

ELECTRO-TECHNOLOGIES COURSE SUMMARIES

INTRODUCTORY

ELT1010: ELECTRO-ASSEMBLY 1

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

Prerequisite: None

ELT1030: CONVERSION & DISTRIBUTION

Students experiment and work with principles of electrical energy conversion and distribution.

Prerequisite: None

ELT1050: ELECTRONIC POWER SUPPLY 1

Students construct different types of alternating and direct current power supplies and demonstrate their application in electrical/electronic systems.

Prerequisite: ELT1010: Electro-assembly 1

ELT1080: CONTROL SYSTEMS 1

Students construct process control systems, demonstrate their basic operation and demonstrate procedures for testing them.

Prerequisite: ELT1010: Electro-assembly 1

ELT1090: ANALOG COMMUNICATION 1

Students install and demonstrate the fundamentals of various consumer audio integrated systems.

Prerequisite: ELT1010: Electro-assembly 1

ELT1110: SECURITY SYSTEMS 1

Students install and demonstrate the fundamentals of sensors, control units and warning devices used in security systems.

Prerequisite: ELT1010: Electro-assembly 1

ELT1130: ROBOTICS 1

Students apply the fundamentals of robotics systems and basic robotics functions.

Prerequisite: None

ELT1140: ROBOTICS APPLICATIONS

Students apply the fundamentals of robotics systems and basic robotics functions.

Prerequisite: ELT1010: Electro-assembly 1

ELT1910: ELT PROJECT A

Students develop project design and management skills to extend and enhance competencies and skills in other CTS courses through contexts that are personally relevant.

Prerequisite: None

INTERMEDIATE

ELT2010: ELECTRO-ASSEMBLY 2

Students apply electro-assembly technology to manufacture circuit boards.

Prerequisite: ELT1010: Electro-assembly 1

ELT2020: ELECTRICAL SERVICING

Students demonstrate the fundamental concepts of repairing, servicing and maintaining electrical and electronic equipment

Prerequisite: ELT1010: Electro-assembly 1

ELT2030: BRANCH CIRCUIT WIRING

Students demonstrate the fundamentals of branch circuit wiring used in residential/commercial buildings.

Prerequisite: ELT1030: Conversion & Distribution

ELT2050: ELECTRONIC POWER SUPPLY 2

Students construct and demonstrate the fundamentals of electronic power supply technology.

Prerequisite: ELT1050: *Electronic Power Supply 1*

ELT2080: CONTROL SYSTEMS 2

Students demonstrate how process control technology is used in real-world applications.

Prerequisite: ELT1080: *Control Systems 1*

ELT2090: ANALOG COMMUNICATION 2

Students demonstrate the fundamental concepts of electronic analog communication systems.

Prerequisite: ELT1090: *Analog Communication 1*

ELT2110: SECURITY SYSTEMS 2

Students demonstrate the fundamentals of security technology used in homes, businesses and transportation systems.

Prerequisite: ELT1110: *Security Systems 1*

ELT2120: ELECTRO-OPTICS

Students demonstrate basic knowledge of lasers and other light wave communication applications in various electronic systems

Prerequisite: None

ELT2130: MAGNETIC CONTROL DEVICES

Students demonstrate the fundamentals of electromagnetic control devices.

Prerequisite: ELT1010: *Electro-assembly 1*

ELT2140: ROBOTICS 2

Students demonstrate the fundamental concepts of sensor devices and control systems by building an electronic circuit to control a direct wire or mobile robot.

Prerequisite: ELT1130: *Robotics 1*

OR

ELT1140: Robotics Applications

ELT2150: ELECTRONIC CONTROLS

Students demonstrate the fundamentals of ladder/relay logic programming and how the programmable logic controller (PLC) system operates.

Prerequisite: ELT2130: *Magnetic Control Devices*

ELT2160: ROBOTICS SENSOR 1

Students demonstrate how basic sensors are used in a robotic system.

Prerequisite: ELT1140: *Robotics Applications*

ELT2170: ROBOTICS SENSOR 2

Students demonstrate how specialized sensors are used in a robotic system.

Prerequisite: ELT2160: *Robotics Sensor 1*

ELT2180: PROCESS CONTROL

Students develop skills in robotics/simulation software control by creating, modifying and using programs that incorporate computer-controlled movements and events in robotics/simulation activities and applications.

Prerequisite: None

ELT2910: ELT PROJECT B

Students develop project design and management skills to extend and enhance competencies and skills in other CTS courses through contexts that are personally relevant.

Prerequisite: None

ELT2920: ELT PROJECT C

Students develop project design and management skills to extend and enhance competencies and skills in other CTS courses through contexts that are personally relevant.

Prerequisite: None

ELT2950: ELT INTERMEDIATE PRACTICUM

Students apply prior learning and demonstrate the attitudes, skills and knowledge required by an external organization to achieve a credential/credentials or an articulation.

Prerequisite: None

ADVANCED**ELT3010: ELECTRO-ASSEMBLY 3**

Students apply photographic processes to construct a printed circuit for an electronic project.

Prerequisite: ELT2010: *Electro-assembly 2*

ELT3020: ELECTRONIC SERVICING

Students develop and apply basic processes and skills to service and repair consumer-based electronic products.

Prerequisite: ELT2020: *Electrical Servicing*

ELT3030: POWER SYSTEMS & SERVICES

Students construct, operate, analyze and evaluate various single-phase and three-phase power systems and services.

Prerequisite: ELT2030: *Branch Circuit Wiring*

ELT3040: GENERATION/TRANSFORMATION

Students operate, experiment with and analyze alternators and transformers used in power generation and distribution.

Prerequisite: ELT1030: *Conversion & Distribution*

ELT3110: AMPLIFIERS

Students demonstrate knowledge of various types and classes of amplifiers.

Prerequisite: None

ELT3140: MOTORS

Students demonstrate knowledge of electric motor operation and loading characteristics.

Prerequisite: None

ELT3150: ROBOTICS 3

Students demonstrate remote/autonomous control systems by constructing circuits to control robotic behaviour.

Prerequisite: ELT2140: *Robotics 2*

ELT3160: CONTROL APPLICATIONS

Students demonstrate the fundamentals of programmed controls and demonstrate how sensing devices are integrated to control output devices.

Prerequisite: ELT2150: *Electronic Controls*

ELT3170: ROBOTICS MICROPROCESSORS

Students compare central processing unit (CPU) architecture of programmable robotics engineered systems and interface with analog sensors.

Prerequisites: ELT1140: *Robotics Applications*
CSE3120: *Object Oriented Programming 1*

ELT3180: ROBOTICS VISION SYSTEMS

Students examine various types of vision in a programmable robotics system.

Prerequisite: ELT2170: *Robotics Sensor 2*

ELT3190: ROBOTICS KINEMATICS & BEHAVIOUR

Students examine the calibration of robots and programmed behaviours in a programmable robotics system.

Prerequisite: ELT3170: *Robotics Microprocessors*

ELT3200: ROBOTICS ARTIFICIAL INTELLIGENCE

Students examine artificial intelligence in a robotics system

Prerequisite: ELT3170: *Robotics Microprocessors*

ELT3205: EXPERT SYSTEMS

Students acquire knowledge of expert systems, such as artificial intelligence and virtual reality. They gain competence by developing or modifying programs that incorporate computer-controlled environments and multimedia interactive activities and applications.

Prerequisite: None

ELT3910: ELT PROJECT D

Students develop project design and management skills to extend and enhance competencies and skills in other CTS courses through contexts that are personally relevant.

Prerequisite: None

ELT3920: ELT PROJECT E

Students develop project design and management skills to extend and enhance competencies and skills in other CTS courses through contexts that are personally relevant.

Prerequisite: None

ELT3950: ELT ADVANCED PRACTICUM

Students apply prior learning and demonstrate the attitudes, skills and knowledge required by an external organization to achieve a credential/credentials or an articulation.

Prerequisite: None