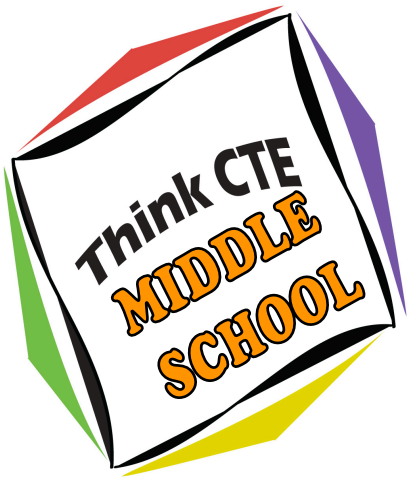
FAIRBANKS NORTH STAR BOROUGH SCHOOL DISTRICT

CAREER & TECHNICAL EDUCATION



Career and Technical Education

Adopted: May 13, 2014

Course Information	
Course Name	**EXPLORING STEM I**
Course Number	
Grade(s)	7
Length	One Quarter or One Semester
Credit	.25 or .5
Prerequisites	None
Sequence or CTEPS (You must first have the Sequence or CTEPS entered into the system.)	Feeds into multiple high school sequences.
Date of District Course Revision	Spring 2014
Career & Technical Student Organization (CTSO)	
CTSO Embedded in this Sequence	SkillsUSA (High School Level)
Occupational Standards	
Source of Occupational Standards	1. Occupational Safety & Health Administration (OSHA) 2. National Center for Construction Education & Research 3. AutoCAD 4. International Society for Technology in Education (ISTE) 5. International Test & Evaluation Association (ITEA)
Names/Numbers of Occupational Standards	1. OSHA: www.osha.gov/dte/outreach/maritime/index.html 2. NCCER: www.nccer.org/findCenter.asp 3. AutoCad: www.usa.autodesk.com/adsk 4. ISTE: www.iste.org/standards.aspx 5. ITEA: www.itea.org
Registration Information	
Course Description (brief paragraph – as shown in your student handbook or course list)	*Exploring STEM I* provides students with a broad understanding of STEM and associated careers. The course introduces students to various aspects of science, technology, engineering and math through designing and problem solving activities. Instructors choose from approved topics depending on student interest and school resources. Course will vary from 9 to 18 weeks. A 9-week course offering will be introductory. An 18-week course will explore content in greater depth. This gateway course is intended to provide students with a broad understanding of career technology and will feed and support CTE offerings at the secondary level.
Instructional Topic Headings (please separate each heading by a semi-colon)	Careers in STEM; Collaboration and Teamwork; Fundamentals of the Design Process; Manual and CAD drawing, Problem-Solving; Safe use of tools in material processing (i.e., hand drill, reciprocating saws, buffer, drill press, disk sander, scroll saw, random orbit, finish sander, belt sander); Modeling; Robotics; Digital Photo and Video; Truss and Architectural Designs; Digital Copying and Fabrication; Troubleshooting Process; Technology and the Environment; Mechanical Advantage; Electronics; Woods.
Summative Assessments and Standards	
Technical Skills Assessment (TSA)	None
Course Addresses	N/A
Alaska ELA and Math Standards	Yes
Alaska Cultural Standards	Yes
All Aspects of Industry (AAI)	Yes

Core Technical Standards	Yes
Career Ready Practices	Yes
Employability Standards	
Source of Employability Standards	Alaska
Tech Prep	
Current Tech Prep Articulation Agreement? (Y/N)	No
Date of Current Agreement	N/A
Postsecondary Institution Name	N/A
Postsecondary Course Name	N/A
Postsecondary Course Number	N/A
Number of Postsecondary Credits	N/A
Author	
Course Developed By	D. Foshee, M. Gatto, T. Hall
Course Adapted From	N/A
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 Standards	Alaska ENG/LA Standards	Alaska Math Standards	Alaska Cultural Standards	Common Technical Core Standards	Career Ready Practices	All Aspects of Industry	Formative Assessments
Students will explore career opportunities in STEM fields.				E4	ST.5			Class Assignments; Projects
Students will demonstrate an understanding of the characteristics and scope of technology.				E4	ST.4		Technology	Class Assignments; Projects
Students will develop an understanding of the various types of technologies, for example: Medical Technologies, Agricultural Technologies, Biotechnologies, Energy and Power Technologies, Information & Communication Technologies, Transportation Technologies, Manufacturing Technologies, Construction Technologies, etc.				E4	ST.4		Technology	Class Assignments; Projects
Students will understand the design process.				C4	ST.ET.1, 4		Tech/Prod	Class Assignments; Projects; Quizzes
Students will recognize safety as a value while developing safe work habits.				B2	ST.3		Health/Safety	Performance Assessment
Students will demonstrate the safe use of small hand and power tools while processing materials.				B2	ST.3; ST-ET.3		Tech/Prod, Health/Safety	Performance Assessment
Students will choose and use correct tools and materials (e.g., software, simulators, manipulatives, construction tools) to solve specific problems.				B2	ST-ET.3		Tech/Prod	Class Assignments; Performance Assessment
Students will use measuring, sketching and other manual and computer drawing techniques while solving problems.					ST.ET.1, 3		Tech/Prod	Class Assignments; Performance Assessment
Students will use CAD software and hardware.					ST.ET.1, 3		Technology, Tech/Prod	Class Assignments; Performance Assessment
Creating simple designs to solve real world problems.				D5	ST.ET.1, 3, 6		Technology, Tech/Prod	Class Assignments; Performance Assessment

Student Performance Standards (Learner Outcomes or Knowledge & Skill Statements)	Specific Occupational Skills Standards	Alaska ENG/LA Standards	Alaska Math Standards	Alaska Cultural Standards	Common Technical Core Standards	Career Ready Practices	All Aspects of Industry	Formative Assessments
Students will describe and apply the Design Process, including troubleshooting, research, development, invention, innovation, and experimentation.				D5	ST.ET.1, 3, 6		Technology, Tech/Prod	Class Assignments; Performance Assessment
Students will research and design a truss or structural support (e.g., truss, bridge).				D5	ST.ET.1, 3, 5-6		Technology, Tech/Prod	Class Assignments; Performance Assessment
Students will use problem-solving, teamwork, and management skills to complete a problem or task successfully. Students will present solutions and information both inside and outside of classrooms.				C4, D5	ST.ET.1, 3, 5-6		Technology, Tech/Prod; Work Habits	Class Assignments; Performance Assessment

Course Information	
Course Name	**EXPLORING STEM II**
Course Number	
Grade(s)	8
Length	One Quarter or One Semester
Credit	.25 or .5
Prerequisites	None
Sequence or CTEPS (You must first have the Sequence or CTEPS entered into the system.)	Feeds into multiple high school sequences.
Date of District Course Revision	Spring 2014
Career & Technical Student Organization (CTSO)	
CTSO Embedded in this Sequence	SkillsUSA (High School Level)
Occupational Standards	
Source of Occupational Standards	1. Occupational Safety & Health Administration (OSHA) 2. National Center for Construction Education & Research 3. AutoCAD 4. International Society for Technology in Education (ISTE) 5. International Test & Evaluation Association (ITEA)
Names/Numbers of Occupational Standards	1. OSHA: www.osha.gov/dte/outreach/maritime/index.html 2. NCCER: www.nccer.org/findCenter.asp 3. AutoCad: www.usa.autodesk.com/adsk 4. ISTE: www.iste.org/standards.aspx 5. ITEA: www.itea.org
Registration Information	
Course Description (brief paragraph – as shown in your student handbook or course list)	*Exploring STEM II* builds on student understanding of STEM and associated careers. Students develop understanding of science, technology, engineering and math through designing and problems solving activities. Instructors choose from approved topics depending on student interest and school resources. Course will vary from 9 to 18 weeks. A 9-week course offering will be introductory. An 18-week course will explore content in greater depth. This gateway course is intended to provide students with a broad understanding of career technology and will feed and support CTE offerings at the secondary level.
Instructional Topic Headings (please separate each heading by a semi-colon)	Careers in STEM; Collaboration and Teamwork; Fundamentals of the Design Process; Manual and CAD Drawing, Problem-Solving; Safe Use of Tools in Material Processing (e.g., Hand Drill, Reciprocating Saws, Buffer, Drill Press, Disk Sander, Scroll Saw, Random Orbit, Finish Sander, Belt Sander); Modeling; Robotics; Digital Photo and Video; Truss and Architectural Designs; Digital Copying and Fabrication; Troubleshooting Process; Technology and The Environment; Mechanical Advantage; Electronics; Woods.
Summative Assessments and Standards	
Technical Skills Assessment (TSA)	None
Course Addresses	N/A
Alaska ELA and Math Standards	Yes
Alaska Cultural Standards	Yes
All Aspects of Industry (AAI)	Yes

Core Technical Standards	Yes
Career Ready Practices	Yes
Employability Standards	
Source of Employability Standards	Alaska
Tech Prep	
Current Tech Prep Articulation Agreement? (Y/N)	No
Date of Current Agreement	N/A
Postsecondary Institution Name	N/A
Postsecondary Course Name	N/A
Postsecondary Course Number	N/A
Number of Postsecondary Credits	N/A
Author	
Course Developed By	D. Foshee, M. Gatto, T. Hall
Course Adapted From	N/A
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 Standards	Alaska ENG/LA Standards	Alaska Math Standards	Alaska Cultural Standards	Common Technical Core Standards	Career Ready Practices	All Aspects of Industry	Formative Assessments
Students will explore career opportunities in STEM fields.				E4	ST.5			Class Assignments; Projects
Students will develop an understanding of the various types of technologies, for example: Medical Technologies, Agricultural Technologies, Biotechnologies, Energy and Power Technologies, Information & Communication Technologies, Transportation Technologies, Manufacturing Technologies, Construction Technologies, etc.				E4	ST.4		Technology	Class Assignments; Projects
Students will describe the relationship between technology and the environment.				E4	ST.4	5, 11	Technology; Community	Class Assignments; Projects
Students will demonstrate knowledge of current technologies and the effects those changes have on global societies, cultures and the environment (e.g., recycling, energy, climate change, waste, discharge).				E4	ST.4	5, 11	Technology; Community	Class Assignments; Projects
Students will solve real world problems that connect various STEM technologies to careers.				B2, B4	ST.ET.1, 3, 6	5-6, 8, 11	Technology; Tech/Prod	Class Assignments; Performance Assessment
Students will describe and apply the Design Process, including troubleshooting, research, development, invention, innovation, and experimentation.				D5	ST.ET.1, 3, 6		Technology, Tech/Prod	Class Assignments; Performance Assessment
Students will recognize safety as a value while developing safe work habits.				B2	ST.3		Health/Safety	Performance Assessment
Students will demonstrate the safe use of small hand and power tools while processing materials.				B2	ST.3; ST-ET.3		Tech/Prod, Health/Safety	Performance Assessment
Students will choose and use correct tools and materials (e.g., software, simulators, manipulatives, construction tools) to solve specific problems.				B2	ST-ET.3		Tech/Prod	Class Assignments; Performance Assessment
Students will use measuring, sketching and other manual and computer drawing techniques while solving problems.					ST.ET.1, 3		Tech/Prod	Class Assignments; Performance Assessment

Student Performance Standards (Learner Outcomes or Knowledge & Skill Statements)	Specific Occupational Skills Standards	Alaska ENG/LA Standards	Alaska Math Standards	Alaska Cultural Standards	Common Technical Core Standards	Career Ready Practices	All Aspects of Industry	Formative Assessments
Students will identify and solve basic problems found during every day activities.				D5	ST.ET.1, 3, 6	2, 4-5, 7-8, 12	Technology, Tech/Prod	Class Assignments; Performance Assessment
Students will understand basic electrical theory.				D5	ST.ET.1, 3, 6	2, 4-5, 7-8, 12	Technology, Tech/Prod	Class Assignments; Performance Assessment
Students will be able to design and construct a model of a small residential structure.				D5	ST.ET.1, 3, 5-6	2, 4-5, 7-8, 12	Technology, Tech/Prod	Class Assignments; Performance Assessment
Students will be able to draw floor plans and elevations to dimension using CAD software and hardware.					ST.ET.1, 3, 6	2, 6, 11	Technology, Tech/Prod	Class Assignments; Performance Assessment
Students will use problem-solving, teamwork, and management skills to complete a problem or task successfully. Students will present solutions and information both inside and outside of classrooms.				C4, D5	ST.ET.1, 3, 5-6		Technology, Tech/Prod; Work Habits	Class Assignments; Performance Assessment