Detailed course outline for First Semester of BS (IT):

Semester I: (19 credit hours)

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Course code: IT 101
Course Name: Introduction to Information and Communication Technologies
Credit Hours: 3
Prerequisites: None (first semester course)

Objectives:
This course focuses on a breadth-first coverage of the use of computing and communication technologies to solve real life problems; including computing environments, general application software like word processing, visual presentation applications, tabular data manipulation, DBMS, WWW, Email management systems, Virus, Anti-Virus, and Spam Protection; Introduction to the basic computing hardware (main building blocks), operating systems, data networks; software engineering and communication technology along with social and ethical issues. An introduction of the program of study in computing for which this course is being taught (CS, IT, SE etc.). The course attempts to provide every student a set of productivity tools that they will be able to use for the rest of their lives.

Course Outline:
Number Systems, Binary numbers, Boolean logic, History computer system, basic machine organization, Von Neumann Architecture, Algorithm definition, design, and implementation, Programming paradigms and languages, Graphical programming, Overview of Software Engineering and Information Communication Technology, Operating system, Compiler, DBMS, Computer networks and internet, WWW, web mail applications, Computer graphics, AI, Viruses and Anti-Viruses, Use of office productivity tools, such as word processors, spreadsheets, presentation applications, etc., Social, Ethical, Professional and Legal Issues, and overview of the complete program of studies in computing and its structure.

Suggested Text Book:
Course code: CS 103
Course Name: Programming Fundamentals
Credit Hours: 4
Prerequisites: None
Objectives:
The course is designed to familiarize students with the basic structured programming skills. It emphasizes upon problem analysis, algorithm designing, and programme development and testing.

Course Outline:
Overview of computers and programming. Overview of language for e.g. C language C. Basics of structured and Modular programming. Basic Algorithms and problem solving, development of basic algorithms, analyzing problem, designing solution, testing designed solution. Fundamental programming constructs, translation of algorithms to programmes, data types, control structures, functions, arrays, records, files, testing programmes.

Reference Material:
1. Problem Solving and Program Design in C / 6E
   Hanly & Koffman
   Addison-Wesley | Published: 02/06/2009
2. C How to Program, 5/E
   Publisher: Prentice Hall Copyright: 2007

Course code: MT 105
Course Name: Calculus and Analytic Geometry
Credit Hours: 3
Prerequisites: None
Objectives:
To provide foundation and basic concepts for calculus and analytical geometry background.

Course Outline:
Complex Numbers, DeMoivre’s Theorem and its Applications, Simple Cartesian Curves, Functions and Graphs, Symmetrical Properties, Curve Tracing, Limit and Continuity, Differentiation of Functions. Derivative as Slope of Tangent to a Curve and as Rate of Change, Application to Tangent and Normal, Linearization, Maxima/Minima and Point of Inflexion, Taylor and Maclaurin Expansions and their convergence. Integral as Anti-derivative, Indefinite Integration of Simple Functions. Methods of Integration: Integration by Substitution, by Parts, and by Partial Fractions, Definite Integral as Limit of a Sum, Application to Area, Arc Length, Volume and Surface of Revolution.
Reference Material:

Course code: EE 107
Course Name: Basic Electronics
Credit Hours: 3
Prerequisites: None
Objectives:
Introduction of Electronics

Course Outline:
Fundamentals of Semiconductor physics: Band theory, semiconductors (intrinsic and extrinsic), pn junction, pn junctions as a rectifier, clipper and clamper circuits, zener diode and voltage regulator, LED and LCD etc., Transistors: Bipolar Junction transistors, BJT biasing circuits, Q-point, BJT as a switch, BJT amplifiers, classes of amplifiers, power amplifiers, Metal oxide transistors, nMOS, pMOS and CMOS inverters circuits. Introduction to A/D and D/A conversion circuits.

Reference Material:
1. Freedman and Young, University Physics, (10th and higher editions).

Course code: EG 109
Course Name: English (Composition and Comprehension)
Credit Hours: 3
Prerequisites: None
Objectives:
Enhance language skills and develop critical thinking.

Course Outline:
Basics of Grammar, Parts of speech and use of articles, Sentence structure, active and passive voice, Practice in unified sentence, Analysis of phrase, clause and sentence structure, Transitive and intransitive verbs, Punctuation and spelling, comprehension, discussion, listening, translation skills, paragraph writing and presentation skills.

Reference Material:
1. Functional English
a) Grammar

b) Writing

c) Reading/Comprehension

d) Speaking

Course code: SS 111
Course Name: Economics
Credit Hours: 3
Prerequisites: None
Objectives: To understand the basic principles of Economics.

Course Outline:

Reference Material: