MASTER COURSE OUTLINE
Prepared By: G Baker/P Ford Date: February 2017

COURSE TITLE
Independent Project

GENERAL COURSE INFORMATION
Dept.: MCT Course Num: 220 (Formerly:)
CIP Code: 15.0405 Intent Code: 21 Program Code: 640
Credits: 5
Total Contact Hrs Per Qtr.: 66
Lecture Hrs: 44 Lab Hrs: 22 Other Hrs:
Distribution Designation: General Elective (GE)

COURSE DESCRIPTION (as it will appear in the catalog)
This second course in robotics addresses challenges and trends in the engineering, manufacturing, and programming of automated mechatronics systems. Students will build, program and test a robotic system using open-source technologies, as well as apply course activities to real-world applications.

PREREQUISITES
MCT 120 or Instructor Permission

TEXTBOOK GUIDELINES
Introductory robotics textbook determined by the unmanned systems and computer science faculty (**Example:** Raspberry Pi Robotics Projects, 3rd Edition (2016), Grimmett; Raspberry Pi User Guide, 4th Edition (2016), Upton & Halfacree; The Art of Electronics, 3rd Edition (2015), Horowitz & Hill; Adafruit Raspberry Pi 3 Starter Pack; Robot Arm and Camera Kit; Pi-Top CEED Kit; Adafruit Basic Electronics Tool Kit; www.learnpythonthehardway.com)

COURSE LEARNING OUTCOMES
Upon successful completion of the course, students should be able to demonstrate the following knowledge or skills.

1) List and describe core robotic system components
2) Compare and contrast robotic software applications/solutions
3) Apply electronics theory to mechatronics related devices
4) Interpret, modify, duplicate and reuse existing source code
5) Build, program and test a robotic system and integrated sensor device
6) Recognize and describe robotic system applications used in industry

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
1. Robots in society: history, laws, ethics, cultural benefits and challenges
2. Robotic hardware

3. Robotic software
4. Robot types/classifications
5. Motor controllers, servos, microcontrollers and microprocessors
6. Robot assembly and programming
7. Robot testing and outcomes reporting

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).

_____ _____

DIVISION CHAIR APPROVAL **DATE**