BASIC ELECTRONICS			
Subject Code	21EC17/27	CIE	50
Number of Lecture Hours/Week	4	SEE	50
Total Number of Lecture Hours	42	SEE Hours	03
CREDITS –3:0:0:3			

Course objectives: This course will enable students to:
- Study fundamentals of semiconductors devices like diode, transistors and Operational Amplifier.
- Study basics of communication systems and different modulation types.
- Study Fundamentals of digital electronics.
- Study different transducers and using a CRO for the measurement of signal parameters.
- Build mathematical and numerical background for the design of electronic circuits
- Equipped with the knowledge provided in this course can design and develop electronic circuits

Module	Teaching Hours
Module -1	
Semiconductor Devices and applications: P-N Junction diode and characteristics, Rectifiers:Halfwave rectifie,fullwave rectifier,capacitor filter,Zener diode characteristics,zener voltage regulator. Bipolar Junction Transistor:Transistor biasing and it's needs,transistor currents,configurations,CE characteristics,common emitter amplifier.	**9 Hours**
Module -2	
Field effect transistors and applications:JFET,characteristics,DC biasing of JFET ,DC load line analysis,JFET on an IC chip,advantage of FETs. **MOSFET:**De type mosfet, enhancement mosfet, characteristics of De type mosfet FET as a switch, FET amplifier and oscillators.	**9 Hours**
Module -3	
Basics of Communication Systems: Introduction, radio frequency spectrum,need for modulation,radio broadcasting,modulation:amplitude modulation,power relations in AM wave,frequency modulation,superheterodyne AM receiver. **Op-Amp Applications:** Op-Amp basics, practical op-amp circuit (Inverting , Non Inverting, summer , integrator and Differentiator.)	**9 Hours**
Module -4	
Digital Electronics: Number system, Number base conversions, Signed arithmetic: Binary addition &subtraction using 2's complement, Logics gates, Half Adder/Subtractor, Full Adder/Subtractor, Boolean algebra ,simplification of Boolean expressions, Realization of Boolean expressions using logic gates.	**8 Hours**
Module -5	
Transducers and Measurment: classification of transducers,LVDT,piezo electic transducer,strain gauge,carbon microphone and loudspeaker.Cathode ray oscilloscope:block diagram of CRO,working of CRT,measurement of amplitude,frequencyand phase,Lissajous figures.	**8 Hours**

Textbook:
1. Basic Electronics by B. L. Theraja, S. Chand Publications
2. Electronic devices and circuit theory by R L Boylestad, Louis N, 6TH edition, PHI.

Reference Books:
1. Digital logic and computer design by M Moris Mano.
2. Electronics devices & circuits by David Bell, 5th Edition, Oxford University Press.

3. Electronic Devices by Thomas L. Floyd, 8th Edition, Pearson Education, Inc., 2007

Question paper pattern:
- The question paper will have ten questions.
- Each full question consists of 20marks.
- There will be 2 full questions (with a maximum of four sub questions) from each module.
- Each full question will have sub questions covering all the topics under a module.

The students will have to answer 5 full questions, selecting one full question from each module.

After completion of the course the Students will be able to:

CO #	Course Outcome (CO)	Blooms Level
CO1	Understand the basics of semiconductor devices and their applications.	L1, L2,L3
CO2	Analyze biasing technique of JFET and MOSFET and their applications as a switch, amplifier and oscillator.	L1, L2, L3
CO3	Understand different modulation techniques and working of receiver circuit. Analyze working of Op amp And it's Applications.	L1, L2,L3
CO4	To study number base conversion, understand laws of Boolean algebra, working of different logic gates.	L1, L2,L3,
CO5	Understand the working of different transducers and use a CRO as a measuring instrument.	L1, L2,L3

CO PO Mapping

	Statement	PO1	2	3	4	5	6	7	8	9	10	11	12	PS O1	PS O2	PS O3
CO1	Understand the basics of semiconductor devices and their applications.	3	2	3									2	3		
CO2	Analyze biasing technique of JFET and MOSFET and their applications as a switch, amplifier and oscillator.	3	3	2									2	3	2	1
CO3	Understand different modulation techniques and working of receiver circuit. Analyze working of Op amp And it's Applications.	3	3	2									2	3	3	1
CO4	To study number base conversion, understand laws of Boolean algebra, working of different logic gates.	3	2	2									2	3		1
CO5	Understand the working of different transducers and use a CRO as a measuring instrument.Understand the working of different Electronic Systems.	3	2	2									2	3		