		L	T	P	C
15EC101	**BASIC ELECTRONICS ENGINEERING**	**2**	**0**	**0**	**2**
	Total Contact Hours – 30				
	Prerequisite: Nil				

PURPOSE

This course provides comprehensive idea about working principle, operation and characteristics of electronic devices, transducers, Digital Electronics and Communication Systems.

INSTRUCTIONAL OBJECTIVES

At the end of the course students will be able to gain knowledge about the

1.	Fundamentals of semiconductor devices and transducers
2.	Principles of digital electronics, and
3.	Principles of various communication systems

UNIT I-SEMICONDUCTOR DEVICES (9 hours)

Overview of Semiconductors, PN junction diodeand Zener diode –Diode circuits: rectifiers (bridge-type only), filters, clippers and clampers - BJT construction, operation, characteristics (CB, CE and CC configurations) and uses – JFET and MOSFET construction, operation, characteristics (CS configuration) and uses.

UNIT II-OPTOELECTRONIC DEVICES (4 hours)

Photoconductive cell - photovoltaic cell - solar cell – photodiode – phototransistor – LED - infrared emitters – LCD -optocouplers.

UNIT IV-TRANSDUCERS (4 hours)

Basic requirements of transducers - classification of transducers - passive transducers: capacitive, inductive, LVDT, potentiometric, strain gauge, thermistor, Hall-Effect - Active transducers: piezoelectric, photoelectric and thermocouple.

UNIT IV-DIGITAL ELECTRONICS (7 hours)

Number systems – binary codes –binary arithmetic - Boolean algebra, laws & theorems - simplification of Boolean expression - logic gates - implementation of Boolean expressions using logic gates - standard forms of Boolean expression.

UNIT V-COMMUNICATION SYSTEMS (6 hours)

Block diagram of a basic communication system – frequency spectrum - need for modulation - methods of modulation - principles of AM, FM, pulse analog and pulse digital modulation – AM / FM transmitters & receivers (block diagram description only) – Satellite Communication – Radar systems – data transmission and MODEM.

TEXT BOOKS

1. R. Muthusubramanian, S. Salivahanan, *"Basic Electrical and Electronics Engineering"*, Tata McGraw-Hill Education, Reprint 2012.
2. B. Somanathan Nair, S.R. Deepa, "*Basic Electronics"*, I.K. International Pvt. Ltd., 2009.

REFERENCES

1. Thomas L. Floyd, *"Electronic Devices"*, Pearson Education, 9th Edition, 2011.
2. R.K. Rajput, "*Basic Electrical and Electronics Engineering"*, Laxmi Publications, First Edition, 2007.

15EC101BASIC ELECTRONICS ENGINEERING												
Course designed by		Department of Electronics and Communication Engineering										
1	Student outcome	a	b	c	d	e	f	g	h	i	j	K
		X										
2	Mapping of instructional objectives with student outcome	1,2,3										1,2,3
3	Category	General (G)		Basic Sciences (B)		Engineering Sciences & Technical Arts (E)			Professional Subjects (P)			
						X						
4	Broad area	Communication		Signal Processing		Electronics		VLSI	Embedded			
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