

# Minnesota State College Southeast

## INDS 1672: Robotics

### A. COURSE DESCRIPTION

Credits: 3

Lecture Hours/Week: 2

Lab Hours/Week: 2

OJT Hours/Week: \*.\*

Prerequisites: None

Corequisites: None

MnTC Goals: None

This course is designed to present the fundamentals of robotics development as a systems engineering problem. Teams will work together to develop robotic solutions to a given application. Requirements development, hardware/software design, device programming, system maintenance/diagnostics, and electro-mechanical applications will be explored. By the end of the class, students will have built a functional robot. (Prerequisites: none) (3 credits: 1 lecture/2 lab)

**B. COURSE EFFECTIVE DATES:** 02/01/2019 - Present

### C. OUTLINE OF MAJOR CONTENT AREAS

1. Team based requirements generation for a robotics based solution to an industrial process
2. Prototyping a functional robot to complete a task
3. Delivery of a multi-system projects incorporating sensors, outputs, and motors

### D. LEARNING OUTCOMES (General)

1. Effective team development using project management tools
2. Software and Mechanical design methodologies
3. Installation procedures to build the robot
4. Mechanical parts interact with the controller
5. Use of sensors
6. Motor control
7. Understanding of writing clear and concise project requirements
8. Joystick control
9. Roborio/myrio (or equivalent) controller development
10. Creating, reading and implementing wiring diagrams
11. Logging and tracing to help with diagnostics and maintenance
12. Mechanical extension development

### E. Minnesota Transfer Curriculum Goal Area(s) and Competencies

None

### F. LEARNER OUTCOMES ASSESSMENT

As noted on course syllabus

### G. SPECIAL INFORMATION

None noted