

**Shri Shivaji Science and Arts College, Chikhli.**  
**Department of Electronics**  
**Program Outcome, Program Specific Outcome and Course Outcome**

**Program Outcomes (POs):**

At the end of the programme, students would be able to

- 1) Utilize the basic knowledge in Electronics science.
- 2) Identify electronic components and ICs.
- 3) Design system components that meet the requirement of public safety and offer solutions to the societal and environmental concerns
- 4) Apply research based knowledge to design and conduct experiments
- 5) Construct, choose and apply the techniques, resources and modern electronics tools required for Electronics applications.
- 6) Apply the contextual knowledge to assess societal, health, safety and cultural issues and endure the consequent responsibilities relevant to the professional electronics practice.
- 7) Examine the impact of electronics solutions in global and environmental contexts and utilize the knowledge for sustained development.
- 8) Develop consciousness of professional, ethical and social responsibilities as experts in the field of Electronics and Communication.
- 9) Perform effectively as a member/leader in multidisciplinary teams.
- 10) Demonstrate resourcefulness for contemporary issues and lifelong learning.

**Program Specific Outcomes:**

Upon completion of the programme successfully, students would be able to

1. acquire knowledge in fundamental aspects of all branches of Electronics
2. create inquisitiveness and problem-solving skills
3. apply the principles of Electronics in solutions to real world problems
4. get prepared for higher education and career in Electronics
5. develop skills in the proper handling of apparatus and components
6. apply Electronics in their day to day life

7. act as a responsible citizen

8. Select and apply cutting-edge engineering hardware and software tools to solve complex Electronics and Communication Engineering problems

9. Apply the fundamental concepts of electronics and communication science to design a variety of components.

## **Course Outcome**

### **Semester I - Basics of Electronics**

<b>Unit No</b>	<b>Title of Unit</b>	<b>Course Outcomes</b>
<b>1</b>	<b>Passive Components &amp; Network theorems</b>	<ul style="list-style-type: none"><li>• To give knowledge of some basic electronic components and circuits</li><li>• Design and analyse of electronic circuits</li><li>• Understand various functions of network and also the stability of network</li></ul>
<b>2</b>	<b>Measuring Instruments</b>	<ul style="list-style-type: none"><li>• Understand fundamental of various electrical measurements</li><li>• Understanding the basic electrical properties.</li></ul>
<b>3</b>	<b>Semiconductor Diodes and Regulated power supply</b>	<ul style="list-style-type: none"><li>• Understand the current voltage characteristics of semiconductor devices</li><li>• To study difference between rectifiers &amp; regulators</li></ul>
<b>4</b>	<b>Bipolar Transistors</b>	<ul style="list-style-type: none"><li>• To study types of transistors &amp; its configurations</li><li>• Experimentally determine Voltage Gain, Current Gain, Input Impedance, Output Impedance of a BJT amplifier in different mode</li></ul>
<b>5</b>	<b>Switching and Optoelectronic devices</b>	<ul style="list-style-type: none"><li>• Analyse DC circuits and relate models of semiconductor devices with their physical operation</li><li>• Learn the various parameters and their interrelationship</li></ul>

<b>6</b>	<b>Integrated Circuits</b>	<ul style="list-style-type: none"> <li>• Understand the fundamentals and areas of applications for the integrated circuits</li> <li>• To understand some working of IC based circuits</li> </ul>
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## Semester II - Digital Electronics

<b>Unit No.</b>	<b>Title of Unit</b>	<b>Course Outcomes</b>
<b>1</b>	<b>Binary Arithmetic &amp; Logic gates</b>	<ul style="list-style-type: none"> <li>• To study different types of Number systems, their interconversions &amp; arithmetic operations</li> <li>• To study logic gates and their usage in digital circuits.</li> </ul>
<b>2</b>	<b>Boolean Algebra &amp; Logic families</b>	<ul style="list-style-type: none"> <li>• Illustrate the basics of Boolean algebra and logic gates</li> <li>• To study the design of gates using discrete electronic components</li> </ul>
<b>3</b>	<b>Multivibrators and Flip Flops</b>	<ul style="list-style-type: none"> <li>• To study multivibrators using transistors</li> <li>• Understanding terminologies of flipflops</li> </ul>
<b>4</b>	<b>Counters and Shift registers</b>	<ul style="list-style-type: none"> <li>• Analyzing important types of Counters</li> <li>• Understand the fundamentals of Registers</li> </ul>
<b>5</b>	<b>Combinational logic circuits</b>	<ul style="list-style-type: none"> <li>• Analyze, design and implement combinational logic circuits</li> <li>• Prepare various combinational and sequential circuits</li> </ul>
<b>6</b>	<b>Semiconductor Memories</b>	<ul style="list-style-type: none"> <li>• Classify different semiconductor memories</li> <li>• Compute different parameters of memories</li> </ul>

### Semester III - Electronics Devices and Circuits

Unit No.	Title of Unit	Course Outcomes
1	Hybrid-parameters & Cascaded amplifiers	<ul style="list-style-type: none"><li>• Analysis of hybrid parameters &amp; their interconversion</li><li>• Study of cascaded amplifiers</li></ul>
2	Power Amplifier	<ul style="list-style-type: none"><li>• Know about the multistage amplifier using BJT in various class to determine frequency response and concept of efficiency</li><li>• Know about different power amplifier circuits, their design and use in electronics and communication circuits</li></ul>
3	Feedback amplifier and Oscillators	<ul style="list-style-type: none"><li>• Know the concept of feedback amplifier and their characteristics.</li><li>• Study the different oscillator circuits for various frequencies</li><li>• Employ the concept of positive feedback to design of an oscillator circuits</li></ul>
4	Operational amplifier and applications	<ul style="list-style-type: none"><li>• Compute and characterization of operational amplifiers</li><li>• Analyze and identify linear and nonlinear applications of Op-Amp</li></ul>
5	Advance applications of Op-Amp	<ul style="list-style-type: none"><li>• Design and analyze advance applications of Op-Amp</li><li>• Study mathematical equations by using Op-Amp</li></ul>
6	A/D and D/A converter	<ul style="list-style-type: none"><li>• learn about various terminologys of A/D and D/A converters.</li></ul>

## Semester IV - Communication Electronics & Microprocessor 8085

Unit No.	Title of Unit	Course Outcomes
1	Modulation and Demodulation	<ul style="list-style-type: none"><li>• Use of different modulation and demodulation techniques used in analog communication</li><li>• Understand about various types of signals and systems, classify them, analyze them, and perform various operations on them</li><li>• Analyze transmitter and receiver circuits</li></ul>
2	Fiber Optic Communication	<ul style="list-style-type: none"><li>• To learn the basic elements of optical fiber transmission link, fiber modes configurations and structures</li></ul>
3	Pulse Modulation and Digital Communication	<ul style="list-style-type: none"><li>• Understand use of transforms in analysis of signals and system in continuous and discrete time domain</li></ul>
4	Architecture and timings of 8085	<ul style="list-style-type: none"><li>• Describe the functionalities of 8085 architectures</li></ul>
5	Instruction and programming of 8085	<ul style="list-style-type: none"><li>• To study Assembly language programming for arithmetic operations</li></ul>
6	Interfacing	<ul style="list-style-type: none"><li>• To understand idea of interfacing and their operating modes</li></ul>

## Semester V - Measuring Instruments

Unit No.	Title of Unit	Course Outcomes
1	Basic Instrumentation	<ul style="list-style-type: none"><li>• Students will be able to describe functional blocks of instrumentation system</li><li>• Student will be able to compare different types of transducers</li></ul>
2	Measurement of Temperature	<ul style="list-style-type: none"><li>• To study different instruments for temperature measurement</li></ul>
3	Timer and PLL	<ul style="list-style-type: none"><li>• Study of PLL using VCO and function generator using IC</li><li>• Study of timer circuits</li></ul>
4	Display, digital Instrument and recorder	<ul style="list-style-type: none"><li>• To study uses of display devices</li><li>• Understand the operation of recorder</li></ul>
5	Sensors and Actuators	<ul style="list-style-type: none"><li>• Students will be able to explain principle of operation for various sensors &amp; actuators</li></ul>
6	Biomedical electronics	<ul style="list-style-type: none"><li>• Students will be able to understand the different types of biomedical instruments</li></ul>

## **Semester VI - Advance Microprocessor and Microcontroller**

<b>Unit No.</b>	<b>Title of Unit</b>	<b>Course Outcomes</b>
<b>1</b>	<b>8086 Architecture</b>	<ul style="list-style-type: none"><li>• To introduce students with the architecture and operation of typical microprocessors and microcontrollers.</li></ul>
<b>2</b>	<b>Instructions and programming of 8086</b>	<ul style="list-style-type: none"><li>• To familiarize the students with the programming and interfacing of microprocessors</li></ul>
<b>3</b>	<b>8051 Microcontroller and Architecture</b>	<ul style="list-style-type: none"><li>• Draw and describe architecture of 8051 microcontroller</li><li>• Design microcontroller-based system for various applications</li></ul>
<b>4</b>	<b>Instruction set of 8051 and programming</b>	<ul style="list-style-type: none"><li>• Write assembly language program for microcontrollers</li></ul>
<b>5</b>	<b>8051 Interfacing and Application</b>	<ul style="list-style-type: none"><li>• Interface various peripheral devices to the microcontrollers</li><li>• Design microcontroller-based system for various applications</li></ul>
<b>6</b>	<b>Advance microcontroller</b>	<ul style="list-style-type: none"><li>• Introduce advance terminologies in microcontrollers</li></ul>