Maulana Abul Kalam Azad University of Technology, West Bengal
(Formerly West Bengal University of Technology)
Syllabus for B. Tech in Computer Science & Engineering
(Applicable from the academic session 2018-2019)

Subject Code : ECS 301	**Category:** Engineering Science course
Subject Name : **Analog and Digital Electronics**	**Semester** : Third
L-T-P : **3-0-0**	**Credit:3**
Pre-Requisites: No-prerequisite	

Course Content:

Module – 1: [9L]
Different Classes of Amplifiers - (Class-A, B, AB and C - basic concepts, power, efficiency [2L];
Recapitulation of basic concepts of Feedback and Oscillation [1L], Phase Shift, Wein Bridge oscillators [2L].

Astable&MonostableMultivibrators [1L]; Schimtt Trigger circuits [1L], 555 Timer [2L].

Module – 2: [11 L]
Binary Number System & Boolean Algebra (recapitulation) [1L]; BCD, ASCII, EBDIC, Gray codes and their conversions [1L]; Signed binary number representation with 1's and 2's complement methods [1L], Binary arithmetic, Venn diagram, Boolean algebra (recapitulation) [1L]; Representation in SOP and POS forms [1L];Minimization of logic expressions by algebraic method. [2L]

Combinational circuits - Adder and Subtractor circuits (half & full adder &subtractor) [2L];
Encoder, Decoder, Comparator, Multiplexer, De-Multiplexer and Parity Generator [2L].

Module – 3: [10L]
Sequential Circuits - Basic Flip-flop & Latch [1L],
Flip-flops -SR, JK, D, T and JK Master-slave Flip Flops[3L],

Registers (SISO,SIPO,PIPO,PISO) [2L]
Ring counter, Johnson counter [1L]
Basic concept of Synchronousand Asynchronous counters (detail design of circuits excluded), [2L]
Design of Mod N Counter [2L]

Module – 4: [6L]
A/D and D/A conversion techniques – Basic concepts (D/A :R-2-R only [2L]
A/D: successive approximation [2L])
Logic families- TTL, ECL, MOS and CMOS - basic concepts. (2L)

Textbooks:
Microelectronics Engineering – Sedra& Smith-Oxford.
Principles of Electronic Devices & circuits—B L Thereja&Sedha—S Chand
Digital Electronics – Kharate – Oxford
Digital Electronics – Logic & Systems by J.Bigmell&R.Donovan; Cambridge Learning.
Digital Logic and State Machine Design (3rd Edition) – D.J.Comer, OUP

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Reference:

Electronic Devices & Circuit Theory – Boyelstad&Nashelsky - PHI
Bell-Linear IC & OP AMP—Oxford
P.Raja- Digital Electronics- Scitech Publications
Morries Mano- Digital Logic Design- PHI
R.P.Jain—Modern Digital Electronics, 2/e ,McGraw Hill
H.Taub&D.Shilling, Digital Integrated Electronics- McGraw Hill.
D.RayChaudhuri- Digital Circuits-Vol-I & II, 2/e- Platinum Publishers
Tocci, Widmer, Moss- Digital Systems,9/e- Pearson
J.Bignell&R.Donovan-Digital Electronics-5/e- Cenage Learning.
Leach &Malvino—Digital Principles & Application, 5/e, McGraw Hill
Floyed& Jain- Digital Fundamentals-Pearson.