

Course Information

SURVEY OF TRANSPORTATION AND COMMUNICATION

Grade Level:	9-10-11
Length:	1 Semester
Period(s) Per Day:	1
Credit:	2
Credit Requirement Fulfilled:	Vocational/Elective

Course Description

This course investigates the use of technology and high tech in the energy, power, transportation and communication industries. Using hands-on approach, students gain knowledge and develop basic skills. Using simulations, projects, computers, lasers and other high tech instructional equipment, students will study topics such as electronics, electrical power transmission systems; and water, land, air and space transportation systems. This is an exploration course where developing communications, thinking, problem solving and skill learning is important.

Course Objectives and Expectations

1. To communicate clearly and effectively and with reason.
2. To consider the environmental, social, and economical impacts of technology.
3. To become aware of when to apply academic appropriate and technical skills in the technology world.
4. To work productively in teams, and to use technology to enhance productivity.
5. To utilize critical thinking to make sense of problems and persevere in solving them.

Student Objectives

After completing this course the student will be able:

1. Define technology and how it affects our lives.
2. Explain the theory of basic transmitting and receiving communication devices such as the telegraph, telephone, radio, and the television.
3. Operate and understand the technology involved with the basic graphic communications equipment.
4. Communicate with modems, satellites, and Tele communications.
5. Understand the process of recording communication on audio, video, analog/digital equipment.
6. Explain the theory of global positioning system and manipulating GPS receivers.
7. Compare different modes of transportation used locally and worldwide.
8. Design and construct a vehicle, which will be powered by gravity, solar power, and compressed air.
9. Design and construct a wireless robot to perform required movements.
10. Develop good work habits-such as proper shop procedures, tool maintenance, and good clean up practices.

Quarter I/First 9 Weeks

Career and Education Exploration Week 1

MTCIS-Career and Learning Exploration
Personal Portfolio/Interest Surveys
Multiple Intelligences/Holland Personality Comparison

Technology Week 1 &2

What is Technology?
How is Technology used in society?
What is the Technological Problem Solving Method?
Fire Mouse
How to use the Technological Problem Solving Method
A Day without Technology

Communication Week 3

What is Communication?
Types of Communication
Visual/Audio/Touchy Feely
Tapping/Signing/Semaphore Flags
Noises/Pollutions to Communication
Billboards/Spam/Static/ADs

Communication Technology Week 4 - 9

What is Communication Technology?
Types of Communication Technology
Telegraph **Week 4**
Radio **Week 5**
Telephone **Week 6**
Computer **Week 7, 8**
Laser **Week 9**
Uses for Communication Technology
Information/Advertise/Persuade/Educate/Entertain

Quarter II/ Second 9 Weeks

Transportation

What is Transportation? **Week 10**
Define and identify different Transportation modes
Sea/Air/Space/Land
Define what safety and transportation have in common
Egg Drop/Slam Sled

What is Transportation Technology? **Week 11-18**
Define what safety and transportation Technology have in common.
Brainstorming/Concept Ideas/Designing/Prototyping/Manufacturing
Explore Different Engineering design methods
Sketching/Computer Simulation/Modeling
Explore Different Engineering ways to better Infrastructure.
Bridges-Weight bearing vs. Span/Robotics

MONTANA STANDARDS FOR CAREER AND VOCATIONAL TECHNICAL EDUCATION

Content Standards indicate what all students should know, understand and be able to do in a specific content area. Benchmarks define our expectations for students' knowledge, skills and abilities along a developmental continuum in each content area. That continuum is focused at three points—at the end of grade 8, the end of one high school course, and the completion of six units of vocational coursework.

CS1	BM 1 2 3
CS2	BM 2 3 4
CS3	BM 1 2 3
CS4	BM 1 2 3 4 5
CS5	BM 1 2 3 4

MONTANA STANDARDS FOR WORKPLACE COMPETENCIES

Content Standards indicate what all students should know, understand and be able to do in a specific content area. Benchmarks define our expectations for students' knowledge, skills and abilities along a developmental continuum in each content area. That continuum is focused at three points—at the end of grade 4, the end of grade 8, and grade 12.

CS1	BM 2 3
CS2	BM 12 3 4 5
CS3	BM 1 2 3 4
CS4	BM
CS5	BM 1 2 3 4 5
CS6	BM 1 2 3 4 6

Evaluation

Career and Vocational/Technical Education Performance Standards: A Profile of Four Levels

The Career and Vocational/Technical Education Performance Standards describe students' knowledge, skills, and abilities in the Career and Vocational/Technical content areas on a continuum from kindergarten through grade 12. These descriptions provide a picture or profile of student achievement at the four performance levels: advanced, proficient, nearing proficiency, and novice.

Advanced This level denotes superior performance.

Proficient This level denotes solid academic performance for each benchmark. Students reaching this level have demonstrated competency over challenging subject matter, including subject-matter knowledge, application of such knowledge to real-world situations, and analytical skills appropriate to the subject matter.

Nearing This level denotes that the student has partial mastery or prerequisite knowledge and **Proficiency** skills fundamental for proficient work at each benchmark.

Novice This level denotes that the student is beginning to attain the prerequisite knowledge and skills that are fundamental for work at each benchmark.

Upon Graduation Workplace Competencies

Advanced A graduating student at the advanced level in Workplace Competencies demonstrates superior performance. He/she:(a) independently identifies, organizes, plans and allocates workplace resources of time, money, human resources, material and facilities; (b) consistently practices workplace skills to identify, analyze, and evaluate procedures, policies, and individual team members' strengths; (c) competently communicates, interprets, and evaluates information; **10/00** -10- (d) independently evaluates and redesigns a variety of complex systems to improve system performance; (e) consistently selects, uses, and evaluates

appropriate technologies and troubleshooting protocol in all learning situations; and (f) purposefully develops, evaluates and adjusts life and career plans and effectively demonstrates workplace readiness skills.

Proficient A graduating student at the proficient level in Workplace Competencies demonstrates solid academic performance. He/she: (a) identifies, organizes, plans and allocates workplace resources of time, money, human resources, material and facilities; (b) practices workplace skills to identify, analyze, and evaluate procedures, policies, and individual team members' strengths; (c) competently communicates, interprets, and evaluates information;(d) evaluates and redesigns a variety of complex systems to improve system performance; (e) selects, uses, and evaluates appropriate technologies and troubleshooting protocol in all learning situations; and(f) develops, evaluates and adjusts life and career plans and demonstrates workplace readiness skills.

Nearing Proficiency A graduating student at the nearing proficiency level in Workplace Competencies demonstrates partial mastery of the prerequisite knowledge and skills fundamental for proficiency in Workplace Competencies. He/she: (a) sometimes identifies, organizes and plans workplace resources of time, money, human resources, material and facilities, but has difficulty allocating these resources effectively; (b) sometimes practices workplace skills to identify and analyze procedures, policies, and individual team members' strengths; and, with assistance, evaluates the results;(c) communicates basic workplace information and, with assistance, interprets and evaluates basic workplace information; (d) sometimes evaluates and with assistance redesigns a system to improve system performance;(e) sometimes selects and uses appropriate technologies in learning situations and, with assistance, uses troubleshooting protocol; and (f) develops life and career plans and, with assistance, evaluates and makes adjustments; demonstrates workplace readiness skills. **Novice** A graduating student at the proficient level in Workplace Competencies is beginning to attain the prerequisite knowledge and skills that are fundamental in Workplace Competencies. He/she: (a) identifies, but has difficulty organizing, planning, or allocating workplace resources of time, money, human resources, material and facilities; (b) seldom practices workplace skills; (c) seldom communicates, interprets, or evaluates information; (d) seldom evaluates and has difficulty redesigning a basic system to improve system performance; (e) seldom selects or uses technologies or troubleshooting protocol in learning situations; and (f) rarely develops, evaluates, or adjusts life and career plans; but, with assistance, demonstrates workplace readiness skills.

Resources

Montana Content Standards/RST

English Language Arts and Literacy in History/Social Studies, Science, and
Technical Subjects Grade-Level November 2011
Grades 11-12
Reading Standards for Literacy in Science and Technical Subjects

MONTANA STANDARDS FOR CAREER AND VOCATIONAL TECHNICAL EDUCATION

Career and Technical Education (CTE)
http://opi.mt.gov/Programs/CTAE/CTE.html#gpm1_13

MONTANA STANDARDS FOR WORKPLACE COMPETENCIES

Career and Technical Education (CTE)
<http://opi.mt.gov/pdf/Standards/ContStds-Workplace.pdf>

Montana Content Standards/RST