

**EL DORADO UNION HIGH SCHOOL DISTRICT
EDUCATIONAL SERVICES
Course of Study Information Page**

| | | | |
|---|---|---|---|
| COURSE TITLE Automotive Technology I | | | |
| DISTRICT COURSE NUMBER (#0540) | | 4-DIGIT STATE COURSE CODE (COMPLETED BY SILT) 5652 | |
| Rationale: | In the U.S., the automotive industry and its 350,000 related industries employ about 7 million workers. Ninety percent of Americans own at least one vehicle and 55 percent own two or more. Americans drive 2.25 trillion miles per year. This class teaches the students to be a good consumer and provides information on the various systems of the automobile and how to make repairs. Students that successfully complete the course can sign up for CTE Advanced Automotive Technology 2 (#0541) for further, more in depth, instruction on automotive system diagnostics and repairs. | | |
| Course Description that will be in the Course Directory: | The Automotive Technology class is a full year class that explores the various sub-systems of an automobile. Some of the systems and concepts that are covered are: Safety, Engine Performance, Brakes, Electrical, Suspension and Steering, Precision Measurement, Emission Controls, and Career Opportunities. | | |
| How Does this Course align with or meet State and District content standards? | This course uses state content standards for each of the 12 unit topics. | | |
| NCLB Core Subjects: | <i>Select up to two that apply:</i> <input type="checkbox"/> Arts <input type="checkbox"/> Economics <input type="checkbox"/> English <input type="checkbox"/> Foreign Language <input type="checkbox"/> Geography <input type="checkbox"/> Civics and Government <input type="checkbox"/> History <input type="checkbox"/> Mathematics <input type="checkbox"/> Reading / Language Arts <input type="checkbox"/> Science <input checked="" type="checkbox"/> Not Core Subject | | |
| CDE CALPADS Course Descriptors: (See Page 2 for Definitions) | CTE TECH PREP COURSE INDICATORS <input checked="" type="checkbox"/> Tech Prep (32) <input type="checkbox"/> Tech Prep & ROP (33) <input type="checkbox"/> ROP <input type="checkbox"/> N/A | CTE COURSE CONTENT CODE <input checked="" type="checkbox"/> CTE Introductory (01) <input type="checkbox"/> CTE Concentrator (02) <input type="checkbox"/> CTE Completer (03) | INSTRUCTIONAL LEVEL CODE <input type="checkbox"/> Remedial (35) <input type="checkbox"/> Honors UC-Certified (39) <input type="checkbox"/> Honors Non UC-Certified (34) <input type="checkbox"/> College (40) <input type="checkbox"/> N/A |
| Length of Course: | <input checked="" type="checkbox"/> Year <input type="checkbox"/> Semester | | |
| Grade Level(s): | <input type="checkbox"/> 9 <input checked="" type="checkbox"/> 10 <input checked="" type="checkbox"/> 11 <input checked="" type="checkbox"/> 12 | | |
| Credit: | <input checked="" type="checkbox"/> Number of units: 10 <input type="checkbox"/> Meets graduation requirements <input type="checkbox"/> Request for UC "a-g" requirements | <input type="checkbox"/> College Prep <input checked="" type="checkbox"/> Elective <input checked="" type="checkbox"/> Career Technical | |
| Prerequisites: | None | | |
| Department(s): | Trades and Industry | | |
| District Sites: | EDHS, ORHS & PHS | | |
| Board of Trustees COS Adoption Date: | May 17, 2011 | | |

| | |
|---|---|
| Textbooks / Instructional Materials: | Modern Automotive Technology, Goodheart-Willcox Co., Inc. James E. Duffy, 2009-7 th Edition, ISBN: 978-1-59070-956-6 |
| Funding Source: | General Fund |
| Board of Trustees Textbook Adoption Date: | June 21, 2011 |

Definitions

| | |
|--|--|
| CALPADS | California Longitudinal Pupil Achievement Data System |
| CTE Technical Prep | A course within a CTE technical career pathway or program that has been articulated with a postsecondary education or through an apprenticeship program of at least 2 years following secondary instruction. |
| Instructional Level Code | Represents a nonstandard instructional level at which the content of a specific course is either above or below a 'standard' course instructional level. These levels may be identified by the actual level of instruction or identified by equating the course content and level of instruction with a state or nationally recognized advanced course of study, such as IB or AP. |
| Instructional Level Honors, UC Certified | Includes all AP courses. |
| Instructional Level Honors, non UC Certified | Requires Board approval. |
| Instructional Level College | Includes ACE courses. Equivalent to college course and content, but not an AP course. Not related to section, but to course. |

EDUCATIONAL SERVICES

Course Title: Automotive Technology I (#0540)

TABLE OF CONTENTS

| <u>STATE CONTENT STANDARD #</u> | <u>CONTENT STANDARD/UNIT TOPIC</u> | <u>PAGE</u> |
|-------------------------------------|---|-------------|
| Unit 1 - C 1.0 | General Shop Safety and Environmental Hazards | 4 |
| Unit 2 - C 4.0 | Automotive References | 5 |
| Unit 3 - C 3.0 | Basic Vehicle Maintenance..... | 6 |
| Unit 4 - C 2.0 | Tools and Precision Measurement..... | 7 |
| Unit 5 - C 3.0 | Engine Construction and Operation..... | 8 |
| Unit 6 - C 6.0 | Automotive Engine Performance..... | 9 |
| Unit 7 - C 7.0 | Electrical Systems | 10 |
| Unit 8 - C 8.0 | Suspension Systems | 11 |
| Unit 9 - C 8.0 | Brake System and Hydraulic Devices..... | 12 |
| Unit 10 - C 6.0 | Cooling System..... | 14 |
| Unit 11 - C 3.0 | HVAC Systems | 15 |
| Unit 12 - C 5.0 | Automotive Record Keeping..... | 16 |

EL DORADO UNION HIGH SCHOOL DISTRICT

EDUCATIONAL SERVICES

Department: Career Technical Education

Course Title: **Automotive Technology I (#0540)**

UNIT/STANDARD #: Unit 1 - General Shop Safety and Environmental Hazards/C 1.0

LEARNING OUTCOME: Students understand the value and necessity of practicing personal and occupational safety and protecting the environment by Using materials and processes in accordance with manufacturer and industry standards.

| LEARNING OUTCOME | INSTRUCTIONAL STRATEGIES | ASSESSMENTS | INTERVENTIONS |
|--|---|---|--|
| 1. What students will learn, know, and be able to do? (Must be aligned to state content standards.) Work safely in the Auto Shop. | 2. Instructional strategies that will be used to engage students. a. Pass safety evaluation with 100% b. Demonstrate correct handling of hazardous materials within the shop. c. Complete a shop safety inspection. d. Demonstrate emergency exit procedures. | 3. How will we know that students have learned? Include both Formative (for learning) and Summative (of learning) assessment examples. a. Pass SP2 Online Safety & Hazardous safety courses with 80% accuracy. b Pass a written test. | 4. What will we do if students don't learn? a. One on one with instructor b. Peer instruction 5. What will we do if students already know it? a. Peer instructions b. Teacher's assistant |

Content Area Standards (Please identify the source)

The students will demonstrate mastery of the following content standards:

C1.1 Know and understand common environmental conservation practices and their applications.
 C1.2 Practice the safe handling and storage of chemicals and hazardous wastes in accordance with material safety data sheets and the requirements of local, state, and federal regulatory agencies.
 C1.3 Understand the way in which waste gasses, emissions, and other environmentally destructive substances are generated and their effects on the environment.
 C1.4 Evaluate the advantages and disadvantages of existing, new, and emerging systems and the effects of those systems on the environment.
 C1.5 Use appropriate personal protective equipment and safety practices.

EL DORADO UNION HIGH SCHOOL DISTRICT

EDUCATIONAL SERVICES

Department: Career Technical Education

Course Title: **Automotive Technology I (#0540)**

UNIT/STANDARD #: Unit 2 - Automotive References/C4.0

LEARNING OUTCOME: Students perform and document maintenance procedures in accordance with the recommendations of the manufacturer.

| LEARNING OUTCOME | INSTRUCTIONAL STRATEGIES | ASSESSMENTS | INTERVENTIONS |
|---|--|--|---|
| 1. What students will learn, know, and be able to do? (Must be aligned to state content standards.) a. Be able to identify and acquire vehicle service procedures and troubleshooting information. b. Be able to document service procedures. | 2. Instructional strategies that will be used to engage students. a. Read and explain a vehicle (vin#), under hood label, and maintenance specifications b. Use a service manual c. Operate a computerized shop library system. | 3. How will we know that students have learned? Include both Formative (for learning) and Summative (of learning) assessment examples. a. Pass a written test b. Pass a performance test | 4. What will we do if students don't learn? (Outline the planned intervention strategies) a. One on one with instructor b. Peer instructions 5. What will we do if students already know it? a. Peer instructions b. Teacher's assistant |

Content Area Standards (Please identify the source)

The students will demonstrate mastery of the following content standards:

- C4.1 Understand the procedures and practices of various manufacturers regarding repair and maintenance schedules.
- C4.2 Know how to properly document maintenance procedures in accordance with applicable rules, laws, and regulations (e.g., Bureau of Auto Repair(BAR), Occupational Health and Safety Administration (OSHA), and the California Air Resources Board (CARB)
- C4.3 Use reference books, technical service bulletins, and other documents and materials related to the automotive service industry available in print and through electronic retrieval systems to accurately diagnose and repair vehicles.
- C4.4 Complete a work order, including customer information, description of repairs, and billing information, in accordance with applicable rules, laws, and regulations.

EL DORADO UNION HIGH SCHOOL DISTRICT

EDUCATIONAL SERVICES

Department: Career Technical Education

Course Title: **Automotive Technology I (#0540)**

UNIT/STANDARD #: Unit 3 - Basic Vehicle Maintenance/C3.0

LEARNING OUTCOME: Students understand scientific principles in relation to chemical, mechanical, and physical functions for various engine and vehicle systems.

| LEARNING OUTCOME | INSTRUCTIONAL STRATEGIES | ASSESSMENTS | INTERVENTIONS |
|---|---|--|---|
| 1. What students will learn, know, and be able to do? (Must be aligned to state content standards.) a. Students will have an understanding of two and four stroke theory. b. Students will have a basic understanding of automotive electrical systems. c. Students will have an understanding of preventive maintenance procedures. | 2. Instructional strategies that will be used to engage students. a. Disassemble, measure, identify and reassemble a 4 stroke small engine. b. Locate and interpret an electrical diagram. c. Basic electrical ohms law theory. d. Perform basic electrical diagnostic using a DVOM. e. Perform a vehicle safety inspection. d. Perform periodic maintenance as per manufactures recommendations. | 3. How will we know that students have learned? Include both Formative (for learning) and Summative (of learning) assessment examples. a. Instructor observation of outcomes. b. Written assessment. | 4. What will we do if students don't learn? (Outline the planned intervention strategies) a. Work with the student one on one. b. Offer additional instructional times to help students. 5. What will we do if students already know it? a. Give the student more challenging opportunities. b. Use the exceptional student to help the slow learner achieve their |

Content Area Standards (Please identify the source)

The students will demonstrate mastery of the following content standards:

C3.1 Understand the operating principles of internal and external combustion engines.
 C3.2 Understand the function and principles of air conditioning and heating systems.
 C3.3 Understand the basic principles of pneumatic and hydraulic power and their applications.
 C3.4 Understand the applications of alternative power sources.
 C3.5 Understand the basic principles of electricity, electronics and electrical power generation, and distribution.
 C3.6 Understand the principles of converting energy from one form to another.
 C3.7 Perform necessary procedures to maintain, diagnose, service, and repair vehicle systems and malfunctions.

EL DORADO UNION HIGH SCHOOL DISTRICT

EDUCATIONAL SERVICES

Department: Career Technical Education

Course Title: **Automotive Technology I (#0540)**

UNIT/STANDARD #: Unit 4 - Tools and Precision Measurement/C2.0

LEARNING OUTCOME: Students understand the safe and appropriate use of tools, equipment, and work processes.

| LEARNING OUTCOME | INSTRUCTIONAL STRATEGIES | ASSESSMENTS | INTERVENTIONS |
|--|--|---|--|
| 1. What students will learn, know, and be able to do? (Must be aligned to state content standards.) a. The student will identify basic measuring tools and their care and applications. b. The student will be able to convert metric measurements to inches. c. The student will be able to read a micrometer. | 2. Instructional strategies that will be used to engage students. a. Lecture and demonstration on measurement tool applications. b. Student measurement task sheets. | 3. How will we know that students have learned? Include both Formative (for learning) and Summative (of learning) assessment examples. a. Written test. b. Practical test | 4. What will we do if students don't learn? (Outline the planned intervention strategies) a. Provide additional time on assignments. b. Provide additional one-on-one instruction after the normal instructional day. 5. What will we do if students already know it? a. Provide additional advanced activities. b. Allow peer to peer instruction. |

Content Area Standards (Please identify the source)

The students will demonstrate mastery of the following content standards:

C2.1 Understand and use appropriate tools and equipment, such as wrenches, sockets, and pliers, to maintain and repair systems and components.

C2.2 Use tools, equipment, and machines to safely measure, test, diagnose, and analyze components and systems (e.g., electrical and electronic circuits, alternating and direct-current applications, fluid/hydraulic and air/pneumatic systems).

C2.3 Select and use the appropriate measurement device(s) and use mathematical functions necessary to perform required fabrication, maintenance, and operation procedures.

C2.4 Know and understand the elements of precision measuring using standard and metric systems.

C2.5 Use measurement scales, devices, and systems, such as dial indicators, and micrometers to design, fabricate, diagnose, maintain, and repair vehicles and components following appropriate industry standards.

C2.6 Know and understand how to access technical reports, manuals, electronic retrieval systems, and related technical data resources.
 C2.7 Comprehend the importance of calibration processes, systems, and techniques using various measurement and testing devices.

EL DORADO UNION HIGH SCHOOL DISTRICT

EDUCATIONAL SERVICES

Department: Career Technical Education

Course Title: **Automotive Technology I (#0540)**

UNIT/STANDARD #: Unit 5 - Engine Construction and Operation/C3.0

LEARNING OUTCOME: Students understand scientific principles in relation to chemical, mechanical, and physical functions for various engine and vehicle systems.

| LEARNING OUTCOME | INSTRUCTIONAL STRATEGIES | ASSESSMENTS | INTERVENTIONS |
|---|---|--|--|
| 1. What students will learn, know, and be able to do? (Must be aligned to state content standards.) a. The student will be able to identify engines by their cylinder and valve arrangements. b. The student will be able to identify the major parts and their relationship to each other. c. The student will be able to list the differences between a diesel engine and gasoline engine. d. The student will be able to identify the different hybrid technologies. | 2. Instructional strategies that will be used to engage students. a. Students will make a poster that shows four types of engine cylinder arrangements and label their components. b. Students will identify the different engine types offered as standard across the range of automobile models under a single brand name and write a short report on findings. c. Lecture/Demonstration | 3. How will we know that students have learned? Include both Formative (for learning) and Summative (of learning) assessment examples. a. Instructor evaluation on individual work turned in by students. b. Written test. | 4. What will we do if students don't learn? (Outline the planned intervention strategies) a. Provide additional time on assignments. b. Provide additional one-on-one instruction after the normal instructional day. 5. What will we do if students already know it? a. Provide additional advanced activities. b. Allow peer to peer instruction. |

Content Area Standards (Please identify the source)

The students will demonstrate mastery of the following content standards:

- C3.1 Understand the operating principles of internal and external combustion engines.
- C3.2 Understand the function and principles of air conditioning and heating systems.
- C3.3 Understand the basic principles of pneumatic and hydraulic power and their applications.
- C3.4 Understand the applications of alternative power sources.
- C3.5 Understand the basic principles of electricity, electronics and electrical power generation, and distribution.
- C3.6 Understand the principles of converting energy from one form to another.
- C3.7 Perform necessary procedures to maintain, diagnose, service, and repair vehicle systems and malfunctions.

EL DORADO UNION HIGH SCHOOL DISTRICT

EDUCATIONAL SERVICES

Department: Career Technical Education

Course Title: **Automotive Technology I (#0540)**

UNIT/STANDARD #: Unit 6 - Automotive Engine Performance/C6.0

LEARNING OUTCOME: Students understand the applications, operation, maintenance, and diagnosis of engines, including but not limited to two- and four- stroke and supportive subsystems.

| LEARNING OUTCOME | INSTRUCTIONAL STRATEGIES | ASSESSMENTS | INTERVENTIONS |
|---|--|--|---|
| 1. What students will learn, know, and be able to do? (Must be aligned to state content standards.) a. The student will be able to use the appropriate reference materials to locate troubleshooting information. b. Student will understand and operate testing equipment. c. Student will understand and operate computerized testing equipment. d. Student will be able to perform engine performance tests. | 2. Instructional strategies that will be used to engage students. a. Read, understand, and explain under hood label and maintenance specifications. b. Use servicing tools and test equipment. c. Operate computerized testing equipment, and explain their findings. | 3. How will we know that students have learned? Include both Formative (for learning) and Summative (of learning) assessment examples. a. Pass a written test. b. Pass a performance test. c. Perform an "on vehicle repair". | 4. What will we do if students don't learn? (Outline the planned intervention strategies) a. One on one with instructor. b. Peer instruction. c. work within a group or team. 5. What will we do if students already know it? a. Perform peer instructions. b. Teacher's assistant. |

Content Area Standards (Please identify the source)

The students will demonstrate mastery of the following content standards:

- C6.0 Students understand the application, operation, maintenance, and diagnose of engines, including but not limited to two-and four-stroke and supporting subsystems:
- C6.1 Perform general engine maintenance, diagnose, service, and repair in accordance with portable national industry standards, such as the National Automotive Technicians Education Foundation and the Equipment and Engine Training Council.
- C6.2 Maintain, diagnose, service and repair lubrication and cooling systems.
- C6.3 Understand how to maintain, diagnose, and repair computerized engine control systems and other engine-related systems.
- C6.4 Maintain, diagnose, service, and repair ignition, electronic, and computerized engine controls and fuel management systems.

EL DORADO UNION HIGH SCHOOL DISTRICT

EDUCATIONAL SERVICES

Department: Career Technical Education

Course Title: Automotive Technology I (#0540)

UNIT/STANDARD #: Unit 7 - Electrical systems/C7.0

LEARNING OUTCOME: Student understands the functions, principles, and operation of electrical and electronic systems using manufacturer and industry standards.

| LEARNING OUTCOME | INSTRUCTIONAL STRATEGIES | ASSESSMENTS | INTERVENTIONS |
|---|--|---|--|
| 1. What students will learn, know, and be able to do? (Must be aligned to state content standards.) a. Student will understand the use of electrical functions and principles. b. Student will understand the operations of electronic and electrical systems in today's modern automobile. | 2. Instructional strategies that will be used to engage students. a. Lecture and demonstrations of electronic and electrical systems. b. Student will demonstrate the use of electrical systems in the modern automobile. c. Lecture and demonstrations of electrical parts and components. | 3. How will we know that students have learned? Include both Formative (for learning) and Summative (of learning) assessment examples. a. Pass written tests b. Pass performance tests. c. Perform on vehicle tests and repairs. | 4. What will we do if students don't learn? (Outline the planned intervention strategies) a. One on one with instructor. b. Peer instructions c. Work within a group or team. 5. What will we do if students already know it? a. Perform peer instructions b. Teacher's assistant. |

Content Area Standards (Please identify the source)

The students will demonstrate mastery of the following content standards:

- C7.0 Students understanding the function, principles, and operation of electrical and electronic systems using manufacturer and industry standards:
- C7.1 Understand how to maintain, diagnose, and repair electrical systems.
- C7.2 Maintain, diagnose, repair, and service batteries.
- C7.3 Understand how to maintain, diagnose, service, and repair starting and charging system.
- C7.4 Diagnose, service, and repair lighting systems.
- C7.5 Diagnose, service, and repair heating and air conditioning systems and components.
- C7.6 Diagnose, service and repair horns, wipers/washers, and other accessories.
- C7.7 Perform necessary procedures to maintain, diagnose, service and repair vehicle electrical and electronic systems and malfunctions.

EL DORADO UNION HIGH SCHOOL DISTRICT

EDUCATIONAL SERVICES

Department: Career Technical Education

Course Title: **Automotive Technology I (#0540)**

UNIT/STANDARD #: Unit 8 - Suspension Systems/C8.0

LEARNING OUTCOME: Students understand the function and principles of automotive drive train, steering and suspension, and tire and wheel components and systems in accordance with portable national industry standards, such as the National Automotive Technicians Education Foundation.

| LEARNING OUTCOME | INSTRUCTIONAL STRATEGIES | ASSESSMENTS | INTERVENTIONS |
|--|--|--|--|
| 1. What students will learn, know, and be able to do? (Must be aligned to state content standards.) a. Student understands the function of the automotive drive train, steering, suspension, tires, wheels. b. Students understand the different principles and types of drive trains, steering systems, suspension systems, and tires and wheels. | 2. Instructional strategies that will be used to engage students. a. Lectures b. Demonstrations of different types of drive trains, steering systems, suspension systems, and tire and wheels. c. Demonstrations of testing procedures for drive train, steering systems, suspension systems, and tires and wheels. | 3. How will we know that students have learned? Include both Formative (for learning) and Summative (of learning) assessment examples. a. Pass written tests. b. Pass performance tests. c. Perform an on vehicle repair. | 4. What will we do if students don't learn? (Outline the planned intervention strategies) a. One on one with instructor. b. Peer instructions. c. Work within a group or team. 5. What will we do if students already know it? a. peer instructions. b. Teacher's assistant. |

Content Area Standards (Please identify the source)

The students will demonstrate mastery of the following content standards:

- C8.0 Student understand the function and principles of automotive drive train, steering and suspension, brake, and tire and wheel components and systems in accordance with portable national industry standards, such as the National Automotive Technicians Education Foundation.
- C8.3 Diagnose, service, and repair steering and suspension systems.
- C8.4 Understand the function and operation of automatic and manual transmissions and transaxles.
- C8.5 Understand tire and rim sizing to select appropriate wheels and tires for vehicles.
- C8.6 Maintain, diagnose, service, and repair under-vehicle systems and malfunctions.

EL DORADO UNION HIGH SCHOOL DISTRICT

EDUCATIONAL SERVICES

Department: Career Technical Education

Course Title: **Automotive Technology I (#0540)**

UNIT/STANDARD #: Unit 9 - Brake Systems/C8.0

LEARNING OUTCOME: Students understand the function and principles of automotive brake systems and hydraulic systems in accordance with national industry standards, such as the National Automotive Technicians Education Foundation.

| LEARNING OUTCOME | INSTRUCTIONAL STRATEGIES | ASSESSMENTS | INTERVENTIONS |
|--|---|--|---|
| 1. What students will learn, know, and be able to do? (Must be aligned to state content standards.) a. Students will have knowledge of the major components of hydraulic brake system b. Students will have knowledge of the two most common types of wheel brake assemblies c. Student will have knowledge of hydraulics as they apply to different automotive systems (example: clutches) d. Students will have knowledge of | 2. Instructional strategies that will be used to engage students. a. Identify different wheel brake assemblies and their components b. Perform a Disc/Drum brake inspection c. Perform a brake service (replace disc or drum and pads or shoes) d. Turn a brake rotor or drum e. Bleed a brake system f. Remove and replace hard and soft brake lines | 3. How will we know that students have learned? Include both Formative (for learning) and Summative (of learning) assessment examples. a. Student will pass a written test b. Student will pass a performance test c. Student will pass a on vehicle repair | 4. What will we do if students don't learn? (Outline the planned intervention strategies) a. One on one review with instructor b. Peer instruction and training c. Work with group or team 5. What will we do if students already know it? a. Peer instructors b. Teacher's assistant |

| | | | |
|--|--|--|--|
| <p>Antilock braking and traction control systems</p> <p>e. Student will have knowledge of how to use a repair manual to find brake specifications</p> <p>f. Student will have knowledge of how to use a brake lathe to machine brake rotors or drums</p> <p>g. Students will have knowledge of how to diagnose and repair common brake system problems</p> | | | |
|--|--|--|--|

Content Area Standards (Please identify the source)

| | |
|--|---|
| <p>The students will demonstrate mastery of the following content standards:</p> | |
| <p>C8.0</p> <p>C8.1</p> <p>C8.2</p> <p>C8.5</p> <p>C8.6</p> | <p>Student understand the function and principles of automotive drive train, steering and suspension, brake, and tire and wheel components and systems in accordance with portable national industry standards, such as the National Automotive Technicians Education Foundation.</p> <p>Understand how to maintain, diagnose, service, and repair hydraulic and power and assist systems.</p> <p>Diagnose, service, and repair disc brake, drum brake, antilock brakes, and others brake systems as developed.</p> <p>Understand tire and rim sizing to select appropriate wheels and tires for vehicles.</p> <p>Maintain, diagnose, service, and repair under-vehicle systems and malfunctions.</p> |

EL DORADO UNION HIGH SCHOOL DISTRICT

EDUCATIONAL SERVICES

Department: Career Technical Education

Course Title: Automotive Technology I (#0540)

UNIT/STANDARD #: Unit 10 - Cooling Systems/C6.0

LEARNING OUTCOME: Students understand the applications, operation, maintenance, and diagnosis of engine cooling systems and supportive subsystems.

| LEARNING OUTCOME | INSTRUCTIONAL STRATEGIES | ASSESSMENTS | INTERVENTIONS |
|--|---|---|---|
| <p>1. What students will learn, know, and be able to do? (Must be aligned to state content standards).</p> <p>a. Student understands the cooling systems used in air, coolant, and oil cooling systems.</p> <p>b. Student understand the effects of engine performance on the cooling systems,</p> <p>c. Student understands the effects of weather and different driving types on the cooling system.</p> <p>d. Student understands the relationships with lubrication systems, fuel system, ignition systems and their</p> | <p>2. Instructional strategies that will be used to engage students.</p> <p>a. Lectures</p> <p>b. Demonstration on the different types of cooling systems.</p> <p>c. Demonstrations on the effects of fuel systems, oil system, and computerized sub-systems.</p> <p>d. Demonstrations on diagnosing, servicing and repair of cooling systems</p> <p>e. Lecture on cooling system safety.</p> | <p>3. How will we know that students have learned? Include both Formative (for learning) and Summative (of learning) assessment examples.</p> <p>a. Pass written tests.</p> <p>b. Pass performance tests.</p> <p>c. Perform an on vehicle repair or tests</p> | <p>4. What will we do if students don't learn? (Outline the planned intervention strategies)</p> <p>a. One on one with instructor.</p> <p>b. Peer instructions.</p> <p>c. Work within a group or team.</p> <p>5. What will we do if students already know it?</p> <p>a. Peer instructions.</p> <p>b. Teacher's assistant.</p> |

| | | | |
|---------------------------------|--|--|--|
| effects on the cooling systems. | | | |
|---------------------------------|--|--|--|

Content Area Standards (Please identify the source)

The students will demonstrate mastery of the following content standards:

C6.0 Students understand the application, operation, maintenance, and diagnose of engines, including but not limited to two-and four-stroke and supporting subsystems:

C6.1 Perform general engine maintenance, diagnose, service, and repair in accordance with portable national industry standards, such as the National Automotive Technicians Education Foundation and the Equipment and Engine Training Council.

C6.2 Maintain, diagnose, service and repair lubrication and cooling systems.

C6.3 Understand how to maintain, diagnose, and repair computerized engine control systems and other engine-related systems.

C6.4 Maintain, diagnose, service, and repair ignition, electronic, and computerized engine controls and fuel management systems.

EL DORADO UNION HIGH SCHOOL DISTRICT

EDUCATIONAL SERVICES

Department: Career Technical Education

Course Title: **Automotive Technology I (#0540)**

UNIT/STANDARD #: Unit 11 - HVAC Systems

LEARNING OUTCOME: Students understand the function and principles of automotive heating, ventilation, and air conditioning systems in accordance with national industry standards, such as the National Automotive Technicians Education Foundation.

| LEARNING OUTCOME | INSTRUCTIONAL STRATEGIES | ASSESSMENTS | INTERVENTIONS |
|-------------------------|---------------------------------|--------------------|----------------------|
|-------------------------|---------------------------------|--------------------|----------------------|

| | | | |
|--|---|---|--|
| <p>1. What students will learn, know, and be able to do? (Must be aligned to state content standards.)</p> <p>a. The student will have knowledge of the major components of automotive heating systems</p> <p>b. The student will have knowledge of the major components of automotive air conditioning systems</p> <p>c. Students will have knowledge of basic refrigeration system operation</p> <p>d. Students will have knowledge of proper collection and environmental concerns of refrigerant</p> <p>e. Students will have knowledge of common engine cooling system problems and diagnosis</p> | <p>2. Instructional strategies that will be used to engage students.</p> <p>a. Identify components both on the off the vehicle for HVAC systems</p> <p>b. Lectures and discussion</p> <p>c. Demonstrations on use of diagnosis equipment</p> <p>d. Demonstrations on use of recovery equipment.</p> | <p>3. How will we know that students have learned? Include both Formative (for learning) and Summative (of learning) assessment examples.</p> <p>a. Pass a written test</p> <p>b. Pass a performance test</p> <p>c. Perform a on vehicle repair</p> | <p>4. What will we do if students don't learn? (Outline the planned intervention strategies)</p> <p>a. One on one with instructor</p> <p>b. Peer instructors</p> <p>c. Work with a group or team</p> <p>5. What will we do if students already know it?</p> <p>a. Peer instructors</p> <p>b. Group leader or teacher's assistant</p> |
|--|---|---|--|

Content Area Standards (Please identify the source)

| |
|--|
| <p>The students will demonstrate mastery of the following content standards:</p> <p>C3.1 Understand the operating principles of internal and external combustion engines.</p> <p>C3.2 Understand the function and principles of air conditioning and heating systems.</p> <p>C3.3 Understand the basic principles of pneumatic and hydraulic power and their applications.</p> <p>C3.4 Understand the applications of alternative power sources.</p> <p>C3.5 Understand the basic principles of electricity, electronics and electrical power generation, and distribution.</p> <p>C3.6 Understand the principles of converting energy from one form to another.</p> <p>C3.7 Perform necessary procedures to maintain, diagnose, service, and repair vehicle systems and malfunctions.</p> |
|--|

EL DORADO UNION HIGH SCHOOL DISTRICT

EDUCATIONAL SERVICES

Department: Career Technical Education

Course Title: **Automotive Technology I (#0540)**

UNIT/STANDARD #: Unit 12 - Automotive Recordkeeping/C5.0

LEARNING OUTCOME: Students understand and apply appropriate business practices.

| LEARNING OUTCOME | INSTRUCTIONAL STRATEGIES | ASSESSMENTS | INTERVENTIONS |
|---|---|--|---|
| <p>1. What students will learn, know, and be able to do? (Must be aligned to state content standards.)</p> <p>a. Student will understand the importance of record keeping.</p> <p>b. Student will learn ethical business practices.</p> <p>c. Student understands the appropriate handling and disposal of hazardous materials.</p> | <p>2. Instructional strategies that will be used to engage students.</p> <p>a. Lectures</p> <p>b. Student will record procedures and review ethical practices.</p> <p>c. Demonstrations on the appropriate safety, handling, and disposal of hazardous materials.</p> <p>d. Discuss the importance of re-cycling.</p> | <p>3. How will we know that students have learned? Include both Formative (for learning) and Summative (of learning) assessment examples.</p> <p>a. Pass written tests.</p> <p>b. Pass performance tests.</p> <p>c. Produce written invoices on work done on vehicles.</p> | <p>4. What will we do if students don't learn? (Outline the planned intervention strategies)</p> <p>a. One on one with instructor</p> <p>b. Peer instructions</p> <p>c. Work within a group or team.</p> <p>5. What will we do if students already know it?</p> <p>a. Peer instructions</p> <p>b. Student team leader</p> |

Content Area Standards (Please identify the source)

| |
|--|
| <p>The students will demonstrate mastery of the following content standards:</p> <p>C5.0 Students understand and apply appropriate business practices:</p> <p>C5.1 Understand work-related systems common to the transportation service industry.</p> <p>C5.2 Know the laws and regulations applicable to recordkeeping and the appropriate handling and disposal of hazardous materials.</p> <p>C5.3 Understand the importance of and the procedures for maintaining accurate records (e.g., business licenses, repair orders, billing and tax records).</p> <p>C5.4 Understand the concept and application of accepted ethical business practices.</p> <p>C5.5 Understand the concept and application of acceptable customer relations practices.</p> <p>C5.6 Understand the need for maintenance of components and systems and the conditions under which service and maintenance are required.</p> |
|--|