



General Electronics Program
Student Learning Outcome Mapping
Course (CLO), Program (PLO), Institutional (ILO)

Program Description: This program is designed to provide students with technical knowledge, skills and proper work habits/attitudes necessary for employment in the field of electronics. The program prepares students to work and advance in their careers in positions such as electronic technicians, assemblers, testers, parts counter salespersons, or operators of their own electronic parts distributor establishments or service and repair shops.

Program Learning Outcomes	Institutional Learning Outcomes
<ol style="list-style-type: none"> 1. Assemble and manufacture electronic circuits. 2. Service and repair electronic consumer products. 3. Service and repair industrial devices and control equipment. 4. Service and repair computers. 	<ol style="list-style-type: none"> 1. Critical Thinking and Problem Solving: Analyze and solve problems by using informed judgment based on evidence, sound reasoning, and/or creativity to differentiate facts from opinions and to specify solutions and their consequences. 2. Communication: Effectively communicate, both orally and in writing, thoughts in a clear, well-organized manner to persuade, inform and/or convey ideas in academic, work, family and community settings. 3. Quantitative and Technological Competence: Use mathematical skills appropriate to our technological society by analyzing and solving problems that are quantitative in nature and use technology for informational, academic, personal and professional needs. 4. Diversity: Understand and appreciate differences in cultures and behaviors between the self and others by demonstrating respect, honesty, fairness, and ethical principles in both personal and professional life. 5. Civic Responsibility: Apply the principles of civility and morality to situations in the contexts of a healthy family, work, community, environment and world. 6. Aesthetics: Apply numerous means of inquiry to experience and appreciate the values of arts and nature.

PLO-ILO Mapping

PLOs	ILOs					
	ILO 1	ILO 2	ILO 3	ILO 4	ILO 5	ILO 6
PLO 1	X	X	X	X		
PLO 2	X	X	X	X		
PLO 3	X	X	X	X		
PLO 4	X	X	X	X		

CLO-PLO-ILO Mapping

GE 113 - Computer Operating System

This course is designed to provide the students with the knowledge and skills required in the manipulation of the computer system. It covers basic hardware set up, maintenance and installations of different types of operating system software and application software in the general electronics technology courses.

CLO	PLO					ILO					
	PLO 1	PLO 2	PLO 3	PLO 4		ILO 1	ILO 2	ILO 3	ILO 4	ILO 5	ILO 6
Students will be able to:											
1. Disinfect the computer from viruses.				X		X	X	X	X		
2. Install different operating system and device driver to the compute.				X		X	X	X	X		
3. Perform user and software configuration.				X		X	X	X	X		
4. Install different application software to the computer.				X		X	X	X	X		
5. Connect the different cable port of computer.				X		X	X	X	X		

GE 114 - Basic Electronics

This course teaches the students about electrical quantities, laws and theorems that govern DC and AC electronic circuits. It also deals with basic digital circuits, basic electronic components, their circuit applications and how to test them using the multi-meter.

CLO	PLO					ILO					
	PLO 1	PLO 2	PLO 3	PLO 4		ILO 1	ILO 2	ILO 3	ILO 4	ILO 5	ILO 6
Students will be able to:											
1. Read and interpret electronic diagrams.	X	X	X	X		X	X	X	X		
2. Identify and replace the defective parts of electronic circuits.	X	X	X	X		X	X	X	X		
3. Design electronics circuits using electronic CAD.	X	X	X	X		X	X	X	X		X
4. Assemble and test an electronic circuit.	X	X	X	X		X	X	X	X		
5. Construct digital logic circuit.	X	X	X	X		X	X	X	X		

GE 115 - Electronic Tools, Test Instruments and Measurements

This course is designed to train students to acquire knowledge and skills in the use of electronic hand tools, applications of soldering and de-soldering techniques, and the use of electronic instruments necessary in making electronic tests and measurements in various electronic circuits. It also requires the students to exercise laboratory safe practices.

CLO	PLO					ILO					
	PLO 1	PLO 2	PLO 3	PLO 4		ILO 1	ILO 2	ILO 3	ILO 4	ILO 5	ILO 6
Students will be able to:											
1. Solder and de-solder electronic components.	X	X	X	X		X	X	X	X		
2. Design electronic printed circuit board.	X	X	X	X		X	X	X	X		X
3. Check and measure the electrical properties of a circuit using analog and digital multi-meter.	X	X	X	X		X	X	X	X		
4. Check and measure the electrical properties of a signal using oscilloscope.	X	X	X	X		X	X	X	X		
5. Utilize other tests instruments (Function Generator RF Signal Generator).	X	X	X	X		X	X	X	X		

GE 116 – Microcontroller

This course is designed to provide students with the knowledge and skills to diagnose, repair and operate microcontroller devices and equipment employed in various industrial applications. It includes programming, wiring, and interfacing for different I/O circuits and devices.

CLO	PLO					ILO					
	PLO 1	PLO 2	PLO 3	PLO 4		ILO 1	ILO 2	ILO 3	ILO 4	ILO 5	ILO 6
Students will be able to:											
1. Assemble a microcontroller circuit board.	X		X			X	X	X	X		
2. Troubleshoot and repair a microcontroller circuit.		X	X			X	X	X	X		
3. Develop programs for a microcontroller circuit.			X			X	X	X	X		X
4. Interface input/output devices to microcontroller circuit.			X			X	X	X	X		

GE 124 - Analog Circuits and Applications

This course is designed to familiarize students with the different electronic devices, analog circuits, techniques and their respective functions and applications. Such circuits are: Power supply circuits, Amplifiers, Oscillators, and Signal processing circuits. It includes testing and troubleshooting.

CLO Students will be able to:	PLO					ILO					
	PLO 1	PLO 2	PLO 3	PLO 4		ILO 1	ILO 2	ILO 3	ILO 4	ILO 5	ILO 6
1. Design and construct power supply circuit.	X	X	X			X	X	X	X		X
2. Troubleshoot and repair power supply circuit.		X	X	X		X	X	X	X		
3. Design and construct an amplifier circuit.		X	X			X	X	X	X		X
4. Troubleshoot and repair amplifier circuit.		X	X			X	X	X	X		
5. Troubleshoot and repair frequency generator circuit.		X	X			X	X	X	X		
6. Troubleshoot and repair signal processing circuit.	X	X	X			X	X	X	X		X

GE 126 - Principles of Electronic Communication Systems

This course is designed to provide the students a comprehensive understanding on the principles of electronic communication systems. It covers principles of radio communication, troubleshooting of AM/FM radio receivers, radio transmitter circuit and some experiments in telephone system and local-area networking.

CLO Students will be able to:	PLO					ILO					
	PLO 1	PLO 2	PLO 3	PLO 4		ILO 1	ILO 2	ILO 3	ILO 4	ILO 5	ILO 6
1. Assemble the AM/FM radio transmitter circuit.	X	X				X	X	X	X		
2. Troubleshoot and repair the AM/FM radio transmitter circuit.		X				X	X	X	X		
3. Assemble the AM/FM radio receiver circuit.	X	X				X	X	X	X		
4. Troubleshoot and repair the AM/FM radio receiver circuit.		X				X	X	X	X		
5. Splice and connect telephone and LAN cable.		X				X	X	X	X		

GE 128 - Robotic 1

This course covers BASIC programing, assembly, testing, motor control, interfacing, sensing lights and sounds, and controlling the robot in a distance. Student will build their robot project that will give them the unique experience in estimation, wiring, source coding tuning and problem solving in robot navigation.

CLO	PLO					ILO					
	PLO 1	PLO 2	PLO 3	PLO 4		ILO 1	ILO 2	ILO 3	ILO 4	ILO 5	ILO 6
Students will be able to:											
1. Assemble the marine underwater robot	X		X			X	X	X	X		
2. Assemble and test the land robot.	X		X			X	X	X	X		
3. Control robot navigation.			X			X	X	X	X		
4. Integrate lights sensor in robot navigation.			X			X	X	X	X		
5. Control with distance detection.			X			X	X	X	X		

GE 212 - Robotic 2

This course will give the students a unique experience in mechanical assembly and programing of a Quad copter robot (flying drone) that can be sent in aerial space to do land mapping and surveying, real-estate observations and aerial video. It also includes wirings, airborne video system installation and sending to an actual mission.

CLO	PLO					ILO					
	PLO 1	PLO 2	PLO 3	PLO 4		ILO 1	ILO 2	ILO 3	ILO 4	ILO 5	ILO 6
Students will be able to:											
1. Assemble the Quadcopter.	X		X			X	X	X	X		
2. Program the Operation of Quadcopter.			X			X	X	X	X		
3. Integrate Remote Control and GPS.			X			X	X	X	X		
4. Test the Flight Operation.			X			X	X	X	X		

GE 214 - Audio Equipment Service and Repair

This course is designed to provide the students with the knowledge and skills in operating, installing, and servicing various audio equipment, circuits, and devices used in sound systems. It includes setup, alignment and adjustment of mechanical and electrical parts and troubleshooting of various audio equipment.

CLO	PLO					ILO					
	PLO 1	PLO 2	PLO 3	PLO 4		ILO 1	ILO 2	ILO 3	ILO 4	ILO 5	ILO 6
Students will be able to:											
1. Assemble audio power amplifier circuit.	X					X	X	X	X		
2. Connect speaker system.		X		X		X	X	X	X		
3. Set up audio equipment.		X				X	X	X	X		
4. Troubleshoot and repair audio equipment.		X				X	X	X	X		

GE 215 - Television Service and Repair

This course is designed to train students in servicing and repairing television receivers. It also includes practical applications and utilization of various test equipment necessary in circuit analysis and troubleshooting.

CLO	PLO					ILO					
	PLO 1	PLO 2	PLO 3	PLO 4		ILO 1	ILO 2	ILO 3	ILO 4	ILO 5	ILO 6
Students will be able to:											
1. Read and interpret television diagram and operating/service manual.		X		X		X	X	X	X		
2. Troubleshoot and repair CRT TV.		X		X		X	X	X	X		
3. Troubleshoot and repair LCD TV.		X		X		X	X	X	X		
4. Troubleshoot and repair LED TV.		X		X		X	X	X	X		
5. Troubleshoot and repair plasma TV.		X		X		X	X	X	X		

GE 217 - Industrial Control Technology

This course is designed to provide the students with fundamental knowledge and skills in industrial electronics circuits, applications, and control technology. It deals with wiring and installation of electric motors, repair and maintenance of field control devices such as industrial switches, relays, and transducers. It also includes PLC operation, setup, configuration, programming, and troubleshooting.

CLO	PLO					ILO					
	PLO 1	PLO 2	PLO 3	PLO 4		ILO 1	ILO 2	ILO 3	ILO 4	ILO 5	ILO 6
Students will be able to:											
1. Diagnose and repair problems of interface driver circuit and controller circuit.			X			X	X	X	X		
2. Diagnose and repair problems of actuators and input/output devices.			X			X	X	X	X		
3. Setup and configure the PLC device.			X			X	X	X	X		
4. Develop PLC programs.			X			X	X	X	X		

GE 222 - Video Systems Repair and Maintenance

This course is designed to provide students with knowledge and skills required in dealing with other video equipment, such as: video cassette recorder/player, 8mm camcorder, DVD video disk recorder/player and installing security camera system in commercial or residential area. It covers the analysis of functional blocks, hookup, electrical and mechanical alignments, disassembly and assembly procedures, replacements of parts and troubleshooting techniques.

CLO	PLO					ILO					
	PLO 1	PLO 2	PLO 3	PLO 4		ILO 1	ILO 2	ILO 3	ILO 4	ILO 5	ILO 6
Students will be able to:											
1. Troubleshoot and repair VCR.		X				X	X	X	X		
2. Troubleshoot and repair camcorder.		X				X	X	X	X		
3. Troubleshoot and repair DVD player.		X				X	X	X	X		
4. Install security camera system.		X				X	X	X	X		

GE 223 - PC Assembly, Maintenance and Repair

This course is designed to provide the students with knowledge and skills required in PC assembly, upgrading, repair, and maintenance. It includes software maintenance, providing backup files, system troubleshooting and repair, and basic concepts of Local Area Network.

CLO	PLO					ILO					
	PLO 1	PLO 2	PLO 3	PLO 4		ILO 1	ILO 2	ILO 3	ILO 4	ILO 5	ILO 6
Students will be able to:											
1. Assemble the system unit of computer and load the operating system.				X		X	X	X	X		
2. Troubleshoot and repair computer.				X		X	X	X	X		
3. Upgrade the computer.				X		X	X	X	X		

GE 225 Internship

This course provides the student with practical training in electronic works. With the assistance of an instructor/coordinator, the student is assigned to work under a supervisor in a governmental department or a private business firm in order to learn through actual work experience.

CLO	PLO					ILO					
	PLO 1	PLO 2	PLO 3	PLO 4		ILO 1	ILO 2	ILO 3	ILO 4	ILO 5	ILO 6
Students will be able to:											
1. Demonstrate proper employee behaviors and work habits.	X	X	X	X		X	X	X	X	X	X
2. Perform general electronic tasks as assigned by a site supervisor.	X	X	X	X		X	X	X	X	X	X