

# **COURSE WISE & SUBJECT WISE OUTCOME**

## **OF UG GENERAL COURSE (B.Sc.) IN ELECTRONICS**

### **UNDER CURRICULUM & CREDIT FRAMEWORK**

**INTRODUCED BY UNIVERSITY OF CALCUTTA, 2022**

### **DEPARTMENT OF ELECTRONICS**

The course outcomes of the different papers offered by University of Calcutta and followed by this college are as below. After completion of the course, students will be able to:

| <b>Course Code</b> | <b>Course Title</b>   | <b>Credits</b> | <b>Course Outcomes</b>   |
|--------------------|---|----------------|--|
| ELT-H-CC-1-1-TH    | Fundamentals of Circuit Theory and Electronic Devices-Theory      | 3              | Unit I: <ul style="list-style-type: none"><li>Define and illustrate various electronic components like resistor, inductor, capacitor, transformer used in electronic circuits.</li><li>Illustrate different concepts of circuit analysis, DC &amp; AC analysis</li><li>Illustrate and adapt network theorems</li></ul> |
|                    |   |                | Unit II: <ul style="list-style-type: none"><li>Explain semiconductor materials and the working of semiconductor devices like p-n junction diode, Zener diode etc and their applications.</li></ul>   |
|                    |   |                | Unit III: <ul style="list-style-type: none"><li>Basics of BJT and transistor biasing</li></ul>   |
|                    |   |                | Unit IV: <ul style="list-style-type: none"><li>Analyzing the concepts of BJT amplifiers and basic of JFET</li></ul>  |
| ELT-H-CC-1-1-P     | Fundamentals of Circuit Theory and Electronic Devices - Practical | 1              | <ul style="list-style-type: none"><li>To Familiarize with Basic Electronic Components (R, C, L, Diodes, Transistors), Digital Multimeter, Function Generator and Oscilloscope.</li></ul>   |
|                    |   |                | <ul style="list-style-type: none"><li>Designing the circuits and installing it on Bread boards.</li></ul>  |
|                    |   |                | <ul style="list-style-type: none"><li>Analyzing the characteristics of different diodes, BJT and JFETs and their applications.</li></ul>   |
|                    |   |                | <ul style="list-style-type: none"><li>Verify the network theorems.</li></ul>   |
|                    |   |                | <ul style="list-style-type: none"><li>Prepare the technical report on the experiments carried.</li></ul>   |
| ELT-H-CC-2-2-TH    | Operational Amplifier and Digital Systems - Theory                | 3              | <ul style="list-style-type: none"><li>The detailed description and applications of Operational Amplifiers.</li></ul>   |
|                    |   |                | <ul style="list-style-type: none"><li>Knowledge of Boolean algebra and detailed analysis of logic gates.</li></ul>   |
|                    |   |                | <ul style="list-style-type: none"><li>Analysis of combinational circuits and sequential circuits to design registers and counters</li></ul>  |
|                    |   |                | <ul style="list-style-type: none"><li>Conversion of analog to digital and digital to analog circuits.</li></ul>  |
| ELT-H-CC-2-2-P     | Operational Amplifier and Digital Systems - Practical             | 1              | <ul style="list-style-type: none"><li>Design of circuits for mathematical operations using Operational amplifiers</li></ul>  |
|                    |   |                | <ul style="list-style-type: none"><li>Design of Adder, Subtractor, flip-flop, registers using digital electronics.</li></ul>   |

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|  |  |  | <ul style="list-style-type: none"> <li>• Prepare the technical report on the experiments carried.</li> </ul> |
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### INTERDISCIPLINARY COURSE(IDC)

| Course Code | Course Title                         | Credits | Course Outcomes   |
|-------------|--------------------------------------|---------|---|
| ELT-IDC-TH  | Fundamentals of Electronics- Theory  | 2       | <ul style="list-style-type: none"> <li>• Understanding basic circuit components (Resistor, Inductor, Capacitor, Transformer)</li> </ul>   |
|             |                                      |         | <ul style="list-style-type: none"> <li>• Basics of OPAMP and its applications.</li> </ul>   |
|             |                                      |         | <ul style="list-style-type: none"> <li>• Understanding the basics of semiconductor materials and the working of semiconductor devices like p-n junction diode, Zener diode, BJT, FET etc used in the circuit</li> </ul> |
|             |                                      |         | <ul style="list-style-type: none"> <li>• Basics of Digital logic circuits.</li> </ul>   |
|             |                                      |         | <ul style="list-style-type: none"> <li>• Fundamentals of electronic communication.</li> </ul>   |
| ELT-IDC-TU  | Fundamentals of Electronics-Tutorial | 1       | <ul style="list-style-type: none"> <li>• Solving problems on digital circuits and doing analysis of basic analog circuits.</li> </ul>   |
|             |                                      |         | <ul style="list-style-type: none"> <li>• Prepare the notebook to solve problems</li> </ul>  |

### SKILL ENHANCEMENT COURSE (SEC)

| Course Code   | Course Title                              | Credits | Course Outcomes   |
|---------------|---|---------|---|
| ELT-MD-SEC-TH | Circuit Simulation with PSPICE-Theory     | 3       | <ul style="list-style-type: none"> <li>• Introduction to PSpice Software &amp; Circuit Descriptions</li> </ul>  |
|               |   |         | <ul style="list-style-type: none"> <li>• DC Operation and Circuit Analysis</li> </ul>   |
|               |   |         | <ul style="list-style-type: none"> <li>• Transient and AC circuit analysis.</li> </ul>  |
|               |   |         | <ul style="list-style-type: none"> <li>• Application to semiconductor diodes, BJT and MOSFET.</li> </ul>  |
| ELT-MD-SEC-P  | Circuit Simulation with PSPICE Laboratory | 1       | <ul style="list-style-type: none"> <li>• Verification of Kirchoff's Voltage Law and Current Law.</li> </ul>   |
|               |   |         | <ul style="list-style-type: none"> <li>• Mesh and Node Analysis of Circuits using DC Sources. Transient Analysis of RC, RL Circuits, AC Analysis of Series and Parallel RLC Circuits</li> </ul> |
|               |   |         | <ul style="list-style-type: none"> <li>• I-V Characteristics of P-N Junction Diode, Zener diode, NPN transistor</li> </ul>  |
|               |   |         | <ul style="list-style-type: none"> <li>• Analysis of BJT CE Amplifier, Enhancement and Depletion mode of Nchannel MOSFET.</li> </ul>  |

## **PROGRAMME OUTCOME**

**PO 1 – Subject Knowledge**– Basic knowledge of the subject will enable the students to consider applying the theoretical ideologies in practical areas so that they are likely to find themselves as professionals after completion of the course.

**PO 2 – Scientific and Critical Thinking** – Students' overall understanding of the discipline are being developed. They are encouraged to apply the knowledge from class in real life problem analysis, critically think with scientific reasoning and to conduct research in a justifiable scientific manner.

**PO 3 – Technical Skill Development**– Students will develop theoretical and software expertise and practical hands-on experiences which they can apply in their professional career in future or in further higher studies. They will also get conversant with recent trends of scientific advancements happening in and around.

**PO 4 – Higher Study Foundation**– Students become highly familiar of the expansion of the learning in their respective field which enables them to get admitted to the premier institutes of the country for higher studies.

**PO-5- Effective Communication-** Speak, read, write and listen clearly in person and through electronic media in English and in one Indian language, and make meaning of the world by connecting people, ideas, books, media and technology.

**PO 6 – Research Orientation and Aptitude**-Encouraging the students to pursue research related to the subject that may lead to expansion of knowledge. An aptitude to research is also stimulated in the minds of the students which prompts them to implement some ideas in good laboratories of the country after completing the programme.

**PO-7- Personality Development** - Imparting personality development skills to the students that are likely to help them in their professional and personal lives, thus making them responsible and sincere citizens.

**PO-8-Spirit of Team Work** - Encouraging the students to coordinate with one another in a team environment and perform well as a team rather than trying to excel individually at the cost of group performance efficiency.

**PO-9-Effective Citizenship-** Demonstrate empathetic social concern and equity-centered national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.

**PO-10- Ethics-** Recognize different value systems including your own, understand the moral dimensions of your decisions, and accept responsibility for them.

**PO-11- Environment and Sustainability-**Understand the issues of environmental contexts and sustainable development.

**PO-12-Self-directed and Life-long Learning-** Acquire the ability to engage in independent and life-long learning in the broadest context socio-technological changes.

## **PROGRAMME SPECIFIC OUTCOME**

**PSO 1** : Learning the fundamentals of Electronics, both theory and practice.

**PSO 2** : Developing the theoretical foundations related to different paradigms such as circuit theory, semiconductor devices, analog and digital electronics etc.

**PSO 3**: Becoming effective and ethical practitioners contributing to social and national development.