

COURSE SYLLABUS

Course Title:	Robotics	Date submitted:	4/30/2018 (18-39)	
Department:	Advanced Manufacturing Technology			
Curriculum:	Technology Studies			
Course Descriptors: Make certain that the course descriptors are consistent with college and Board of Trustees policies, and the current course numbering system.	Course Code: (eg. ACC*101) MFG*140 Course Type: X A: Clinical B: Lab D: Distance Learning I: Individual/Independent L: Lecture N: Internship M: Seminar P: Practicum U: Studio X: Combined Lecture/Lab Y: Combined Lecture/ Clinical/Lab Z: Combined Lecture/Studio	Prerequisites:		
	Elective Type: G AH: Art History E: English FA: Fine Arts FL: Foreign Language G: General HI: History HU: Humanities LAS: Liberal Arts & Sciences M: Math S: Science SS: Social Science	None		
	Credit Hours: 3 Developmental: (yes/no) No Lecture: 1.5 Clinical: 0 Lab: 1.5 Studio: 0 Other: 0 TOTAL: 3	Corequisites:		
	Contact Hours: Lab: 1.5 Studio: 0 Other: 0 TOTAL: 3	None		
	Class Maximum: 24 Semesters Offered: Fall	Other Requirements:		
		None		
	Catalog Course Description:	Robotics provides the student with a brief history of the application of Robotics to the manufacturing process to date and a vision of future applications of Robotics. Robotics provides an overview of the Robotic hardware, software, and programming necessary to specific applications. Robotics reviews the following: electromechanical systems, fluid power systems, sensing systems, end-of-arm tooling, PLC's, digital electronics, programming, and industrial applications.		
	Topical Outline: List course content in outline format.	1. Introduction to Industrial Robotics 2. Fundamentals of Robotics 3. Programming the Robot 4. Industrial Applications 5. The Role of Robots in Today's Manufacturing 6. Electromechanical Systems 7. Demonstrate an understanding of the role of fluid power systems in manufacturing.		

	<ol style="list-style-type: none"> 8. Maintaining Robotic Systems 9. Sensing Systems 10. End-of Arm Tooling 11. Digital Electronics 12. Programmable Logic Controllers 13. Robot Interfacing and Vision Systems 14. The Future of Robotics
<p>Outcomes: Describe measurable skills or knowledge that students should be able to demonstrate as evidence that they have mastered the course content.</p>	<p>Upon successful completion of this course, the student will be able to do the following:</p> <p>COURSE:</p> <ol style="list-style-type: none"> 1. demonstrate an understanding of robotic history, early robots, and the role of the robot in industry 2. demonstrate an understanding of the complex robotic system by breaking the system down into subsystems 3. discuss the concepts and methods of programming the robot 4. explore industrial applications of robots through the integration of robotics into the manufacturing process 5. discuss the role of robotics in today's customer-driven manufacturing 6. discuss the electromechanical system and its role in automation and the use of robots 7. demonstrate an understanding of the role of fluid power systems in manufacturing 8. demonstrate a basic understanding of robotic maintenance, including hydraulic, pneumatic, electrical power systems, and electronic control systems 9. demonstrate an understanding of the use of sensors to give robots a higher level of intelligence by improving decision-making capabilities 10. explore the use of <i>end-of-arm tooling</i> as a tool for robot grasping, lifting, transporting, and maneuvering 11. demonstrate an understanding of the digital electronics used to store information, count, encode, and decode as it applies to robotics 12. explore the use of the programmable logic controller as a device for controlling the robot 13. demonstrate an understanding of robot interfacing with other production equipment 14. explore the future of robotics including computer-integrated manufacturing <hr/> <p>PROGRAM: <i>(Numbering reflects Program Outcomes as they appear in the college catalog)</i></p> <p><u>Electronics Technology Certificate and A.S. Degree</u></p> <ol style="list-style-type: none"> 1. Demonstrate an understanding of Shop Safety. 2. Demonstrate an understanding the theory of electrical structure, voltage, current, resistance, and electrical circuit and their measurement. 3. Demonstrate an understanding of the basic laws of arithmetic. 4. Demonstrate an understanding of several number systems and codes that are the foundation of digital theory and digital applications.

	<p>5. Make comparisons with personal computers; as well as, develop an understanding of its origin and growth since conception.</p> <p>6. Demonstrate an understanding of the fundamentals of Automated Manufacturing systems.</p>
<p>Evaluation: List how the above outcomes will be assessed.</p>	<p>GENERAL EDUCATION: <i>(Numbering reflects General Education Outcomes as they appear in the college catalog)</i></p> <p>No General Education outcomes.</p> <p>Assessment will be based on the following criteria: tests and quizzes</p>
<p>Instructional Resources: List library (e.g. books, journals, on-line resources), technological (e.g. Smartboard, software), and other resources (e.g. equipment, supplies, facilities) required and desired to teach this course.</p>	<p>Required: Robotics and electronics equipment.</p> <p>Desired: None</p>
<p>Textbook(s)</p>	<p><u>Robotics Technology</u>, James W. Masterson, Robert L. Towers, Stephen W. Fardo, Goodheart-Wilcos Publishers, Inc., latest edition</p>