COURSE OUTLINE

RAA104

Prepared: Dean Matthews   Approved: Corey Meunier

Course Code: Title	RAA104: MANUFACTURING PROCESSES
Program Number: Name	4068: ROBOTICS AUTOMATION
Department:	ROBOTICS GRADUATE CERTIFICATE
Semester/Term:	17F
Course Description:	The students in this course will gain an understanding of typical processes used in various manufacturing environments and the arguments for and against introducing automation into these environments. Students will be introduced to the concepts of design for assembly, return on investment (ROI), mean time between failure (MTF), lead time and several other topics as they relate to automation and robotics used in industry
Total Credits:	3
Hours/Week:	3
Total Hours:	45
This course is a pre-requisite for:	RAA204
Vocational Learning Outcomes (VLO's): **Please refer to program web page for a complete listing of program outcomes where applicable.**	#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. #4. Assist in the assessment and management of robotic systems by applying business principles to the electromechanical environment. #6. Integrate budgetary, technical, functional and safety considerations in the design and optimization of custom automation solutions.
Essential Employability Skills (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. #2. Respond to written, spoken, or visual messages in a manner that ensures effective communication. #5. Use a variety of thinking skills to anticipate and solve problems. #6. Locate, select, organize, and document information using appropriate technology and information systems. #7. Analyze, evaluate, and apply relevant information from a variety of sources. #8. Show respect for the diverse opinions, values, belief systems, and contributions of others. #9. Interact with others in groups or teams that contribute to effective working relationships and

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	the achievement of goals. #10. Manage the use of time and other resources to complete projects. #11. Take responsibility for ones own actions, decisions, and consequences.
Course Evaluation:	Passing Grade: 50%, D
Evaluation Process and Grading System:	

Evaluation Type	Evaluation Weight
Assignments	20%
Case Study	20%
Test 1	30%
Test 2	30%

Books and Required Resources:	Automation, Production Systems, and Computer-Integrated Manufacturing by Mikell P. Groover Publisher: Pearson Edition: Fourth ISBN: 978-0-13-349961-2
Course Outcomes and Learning Objectives:	

Course Outcome 1.

Investigate different manufacturing processes as they pertain to automation, specifically robotics

Learning Objectives 1.

Identify and explain various processes used in manufacturing facilities
Give examples of processes that would benefit from implementation of automation
Investigate case studies of successful and unsuccessful implementations of automation
Debate reasons for and against implementation of automation

Course Outcome 2.

Investigate concepts of Automated Manufacturing

Learning Objectives 2.

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Review design for assembly concepts
Identify the differences between fixed (hard), programmable and flexible automation
Examine relationships between production facilities and products

Course Outcome 3.

Examine cost benefit analysis of automation

Learning Objectives 3.

Investigate manual vs. automated costs for a typical manufacturing environment
Investigate concepts such as lead-time, mean-time between failure and other production planning concepts

Course Outcome 4.

Investigate various manufacturing transport systems and automated storage systems (ASRS)

Learning Objectives 4.

Examine various types and components to automated systems
Analyze different automated storage and retrieval systems and how they are used in production environments
Examine various automated inspection technologies

Date:	Friday, August 18, 2017
	Please refer to the course outline addendum on the Learning Management System for further information.