DISTRICT NAME: Matanuska Susitna Borough School District

CTE Course Description and Standards Crosswalk

Course Information	
Course Name	Competition Robotics
Course Number	84750
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	Skills USA
Occupational Standards	
Source of Occupational Standards	ISTE
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)	This course is designed to simulate a real-world engineering environment. Each year FIRST presenting students around the world are presented with robotic challenges which combine the excitement of sport with the rigors of science and technology. Under strict rules, limited resources, and time limits, teams of students are challenged to raise funds, design a team "brand," hone teamwork skills, and build and program robots to perform prescribed tasks against a field of competitors. Teams will then participate in regional, state, and national competitions as they progress through the challenge.
Instructional Topic Headings (please separate each heading by a semi-colon)	Safety in a Lab, Teamwork, Competition preparation, 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	

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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)	No

Standards Alignment

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
Use safe behavior and practices in a laboratory and competition 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. Use the history of robotic competitions to further improve competitive robotics.	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 analyze 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
Apply math and science 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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Apply the engineering/design process 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
Anticipate problems, and 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
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
Employ voice recognition/synthesis, vision systems, and interfacing techniques.	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. Improve test models to prepare for Competition.	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
Investigate 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
Conduct, 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. Use observations to prove or disprove predictions to improve functionality of robot in competition.	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
Logitec 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
RobotC Curriculum for Lego Mindstorms – 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