

COURSE ELT2180: PROCESS CONTROL

Level: Intermediate

Prerequisite: None

Description: 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.

Parameters: Access to appropriate computer equipment, software and support materials.

Outcomes: The student will:

- 1. demonstrate basic electronic process control software competence**
- 2. explain the theory and processes used to control a robot and/or other simulation**
 - 2.1 describe the types of tasks robots perform
 - 2.2 diagram a basic robot, labelling components including the controller
 - 2.3 describe the functions of labelled components
 - 2.4 explain the processes used to control robots
 - 2.5 give examples of the types of software used to instruct the controller
 - 2.6 give an example of when it would be feasible to use a robot over a human to perform a task
 - 2.7 give an example of when it would be feasible to use a human over a robot to perform a task
 - 2.8 explain how robotics affect society now and will affect society in the future
- 3. construct a robot or cause a robot to function, as intended, through computer control**
 - 3.1 design and implement a robotics and/or other computer simulation by following a procedure to:
 - 3.1.1 identify software and application(s)
 - 3.1.2 determine and design algorithm parameters
 - 3.1.3 collect required support resources
 - 3.1.4 input data
 - 3.1.5 apply animation or robotics software commands
 - 3.1.6 load, create, customize and modify robotics or a simulation files(s)
 - 3.2 demonstrate animation/robotic capability by:
 - 3.2.1 displaying, printing and/or exporting animation or a robotics file(s)
 - 3.3 use commands and functions to control a robot(s) in teacher-specified exercises
- 4. apply appropriate work station routines consistently**
 - 4.1 apply efficient work station positions and routines that encourage:
 - 4.1.1 good health and safety; e.g., posture, positioning of hardware and furniture
 - 4.1.2 security for hardware, software, supplies and personal work
- 5. demonstrate basic competencies**
 - 5.1 demonstrate fundamental skills to:
 - 5.1.1 communicate
 - 5.1.2 manage information
 - 5.1.3 use numbers
 - 5.1.4 think and solve problems
 - 5.2 demonstrate personal management skills to:
 - 5.2.1 demonstrate positive attitudes and behaviours
 - 5.2.2 be responsible
 - 5.2.3 be adaptable

- 5.2.4 learn continuously
 - 5.2.5 work safely
- 5.3 demonstrate teamwork skills to:
 - 5.3.1 work with others
 - 5.3.2 participate in projects and tasks
- 6. identify possible life roles related to the skills and content of this cluster**
 - 6.1 recognize and then analyze the opportunities and barriers in the immediate environment
 - 6.2 identify potential resources to minimize barriers and maximize opportunities