GOPALAN COLLEGE OF ENGINEERING AND MANAGEMENT

Department of Electronics and Communication Engineering

Academic Year: **2017** Semester**: EVEN**

COURSE PLAN

Semester: **II** Subject Code& Name: **15ELN25 & BASIC ELECTRONICS**

Name of Subject Teacher: **Supreetha K**

Name of Subject Expert (Reviewer): **Kavitha M V**

For the Period: From: 13-02-17 to 02-06-17

Details of Book to be referred:

Text Books	**1.** David A. Bell, **"Electronic Devices and Circuits",** Oxford University Press, 5th Edition, 2008. **2.** D.P. Kothari, I. J. Nagrath, "**Basic Electronics",** McGraw Hill Education (India) Private Limited, 2014.
Reference Books	MuhammadAli Mazidi, "**The 8051 Microcontroller and Embedded. Systems. Using Assembly and C."** Second Edition, 2011, Pearson India.

Lecture NO	Topic Planned	Practical Applications & Brief objectives	Book referred with Pg No.	Planned Date	Executed Date	Deviation Reasons thereof	How Made Good / Reciprocate arrangement	Remarks by HOD
1.	Introduction to the subject	**Objective:** • Have a thorough understanding of the fundamental concepts and techniques used in digital electronics. • To understand and examine the structure of various number		06-02-17				
2.	**Module 3** **Digital Electronics** Introduction , Switching and Logic levels, Digital Waveform		T2 9.2	07-02-17				

3.	Number Systems: Decimal Number System, Binary Number System	systems. • To understand, analyze and design various combinational circuits. **Application:** Personal computers mobile phones Tablets Calculators Microprocessors **OUTCOME:** Able to understand the different types of number systems, conversions, logic gates and adder circuits used in digital systems.	T2 10.2	08-02-17				
4.	Problems on binary to decimal conversion, Problems on decimal to binary conversion		T2 10.3	09-02-17				
5.	Hexadecimal Number System: Converting Binary to Hexadecimal, Hexadecimal to Binary		T2 10.8	10-02-17				
6.	Converting Hexadecimal to Decimal, Converting Decimal to Hexadecimal		T2 10.9	13-2-17				
7.	Octal Numbers: Binary to Octal Conversion, Relevant problems.		T2 10.10	14-2-17				
8.	Complement of Binary Numbers: 1's complement and 2's complement representation.		T2 10.11	15-2-17				
9.	Boolean Algebra Theorems, De Morgan's theorem		T2 10.13	16-2-17				
10.	Digital Circuits: Logic gates, NOT Gate, AND Gate, OR Gate, XOR Gate, NAND Gate, NOR Gate, X-NOR Gate.		T2 10.15	20-2-17				
11.	Algebraic Simplification		T2 11.14	20-2-17				
12.	NAND Implementation		T2 11.16	21-2-17				
13.	NOR Implementation		T2 11.18	23-2-17				
14.	Half adder, Full adder		T2 11.19	27-2-17				

15.	Test on module-3			27-2-17				
16.	**Module-4 Flip-Flops, Microcontrollers** Introduction to Flip-Flops	**Objective:** • Understand the internal circuit operation of SR and gated SR flipflops. • Understand the architecture of 8051. **Application:** • registers, • Counters frequency divider circuits. • Automobile, aeronautics, space, robotics, defense application, mobile communications, industrial processing, medical applications. **OUTCOME:** • Able to understand the basics of flipflops and latches. • They will also gain knowledge about architecture of 8051 microcontroller.	T2 12.2	28-2-17				
17.	NAND Gate Latch		T2 12.2	02-3-17				
18.	NOR Gate Latch		T2 10.22	03-3-17				
19.	RS Flip-Flop, Gated Flip-Flops: Clocked RS Flip-Flop		T2 12.4	04-3-17				
20.	Introduction to microcontrollers		R 19	06-3-17				
21.	8051 Microcontroller Architecture		R 23	06-3-17				
22.	8051 Microcontroller Architecture		R 43	07-3-17				
23.	an example of Microcontroller based stepper motor control system		R 434	13-3-17				
24.	**Module-5 Communication Systems, Transducers** Introduction to communication systems	**Objectives:** • Understand the basic concepts of communication systems. • Understand the process of amplitude modulation and demodulation. • To have an adequate knowledge in resistance, inductance and piezoelectric transducers. **Applicaton:**	T2 18.2	13-3-17				
25.	Elements of Communication Systems		T2 18.2	14-3-17				
26.	Modulation		T2 18.2	16-3-17				
27.	Amplitude Modulation, Modulation Index		T2 18.3	17-3-17				

28.	Spectrum Power, transmitted power	• Modulation is used in CDs, digital cellular service, digital phone lines and computer modems. • Transducers are used in antennas, hall effect sensors, galvanometers, potentiometers, Loudspeakers. **OUTCOME:** • Able to understand the basics of communication systems and different types of modulation techniques. • Able to understand the basics of transducers and different types of transducers.	T2 18.5	20-3-17				
29.	AM Detection (Demodulation)		T2 18.8	20-3-17				
30.	Frequency Modulation, Phase Modulation		T2 18.9	21-3-17				
31.	Introduction, Passive Electrical Transducers		T2 15.1	23-3-17				
32.	Resistance Thermometers, Thermistor		T2 15.5	27-3-17				
33.	Linear Variable Differential Transformer (LVDT)		T2 15.8	27-3-17				
34.	Active Electrical Transducers : Piezoelectric Transducer		T2 15.9	28-3-17				
35.	Photoelectric Transducer		T2 15.11	30-3-17				
36.	Test on module-4&5			31-3-17				
37.	**Module 1 Semiconductor Diodes and Applications, Bipolar Junction Transistors** p-n junction Diode, Diode approximations, DC load line analysis	**Objectives:** • To understand the basic function of diodes in electrical circuits and describe the characteristics of an ideal diode. • Understand the concept of BJT amplification and various characteristics of BJT. **Application:** • Diodes can be used in voltage regulators, to electronically tune radio and TV receivers, to	T1 20	03-4-17				
38.	Half-wave rectifier , Two-diode Full-wave rectifier		T1 72	03-4-17				
39.	Bridge rectifier, Capacitor filter circuit, Relevant Problems		T1 77	04-4-17				

40.	Zener diode voltage regulators: Regulator circuit with no load	generate radio-frequency oscillations, to produce light etc. • BJT's are used in radio frequency for wireless systems. They can also be used as small signal amplifier, metal proximity photocell etc. **OUTCOME:** • Able to understand the basics of diodes and rectifiers. • Able to understand the basics of npn and pnp transistor.	T1 108	06-4-17				
41.	Loaded Regulator		T1 109	07-04-17				
42.	BJT operation		T1 144	10-4-17				
43.	BJT Voltages and Currents, BJT amplification		T1 150	10-4-16				
44.	Common Base and Common Collector Characteristics		T1 161	11-4-17				
45.	Common Emitter Characteristics		T1 166	13-4-17				
46.	**Module -2 BJT Biasing, Introduction to Operational Amplifiers** DC Load line and	**Objectives:** • To understand the DC load line and different biasing circuits of BJT. • To study the basics of OPAMP and to become familiar with operational amplifier circuits. **Application:** • OPAMPs are used in audio and video pre amplifiers, buffers, filters, voltage regulators, ADCs, DACs etc **OUTCOME:** • The students will be able to understand different types of BJT biasing. • They will also be able to understand the basics and	T1 181	20-04-17				
47.	Bias Point		T1 181	21-04-17				
48.	Base Bias		T1 188	24-04-17				
49.	Numerical examples as applicable		T1 188	24-04-17				
50.	Voltage divider Bias,		T1 196	25-04-17				
51.	Numerical examples as applicable		T1 196	27-04-17				

52.	Ideal op amp characteristics	applications of operational amplifier.	T2 6.5	28-04-17				
53.	Inverting OPAMP circuits		T2 6.2	02-05-17				
54.	Non Inverting OPAMP circuits		T2 6.6	04-05-17				
55.	OPAMP applications: voltage follower		T2 6.8	05-05-17				
56.	Summing amplifier		T2 6.6	08-05-17				
57.	Subtractor		T2 6.6	08-05-17				
58.	Integrator		T2 6.10	09-05-17				
59.	Differentiator		T2 6.10	11-05-17				
60.	Integrator			12-05-17				
61.	Numericals			18-05-17				
62.	Test on module-1&2			19-05-17				
63.	Revision on module 1			29-05-17				
64.	Revision on module 2			29-05-17				
65.	Revision on module 3			30-05-17				
66.	Revision on module 4			01-06-17				
67.	Revision on module 5			02-06-17				

Prepared By:_____
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Date & Sign_____

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(Sub. expert)
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