CHINO VALLEY UNIFIED SCHOOL DISTRICT
INSTRUCTIONAL GUIDE

Exploring Technology

Course Number	3148
Department	Electives
Length of Course	12-18 Weeks
Grade Level	7-8
Board Approved	September 2, 2004

Description of Course: Students will be instructed through a broad based exploration of technology using the modular delivery system. This course is designed in conjunction with the State of California Industrial and Technology Education Framework and Model Curriculum Standards. Students will develop skills in technology through hands-on experiences that emphasize problem solving and critical thinking.

Rationale for Course: Many students lack the skills necessary to achieve career success. Exploring Technology will assist students in acquiring technology skills as well as skills necessary to prepare students for the workplace. This course reinforces the academic core curriculum in math, science, language arts, and history and builds a bridge to career success.

Standard 1: Goal Setting

1.1 Objective: Students will participate in goal setting activities that will enable them to achieve their educational goals using technology as a tool.
- 1.1.1 Performance Indicator: Students will understand the basic course requirements, methods of student evaluation, course objectives, class procedures, and content.
- 1.1.2 Performance Indicator: Students will develop a thorough knowledge of skills and attitudes concerning the safe use of hand and power tools, machines, equipment, materials, and processes and will demonstrate this understanding through the use of materials and equipment.
- 1.1.3 Performance Indicator: Students will understand that everyone possesses a full range of aptitudes, skills, and emotional expressions.

Standard 2: Self Management Skills

2.1 Objective: Students will learn “self-management” skills that allow them to monitor, reward and direct their efforts to become responsible for their own learning. Students will learn skills for organizing materials, time, and space.
- 2.1.1 Performance Indicator: Students will maintain an organized workstation.

2.1.2 Performance Indicator: Students will be required to return all equipment to its proper place in good order.
2.1.3 Performance Indicator: Students will demonstrate a positive work ethic by good attendance and showing up to class on time.
2.1.4 Performance Indicator: Students will set priorities on a weekly basis for each class.
2.1.5 Performance Indicator: Students will keep a “To-Do” list of important activities and assignments.

Standard 3: Effects of Technology

3.1 Objective: Students will learn about the effects of technology on their daily lives and adapt to the changes in technology around them through exploration of modular systems.
3.1.1 Performance Indicator: Students will explore medical technology, kinesiology (the study of muscle and muscle movement), and biology with emphasis on personal and commercial applications.
3.1.2 Performance Indicator: Students will explore hands-on problem solving by integrating research and design with computer applications and measurement.
3.1.3 Performance Indicator: Students will experience fabrication techniques through engraving, laminating, molding, and injection of plastic and composite materials.
3.1.4 Performance Indicator: Students will identify and use common hand and power tools and machines. The student will also fabricate several products using a combination of hand and power tools that will reinforce other areas of study in this course.
3.1.5 Performance Indicator: Students will explore the use of computers to generate graphics and animation to produce a short animated segment. The student will learn to operate a video camera and computer to digitize a video image to the computer screen.
3.1.6 Performance Indicator: Students will write a script for a 15 minute radio program to include news, weather, sports, commercials, and music.
3.1.7 Performance Indicator: Students will broadcast the program onto an audio cassette.
3.1.8 Performance Indicator: Students will use components such as a turntable, cassette deck, compact disc player, microphone, and mixer to complete the broadcast.
3.1.9 Performance Indicator: Students will explore the use and application of a two-way CB radio and Morse code.

3.2 Objective: Students will explore the use and application of a video camera. (Module: Digital Videography)
3.2.1 Performance Indicator: Students will learn to operate a video camera.
3.2.2 Performance Indicator: Students will write and produce two 30-second

commercials.

3.2.3 Performance Indicator: Students will script a 15 minute video broadcast that will contain news, sports, weather and commercials.

3.2.4 Performance Indicator: Students will use a computer to generate graphics that will be used for the title sequences on their video production.

3.2.5 Performance Indicator: Students will manipulate digital images on a computer.

3.3 Objective: Students will learn the operation of the 4-cycle small gasoline engine, understand the environmental concepts relating to engines, and understand solar power as an alternate energy source.

3.3.1 Performance Indicator: Students will correctly disassemble a small 4–cycle engine, identify the parts, and reassemble the engine.

3.3.2 Performance Indicator: Students will demonstrate the safe use of tools.

3.4 Objective: Students will learn the basic principles of electricity and electronics. (Module: Electronics)

3.4.1 Performance Indicator: Students will learn to read and interpret schematic diagrams.

3.4.2 Performance Indicator: Students will construct a variety of simple electrical and electronic circuits to reinforce these concepts.

3.5 Objective: Students will complete a variety of activities including orthographic projection, pictorial drawings, lettering and measuring, dimensioning, and pattern layout in the field of visual communications. (Module: Manual Drafting)

3.6 Objective: Students will learn the parts and nomenclature of robots and how to operate various types of robots to complete a series of pick-and-place tasks. (Module: Robotics)

3.7 Objective: Students will understand simple machines. (Module: Simple Machines)

3.7.1 Performance Indicator: Students will apply the principles of six simple machines: inclined plane, wedge, screw, wheel and axle, lever, and pulley.

3.7.2 Performance Indicator: Students will demonstrate how the principles of simple machines are used to convert, transfer, and change energy into usable or desirable power.

3.7.3 Performance Indicator: Students will discover the uses of pneumatic devices (cylinders, pistons, vacuum generators)

3.8 Objective: Students will learn the basics of computer aided drafting. (Module: C.A.D.)

3.8.1 Performance Indicator: Students will complete drawings that are saved

to disk, retrieved, modified, and drawn using the plotter.

3.9 Objective: Students will learn to program a computer numerical control (C.N.C.) lathe/mill to make a product. (Module: CNC)

3.9.1 Performance Indicator: Students will choose appropriate function codes, axis, and feed rates and program them into the computer that controls the lathe.

3.9.2 Performance Indicator: Students will enter, test, and run programs, as well as design their own program.

3.10 Objective: Students will identify the roles of satellites in our daily lives.

3.10.1 Performance Indicator: Students will operate a ku band earth receiving station that has access to education, news, and entertainment programming.

3.10.2 Performance Indicator: Students will define transmissions of data, video, basic astronomy, uplink and downlink.

3.11 Objective: Students will examine the ergonomic structure of the automobile.

3.11.1 Performance Indicator: Students will study basic tools, fasteners, automobile parts, and operation of the transportation trainer.

3.12 Objective: Students will set up a company.

3.12.1 Performance Indicator: Students will fill out an employment application, take part in a job interview, receive on-the-job training, and fabricate and assemble a product.

3.13 Objective: Students will assist in the management of the Technology Lab.

3.13.1 Performance Indicator: Students will be responsible for distributing materials, assisting other students, packaging materials, receiving and communicating messages, and monitoring clean up assignments.

3.14 Objective: Students will use critical thinking and problem solving techniques to design, test, and market a solution to a design problem assigned by the teacher.

3.14.1 Performance Indicator: Students will write a research paper including initial sketches and ideas, written justification of final design, test results, and a marketing strategy to accompany each research problem.

3.15 Objective: Students will design and print a single story home using a computer and a printer. (Module: CAD)

3.15.1 Performance Indicator: Students will cut and paste printed image into a completed three dimensional house.

3.15.2 Performance Indicator: Students will make an exterior landscape design using the computer and printer.

3.16 Objective: Students will explore the research and design of flight technology. (Module: Aerodynamics and Flight Simulator)

- 3.16.1 Performance Indicator: Students will research current aircraft technology and air transportation.
- 3.16.2 Performance Indicator: Students will design and shape a wing section using structural urethane foam.
- 3.16.3 Performance Indicator: Students will test the wing airfoil in the wind tunnel and analyze it for accurate measurements of lift and drag.
- 3.16.4 Performance Indicator: Students will modify the wing section to enhance its lift characteristics.
- 3.16.5 Performance Indicator: Students will explore the characteristics of the flight surfaces of airplanes as they affect performance.

3.17 Objective: Students will design and build a model bridge using a computer, printer, building materials, and hand tools.

- 3.17.1 Performance Indicator: Students will bring together previous learning by demonstrating the ability to understand model bridge design and structural concepts, reinforce mathematics and computer skills, utilize problem solving skills, and develop motor skills and spatial visualization.

3.18 Objective: Students will investigate the operation of the four-cycle engine.

- 3.18.1 Performance Indicator: Students will identify the basic parts of the engine.
- 3.18.2 Performance Indicator: Students will learn the correct and safe use of hand tools, safety set up, and operation.
- 3.18.3 Performance Indicator: Students will take running engine measurements, and complete consumer service repairs on a small engine.