Course Description

(630202) Engineering Analysis II

(630203) Programming Language
C and C++ Programming Environment: Compiled language, program creation, structure of programs, Problem solving techniques, Elements of C++ programming language, Operands of C++, Expressions, Program design process, Control structures, Looping, Functions, C++ stream input/output, Structured types, Data abstraction and classes, Arrays, Pointers, dynamic data and reference types, File processing, Templets.

(630204) Discrete Mathematics

(630205) Object Oriented Programming

(630206) Software Laboratory (1)
The experiments given in this lab. will improve the student skills in C & C++ programming.

(630231) Data Structures and Algorithms

(630232) System Programming & Analysis

(630261) Logic Circuits
**Logic Circuits Laboratory**

**Data Base systems**

**Software Laboratory (2)**
This lab. covers the main concepts of data structures: Arrays, Records, Stacks, Queues and Lists Sorting and merging. Searching techniques. The principles of algorithms: Analysis, design, dynamic programming. Back tracking. Branch techniques. Also, tutorials to cover database systems.

**Signal Analysis & Processing**
Basic concepts : Signals and systems in discrete time, Discrete and fast Fourier transform, The z-transform arithmetic Design techniques for digital filters, FIR, IIR, recursive and non-recursive filters. effect of finite word length applications.

**Software Engineering I**

**Computer Architecture**
Basic computer architecture and organization. Instruction set and addressing modes. Processor design. The execution unit and the control unit. Microprogramming memory hierarchy and organization. Input/output systems. Introduction to parallel processing.

**Digital techniques**
The course aims to: - Introduce the main building blocks of digital circuits, BJTs and MOS devices, logic families (CMOS, TTL, ECL etc.), digital to analogue and analogue to digital conversion. Provide good understanding of the operation of semiconductor devices. Introduce the principals of programmable logic devices. Make the student aware of the practical issues involved in using electronic circuits and systems, such as: propagation delay, switching speed limitations, power dissipation, fan-in/fan out constraints.

**Microprocessors**
(630376) Microprocessors Laboratory
Familiarization with the microprocessor lab. Microprocessor instruction set and assembly language fundamentals. Writing, debugging, and executing various assembly language programs. Memory (RAM) interfacing. I/O interfacing.

(630441) Data Communication
This course introduces the fundamental principles of communication systems; both wire and wireless systems are given. It also introduces different limitations imposed by the channel characteristics and the internal noise of the system. A brief description of the analogue communication system is given. Different analogue modulation techniques are illustrated. Analogue to digital conversion principles are explained. A detailed description of the digital communication system is given. Different line coding is given and different data multiplexing techniques are highlighted.

(630442) Computer Networks

(630452) Intelligent Systems Design

(630456) Software Laboratory (3)
Selected tutorials (as small projects) to cover the principles of software engineering: Analysis, design, verification, testing, software documentation and management.

(630462) Operating Systems

(630470) Embedded System Design
Basic introduction to microcontroller-based embedded systems design, development and implementation. It includes embedded system types, microcontroller architecture, programming, I/O interfacing, task scheduling, and interrupt management and other related topics.

(630476) Computer Design Laboratory
Students attend this course have passed at least 90-120 credit hours, so they are almost going to implement their main projects during the next terms. Robust projects are hardware projects, especially those interfaced with personal computer (PC); this laboratory improves hardware skills, provides tips for hardware matters, and other
important considerations in electronic and electrical sides, rather than hidden tricks in writing drivers for your design.

(630546) Computer Networks Laboratory
Several tutorials to cover the principles of operating systems and analysis tutorials to cover the design and implementation of computer networks.

(630561) Advanced Computer Architecture
An Advanced treatment of computer architecture covering new technological developments. Including detail to multiprocessor systems and specialized machines. Special emphasis will be developed to new concepts such as data flow machines, higher level language processors and associative processor.

(630581) Real-Time Systems

(630597) Engineering Project I
The student should attach himself to one or more faculty members who assign him a project. He analyzes this project and suggests a method to carry out the project in the next stage.

(630598) Engineering Project II
Based on the results obtained from the first stage. The student carries out the project suggested by the department.

(630451) Software Engineering II

(630461) Advanced Logic Circuits

(630501) Advanced Programming Language
This course will cover the features and applications of an advanced programming language, such as C# and JAVA. The course description will be decided by the department.

(630545) Advanced Computer Networks
Review of protocols, layering, the functions of the subnet including error detection and recovery. Structure & operation of TCP/IP. MAC & IP Addressing: address resolution, Host name resolution, static & dynamic addressing. Internetworking: bridges, transparent

(630544) Network Design & Management

(630551) Neural Networks & Fuzzy Logic

(630573) Modeling & Simulation

(630574) Computer Security