Course Title: **Digital Logic (3 Cr.)**
Course Code: **CACS105**
Year/Semester: **I/I**
Class Load: **5 Hrs. / Week (Theory: 3 Hrs, Practical: 2 Hrs.)**

Course Description

This course presents an introduction to Digital logic techniques and its practical application in computer and digital system.

Course Objectives

The course has the following specific objectives:

- To perform conversion among different number systems
- To simplify logic functions
- To design combinational and sequential logic circuit
- To understand industrial application of logic system.
- To understand Digital IC analysis and its application
- Designing of programmable memory

Course Contents

Unit 1 Introduction **2 Hrs.**

1.1 Digital Signals and Wave Forms
1.2 Digital Logic and Operation
1.3 Digital Computer and Integrated Circuits (IC)
1.4 Clock Wave Form

Unit 2 Number Systems **5 Hrs.**

2.1 Binary, Octal, & Hexadecimal Number Systems and Their Conversions
  2.1.1 Representation of Signed Numbers-Floating Point Number
  2.1.2 Binary Arithmetic
2.2 Representation-of BCD-ASCII-Excess 3 -Gray Code –Error Detecting and Correcting Codes.

Unit 3 Combinational Logic Design **16 Hrs.**

3.1 Basic Logic Gates NOT, OR and AND
3.2 Universal Logic Gates NOR and NAND
3.3 EX-OR and EX-NOR Gates
3.4 Boolean Algebra:
  3.3.1 Postulates & Theorems
  3.3.2 Canonical Forms - Simplification of Logic Functions
3.5 Simplification of Logic Functions Using Karnaugh Map.
  3.5.1 Analysis of SOP And POS Expression
3.6 Implementation of Combinational Logic Functions
  3.6.1 Encoders & Decoders