

**3EC82: APPLIED ELECTRONICS**  
**CREDITS - 3 (LTP: 3,0,0)**

**Course Objective:**

The basics of applications based electronics fundamentals are covered for the students of different branches other than electronics and communication.

**Teaching and Assessment Scheme:**

Teaching Scheme (Hours per Week)			Credits	Assessment Scheme				Total Marks
L	T	P		Theory		Practical		
			ESE	CE	ESE	CE	100	
3	0	0	3	60	40	00		00

**Course Content:**

Unit No.	Topics	Teaching Hours
1.	<b>Operational Amplifiers :</b> Ideal operational amplifier, Operational amplifier Stages, Operational amplifier parameters, Equivalent circuit of op-amp, Ideal Voltage transfer Curve, Open-Loop Op-amp configurations, Closed-Loop op-amp configurations	06
2.	<b>555 Timer Circuits :</b> Block diagram, Use as Astable multivibrator and monostable multivibrator	04
3.	<b>Transducers :</b> Capacitive Transducer, Inductive Transducer, Linear Variable Differential Transformer, Oscillation Transducer, Potentiometric transducer, Electrical strain gauges, Resistance thermometer, Thermistor, Thermocouple, Piezoelectric Transducer, Photoelectric transducer	07
4.	<b>Introduction to Electronics Communication :</b> The significance of Human Communication, Communication systems, Types of Electronics Communication, Modulation and Multiplexing, The electromagnetic Spectrum, Bandwidth	06
5.	<b>Optoelectronic Devices :</b> Photoconductive sensors, Photovoltaic sensors, Photo emissive sensors, Light emitters, Liquid Crystal Display, Opto-coupler	07
6.	<b>Memories and Microcontroller :</b> Introduction to semiconductor memories, The AVR microcontrollers' history and features, AVR architecture ,AVR programming in C.	07

<b>Unit No.</b>	<b>Topics</b>	<b>Teaching Hours</b>
7.	<b>Consumer Electronics :</b> Washing machines (Electronic Controller, Fuzzy logic machines and automatic washing Machines), Audio systems, I-pods, RFID, Barcode Scanner and decoder, Photocopier machines, Introduction to organic electronics and internet of things (Industry 4.0)	08
<b>Total</b>		<b>45</b>

#### **List of References:**

1. S Salivahanans, N Kumar, A Vallavaraj, “*Electronic devices and circuits*”, 2<sup>nd</sup> Edition, McGraw Hill, 2008
2. Santiram KAL, “*Basic Electronics Devices, Circuits and its Fundamentals*”, 5<sup>th</sup> Edition, PHI Publication, 2006
3. M.A. Mazidi, Sarmad Naimi, Sepehr Naimi, “*The AVR Microcontroller & Embedded Systems using Assembly and C*”, 1<sup>st</sup> Edition, Pearson Education, 2011.
4. Louis E. Frenzel, “*Principles of Electronic Communication Systems*”, 3<sup>rd</sup> Edition, McGraw Hill Publication, 2014
5. Alasdair Gilchrist, “*Industry 4.0*”, Apress, 2016

#### **Course Outcomes (COs):**

1. Understand the fundamental s of Operational amplifier and its applications.
2. Analyze and able to design sensor based applications.
3. Understand the Principles of Electronics Communication.
4. Understand and able to analyze Modern Communication systems and its applications.
5. Able to use of the CAD tools and programming of AVR on C platform.
6. Design and understands the various modern electronics based real time industrial applications.