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 barring 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 34
CS3   BM 1 2 3
CS4   BM 1 2 345
CS5   BM 1 2 34

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 12 345
CS3   BM 1 2 34
CS4   BM
CS5   BM 1 2 345
CS6   BM 1 2 346

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 kingergarten 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