

Industrial Engineering Program

1. COURSE NUMBER AND NAME	IE 449 – Industrial Robotics
2. CREDITS AND CONTACT HOURS	3 Credits. 4 Contact Hours
3. COURSE INSTRUCTOR	Kevin McDermott
4. TEXT BOOK	Fuller, J. L., Robotics Programming and Projects, 2 nd Ed., Prentice Hall, 1992
4A. OTHER MATERIAL	Robot manuals and videos
5A. CATALOG DESCRIPTION	Robotics in manufacturing systems. The field of robotics is studied with emphasis given to the role of programmable robots in manufacturing. Hands-on experience with hardware and software necessary for various industrial robot systems through laboratory experience.
5B. PREREQUISITES	CS 101, Phys 121, junior or senior standing.
5C. REQUIRED, ELECTIVE OR SELECTED ELECTIVE	Elective
6A. SPECIFIC OUTCOMES OF INSTRUCTION	The students will: <ol style="list-style-type: none"> 1 Learn to program robots using code and teach pendants (a, k). 2 Be able to identify safety, economic and social issues associated with robotization (c). 3 Be able to identify and list robots, end effectors, and robot functions (j, k). 4 Be able to do design and develop in groups and individually robotic work cells (a, b, d, k).
6B. CRITERION 3 OUTCOMES ADDRESSED	The mapping of the four (4) outcomes of instruction of item 6A to the Criterion 3 outcomes (a-k) is as follows: <ol style="list-style-type: none"> 1. Satisfies Criterion 3 outcomes a and k. 2. Satisfies Criterion 3 outcome c. 3. Satisfies Criterion 3 outcomes j and k. 4. Satisfies Criterion 3 outcomes a, b, d and k.
7. TOPICS COVERED	<ol style="list-style-type: none"> 1. Robot uses in manufacturing 2. Robot anatomy and classifications 3. IBM Robutor, robotic term project 4. End effectors, gripper, pick-up devices 5. Robotizing a process, orientation and control devices 6. Electronic control of robots, die casting applications 7. Reliability, maintenance and safety 8. Justification, investment casting application 9. Sociological impact of robots, forging applications

	<p>10. Mobil robots, NJIT's flexible manufacturing system</p> <p>LABS</p> <ul style="list-style-type: none">I. Microbot robotsII. IBM RoboturIII. Fanuc robots, Prab robot, Motion Mate robotIV. Organizing to support robots, art welding applicationsV. Productivity and robotics, economic factors, equipmentVI. Robot attributes, tactile sensing, vision sensing, press work applications
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