MASTER COURSE OUTLINE
Prepared By: Gary Baker   Date: February 2020

COURSE TITLE
Mechatronics I

GENERAL COURSE INFORMATION

Dept.: MCT	Course Num: 101	(Formerly:)
CIP Code: 15.0613	Intent Code: 21	Program Code: 640
Credits: 2-5		
Total Contact Hrs Per Qtr.: 33-83		
Lecture Hrs: 11-28	Lab Hrs:22-55	Other Hrs:

Distribution Designation: General Elective (GE)

COURSE DESCRIPTION (as it will appear in the catalog)
This course is an introduction to the multidisciplinary field of mechatronics - the integration of systems design, electronic, mechanical, electrical, computers, PLC, and control sciences/engineering. This course will introduce students to the fundamental electrical, electronics, communications, networks and computational theory that forms the foundation for future studies in the field of mechatronics. Students will build and demonstrate electronic projects using the Elegoo Uno R3 Project Kit. *This is a variable credit course where students can choose to enroll in 2 to 5 credits depending on their needs.*

PREREQUISITES
None

TEXTBOOK GUIDELINES
Introductory electrical, electronics, communications and texts and equipment determined by MCT faculty (Examples: *Make: Electronics: Learning by Discovery, Platt; Practical Electronics for Inventors,* Scherz & Monk)

COURSE LEARNING OUTCOMES
Upon successful completion of the course, students should be able to demonstrate the following knowledge or skills.
1) Discuss the field of mechatronics, recalling key attributes and technological challenges
2) Describe basic electrical and electronics components used in modern devices
3) Understand the basics of DC circuits/circuit theory
4) Recall key modules used in the development of mechatronics control systems
5) Apply fundamental radio frequency (RF) communications concepts and theory
6) Demonstrate the use of specific electronics related basic equations/formulas
7) Recall current types of software programming languages and applications used to support mechatronics
8) Construct, test and demonstrate several electronic and mechatronic projects and programs

INSTITUTIONAL OUTCOMES
IO3   **Human Relations/Workplace Skills**: Students will be able to demonstrate teamwork, ethics, appropriate safety awareness and/or workplace specific skills

COURSE CONTENT OUTLINE

Module 1 (1 credit): Introduction to Mechatronics
Introduction to the field of Mechatronics
Strategies for Academic Success
Introduction to Arduinos and Elegoo (EL) Electronic Kit
EL Projects #1 - #6

Module 2 (1 credit): Circuit Playground Express (CPX) and Elegoo (EL)
Physical computing project CPX
EL projects #7 - #12

Module 3 (1 credit): Raspberry Pi (RPi) and Elegoo (EL)
Physical computing project RPi
EL projects #13 - #18

Module 4 (1 credit): Raspberry Pi (RPi) and Elegoo (EL)
Physical computing project RPi
EL Projects #19 - #24

Module 5 (1 credit): Raspberry Pi (RPi) and Elegoo (EL)
Physical computing project RPi
EL Projects #25 - #33

DEPARTMENTAL GUIDELINES *(optional)*

The syllabus must contain evaluation/grading guidelines, class environment/expectations/rules, course learning outcomes, and a disability services statement. A schedule must be provided to students that contains content covered (text chapters, topics, etc.) and tentative test dates (to include final date/time).

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DIVISION CHAIR APPROVAL   **DATE**