# Bhoj Reddy Engineering College for Women: Hyderabad
## Department of Electronics and Communication Engineering
Lesson plan of faculty member for the academic year 2016–17

Class: II B Tech                    Branch-Section: ECE-B                    Semester: I

Subject: Switching Theory and Logic Design                    Lectures per week: 4+1 (Tutorial)

| Lecture Number | Topics to be covered | Date (s) |
|---|---|---|
| UNIT – I: Number System and Boolean Algebra and Switching Functions | | |
| 1 | Number systems, Base Conversion methods | 13 June 2016 |
| 2 | Number systems, Base Conversion methods | 15 June 2016 |
| 3 | Complement of numbers | 17 June 2016 |
| 4 | Binary Codes, BCD and its properties | 18 June 2016 |
| 5 | Tutorial (G1, G3, G2) - Problems on binary conversion method | 13, 14, 16 June 2016 |
| 6 | Unit Distance Codes, Alpha Numeric Codes | 20 June 2016 |
| 7 | Error Detecting and Correcting Codes | 22 June 2016 |
| 8 | Boolean algebra basic theorems and Properties | 24 June 2016 |
| 9 | Boolean functions | 25 June 2016 |
| 10 | Tutorial (G1, G3, G2) - Simplification examples | 20, 21, 23 June 2016 |
| 11 | Canonical and standard forms | 27 June 2016 |
| 12 | Algebraic Simplification of Digital Logic gates | 29 June 2016 |
| 13 | Properties of XOR gates. Universal gates | 1 July 2016 |
| 14 | Multilevel NAND, NOR realizations | 2 July 2016 |
| 15 | Tutorial (G1, G3, G2) - Realization of universal gates | 27,28,30 June 2016 |
| **UNIT-II: Minimization and Design of Combinational Circuits** | | |
| 16 | Introduction minimization with theorem | 4 July 2016 |
| 17 | The Karnaugh Map Method 2 and 3 variable maps | 8 July 2016 |
| 18 | The Karnaugh Map Method 4,5 and 6 variable maps | 9 July 2016 |
| 19 | Tutorial (G1, G3) - Problems related to K-Map method | 4, 5,July 2016 |
| 20 | Prime and Essential Prime implicants | 11 July 2016 |
| 21 | Don't care map entries, using the maps for simplifying | 13 July 2016 |
| 22 | Tabular method, Partially specified expressions | 15 July 2016 |
| 23 | Multi output minimization, Combinational design | 16 July 2016 |
| 24 | Tutorial (G1, G3, G2) - Problems related to tabular method | 11,12,14 July 2016 |
| 25 | Arithmetic circuits | 18 July 2016 |
| 26 | Comparator, decoder | 20 July 2016 |
| 27 | Encoders, Multiplexers | 22 July 2016 |
| 28 | Code converters, wired logic, Tri state bus system | 23 July 2016 |
| 29 | Tutorial (G1, G3, G2) - Problems related to Multiplexers | 18,19, 21  July 2016 |
| 30 | Practical aspects related to Combinational Logic design | 25 July 2016 |
| 31 | Practical aspects related to Combinational Logic design | 27 July 2016 |
| 32 | Hazards and Hazard free relations | 29 July 2016 |
| 33 | Hazards and Hazard free relations contd… | 30 July 2016 |
| 34 | Tutorial (G1, G3, G2) - Problems related to code converters | 25,26,28  July 2016 |
| **UNIT-III: Sequential Machines Fundamentals** | | |
| 35 | Comparison of combinational and sequential circuits | 3 August 2016 |
| 36 | The binary cell, Fundamentals of sequential machine operation | 5 August 2016 |
| 37 | Latches and Flip Flops | 6 August 2016 |
| 38 | Tutorial (G3, G2) - Problems  related to FSM | 2, 4  August 2016 |
| 39 | The Clocked T Flip Flop | 16  August 2016 |
| 40 | Clocked J K Flip Flop | 19 August 2016 |
| 41 | Conversion from one type of Flip Flop to another | 20 August 2016 |
| 42 | Tutorial (G3, G2) - Realization of all flip flops | 16,18  August 2016 |
| 43 | Conversion from one type of Flip Flop to another | 22 August 2016 |

| 44 | Timing and Triggering considerations, Clock skew | 24 August 2016 |
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| **UNIT-IV**: **Sequential Circuit Design and Analysis** | | |
| 45 | Introduction, State diagram | 26 August 2016 |
| 46 | Analysis of synchronous sequential circuits | 27 August 2016 |
| 47 | Tutorial (G1, G3) - Problems related to flip flop converters | 22,23, August 2016 |
| 48 | Approaches to the design of synchronous sequential FSM | 29 August 2016 |
| 49 | Design aspects, steps, Realization using flip flops | 31 August 2016 |
| 50 | Design of Single mode counter | 2 September 2016 |
| 51 | Design of Single mode counter | 3 September 2016 |
| 52 | Tutorial (G1,G3, G2) - Problems related to state diagram | 29,30 Aug 2016,1 Sept 2016 |
| 53 | Design of ripple counter | 7 September 2016 |
| 54 | Design of ring counter | 9 September 2016 |
| 55 | Shift register | 10 September 2016 |
| 56 | Tutorial (G3, G2) - Problems related to counters | 6, 8 September 2016 |
| 57 | Shift register sequences | 14 September 2016 |
| 58 | Ring counter using shift register | 16 September 2016 |
| **UNIT-V**: **Sequential Circuits** | | |
| 59 | Finite state machines capabilities and limitations | 17 September 2016 |
| 60 | Tutorial (G3, G2) - Realization of different registers | 13, 15 September 2016 |
| 61 | Melay and Moore models | 19 September 2016 |
| 62 | Minimization of completely specified machines | 21 September 2016 |
| 63 | Minimization of incompletely specified machines | 23 September 2016 |
| 64 | Partition Techniques | 24 September 2016 |
| 65 | Tutorial (G1, G3, G2) - Problems related to partition techniques | 19, 20, 22 September 2016 |
| 66 | Merger chart method | 26 September 2016 |
| 67 | Concept of minimal cover table | 28 September 2016 |
| 68 | ASM charts, Salient Features | 1 October 2016 |
| 69 | Tutorial (G1, G3, G2) - Problems related to merger chart method | 26, 27, 29 September 2016 |
| 70 | System design using data path and control sub systems | 3 October 2016 |
| 71 | Weighing machine | 28 October 2016 |
| 72 | Binary Multiplier | 29 October 2016 |
| 73 | Tutorial (G1, G3, G2) - Problems related to ASM charts | 24, 25, 27 October 2016 |
| 74 | Previous papers discussion | 31 October 2016 |
| 75 | Revision | 2 November 2016 |

**TEXT BOOKS:**

1. Switching and Finite Automata Theory- Zvi Kohavi & Niraj K. Jha, 3rd Edition, Cambridge.
2. Digital Design- Morris Mano, PHI, 3rd Edition.

**REFERENCE BOOKS:**

1. Introduction to Switching Theory and Logic Design – Fredriac J. Hill, Gerald R. Peterson, 3rd Ed,John Wiley & Sons Inc.
2. Digital Fundamentals – A Systems Approach – Thomas L. Floyd, Pearson, 2013.

Name and signature of the faculty: **K Anjaneyulu**        ----

Name and signature of Head of the Department: **Ms N Shribala**        ----