Robotics

Career Cluster	STEM
Course Code	21009
Prerequisite(s)	None
Credit	.5
Program of Study and Sequence	Foundational Courses, Cluster Courses, Pathway Courses, Capstone Experience
Student Organization	None
Coordinating Work-Based Learning	industry tours of local businesses utilizing robotic systems
Industry Certifications	None
Dual Credit or Dual Enrollment	TBD
Teacher Certification	Information Technology Cluster Endorsement; Programming & Software Development Pathway Endorsement; STEM Cluster Endorsement; Engineering & Robotics Pathway Endorsement; Manufacturing Cluster Endorsement; Welding & Precision Machining Pathway Endorsement; 7-12 Technology Education Endorsement; K-12 Educational Technology Endorsement; K-12 Classroom Technology Endorsement
Resources	BEST Robotics: http://www.bestinc.org/ FIRST Tech Challenge: http://www.usfirst.org/roboticsprograms/ftc STEM Robotics 101: http://stemrobotics.cs.pdx.edu/node/190?root=291 Career Research: www.sdmylife.com and http://www.onetonline.org

Course Description:

This robotics course emphasizes the design, building, operation, application, and documentation of robotic systems. Students follow the engineering design process, apply basic programming skills, and explore how robots and automated systems are used in industry.

Students will have an understanding of the historical and current uses of robots and automated systems; programmable circuits, interfacing both inputs and outputs; proficient ethical standards for engineering and technology professions; and testing of robots.

Career Cluster: STEM

Course: Robotics

Program of Study Application

This is a STEM Pathway Course for the Robotics Pathway, preceded by a Foundational Course(s) and a Cluster Course(s).

Course Standards

Indicator # RBT 1 Identify components of a robotic system		
Webb Level	*Sub-indicator*	*Integrated Content*
Level 1: Recall	RBT 1.1 Describe the parts necessary to make a robot	
Level 2: Skill/ Concept	RBT 1.2 Examine the relationships among the subsystems	
Indicator # RBT 2 Understand safety procedures and ethical issues inherent to robotics		
Webb Level	*Sub-indicator*	*Integrated Content*
Level 2: Skill/ Concept	RBT 2.1. Demonstrate proper safety procedures	
Level 2: Skill/ Concept	RBT 2.2. Determine how to apply OSHA Compliant Lockout – Tag-out procedures	
Level 2: Skill/ Concept	RBT 2.3. Examine current ethical issues	
Indicator # RBT 3 Construct, analyze and troubleshoot circuits		
Webb Level	*Sub-indicator*	
Level 3: Strategic thinking	RBT 3.1. Build circuit according to schematic diagram	
Level 3: Strategic thinking	RBT 3.2. Calculate circuit parameters	

Level 3: Strategic thinking	RBT 3.3. Measure circuits parameters	
Level 3: Strategic thinking	RBT 3.4. Compare calculated and measured solutions to analyze circuit operation	
Indicator # RBT 4 Design, build and analyze a robotic system		
Webb Level	*Sub-indicator*	
Level 3: Strategic thinking	RBT 4.1 Using the design process, design, build and program a robot to perform a specified task	
Level 3: Strategic thinking	RBT 4.2 Test and modify the robot for any flaws in hardware or bugs in software components	
Level 3: Strategic thinking	RBT 4.3 Write a technical report evaluating the system performance	
Indicator # RBT 5 Research career opportunities and industry applications		
Webb Level	*Sub-indicator*	
Level 1: Recall	RBT 5.1 Explore career opportunities in the robotics field	
Level 3: Strategic Thinking	RBT 5.2 Investigate commercial application of robotic systems	