the ethical standards as put forward by international professional bodies such as IEEE.
CS Capstone II	0102492	This course starts with translation of proposal identified in Capstone-I into implementable design. This involves developing a suitable prototype and/or work development and to submit a first demo from the agreed system. The proposed analysis in Capstone-I should take place in this course in details. The course ends with a final product that should meet the user/problem requirement and needs. The output should live up to ethical standards as put forward by international professional bodies such as IEEE.
Foundations of Software Engineering	0103220	This course introduces basic concepts of software engineering by focusing on software engineering process: development and maintenance. The course covers the software engineering lifecycle models and deliverables; requirements analysis and specification; architectural and detailed design; verification and validation and software maintenance issues.
Software Requirements and Specification	0103320	This course introduces requirements engineering within software life-cycle: requirements elicitation and modeling issues and techniques; documentation and management of requirements; standards and CASE tools; cognitive and socio-organizational issues
Software Design and Development	0103330	This course is designed to teach students the knowledge, understanding, skills and values to solve problems through the creation of software solutions. The course introduces students to the nature of software design, design process, agile-based design, architectural design and distributed architecture. It also introduces popular design frameworks, such as object-oriented design, function-oriented design, and aspect-oriented design. The course is concluded with user interface design and its contemporary design issues.

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Formal Specifications and Design Methods	0103331	This course introduces the formal methods in detail and their usage in requirements specification and software design. The course will start with introduction of formal specification, algebraic specification, and specification in Z language. Requirements and design strategies using Z language will be taught in detail. Design formal methods such as state charts and Petri-net models will also be covered thoroughly. The course will also introduce students with Alloy, B-Method and B-Event method to specify and design complex systems. Object-Oriented formal language, OCL, will be taught with implementation on real-life complicated systems. The course will be concluded with software verification and validation methodologies.
Software Project Management	0103420	This course develops the basic principles of project management, including concepts from the initiating, planning, executing, monitoring & controlling, and closing process groups. Introduces fundamentals from the ten project management knowledge areas: integration, scope, time, cost, quality, human resources, communications management
Object-Oriented Analysis and Design	0103430	This course introduces the object-oriented analysis and design, which includes the Unified Process development cycle; object oriented principles (encapsulation, inheritance, polymorphism), use case analysis; Unified Modeling Language (UML), dynamic and static diagrams; design principles (coupling and cohesion) and design patterns. The course includes a large-scale software-development project.
User Interface Design	0103431	This course covers the principles of designing, developing and testing appealing and effective user interface (UI) and user experience (UX) for desktop, web and mobile applications. They will learn about UI and UX design patterns, usability testing, and learnability. Issues and guidelines of designing modern and contemporary interfaces of small screened devices, such as Android and iPhone, will also be part of the course. The growing field of Big data demands effective data visualization on modern devices. We will learn methods and best practices to present such information in an effective manner on the applications along with creation and testing of modern Dashboards.
Software Measurement and Testing	0103440	This course is an introduction to software testing and metrics within the context of software quality engineering: module and unit testing; integration and acceptance testing; quality factors and metrics; verification and validation; review and inspections; reliability, security and safety assurance; and automated software testing.
Software Evolution and Maintenance	0103441	This course provides concepts and advanced technologies in software evolution: Program comprehension; construction of reusable software; separation of concerns; techniques for reverse engineering and re-engineering software; design for change layered design and incremental; and also analyze an existing system, explore possible change strategies, and construct a plan for evolving each of the systems major components.
BSSE Internship	0103480	This course is designed to let students apply their knowledge of mathematics, software engineering, and programming in real world professional situations. The students work as interns with multidisciplinary employees and experience real-world applications of their learned skills. The course offers an opportunity to the students to understand the differences between classroom and professional life, which in return can help them in choosing their career path.
SE Capstone I	0103490	This course starts with identification of a problem that could be resolved using software engineering techniques. Candidate solutions are considered to identify the most suitable solution depending on the nature, scope and context of the problem. The literature is

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		reviewed to document the domain knowledge and existing similar solutions. It is followed by collection of requirements. Various techniques such as, surveys, interviews, questionnaires and study of relevant literature, are used to gather functional, non-functional and system requirements. The requirements are elaborated and specified using the selected software analysis and design methodology. This course concludes with preparation of an early design document and documentation of all the research work done during the semester.
SE Capstone II	0103491	This course starts with translation of specifications of the system identified in Capstone-I into implementable design. This involves designing system's requirements and modules in UML or another selected design framework. The design is approved by the supervisor and documented in the project's dissertation. The next step is to develop prototypes of the system to get prospective users' feedback. The design is altered as per the feedback and is finalized. The implementation of the system starts in the next phase in the most suitable programming language and technology. The system is thoroughly tested and refactored after being implemented. The last step is to document all the activities of the project in form of a dissertation.
Circuit Analysis I	0104230	This course is an introduction to linear circuit analysis. Topics include Ohm's law; Kirchhoff's laws; resistor combinations; nodal and loop analysis techniques; superposition theorem; source transformation; Thevenin's and Norton's theorems; maximum power transfer; capacitance and inductance; first- and second-order transient analysis.
Circuit Analysis Lab	0104231	This lab covers ab introduction to electric circuits, Basic concepts of voltage and current; Kirchhoff's voltage and current laws; Ohm's law; voltage and current sources, Thevenin and Norton equivalent circuits, Superposition Theorem, Maximum Power Transfer Theorem, Time- and frequency-domain analysis of RLC circuits. Hands on experience on circuits and LTSpice Simulation software.
Digital Logic Design	0104240	This course presents the theory of number systems, binary arithmetic, Boolean algebra, digital circuits and systems, stressing techniques for the analysis and synthesis of combinational and sequential logic systems. It covers the operations of basic logic gates, example of some combinational and sequential circuits such as adders, subtractors, decoders, encoders, multiplexers, demultiplexers, latches, flip-flops, counters and shift registers.
Digital Logic Design Lab	0104241	This lab introduces the foundation of Digital Computer Design. Numbering systems and Boolean algebra are the basis of this course. At the end of the course, the students should be able to design different combination and sequential circuits.
Computer Architecture	0104242	This course introduces the fundamental concepts of computer architecture. It covers computer abstractions, operations of the computer hardware, representing instructions in the computer, MIPS addressing for 32-Bit immediates and addresses, parallelism and instructions synchronization, arithmetic for computers, floating Point, parallelism and computer arithmetic, the processor, building a datapath, pipelined datapath and control, data hazards and control hazards, memory technologies, basics of caches, measuring and improving cache performance, virtual machines, virtual memory, and parallel processors.
Circuit Analysis II	0104330	This course covers sinusoidal steady-state circuit analysis including phasors, impedance, admittance and analysis techniques; steady-state power analysis including instantaneous, average, and complex power; mutual inductance and transformers; frequency response; resonant circuits; passive filters; and two-port networks.

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Electronic Circuits	0104331	This course covers diode circuits and applications; Field-Effect Transistors (FET) and Bipolar Junction Transistors (BJT); DC biasing of amplifiers; small signal models for transistors; the types of single-stage amplifiers; and multistage amplifiers.
Electronics Lab	0104332	This lab covers the basic concepts of semi-conductor diode and its current-voltage relationship. Various applications of junction diode along with their various types are also demonstrated practically. Characteristics of Bipolar Junction Transistor, Field-Effect Transistor, and Operational Amplifiers are explained with the help of hands on experience and LTSpice Software simulations.
Digital Electronics	0104333	This course discusses digital design techniques for integrated circuits. Emphasis is on the design of logic gates and circuits at the transistor level. A number of different logic families are described, including CMOS, ECL, TTL, and BiCMOS.
Microprocessor and Assembly Language	0104350	This course covers: the architecture of the microprocessor, microprocessor instructions, assembly language, basic I/O and memory interfaces.
VLSI Systems and Design	0104430	This course introduces VLSI design in CMOS technology, and provides a background on CMOS layout and physical design. The theory of MOS transistors is addressed along with characterization and performance estimation of CMOS circuits. In addition, the course covers array subsystems including decoders and memory systems, and provides an introduction to Verilog and VHDL to be used to design and simulate a finite state machine. Lab sessions are required.
Digital Systems Design	0104440	This course covers the concepts of sequential logic including Finite State Machine (FSM) models (Mealy and Moore), state transition tables and state diagrams. The course addresses FSM implementation with D and JK flip-flops, and design issues with regard of state reduction in FSMs and incompletely specified sequential circuits. The topic of Algorithmic State Machines (ASMs) is also addressed as well as asynchronous circuits and hazards. Throughout this course, the students learn a Hardware Description Language such as VHDL or Verilog to be used in designing with programmable logic (e.g. PLD, ROM, FPGA.) Lab sessions are required.
Advanced Computer Architecture	0104441	This course covers advanced concepts in computer architecture. Topics include instruction set architecture, pipelining, instruction-level parallelism, caches and virtual memory design, input/output systems, multiprocessors, and SIMD.
Real-Time Embedded Systems	0104450	The course introduces real time embedded systems. It covers the different types of processors, where ARM processor will be intensely discussed. This course also, covers real time operating systems, system design and modeling for developing real time embedded systems, differentiates between general purpose operating systems and real time operating system. Then, formulate real time applications, which based on embedded systems.
BSCE Internship	0104580	This course provides real world experience in Computer Engineering field. The internship must be off-campus and students must complete at least one semester of work consisting of 240 hours or 20 hour work per week. The students work as interns with multidisciplinary employees and experience real-world applications of their learned skills. The course offers an opportunity to the students to understand the differences between classroom and professional life, which in return can help them in choosing their career path.
CE Capstone I	0104590	This course provides our undergraduate engineering students with imperative design experience to prepare them for the Computer Engineering industry. The capstone project is

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Course Name	Course ID	Course Description
		intended to integrate and draw on the knowledge that students have acquired during their study. It also gives students an opportunity to improve their communication skills and work in a team.
CE Capstone II	0104591	This course is a continuous step for CE Capstone I (0104590). The course provides our undergraduate engineering students with imperative design experience to prepare them for the Computer Engineering industry. The capstone project is intended to integrate and draw on the knowledge that students have acquired during their study. It also gives students an opportunity to improve their communication skills and work in a team
Computer Network Protocols and Applications	0105400	This course introduces concepts and principles in today's networks and various aspects of computer networking, including layered network architecture, TCP/IP suite, application layer protocols, client-server and P2P paradigms, transport layer protocols (TCP/UDP), packet delay, packet loss, throughput in packet switched networks, reliable data transfer, flow control and congestion control, IPv4/IPv6 addressing, subletting, CIDR, IP packet delivery and routing, Internet Control Message Protocol (ICMP), RIP, OSPF, BGP, data-link layer Protocols: ARP/RARP and Ethernet, and Multiprotocol Label Switching (MPLS).
Network Lab	0105401	This lab introduces basic practical concepts of networking. Topic Included: Introduction of OSI layers, TCP/IP and IP addressing and subnet masking; hands-on configuration experience on various network devices including Cisco routers and switches; Use multiple networking tools including Packet Tracer, Wireshark, Putty software, to simulate and troubleshoot basic networks; learn various networking skills including static and dynamic routing, Inter-VLAN routing, Network Address Translation (NAT), Access Control List (ACL), implementing socket programming and traffic analysis.
Cryptography and Computer Network Security	0105410	This course introduces the basics of cryptography and its application to computer-network security services and mechanisms. It covers an overview of network security, security attacks, security services, security mechanisms, symmetric cipher, substitution techniques, transposition techniques, rotor machines, steganography, block cipher principles, differential and linear cryptanalysis, Data Encryption Standard (DES), Simplified-DES, Euclidean Algorithm, modular arithmetic, finite fields of the form GF(p), polynomial arithmetic, finite fields of the form GF(2^n), Advanced Encryption Standard (AES), Simplified-AES, asymmetric cipher model, principles of public-key cryptosystems, RSA Algorithm, digital signatures, Message Authentication Codes (MACs), and web security issues.
Computer Network Management	0105411	This course covers the methods, techniques and tools for the management of telecommunication systems and networks. SNMP network management; OSI network management; CMIP; Web-based Network Management; Remote Monitoring (RMON, RMON2). Issues to be addressed include: configuration and name management, fault and performance management, security, and accounting management
Network Programming	0105420	This course introduces the students to the basic concepts of networks programming using Java programming language and its network libraries. The course covers the TCP/IP protocol stack, Internet Addressing and URL, Client-Server Model, Peer-to-Peer Model , I/O Streams, TCP Sockets, UDP Sockets, Multithreading and Multiplexing, Secure sockets, File Handling, Non-Blocking I/O, RMI, CORBA, Servlets, and Web Services.
Mobile IP	0105421	This course focuses on IP-based mobile telecommunications, especially with Mobile IPv6 protocol. The course topics include the concepts of mobile nodes, mobile agents, home

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		agent discovery, binding with node/agent actions, IP security for mobile nodes and their home agents, and the operation of Mobile IPv6 with Internet Multimedia Subsystem (IMS) and Session Initiation Protocol (SIP).
Advanced Networks	0105520	This course presents various advanced topics in computer networks. The course covers layered communication architecture, reliable data transfer, TCP connection management, flow control, principles of congestion control, mechanisms of congestion control, Quality of Service (QoS), Integrated Services Architecture (ISA), Differentiated Services, IP performance metrics, Voice over IP, IPv6, VPN networks, Software Defined Networks (SDNs), Network Functions Virtualization (NFV), cloud computing, and the Internet of Things (IoT).
Data and Computer Communications	0106320	This course provides an overview of data communication and networks. Topics include transmission impairments analysis (Nyquist and Shannon) and mediums, modulation/demodulation, Physical and Data Link Control layers issues, and multiplexing mechanisms.
Signals and Systems Analysis	0106330	This course covers the followings topics: Continuous- and discrete- time signals and system, Continuous and discrete linear time-invariant systems. Fourier Analysis: Fourier series and Fourier Transform. Laplace Transform and Z- transform.
Random Signals and Systems	0106331	This course includes discussion of probabilistic models, conditional probability; vectors of random variables; distributions and density functions; expectations and characteristic functions; independence; laws of large numbers; central-limit theorem; random process concepts; random signal analysis concepts
Introduction to Communications Systems	0106340	This course includes a review of signals, linear systems and Fourier theory, signals bandwidth and spectra, an analysis of analogue modulation systems (AM, PM and FM), synchronizations, characterization and effect of noise, transceiver architectures of analog systems, and overview of pulse code modulation
Communication Lab	0106341	This lab is an introduction to the most common hands on techniques that are used to build both analog and digital communication systems using modern digital signal processing approach. Frequency Modulation and Amplitude Modulation is done in Analog Signal Processing. Whereas digital communication systems are introduced by looking first at base methods such as pulse width modulation (PWM), and pulse position modulation (PPM). The combination of all these modulation finally leads to the most commonly used digital modulation systems such as frequency shift keying (FSK), phase shift keying (PSK) and amplitude shifting key (ASK).
Electromagnetic Theory	0106350	This course introduces the basic concepts and mathematics of the classical Electromagnetic Theory. Topics include vector algebra, coordinate systems, a discussion of static electric field dielectrics, polarization, field distributions of charges, steady electric currents, field at boundary conditions, and Maxwell's equations. Prior knowledge of vector calculus, differential equation and undergraduate level electromagnetic theory is required.
Digital Signal Processing	0106430	This course includes a review of discrete-time signals and systems properties and representation, sampling of continues time signals. The course will cover digital processing of continuous-time signals, a review of Z-transform, frequency response and impulse response for linear time invariant systems. It also covers the design of Finite impulse response (FIR) filters and infinite impulse response (IIR) filters. Discrete Fourier Series and Discrete Fourier Transform (DFT). Fast Fourier Transform (FFT). Fourier analysis of signals using Discrete Fourier Transform.

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Digital Communication	0106440	This course reviews probability, random variables and signal representation. It also introduces the power and energy analysis for signals using time domain and frequency domain. The course introduces the concept of data formatting, sampling theory, Nyquist Criteria, uniform and non-uniform quantization, digital odulation/demodulation techniques for baseband and band-pass signals, Inter-symbol-interference (ISI) and Equalization channel coding/decoding methods and techniques
Wireless Communications Fundamentals	0106441	This course covers: Transmission fundamentals; RF wave propagation, Channel characterization, Multiple Access techniques; Spread spectrum; Wireless cellular concepts and Satellite communications.
Antennas	0106450	This course is designed to familiarize a student with the field of antenna theory and electromagnetic radiation. Topics will include: Antenna parameters; Radiation integrals; Dipole and loop antennas; Travelling-wave antennas; Aperture and microstrip patch antennas; Linear and planar antenna arrays.
BSNCE Internship	0106502	This course provides real world experience in Networks and Communication Engineering field. The internship must be off-campus and students must complete at least one semester of work consisting of 240 hours or 20 hour work per week. The students work as interns with multidisciplinary employees and experience real-world applications of their learned skills. The course offers an opportunity to the students to understand the differences between classroom and professional life, which in return can help them in choosing their career path.
Satellite Communications	0106550	This course introduces an historical perspective, orbital mechanics and constellations, satellite space segments, satellite propagation, link budgets, satellite access techniques.
NCE Capstone I	0106590	This course provides the undergraduate engineering students with imperative design experience to prepare them for the Networks and Communication industry. The capstone project is intended to integrate and draw on the knowledge that students have acquired during their study. It also gives students an opportunity to improve their communication skills and work in a team.
NCE Capstone II	0106591	This course is a continuous step for NCE Capstone I (0106590). This course provides our undergraduate engineering students with imperative design experience to prepare them for the Networks and Communication industry. The capstone project is intended to integrate and draw on the knowledge that students have acquired during their study. It also gives students an opportunity to improve their communication skills and work in a team.
Calculus 1	0107101	This course introduces functions, foundation of trigonometry functions and its graphs, Limits and continuity, the concept and methods of Differentiation, curve sketching, maximum-minimum problems, related rates, Mean Value Theorem, the concept of anti-derivative, Riemann integral, logarithm, and exponential functions
Linear Algebra	0107102	This course consists of the following: Linear equations, Gaussian elimination, Matrices, Algebraic properties of matrix operations, determinants, vector spaces, subspaces, basis and dimensions, Linear dependence and independence, Linear transformations, eigenvalues and eigenvectors.
Probability Theory and Statistics	0107103	This course covers a progression of topics from introduction to statistics, constructing and interpreting graphs, measures of central tendency, measures of dispersion (or variation), measures of position, linear regression and correlation analysis, the fundamental principle of probability, discrete probability distributions and Continuous (i.e. normal) distribution, and Estimating Single

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		Population Parameters (confidence interval estimation). Applications and problem solving are emphasized.
Calculus 2	0107104	This course covers the following topics: applications of definite integrals to calculate volumes and lengths of plane curves, and area of surfaces of revolution, techniques of integration, first order differential equations, infinite sequences and series, power series, parametric equations, polar coordinates, vectors and the geometry of space.
Discrete Structures	0107200	This course covers how to formulate and represent problems mathematically, think logically and apply mathematical techniques for solving such problems. To this end, students will learn logic and proof, sets, functions, induction and recursion. The course will also cover some combinatorial principles and methods such as counting, permutation and combination. Key topics involving discrete probability, Boolean algebra, graphs and trees are also covered.
Introduction to Numerical Methods	0107201	This course provides an overview of the practical experience in utilizing algorithms for solving numerical problems arising in applied sciences. Topics covered will include solution of linear and nonlinear systems, curve fitting and least square line, numerical differentiation and integration, solution of differential equations and system of linear Algebraic equations, Interpolation and polynomial approximation. A computer will be utilized in solving problem assignments.
Engineering Math	0107202	This course introduces the ordinary differential equations (ODEs) which can be used in many engineering applications. This course also provides an introduction to Laplace transform that may have a useful role in circuit analysis and control. There are other important topics covered in this course such as vector analysis and complex calculus which can be used in solving such engineering problems (e.g. fluid mechanics, thermodynamics, etc.).
Physics 1	0108103	This course covers: Introduction to the concepts of vectors, motion in one dimension, motion in two dimensions, Newton's laws of motion, circular motion, work and energy, and potential energy.
Physics I Lab	0108104	This lab covers the concepts of mechanics: kinematics, force, energy, and momentum. In addition, this course aims to introduce the basic skills in conducting experiments, handling basic equipment; and build necessary concepts of data analysis and error correction.
Physics 2	0108203	This course gives view of electric charge and electric field, Coulomb's law, Gauss's Law and its applications, Capacitance and dielectric, Current and Resistance, Ohm's Law, Direct current circuits, Kirchhoff's rules, and Magnetic fields.
Physics II lab	0108204	This lab covers the concepts of Electric charge, electric field, Coulomb's law, Gauss's law and its applications, Capacitance and dielectric, Current and resistance, Direct current circuits, Magnetic fields, Source of magnetic field and Faraday law. In addition, this course aims to introduce basic skills in conducting experiments, handling basic equipment, and building necessary concepts of data analysis and error correction.