New Course Form

MET 238 Mechatronics Capstone Project 3

Originator: Kenny Keith **Status:** In Process **Date Created:** 12/08/2014

Department: IMO Industrial Maintenance and Operations **Submitted:** 12/08/2014

Completed: **To ACETS:**

Course Prefix: MET

Course Number: 238

Course Title: Mechatronics Capstone Project

Cross-listing: No

Cross-listing information:

Semester for Implementation: Fall

Year of Implementation: 2015

Course Type: Required Transfer Vocational

Credit Hours: 3

Transfer Course: BAS-articulation discussions are underway

Course Catalog Description: This course provides a capstone experience for the Mechatronics Area of Specialization by requiring that the student, together with a team mate(s), apply skills and knowledge from each of the program areas to an independent mechatronics project related to consumer goods packaging

Rationale: Mechatronics is about the synergistic integration of the multiple disciplines of mechanical, electrical/electronic, computer and process control engineering to improve manufacturing machines and processes. Whereas much of the learning of the program is done in the individual technical areas using a guided approach to new topics, this course allows the student to integrate the skills and knowledge obtained during the first three (3) semesters while building upon and practicing teamwork skills in an independent learning situation

Total Lecture Contact Hours per Week: 2

Total Lab Contact Hours per Week: 3

Total Clinical Contact Hours per Week: 0

Total Contact Hours: 80

Load Factor:	4.1
Requisites:	Yes
Prerequisites:	MET 150 Industrial Mechanics II MET 200 Robotics and Motion Control MET 210 Process Control & Instrumentation
Co-requisites:	MET 220 Advanced PLCs
Mode of Instructional Delivery:	(1) Traditional classroom instruction (3) Hybrid: internet with live lab (5) Laboratory
If "other" mode of instruction, specify:	
Library Resources:	N/A
Assessment of Student Learning - Methods:	(1) Written Examinations (3) Oral Presentations (5) Demonstration of Skills
IF "other" assessment, specify:	
Recommend Course Enrollment:	12
Credit by Examination:	No
Literacy/ Critical Inquiry Component:	N/A
Ethnic/ Gender Awareness:	N/A
Sustainability (explanation):	N/A
COURSE TOPICS:	The student will develop and implement a project plan approved by the instructor that will demonstrate the ability to integrate the skills and knowledge obtained over the previous three (3) semesters of study. The student will work with actual industrial equipment and machinery in a realistic application. This course will broaden the student's knowledge with respect to technology suppliers, equipment and applications. It is strongly suggested that the student and instructor begin planning for this course during the semester prior to the semester in which the course is completed.
COURSE OUTCOMES:	1.Establish and communicate obtainable project objectives 2.Develop a work plan, budget and schedule 3.Communicate the work plan to the faculty advisor for approval 4.Implement the work plan 5.Use oral and written communications skills to document and communicate

activities and results
6.Link the work plan to business objectives
7.Explain the relationship of the work plan to the environment, society and individual workers or consumers
8.Demonstrate teamwork and take shared responsibility for a task.
9.Demonstrate knowledge in each of the four (4) areas of mechatronics: mechanical engineering, electrical and electronic engineering, systems and process control engineering, and computer science
10.Integrate the four technical areas of mechatronics.
11.Design a mechatronic system using drawings, calculations and appropriate physical laws and properties
12.Specify components of a mechatronic system
13.Assemble a mechatronic system
14.Demonstrate the ability to program, calibrate and configure a mechatronic system
15.Demonstrate the ability to test the components of a mechatronic system
16.Demonstrate the ability to start-up and operate a mechatronic system
17.Demonstrate the ability to troubleshoot and repair a mechatronic system
18.Create documentation for a mechatronic system from both a technical and operational perspective
19.Specify maintenance procedures for a mechatronic system
20.Perform a post completion audit of the project identifying the processes, procedures and technology that worked well and should be reinforced and those that went poorly and should be improved.
21.Present and communicate the project results to others using Presentation software.

Proposer: Kenny Keith