## **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

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#### **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

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#### **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

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# **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

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