







Robotics 1 (14.4231) (District)


District > 2016-2017 > Advanced > Technology & Engineering > Robotics 1 (14.4231) (District) > Scott, Robert; Watson, Scott
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Unit	CTE Standards and Objectives	Essential Questions	Content	Skills	Vocabulary	Formative & Summative Assessments
Safety (Week 1, 1 Week)	 Robotics1.pdf	<ul style="list-style-type: none"> How valuable are your fingers, toes and eyesight to you? What is more dangerous property of electricity Voltage or Current? 	The reason and purpose of safety regulations <ul style="list-style-type: none"> Safe practice around electrical circuitry Basic hand and power tool safety 	State reasons why we have safety regulations <ul style="list-style-type: none"> Discuss general safety practices to observe around electrical circuits Demonstrate proper hand and power tool use. 	Circuit Breaker <ul style="list-style-type: none"> Lock-out tag-out Material Safety Data Sheets (MSDS) Fatal Current Lethal Voltage 	Safety Test Common: Test: Common Canvas system based safety testing
History of Robotics (Week 2, 1 Week)	 Robotics1.pdf	<ul style="list-style-type: none"> Is the history of robotics separate from or intertwined with the history of computers? Has the field of robotics advanced at the rate society envisioned? 	<ul style="list-style-type: none"> The word "android" Builds an automated loom that is controlled with punched cards "Difference Engine" remote-controlled vehicle The word ROBOT is used for the first time in the context of mechanical people "Laws of Robotics". The "Turing Test". 	<ul style="list-style-type: none"> Students will be able to recite major events in robotics history 	<ul style="list-style-type: none"> Robot Android Drone Automation Artificial Intelligence 	Common: Written: Informative Robot History timeline assignment; Students research and complete robotics history timeline of major events in robotics history.

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Engineering Design Process (Week 3, 6 Weeks)	 Robotics1.pdf	<ul style="list-style-type: none"> Is it possible to design a robot successfully without following the engineering design process? What do you think the statistical odds of it working perfectly are? 	The 3 stages of the engineering design process (Conceptual stage, Development stage, and evaluation stage)	<ul style="list-style-type: none"> The students will be able to perform the steps necessary to complete the conceptual stage of the engineering design process. The students will be able to perform the steps necessary to complete the development stage of the engineering design process. The students will be able to perform the steps necessary to complete the evaluation stage of the engineering design process. 	<ul style="list-style-type: none"> conceptual design problem statement constraints brainstorm development prototype engineering drawing reengineering testing 	Engineering Design Process Formative: Project: Personal <ul style="list-style-type: none"> The assessment for this standard has the student go through the engineering design process. In the basic (1st semester) course the assessment is done using software and quick model - prototyping items like K'nex or Legos. In the advanced course the assessment is done using actual competition robot design

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Engineering Notebook (Week 6, 3 Weeks)	 Robotics1.pdf	<ul style="list-style-type: none"> Is it possible to design a robot successfully without following the engineering design process? What do you think the statistical odds of it working perfectly are? 	The 3 stages of the engineering design process (Conceptual stage, Development stage, and evaluation stage)	<ul style="list-style-type: none"> The students will be able to document the engineering design process.. 	<ul style="list-style-type: none"> Engineering Notebook engineering drawing 	Engineering Design Process Formative: Project: Personal <ul style="list-style-type: none"> The assessment for this standard has the student go through the engineering design process. In the basic (1st semester) course the assessment is done using software and quick model - prototyping items like K'nex or Legos. In the advanced course the assessment is done using actual competition

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Robot Programming (Week 9, 6 Weeks)	 Robotics1.pdf	<ul style="list-style-type: none"> What limits a computer program? 	<ul style="list-style-type: none"> program specification tables program flow charts decision logic branching loops 	<ul style="list-style-type: none"> Students will be able to create program specification tables Students will be able to create program flow charts Students will be able to create decision logic Students will be able to create branching logic Students will be able to create loop structures 	<ul style="list-style-type: none"> flow chart specification table low level high level sequential object oriented loop branching 	<p>robot design - construction and testing.</p> <p>Programming Project Formative: Project: Technology Students will create software programs. Microsoft Resource Technician (MRT) Certification practice exam Formative: Test: Standardized</p> <ul style="list-style-type: none"> The Microsoft Resource Technician (MRT) Certification exam is an industry standard for personal computer industry. The practice exams will be used as formative tools to drive student learning in

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Team Robotics Project (Week 15, 3 Weeks)	 Robotics2.pdf	How does one demonstrate they have a firm grasp of systems in robotics?	This standard has students working in teams demonstrate their knowledge of robotics by creating a robotics project using the Engineering Design Process and Programming skills. Teams complete their project by making a presentation to the class.	<ul style="list-style-type: none"> - Presentation - Organization - Application of electronics, programming, and mechanical systems together. 	- Capstone project	areas where further skill is needed to meet industry standards.
Employability Skills - CTSO (Week 18, 2 Weeks)	 Robotics1.pdf	<ul style="list-style-type: none"> • What skills are more important for gaining employment employability skills or technical skills? 	<ul style="list-style-type: none"> • The importance of having good employability skills 	<ul style="list-style-type: none"> • Students willThe importance of having good employability skills 	<ul style="list-style-type: none"> • ethics • network 	MindTools.com Employability Skills Common: Test: Standardized Employability Skills assessment tools available from MindTools.com