IND256 Robotics II Syllabus

Course Information

Credits 3
Campus Washburn Institute of Technology (Forbes Facility)
Address 6530 SE Forbes Avenue
City/State/Zip Topeka, Kansas 66619
Office Fax 785-670-2734

Description
This course builds on the knowledge gained in ‘Robotics I’ and focuses on sensors, end effectors, control systems and maintenance. Students learn advanced commands and operators, create simulation objects, configure objects and design workcells.
Prerequisite: IND252 or consent of instructor

Textbooks

Student Learning Outcomes:
A. Communicate effectively
B. Integrate technology
C. Learn effectively
D. Demonstrate cooperative teamwork skills
E. Apply safety in the workplace
F. Think critically and creatively
G. Demonstrate responsible work ethics

Competencies
1. Describe how sensors are integrated into an automated system.
2. Construct a flow chart given a general sequence of operations
3. Discuss the similarities and differences between the movement of an end effector and the human hand.
4. Explain the operation of various types of grippers used in robotic applications.
5. Explain the differences and benefits between end effector grippers and end effector tools.
6. Describe use of Cartesian coordinate programming to move a robot.
7. Describe important factors and desirable characteristics to be considered in the design of end effectors.
8. Understand what a bit of information represents.
9. Identify the function of a computer system’s basic components.
10. Summarize the characteristics and functions of the binary system.
11. Identify common types of logic gates.
12. Understand the purpose of instructions in computer programming, machine vision and image processing.
13. Understand the purpose of interfacing robotic systems in a manufacturing environment and develop and implement a preventive maintenance plan.

Guidelines for Success

Assessment Plan
Assessment is an integral part of the educational process at Washburn Tech and accurate feedback is an important tool in continuously improving the institution’s technical programs. Students can expect to participate in assessment activities prior to entry into programs, within specific courses and following program completion for specific fields of study.

Grading Rationale
Class sessions and assignments will include daily homework, in-class review of homework, quizzes. Grades will be based on: Attendance and general participation, daily homework, quizzes and tests and final exam.

Grading Scale
90% or higher  A
80% to 89%  B
70% to 79%  C
60% to 69%  D
Less than 60%  F

Attendance
Tardies and absences will affect the daily grade for attendance. Students who miss class should inform the instructor beforehand whenever possible, and are responsible for course content, for turning in any required homework, and for taking the initiative to make up any missed tests, labs or quizzes.
Disability
The Special Support Services (SSS) Office is responsible for assisting in arranging accommodations and for identifying resources at Washburn Institute of Technology for persons with disabilities. Qualified students with disabilities MUST register and provide documentation with the office to be eligible for services. New requests for accommodations should be submitted two months or more prior to the date services should begin; however, contact the SSS Office as soon as a need may arise. Depending on the accommodation request, four to eight week lead time may be needed for timely and effective provision of services. SSS coordinates and assist in arranging services it deems appropriate of eligible students on a case-by-case basis.

If you are a student with a disability that may substantially limit your ability to participate in this class and believe you will need accommodations, it is your responsibility to contact:

Special Support Services Coordinator
Phone: 785-228-6356
E-Mail: ssscoordinator@washburn.edu