COURSE OUTLINE: RAA204 - PROJECT COURSE

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Course Code: Title	RAA204: PROJECT COURSE
Program Number: Name	4068: ROBOTICS AUTOMATION
Department:	ROBOTICS GRADUATE CERTIFICATE
Semesters/Terms:	19W
Course Description:	The objective of this course is to allow the student to research a relevant robotic application used in industry and perform a similar operation in our robot lab using the automation equipment they have become familiar with over the course of the program.
Total Credits:	3
Hours/Week:	3
Total Hours:	45
Prerequisites:	RAA100, RAA106
Corequisites:	There are no co-requisites for this course.
Vocational Learning Outcomes (VLO's) addressed in this course: **Please refer to program web page for a complete listing of program outcomes where applicable.**	**4068 - ROBOTICS AUTOMATION** VLO 1 Construct and evaluate robotic control programs for various scenarios against which to model the functionality and stability of automation systems. VLO 2 Plan and lead the installation of new industrial equipment and its physical and digital integration with existing systems. VLO 3 Collaborate with health and safety personnel to develop plans and specifications that incorporate, among other elements, safety controls and physical guarding to comply with all applicable regulatory safety designs and standards used in industrial robotic applications. VLO 4 Assist in the assessment and management of robotic systems by applying business principles to the electromechanical environment. VLO 5 Validate and optimize the functioning of motor, drive, control, and robotic systems. VLO 6 Integrate budgetary, technical, functional and safety considerations in the design and optimization of custom automation solutions. VLO 7 Formulate and use a variety of troubleshooting techniques on new and legacy electromechanical equipment, processes, systems and subsystems.
Essential Employability Skills (EES) addressed in this course:	EES 1 Communicate clearly, concisely and correctly in the written, spoken, and visual form that fulfills the purpose and meets the needs of the audience. EES 2 Respond to written, spoken, or visual messages in a manner that ensures effective communication. EES 3 Execute mathematical operations accurately. EES 4 Apply a systematic approach to solve problems. EES 5 Use a variety of thinking skills to anticipate and solve problems. EES 6 Locate, select, organize, and document information using appropriate technology and information systems.

	EES 7 Analyze, evaluate, and apply relevant information from a variety of sources. EES 8 Show respect for the diverse opinions, values, belief systems, and contributions of others. EES 9 Interact with others in groups or teams that contribute to effective working relationships and the achievement of goals. EES 10 Manage the use of time and other resources to complete projects. EES 11 Take responsibility for ones own actions, decisions, and consequences.
Course Evaluation:	
Other Course Evaluation & Assessment Requirements:	Grade Definition Grade Point Equivalent A+ 90 - 100% 4.00 A 80 - 89% 4.00 B 70 - 79% 3.00 C 60 - 69% 2.00 D (Fail)50 - 59% 1.00 F (Fail)49% and below 0.00 CR (Credit) Credit for diploma requirements has been awarded. S Satisfactory achievement in field /clinical placement or non-graded subject area. U Unsatisfactory achievement in field/clinical placement or non-graded subject area. X A temporary grade limited to situations with extenuating circumstances giving a student additional time to complete the requirements for a course. NR Grade not reported to Registrar`s office. W Student has withdrawn from the course without academic penalty.

Course Outcomes and Learning Objectives:

Course Outcome 1	Learning Objectives for Course Outcome 1
1. Identify which elements of a manufacturing process are suitable for automation	1.1 Investigate processes that would benefit from automation 1.2 Identify processes that cannot or should not be automated 1.3 Synthesize results of process investigation with our robotics lab and equipment
Course Outcome 2	**Learning Objectives for Course Outcome 2**
2. Research a relevant automation project that can be implemented in our robotics lab using the robots, conveyors, cameras, etc.	2.1 Investigate case studies and projects that use robotics in manufacturing environments 2.2 Plan and prepare documentation that outlines project specifications
Course Outcome 3	**Learning Objectives for Course Outcome 3**
3. Manage and execute an automated project which uses robots.	3.1 Implement specifications and requirements previously developed for a robot project

Evaluation Process and Grading System:

Evaluation Type	Evaluation Weight
Project Daily Log Book	10%
Project Demonstration	40%
Project Final Report	40%
Project Proposal	10%

Date:	August 28, 2019
Addendum:	Please refer to the course outline addendum on the Learning Management System for further information.