



Wayne County Community College District

COURSE SYLLABUS

MCT 202 Introduction to Robotics

CREDIT HOURS: 3.00

CONTACT HOURS: 60.00

COURSE DESCRIPTION:

This course is an introduction to the field of robotics technology. It will provide the student with a historical overview of the use and development of robotics. It will also include a discussion of the different types of robots (e.g., point-to-point, continuous path, electric, hydraulic, pneumatic, etc.) and introduction to robotics programming.

PREREQUISITES: NONE

EXPECTED COMPETENCIES:

Upon successful completion of this course, the student will:

1. The meaning of the terms robot and robotics.
2. Industrial automation and industrial robot.
3. Non-industrial robot
4. The criteria used to decide whether a job should be done by robot or human.
5. The components of industrial robot.
6. The many styles of manipulators.
7. The three types of power used for robots.
8. The specialized field of robot grippers
9. How to begin selecting a robot for a specific task?
10. The three types of robot controllers.
11. The robot vehicle and mounting.
12. The variety of grippers available.
13. The importance of choosing right gripper.
14. How to calculate the force required doing the job?
15. The characteristics of internal and external sensors.
16. The ways robots used internal and external sensors.
17. Some devices that can be used as sensors for robots.
18. How better sensors will expand the range of the tasks that robots perform?
19. What areas could use robots?
20. How maintenance can make or break a project?
21. How preventive maintenance can reduce the need for emergency maintenance?
22. Problems that may encountered in working on closed servo-controlled systems.
23. Why robotic safety is needed?
24. The importance of planning safety.
25. The need to think safety.
26. What make an area of robotic safety?
27. How robot may make working condition safer for human.
28. Legal aspects of robotic safety.
29. What artificial intelligence is?
30. How artificial intelligence may help improve the industrial robot of today?



Wayne County Community College District

COURSE SYLLABUS

31. How a simple expert system works?
32. How to classify robot by several different methods?
33. What developments are likely to appear in future generations of robots?
34. How to justify the robot cost through return-on-investment and payback-period calculations?
35. How to justify the robot cost through calculation of cash flow?
36. How people can be expected to react to robots?
37. Some of the disadvantages of robot labor.
38. The tools used for predicting the future robots.
39. The probable short-term and long-term future for robots.
40. What makes up a robotic operating system and types of operating systems?
41. The capabilities of robots operating system.
42. Programming languages that can be used to get the application program into the robotic operating system.
43. The methods that may be used to give a robot application programs.
44. The step involved in developing and programming or training a robot.
45. Why robotic projects are so complex?
46. The steps involved in robotics development life cycle.
47. The techniques used to organize a robotics project.
48. The hardware interfacing techniques that are used to connect simple vision devices to a controller.
49. The programming problems for vision systems.
50. Interfacing a single-point tactile sensor to a robot.
51. Interfacing multiple-point tactile systems.
52. Software considerations for tactile systems.
53. Hardware used for three main methods of speech synthesis.
54. Programming problems involved with each of speech synthesis techniques

ASSESSMENT METHODS:

Student performance may be assessed by examination, quizzes, case studies, oral conversation, group discussion, oral presentations. The instructor reserves the option to employ one or more of these assessment methods during the course.

GRADING SCALE:

- 90%-100% = A
- 80%-89.9%= B
- 70%-79.9%= C
- 60%-69.9%= D
- <60% = E