IND252 Robotics I 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 is an introduction to robotics and provides an understanding of basic robotics principles, parts of robots, degrees of freedom, programming methods and languages. Students learn to home a robot, test teach points and design simple robot programs for different applications.
Prerequisites: IND216 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. Explain types of automation and classification of industrial robots.
2. Identify the parts of the robots, and explain degrees of freedom.
3. Discuss different robot configurations, servo and non-servo robots.
4. Demonstrate ability to home a servo robot.
5. Identify the different motion control applications.
6. Demonstrate ability to run and stop a servo robot program.
7. Explain the various programming methods and their characteristics.
8. Design robot programs for different applications.
9. Describe various peripheral applications, such as vision and voice recognition.
10. Describe how robots are integrated into a manufacturing process.
11. Identify processes where robots are used and select the proper robot for a given task.
12. List peripheral devices used to complete tasks.
13. Connect digital input and output devices to a robot controller.
14. Discuss the use of electromechanical systems and control systems used with robots.
15. Describe the type of motion that rotary electric actuators produce.
16. Teach points with a double-jointed robot arm using the full range of its work envelope.

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, 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