

SEMESTER – I/II						
INTRODUCTION TO ELECTRONICS ENGINEERING (Common for Non Circuit Branches)						
Course Code	:	22ES1A05		CIE	:	100 Marks
Credits: L: T: P	:	3:0:0		SEE	:	100 Marks
Total Hours	:	40L		SEE Duration	:	3.00 Hours

UNIT-I					08 Hrs
REGULATED POWER SUPPLY: Block Diagram, Bridge Rectifier with filter, Zener diode as Voltage Regulator, Photo diode, LED. AMPLIFIERS: CE Amplifier with and without feedback, Multistage amplifier, BJT as a switch, Cutoff and Saturation modes.					
UNIT-II					08 Hrs
FEEDBACK AND SIGNAL GENERATORS: Feedback Concepts, Advantages of Voltage series Negative feedback, Oscillator Operation, Barkhausen Criterion, RC Phase Shift Oscillator, Wein Bridge Oscillator, Crystal Oscillator (Only Concepts, Working, Waveforms, No mathematical derivations). OPERATIONAL AMPLIFIERS: Op-Amp basics, Practical Op-amp circuits- Inverting Amplifier, Non Inverting Amplifier, Voltage Follower, Summer, Integrator, Differentiator (Only Concepts, Working, Waveforms, No mathematical derivations)					
UNIT-III					08 Hrs
BOOLEAN ALGEBRA AND LOGIC CIRCUITS: Binary numbers, Number base conversion and Hexadecimal Numbers, Complements, Basic definitions, Basic theorems and properties of Boolean Algebra, Boolean functions, Canonical and Standard forms, Digital Logic gates, Demorgan's Laws, Ex-OR realization using NAND and NOR, Kmaps (Upto 4 variable) COMBINATIONAL LOGIC: Introduction, Design procedure, Adders-Half adder, Full adder					
UNIT-IV					08 Hrs
COMMUNICATION SYSTEMS: Introduction, Elements of Communication system, Modulation- AM, FM (Only concepts, working principle, waveform and Comparison), Super heterodyne receiver, Digital Communication block diagram. INTRODUCTION TO MICROPROCESSOR AND MICROCONTROLLER: Microprocessor, Microcontroller (Only concepts, working principle, and Comparison) Case studies: i. Development board based on Microprocessor (Raspberry Pi) ii. Development board based on Micro controller (Arduino)					
UNIT-V					08 Hrs
TRANSDUCERS: Introduction to Transducers: Passive Electrical transducers- Resistive thermometer, Linear variable differential transformer (LVDT), Proximity transducer. Active Electrical transducer- Piezo electric transducer, Hall effect Transducer. SENSORS: Introduction to sensors: LDR, Biomedical Sensor, Humidity sensor, Ultra sonic Sensor, Touch Sensor (Only concepts, working principle) Case studies: i. Automatic Headlight System ii. Pick and Place Robots.					

Course Outcomes: After completing the course, the students will be able to	
CO1:	Comprehending the operations and the characteristics of the Electronic devices for modern day applications.
CO2:	Analyze Different Electronic circuits for various system designs.
CO3:	Demonstrate the different building blocks of Electronics systems.
CO4:	Evaluate the performance of the Electronic Systems to meet given specifications using modern Engineering tools.

Reference Books	
1.	Basic Electronics, D P Kothari, I J Nagrath, 2 nd edition, McGraw Hill Education (India), Private Limited, 2018.
2.	Electronic Devices and Circuit Theory, Robert L Boylestad, Louis Nashelsky, Prentice Hall India publication, 11th Edition, 2009.
3.	Digital Logic and Computer Design, Morris Mano, Prentice Hall India publication, 54th Edition, 2007, ISBN: 978-81-317-1450-8.
4.	Electronic Devices and Circuits, David A. Bell, Oxford University Press, 5th Edition, 2008, ISBN: 9780195693409.
5.	Microelectronics circuits: Theory and applications, Adel S Sedra & Kenneth C Smith, Oxford University Press, 5 th Edition, ISBN: 9780198062257.
6.	Basic Electronics, Ravish Aradhya H V, McGraw Hill Education; 3rd edition, ISBN: 978-0071333108.

ASSESSMENT AND EVALUATION PATTERN		
WEIGHTAGE	50%	50%
QUIZZES		
Quiz-I	Each quiz is evaluated for 10 marks adding up to 20 MARKS.	*****
Quiz-II		
THEORY COURSE : (Bloom’s Taxonomy Levels: Remembering, Understanding, Applying, Analyzing, Evaluating, and Creating)		
Test – I	Each test will be conducted for 50 Marks adding upto 100 marks. Final test marks will be reduced to 40 MARKS	*****
Test – II		
EXPERIENTIAL LEARNING	40	*****
Case Study-based Teaching-Learning	10	*****
Sector wise study & consolidation (viz., Engg. Semiconductor Design, Healthcare & Pharmaceutical, FMCG, Automobile, Aerospace and IT/ITeS)	20	
Video based seminar (4-5 minutes per student)	10	
MAXIMUM MARKS FOR THE THEORY	100 MARKS	100 MARKS

PRACTICALS	**	**
TOTAL MARKS FOR THE COURSE	100	100

CO-PO Mapping												
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	1	-	-	-	-	-	-	-	-	-	-
CO2	1	1	2	-	-	-	-	-	1	-	-	1
CO3	-	-	1	-	2	-	-	1	-	1	-	1
CO4	-	-	-	-	2	-	-	2	2	1	-	1

High-3: Medium-2: Low-1