COURSE ELT1010: ELECTRO-ASSEMBLY 1

Level: Introductory

Prerequisite: None

Description: Students apply basic fabricating and servicing techniques to construct and test electronic and electromagnetic devices and cables.

Parameters: Access to basic hand tools, soldering equipment, voltmeter, ohmmeter/test light and related resources.

Outcomes: The student will:

1. **create a health and safety plan with special emphasis on conditions and factors related to the specific pathway or series of courses**
   - 1.1 research and identify the following eight common elements of a health and safety management system:
     - 1.1.1 management, leadership and organizational commitment including policies, guidelines and responsibilities
     - 1.1.2 hazard identification and assessment
     - 1.1.3 hazard control
     - 1.1.4 worker competency and training including: technical competence, safe work practices and procedures, personal protective equipment
     - 1.1.5 work site inspection
     - 1.1.6 incident investigation
     - 1.1.7 emergency response
     - 1.1.8 management system administration including: evaluation, records and statistics, maintenance of system
   - 1.2 explain each of the elements reflecting on occupational health and safety implications
   - 1.3 define health and safety elements relevant to the world-of-work
   - 1.4 present a health and safety plan clarifying its relevance to the work world and society in general
2. **research common processes and methods of hazard identification, assessment and control specific to the pathway or series of courses**
   - 2.1 research and identify common job site hazard identification processes
   - 2.2 research and identify common methods for assessment and control of hazards
   - 2.3 explain and demonstrate appropriate health and safety effective practices
   - 2.4 demonstrate a proactive personal commitment toward improvement of workplace health and safety including concern for others and following instructions, rules and guidelines
3. **apply the appropriate fabrication techniques, including proper soldering and component assembly procedures, to construct and test a simple electronic circuit**
   - 3.1 construct and analyze a simple control circuit
   - 3.2 use various breadboarding techniques to be able to understand methods used; e.g., nail and board sector and spring clip, wire wrap, point-to-point and solderless breadboard
   - 3.3 identify components
   - 3.4 measure voltage and continuity to appraise condition of circuit using appropriate instrumentation; e.g., simple alarm, simple automobile circuit, multimeter (digital and analog)

4. **apply the appropriate fabrication techniques to construct and test an electromagnetic device**
   - 4.1 define AC/DC voltage and polarity
   - 4.2 use proper solder and soldering techniques to gain an understanding of their value
   - 4.3 analyze several magnetic devices to formulate an understanding of their function; e.g., speakers, electromagnetic crane, tape heads, moving magnetic pick-ups, relays, magnetic strip, levitation trains, magnetic device in hard drive
5. **identify and assemble common electrical/electronic cables and connectors used in power, audio and video connections**
   - 5.1 install specialty connectors and cables to acquire knowledge and skills
   - 5.2 demonstrate an understanding of specialty cables that link systems with special functions including fibre optics, coaxial and telephone
6. **demonstrate established laboratory procedures and safe work practices**
   - 6.1 demonstrate safe home/laboratory procedures with respect to electrical hazards and use of solder and flux
   - 6.2 identify and explain the importance of electrical protection devices
7. **demonstrate basic competencies**
   - 7.1 demonstrate fundamental skills to:
     - 7.1.1 communicate
     - 7.1.2 manage information
     - 7.1.3 use numbers
     - 7.1.4 think and solve problems
   - 7.2 demonstrate personal management skills to:
     - 7.2.1 demonstrate positive attitudes and behaviours
     - 7.2.2 be responsible
     - 7.2.3 be adaptable
     - 7.2.4 learn continuously
     - 7.2.5 work safely
   - 7.3 demonstrate teamwork skills to:
     - 7.3.1 work with others
     - 7.3.2 participate in projects and tasks
8. **make personal connections to the cluster content and processes to inform possible pathway choices**
   - 8.1 complete/update a personal inventory; e.g., interests, values, beliefs, resources, prior learning and experiences
   - 8.2 create a connection between a personal inventory and occupational choices