MASTER COURSE OUTLINE
Prepared By: G Baker/P Ford Date: December 2016

COURSE TITLE
Robotics I

GENERAL COURSE INFORMATION
Dept.: MCT Course Num: 120 (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)
Students are introduced to the world of robotics, including the mechanisms, dynamics, control systems, sensors, vision, and basic programming and file management used in modern robotic systems. Students will build, program and test a robotic system as part of a group project.

PREREQUISITES
MCT 102 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; Dexter GoPiGo Robot 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 robot classifications
2) Apply electronics theory for analog, digital, and logical devices
3) Demonstrate the effective design and interpretation of schematic diagrams
4) Classify the key attributes of microprocessor and ancillary hardware
5) Compare and contrast capabilities and limitations of robotic programming languages
6) Differentiate between command line interface (CLI), touch user interface (TUI) and graphical user interface (GUI) applications
7) Interpret various types of source code; modify, reuse and duplicate existing source code
8) Identify and group complex sensors, displays, and indicators
9) Recognize and provide examples of various levels of robotic automation and autonomy
10) Build, test, debug, improve and demonstrate a robotic software control system

INSTITUTIONAL OUTCOMES

COURSE CONTENT OUTLINE

1. History of microprocessors for robotics
2. Past and current programming languages for robotics
3. Peripheral systems and devices
4. Remote, local and autonomous operations
5. Robot types and limitations
6. The robot and its components
7. Sensors, vision, and remote control
8. Editing, programming, testing, debugging, libraries and file management

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**