

## CTE Course Description and Standards Crosswalk

Course Information	
Course Name	Robotics
Course Number	84730
Number of High School Credits	.5
Sequence or CTEPS (You must first have the Sequence or CTEPS entered into the EED-CTE system.)	Computer Science Technologies
Date of district Course Revision	May 2017
Career & Technical Student Organization (CTSO)	
CTSO embedded in this sequence	SkillsUSA
Occupational Standards	
Source of Occupational Standards	ISTE, SCCI
Names/Numbers of Occupational Standards	ISTE 1-6, SCCI Science and Technology
Registration Information	
Course Description (brief paragraph – as shown in your student handbook or course list)	The Robotics course teaches 9th through 12th grade students the science/technology/engineering process using mechanisms, machines, and robotic systems. Students' progress at their own pace while studying and performing tasks independently and in small groups. Hands-on activities supplemented with demonstrations, mentorship, and study tips familiarize students with the concepts and application of robotic technologies. Performing laboratory experiments, students will gain firsthand knowledge of simple machines, fabrication, and logic systems. Students will learn how to program complex robotic systems to perform a variety of interesting and useful tasks. Students will also have.
Instructional Topic Headings (please separate each heading by a semi-colon)	Safety in a Lab, Mechanisms and simple Machines, Apply engineering, math and science principles, troubleshoot problems, Program robots, Voice Recognition, Build models, Career exploration
Summative Assessments and Standards	
Technical Skills Assessment (TSA)	NO
Course addresses:	
New Alaska ELA and Math Standards	Yes
Alaska Cultural Standards	Yes
All Aspects of Industry (AAI)	Yes
Core Technical Standards	Yes
Employability Standards	Yes
Employability Standards	
Source of Employability Standards	State of Alaska
Tech Prep	
Current Tech Prep Articulation Agreement? (Y/N)	No
Date of Current Agreement	
Postsecondary Institution Name	

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Postsecondary Course Name	
Postsecondary Course Number	
# of Postsecondary Credits	

### Additional CTE Course Information

Author	
Course developed by	
Course adapted from	
Date of previous course revision	n/a
Course Delivery Model	
Is the course brokered through another institution or agency? (Y/N)	N

Standards Alignment
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Student Performance Standards (Learner Outcomes or Knowledge & Skill Statements)	Specific Occupational Skills Standard	Common Technical Core Standards	New Alaska ENG/LA Standards	New Alaska Math Standards	Alaska Cultural Standards	Employability/ Career Readiness Standards	All Aspects of Industry/ Systems	Assessment
Demonstrate safe behavior and practices in a laboratory environment.	ISTE1,2b, 4 SCCI SCC06	ST3, 6	L.9-12.6 RST.9-12.1, 4	MP 1, 5, 6, 7	B2, 4	A2, 5, 6	Technical Skills Health/Safety Labor	Class Observation
Understand the history, social impact and fundamentals of robot technology.	ISTE1, 4, 6 SCCI SCPA01	ST4, 6	L.9-12.6 RST.9-12.1, 4	MP 1, 7	B2, 4	A2, 5	Technical Skills	Class Observation & Discussion
Identify mechanisms and explain their operation in simple machines.	ISTE1, 4, 5, 6, 7 SCCI SCPA 01, 03, 10	ST1, 2, 6	L.9-12.6 RST.9-12.1, 4	MP 1, 5, 6, 7	B2, 4	A2, 5	Technical Skills	Class Observation & Discussion
Recognize how math and science principles are used to develop robotics solutions to design problems.	ISTE1, 4, 5, 6, 7 SCCI SCPA 01, 03, 10	ST1, 6 ST-SM1, 2, 3, 4	L.9-12.6 RST.9-12.1, 4	MP 1,2,3,4, 5, 6, 7,8	B2, 4	A2, 5	Technical Skills	Class Observation & Discussion Project

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<b>Student Performance Standards (Learner Outcomes or Knowledge &amp; Skill Statements)</b>	<b>Specific Occupational Skills Standard</b>	<b>Common Technical Core Standards</b>	<b>New Alaska ENG/LA Standards</b>	<b>New Alaska Math Standards</b>	<b>Alaska Cultural Standards</b>	<b>Employability/ Career Readiness Standards</b>	<b>All Aspects of Industry/ Systems</b>	<b>Assessment</b>
Recognize how engineering/design processes are used to solve problems.	ISTE1, 4, 6, 7 SCCI SCPA 01, 03, 10	ST1, 2, 6 ST-ET1, 3, 5	L.9-12.6 RST.9-12.1, 4	MP 1, 5, 6, 7	B2, 4	A2, 5	Technical Skills	Class Observation & Discussion Project
Practice troubleshooting techniques to resolve problems.	ISTE1, 4, 6, 7 SCCI SCPA 01, 03, 10	ST1, 2, 6	L.9-12.6 RST.9-12.1,3, 4	MP 1, 5, 6, 7	B2, 4	A2, 5	Technical Skills Planning Work Habits	Class Observation & Discussion Project
Understand how to program robots to understand data acquisition, data handling, and conversation.	ISTE1, 4, 6, 7 SCCI SCPA 01, 03, 10, 11	ST1, 2, 6	L.9-12.6 RST.9-12.1,3, 4	MP 1, 5, 6, 7	B2, 4	A2, 5	Technical Skills	Class Observation & Discussion Project
Identify voice recognition/synthesis, vision systems, and interfacing techniques. Understand how these functions work together.	ISTE1, 4, 6, 7 SCCI SCPA 01, 03, 10, 11	ST1, 2, 6	L.9-12.6 RST.9-12.1, 4	MP 1, 5, 6, 7	B2, 4	A2, 5	Technical Skills	Class Observation & Discussion Project
Build models that simulate robots at work.	ISTE1, 4, 6, 7 SCCI SCPA 01, 03, 10, 11	ST1, 2, 6	L.9-12.6 RST.9-12.1, 3,4	MP 1, 5, 6, 7	B2, 4	A2, 5	Technical Skills Planning	Class Observation & Discussion Project
Identify the robotic profession and related careers.	ISTE1, 2, 4, 6, 7 SCCI SCC 09	ST1, 2, 6	L.9-12.6 RST.9-12.1, 4	MP 1, 5, 6, 7	B2, 4	A1-7 B1-5	Technical Skills Work Habits Labor Community Planning	Class Observation & Discussion Project
Develop, and present technical reports and a threaded case study.	ISTE1, 3, 4, 6, 7	ST1, 2, 6	L.9-12.6 RST.9-12.1,3, 4	MP 1, 5, 6, 7	B2, 4	A2, 5	Technical Skills Planning	Class Observation & Discussion Project

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	SCCI SCPA 01, 03, 10		WHST9-12.4, 7, 8, 9					
Record predictions, observation, and data in notebook.	ISTE1, 3, 4, 6, 7 SCCI SCPA 01, 03, 10	ST1, 2, 6	L.9-12.6 RST.9-12.1,3, 4 WHST9-12.4, 7, 8, 9	MP 1, 5, 6, 7	B2, 4	A2, 5	Technical Skills Planning	Class Observation & Discussion Project

**Instructional Resources**

**List the major instructional resources used for this course: (websites, textbooks, essential equipment, reference materials, supplies)**

**Materials:**

**Tetrix Classroom bundle with Lego Mindstorms  
Samantha Wi-Fi Communications Module  
Logitech F130 Controller**

**Programs: Labview and/or RobotC**

**Curriculum: Tetrix Getting Started Guide – [http://www.education.rec.ri.cmu.edu//products/getting\\_started\\_tetrix/index.html](http://www.education.rec.ri.cmu.edu//products/getting_started_tetrix/index.html)  
RobotC Curriculum for Lego Mindstorms – [http://www.education.rec.ri.cmu.edu/previews/robot\\_c\\_products/teaching\\_rc\\_tetrix](http://www.education.rec.ri.cmu.edu/previews/robot_c_products/teaching_rc_tetrix)  
Labview online – <http://www.tetrixrobotics.com/tetrixmasterywithlabview>.  
FTC Robotics: Tips, Tricks, Strategies, and Secrets ISBN 9781451576924**