

DEPARTMENT OF TECHNOLOGY EDUCATION
University of the Punjab, Lahore
Course Outline

Programme	BS Technology Education	Course Code	BSTE304	Credit Hours	3
Course Title	General Electronics				
Course Introduction					
Welcome to General Electronics! This course covers the fundamental principles and concepts of electronics, including circuit analysis, electronic devices, and practical applications					
Learning Outcomes					
On the completion of the course, the students will:					
<ol style="list-style-type: none"> 1. Understand the basic principles of electricity and electronics 2. Analyze and design simple electronic circuits 3. Identify and explain the functions of various electronic components 4. Apply electronic principles to practical problems 					
Course Content				Assignments/Readings	
Week 1	Unit-I.1 Definition and scope of electronics			Define electronics and its scope in a short essay (100-150 words)	
	Unit-I.2 History and development of electronics				
Week 2	Unit-2.1 Electric charges and currents			Calculate the current in a circuit given the voltage and resistance (5 problems)	
	Unit-2.2 Ohm's law and resistors				
Week 3	Unit-3.1 Series and parallel circuits			Apply Kirchhoff's laws to solve 2 different circuit problems	
	Unit-3.2 - Kirchhoff's laws				
Week 4	Unit-4.1 - Resistors, capacitors, and inductors			Calculate the capacitance and inductance of 2 different circuits	
	Unit-4.2 - Diodes and transistors				
Week 5	Unit-5.1- Amplifiers and oscillators			Design and simulate a half-wave and full-wave rectifier circuit.	
	Unit-5.2- Rectifiers and power supplies				
Week 6	Unit-6.1- Number systems and logic gate			Investigate the properties of	

	Unit-6.2- Flip-flops and counters	different number systems (e.g., signed, unsigned)
Week 7	Unit-7.1- Measurement instruments and techniques	Design and implement a simple fault detection and indication circuit.
	Unit-7.2- Troubleshooting and fault analysis	
Week 8	Unit-8.1- Fundamentals of communication systems	Analyze and compare different modulation schemes (e.g., AM, FM, PM).
	Unit-8.2- Modulation and demodulation	
Week 9	Unit-9.1- Electronic control systems	Analyze and compare the performance of different control strategies (e.g., open-loop, closed-loop)
	Unit-9.2- Microcontrollers and embedded systems	
Week 10	Unit-I0.1- Electrical safety and precautions	Design and implement a simple electrical safety system (e.g., ground fault circuit interrupter)
	Unit-I0.2- Ethical considerations in electronics	
Week 11	Unit-I1.1- Project proposal and design	Propose and design an electronic project (e.g., smart home system, wearable device).
	Unit-I1.2- Project implementation and testing	
Week 12	Unit-I2.1- Micro electromechanical systems (MEMS)	Research and present on MEMS applications and devices (e.g., accelerometers, gyroscopes).
	Unit-I2.2- Nanotechnology and its applications	
Week 13	Unit-I3.1- Real-world applications and case studies	Investigate the challenges and opportunities of electronic system design in various industries
	Unit-I3.2- Group discussions and presentations	
Week 14	Unit-I4.1- Review of key concepts and formulas	Practice problem-solving using key concepts and formulas.
	Unit-I4.2- Practice problems and quizzes	
Week 15	Unit-I5.1- Finalize and present electronic project	Preparation Final project.
	Unit-I5.2- Peer evaluation and feedback	
Week 16	Unit-I6.1- Comprehensive review of course material	Prepare a project report and documentation
	Unit-I6.2- Final exam and assessment	
Textbooks and Reading Material		
Electronics Fundamentals by Thomas L. Floyd		
The Art of Electronics by Paul Horowitz and Winfield Hill		
Electronics: A First Course by Owen Bishop		
Teaching Learning Strategies		

Lectures and discussions

Laboratory experiments and simulations

Group work and projects

Assessment

Sr. No.	Elements	Weightage	Details
1.	Midterm Assessment	35%	Written Assessment at the mid-point of the semester.
2.	Formative Assessment	25%	Continuous assessment includes: Classroom participation, assignments, presentations, viva voce, attitude and behavior, hands-on-activities, short tests, projects, practical, reflections, readings, quizzes etc.
3.	Final Assessment	40%	Written Examination at the end of the semester. It is mostly in the form of a test, but owing to the nature of the course the teacher may assess their students based on term paper, research proposal development, field work and report writing etc.