EL DORADO UNION HIGH SCHOOL DISTRICT
Educational Services

Course of Study Information Page

Course Title: Shop Fundamentals - Electronics (#502)	
Rationale: Electricity and Electronics is virtually in every person's life whether at home, on the job, recreation, etc. This course gives the student the opportunity to both explore the nature of electricity and to help him or her to decide on a future in the field of Electricity or Electronics.	
Course Description: In this course the student will learn the fundamentals of electronics and a deep understanding of Direct Current (D.C.). The course is articulated with colleges teaching D.C. Circuits and the students may have an opportunity to receive college credit upon taking a college made test administered by the instructor. The outline below will show specifically what will be taught.	
How Does This Course Align With or Meet State and District Content Standards? Each unit is aligned with State and National Standards.	
Length of Course:	1 year (part of a sequence of up to three - 12 week courses)
Grade Level:	Grade 9-10
Credit: 5 units per semester ❒ Meets graduation requirements ❒ Request for UC "a-f" requirements ❒ College Prep ☒ Elective ☒ Vocational	
Prerequisites:	None
Department(s):	Trades & Industrial Education
District Sites:	EDHS, ORHS, PHS, UMHS
Board of Trustees Adoption Date:	February 13, 2001
Textbook(s)/Instructional Materials:	Miscellaneous supplementary materials
Date Adopted by the Board of Trustees:	May 8, 2001

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UNIT #1: Lab Orientation, Inventory and Safety

"Big Idea" (Theme)

The student will learn how to inventory and identify all the lab tools, parts and equipment needed to complete all assigned lab work. Shop safety will be stressed and practiced.

State/National Standards

Standard 1: Fabrication and Assembly

Standard 3: Identifying Electronic Components

Standard 5: Units of Measure

Career Performance Standard 5: Occupational Safety

Give examples of student work that demonstrates mastery of this standard

1. Student will take and pass a safety test.
2. Student will develop a tools, parts and equipment list.
3. Teacher's observation of the student's work.

Identify best practices used to teach standard

1. Demonstration by the instructor.
2. Samples of outstanding student work.

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UNIT #2: Soldering Wire Connections and Circuit Boards

"Big Idea" (Theme)

The student will show knowledge of proper soldering and wiring techniques.

State/National Standards

Standard 1: Fabrication and Assembly

Standard 3: Identifying Electronic Components

Standard 5: Units of Measure

Give examples of student work that demonstrates mastery of this standard

1. Pass test on the five common wire connections
2. Demonstrate a knowledge of the five common splices by being able to complete lab assignments using the splices where needed.
3. Be able to assemble parts on a P.C. Board
4. Be able to dissemble parts off of a P.C. Board

Identify best practices used to teach standard

1. Demonstration by instructor.
2. Modeling by other students' work.
3. Handouts.

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UNIT #3: Electrical Tools, Wire Conductors and Insulators

"Big Idea" (Theme)

The student will learn how to read and use wire conductors, insulators and gauges.

State/National Standards

Standard 1: Fabrication and Assembly

Standard 3: Identifying Electronic Components

Standard 5: Units of Measure

Give examples of student work that demonstrates mastery of this standard

1. The student will be able to select the proper wire, remove the insulation and ID the conductors for solid or stranded wire and the wire gauge.

Identify best practices used to teach standard

1. Demonstration by the instructor.
2. Show samples of quality work from other students.

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UNIT #4: Resistors and Identification Codes

"Big Idea" (Theme)

Students will learn the color codes for resistors and their functions.

State/National Standards

Standard 1: Fabrication and Assembly

Standard 3: Identifying Electronic Components

Standard 5: Units of Measure

Standard 2: History of Electricity and Electronics

Give examples of student work that demonstrates mastery of this standard

1. Each student will be able to state the ratings (value, power, and tolerance) and the meaning of the color code for a select group of resistors.

Identify best practices used to teach standard

1. Demonstrations by the instructor.
2. Review of handouts on tools, equipment and techniques.

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UNIT #5: Circuits, Symbols and Components

"Big Idea" (Theme)

The student will lean about electronic circuits, symbols and components that are used in the field of Electricity/Electronics.

State/National Standards

Standard 1: Fabrication and Assembly

Standard 3: Identifying Electronic Components

Standard 5: Units of Measure

Give examples of student work that demonstrates mastery of this standard

1. The student will use schematics along with work sheets that will help the builder fabricate necessary circuits.

Identify best practices used to teach standard

1. Students work from teacher-generated work sheets and schematics.

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UNIT #6: Reading Schematics and Fabrication

"Big Idea" (Theme)

Each student will be able to read a schematic for the purpose of fabricating a small electronic project.

State/National Standards

Standard 1: Fabrication and Assembly

Standard 2: Identifying Electronic Components

Standard 5: Units of Measure

Give examples of student work that demonstrates mastery of this standard

1. Each student will build an electronic project given only a parts bag, schematic and a printed circuit board.
2. Each student, working from a schematic, will troubleshoot problems on a circuit board.

Identify best practices used to teach standard

1. Instructor designed work sheets and schematics.
2. Demonstrations by instructor.

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UNIT #7: Careers and Job Preparation

"Big Idea" (Theme)

Each student will have the opportunity to learn about careers and job prospects in the field of electronics.

State/National Standards

Career Performance Standard 1: Personal Skills

Career Performance Standard 2: Interpersonal Skills

Career Performance Standard 4: Employment Literacy

Give examples of student work that demonstrates mastery of this standard

1. Each student will have the opportunity to discover the wide range of jobs and careers related to the field of Electronics.

2. Each student will complete a career research in COIN or other online career inventory.

Identify best practices used to teach standard

1. Demonstration by instructor.

2. Field trip to the career center.

3. Completion of the COIN career inventory.

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UNIT #8: Maintenance, Trouble Shooting and Repair

"Big Idea" (Theme) Each student will be able to complete a trouble-shooting procedure sheet.
State/National Standards Standard 1: Fabrication and Assembly Standard 3: Identifying Electronic Components Standard 5: Units of Measure
Give examples of student work that demonstrates mastery of this standard 1. Given a circuit board or other electronic device, each student will be able to follow the instructions on trouble shooting handouts to find the problem and make necessary repairs.
Identify best practices used to teach standard 1. Demonstration by instructor. 2. Students working as a team of two to problem solve.