EL DORADO UNION HIGH SCHOOL DISTRICT
EDUCATIONAL SERVICES

Course of Study Information Page

COURSE TITLE **Introduction to Service and Repair**	
DISTRICT COURSE NUMBER **0542**	4-DIGIT STATE COURSE CODE (COMPLETED BY SILT) **8530**
Rationale:	This is a course is the first of two courses that prepares individuals to apply technical knowledge and skill in their subject area
Course Description that will be in the Course Directory:	In this course students will learn the assembly and dissassembly process of mechanisms along with diagnostic/troubleshooting proceedures and skills. Students will study all features of a 2 and 4 stroke small engines and use all tools appliciable for small engine repair and maintenance. Work ethic, productivity, and safety are an integral part of the classroom and laboratory activities of these classes.
How Does this Course align with or meet State and District content standards?	Each unit is aligned with state and National Standards. State transportation and CTE pathways are followed.
NCLB Core Subjects:	*Select up to two that apply:* ☐ Arts ☐ Civics and Government ☒ Not Core Subject ☐ Economics ☐ History ☐ English ☐ Mathematics ☐ Foreign Language ☐ Reading / Language Arts ☐ Geography ☐ Science
CDE CALPADS Course Descriptors: (See Page 2 for Definitions)	CTE TECH PREP COURSE INDICATORS ☐ Tech Prep (32) (Higher Ed) ☐ Tech Prep & ROP(33) (Higher Ed) ☐ ROP (30) ☒ N/A CTE COURSE CONTENT CODE ☒ CTE Introductory (01) ☐ CTE Concentrator (02) ☐ CTE Completer (03) ☒ Voc Subject _____ ☐ N/A INSTRUCTIONAL LEVEL CODE ☐ Remedial (35) ☐ Honors UC-Certified (39) ☐ Honors Non UC-Certified (34) ☐ College (40) ☒ N/A
Length of Course:	☐ Year ☒ Semester
Grade Level(s):	☒ 9 ☒ 10 ☒ 11 ☒ 12
Credit:	☒ Number of credits: **5** ☒ Meets graduation requirements (subject **Elective**) ☐ Request for UC "a–g" requirements CSU/UC requirement _____ ☐ College Prep
Prerequisites:	None
Department(s):	CTE
District Sites:	ORHS
Board of Trustees COS Adoption Date:	April 23, 2019
Textbooks / Instructional Materials:	None required. All materials will be teacher generated.

Funding Source:	CTEIG
Board of Trustees Textbook Adoption Date:	N/A

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.

EL DORADO UNION HIGH SCHOOL DISTRICT

EDUCATIONAL SERVICES

Course Title: Introduction to Service and Repair

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Department: **CTE**

Course Title: **Introduction to Service and Repair** Course Number: **0542**

Unit Title: **Safety Practices**

Content Area Standards (Please identify the source): List content standards students will master in this unit.

This course is intended to provide students with experiential learning opportunities as they perform "hands-on" skills specified in the curriculum under the direct supervision of the teacher. This "hands on" philosophy will enable students to understand curriculum content so that they may pass the Briggs and Stratton Competency Exam and receive certification from Briggs and Stratton. English, language arts, mathematics, and science are reinforced.

CTE Standards from the California Framework Section "C" - Systems Diagnostics, Service and Repair Pathway C1.1, 1.2 1.3

Unit Outline: A detailed descriptive summary of all topics covered in the unit. Explain what the students will learn, know and be able to do.

Students will be able to understand general shop safety.

Standard 1 Learn safe working habits and procedures.
Pass a safety test with 100 percent. Personal safety
Tool and equipment safety
Workplace safety

Standard 2 Comply with safety rules for working with small engine chemicals.
Chemical manufacturers provide a material safety data sheet (MSDS) for each chemical they produce
Store chemicals in properly labeled containers

Standard 3 Identify the harmful exhaust gasses encountered in the small engine field and the hazards they present. Hydrocarbons (HC) and carbon monoxide (CO)

Instructional Strategies: Indicate how the Instructional Strategies support the delivery of the curriculum and the course goals. Indicate how assignments support the Anchor Standards.

Direct instruction, demonstration, independent student work

Direct instruction would include power point presentations/lectures.

Demonstrations would involve instructor modeling the process of lab completion for the day.

Indepentent student work is modeld after the instructors demonstration. Students will be evaluated one on one in a setting that allows them to demonstrate the progression of lesson. Students will be asked to re-examine any areas of deficiency before moving on to the next step.

Peer evaluation of the process and final product are also part of my instructional strategies. This allows peers to be able to articulate what is right and what needs to be fixed as part of a final evaluation.

Assessments: Describe the Formative and Summative assessments that will be used to demonstrate learning and mastery of the standards.

Both formative and summative assesments will be used.
Since this is a mostly hands on class, student assessment can be done in a variety of ways.

- "walk around assesment" - direct questioning during lab time provides instructor feedback quickly
- online briggs and stratton modules on 4cycle theory, Compression, Governors and Electrical Systems are availbale in part or in whole. Certification can be used for entry level positions in the small engine repair industry.
- traditional evaluations to show proficiency - student retakes required before moving forward

Interventions: Describe methods used to support students who fail to master unit Formative and Summative assessments.

Methods include but are not limited to re performing certain tasks to ensure competency.As mentioned above, assessment levels of a certain percentage (typically 70%, but perhaps higher) would be required before moving on the the next unit.

EDUCATIONAL SERVICES

Department: **CTE**

Course Title: **Introduction to Service and Repair** Course Number: **0542**

Unit Title: **Basic Hand Tools**

Content Area Standards (Please identify the source): List content standards students will master in this unit.

The course is intended to provide students with experiential learning opportunities as they perform "hands-on" skills specified in the curriculum under the direct supervision of the teacher. This "hands on" philosophy will enable students to understand curriculum content so that they may pass the Briggs and Stratton Competency Exam and receive certification from Briggs and Stratton. English, language arts, mathematics, and science are reinforced.

CTE Standards from the California Framework Section "C" - Systems Disagnostics, Service and Repair Pathway C2.1, 2.2, 2.5.

Unit Outline: A detailed descriptive summary of all topics covered in the unit. Explain what the students will learn, know and be able to do.

Students will be able to understand basic hand tools, fasteners, and shop equipment.

Standard 1 Identify, size, and measure metric and standard fasteners.
Bolts, nuts, lock washers, keys, cotter pins, and snap rings
Right-hand and left-hand threads, and course and fine threads

Standard 2 Correctly identify and use basic hand tools.
Screwdrivers, wrench, sockets, drive handles, extensions, pliers, hammer, chisels, punches, files, hacksaw, pullers, vises, drill bits, grinder
Describe the use of each of the above tools

Standard 3 Identify and demonstrate use of basic measuring tools (accurate to 1/32 or 1mm).
Micrometers, rulers, feeler gauges compression gauges, and digital multi meter (DMM)

Standard 4 Use reference manuals or information systems to find service procedures and specifications.
Computer oriented
Printed manuals
Owner's manuals

Instructional Strategies: Indicate how the Instructional Strategies support the delivery of the curriculum and the course goals. Indicate how assignments support the Anchor Standards.

Direct instruction, demonstration, independent and group student work

Direct instruction would include power point presentations/lectures.

Demonstrations would involve instructor modeling the process of lab completion for the day.

Independent student work is modeled after the instructor's demonstration. Students will be evaluated one on one in a setting that allows them to demonstrate the progression of lesson. Students will be asked to re-examine any areas of deficiency before moving on to the next step.

Peer evaluation of the process and final product are also part of my instructional strategies. This allows peers to be able to articulate what is right and what needs to be fixed as part of a final evaluation.

Assessments: Describe the Formative and Summative assessments that will be used to demonstrate learning and mastery of the standards.

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EDUCATIONAL SERVICES

Department: **CTE**

Course Title: **Introduction to Service and Repair** Course Number: **0542**

Unit Title: **Basic Performance and Service of a Small Engine**

Content Area Standards (Please identify the source): List content standards students will master in this unit.

The course is intended to provide students with experiential learning opportunities as they perform "hands-on" skills specified in the curriculum under the direct supervision of the teacher. This "hands on" philosophy will enable students to understand curriculum content so that they may pass the Briggs and Stratton Competency Exam and receive certification from Briggs and Stratton. English, language arts, mathematics, and science are reinforced.

CTE Standards from the California Framework Section "C" - Systems Disagnostics, Service and Repair Pathway C3.0, 3.1, 3.3, 3.6

Unit Outline: A detailed descriptive summary of all topics covered in the unit. Explain what the students will learn, know and be able to do.

Students will be able to identify and perform basic services on a small engine.

Standard 1 Locate and identify basic engine components.

Identify engine components.
o Block, crankshaft, camshaft, piston, cylinder head, connecting rod, valve train, timing components
o Fuel systems: carburetor, filter, lines, tank
o Ignition systems: spark plug, magneto, coil
o Cooling system: cooling fins, shroud, and flywheel
o Lubrication system: dip stick, oil slinger or pump, oil plug, oil
o Exhaust system: muffler, exhaust gasket

Standard 2 Change engine oil and filter on a small engine. Use proper disposal methods for waste oil.
Check fuel filter.
Check air filter.
Change and gap spark plug.
Remove and sharpen lawn mower blade.
Check oil level.
Perform an oil change.

Standard 3 Understand the four stroke cycle.
Intake
Compression
Power
Exhaust

Standard 4 Understand the two stoke cycle.
Intake/compression
Power/exhaust
Explain the differences and similarities between 2-cycle and 4-cycle engines.
Intake and exhaust ports on 2-cycle engines versus valves on 4-cycle engines.
Correctly mix 2-cycle oil and gasoline mixture.

Instructional Strategies: Indicate how the Instructional Strategies support the delivery of the curriculum and the course goals. Indicate how assignments support the Anchor Standards.

Direct instruction, demonstration, independent student work

Direct instruction would include power point presentations/lectures.

Demonstrations would involve instructor modeling the process of lab completion for the day.

Independent student work is modeled after the instructor's demonstration. Students will be evaluated one on one in a setting that allows them to demonstrate the progression of lesson. Students will be asked to re-examine any areas of deficiency before moving on to the next step.

Peer evaluation of the process and final product are also part of my instructional strategies. This allows peers to be able to articulate what is right and what needs to be fixed as part of a final evaluation.

Assessments: Describe the Formative and Summative assessments that will be used to demonstrate learning and mastery of the standards.

Both formative and summative assesments will be used.
Since this is a mostly hands on class, student assessment can be done in a variety of ways.

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Interventions: Describe methods used to support students who fail to master unit Formative and Summative assessments.

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EDUCATIONAL SERVICES

Department: **CTE**

Course Title: **Introduction to Service and Repair** Course Number: **0542**

Unit Title: **Tear Down and Reassembly**

Content Area Standards (Please identify the source): List content standards students will master in this unit.

This course is intended to provide students with experiential learning opportunities as they perform "hands-on" skills specified in the curriculum under the direct supervision of the teacher. This "hands on" philosophy will enable students to understand curriculum content so that they may pass the Briggs and Stratton Competency Exam and receive certification from Briggs and Stratton. English, language arts, mathematics, and science are reinforced.

CTE Standards from the California Framework Section "C" - Systems Diagnostics, Service and Repair Pathway C6.0 through 6.4

Unit Outline: A detailed descriptive summary of all topics covered in the unit. Explain what the students will learn, know and be able to do.

Students will be able to disassemble and reassemble a small gas engine.

Standard 1 Identify major small gas engine components and parts.
- Cylinder block
- Side cover
- Cylinder
- Crankshaft and crank gear
- Connecting rod
- Bearing
- Piston
- Piston-pin (wrist-pin)
- Rings (compression ring/oil control ring)
- Tappets/lifters
- Valves (intake/exhaust)
- Valve spring and valve retainer
- Camshaft
- Cylinder head
- Head gasket
- Reed valve (2-stroke)

Standard 2 Disassemble a small gas engine.

Standard 3 Inspect major small gas engine components and parts.
- Cylinder head torque pattern.
- Inspect the cylinder.
- Ring end gap.
- Inspect the piston.
- Connecting rod, bearing clearance (plastic gauge)
- Check crankshaft endplay.
- Check valve clearance.
- Inspect valve and valve seat.

Standard 4 Recondition, repair, or replace components and parts.

Standard 5 Reassemble a small gas engine

Instructional Strategies: Indicate how the Instructional Strategies support the delivery of the curriculum and the course goals. Indicate how assignments support the Anchor Standards.

Direct instruction, demonstration, independent student work

Direct instruction would include power point presentations/lectures.

Demonstrations would involve instructor modeling the process of lab completion for the day.

Independent student work is modeled after the instructor's demonstration. Students will be evaluated one on one in a setting that allows them to demonstrate the progression of lesson. Students will be asked to re-examine any areas of deficiency before moving on to the next step.

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Assessments: Describe the Formative and Summative assessments that will be used to demonstrate learning and mastery of the standards.

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Interventions: Describe methods used to support students who fail to master unit Formative and Summative assessments.

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Department: **CTE**

Course Title: **Introduction to Service and Repair** Course Number: **0542**

Unit Title: **Math as it Relates to Small Engines**

Content Area Standards (Please identify the source): List content standards students will master in this unit.

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CTE Standards from the California Framework Section "C" - Systems Disagnostics, Service and Repair Pathway C 3.4, 3.5, 3.6

Unit Outline: A detailed descriptive summary of all topics covered in the unit. Explain what the students will learn, know and be able to do.

Students will be able to solve basic mathematical equations related to small engines.

Standard 1
Solve basic ratio-to-proportion problems.
Fuel/air mixture
Oil/gas mixture

Standard 2
Mathematics: How to measure materials to within .001 inch
Mathematics: Calculating displacement and compression ratios

Instructional Strategies: Indicate how the Instructional Strategies support the delivery of the curriculum and the course goals. Indicate how assignments support the Anchor Standards.

Direct instruction, demonstration, independent student work

Direct instruction would include power point presentations/lectures.

Demonstrations would involve instructor modeling the process of lab completion for the day.

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Interventions: Describe methods used to support students who fail to master unit Formative and Summative assessments.

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Department: **CTE**

Course Title: **Introduction to Service and Repair** Course Number: **0542**

Unit Title: **Employablility**

Content Area Standards (Please identify the source): List content standards students will master in this unit.

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CTE Standards from the California Framework Section "C" - Systems Disagnostics, Service and Repair Pathway C 5.0, 5.1, 5.4, 5.5

Unit Outline: A detailed descriptive summary of all topics covered in the unit. Explain what the students will learn, know and be able to do.

Students will be able to understand the importance of emplyability and work habits

- Standard 1 Integrity
- Standard 2 Punctuality
- Standard 3 Staying on Task
- Standard 4 Productive team worker and independent worker
- Standard 5 Leadership

Instructional Strategies: Indicate how the Instructional Strategies support the delivery of the curriculum and the course goals. Indicate how assignments support the Anchor Standards.

Direct instruction, demonstration, independent student work

Direct instruction would include power point presentations/lectures.

Demonstrations would involve instructor modeling the process of lab completion for the day.

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Assessments: Describe the Formative and Summative assessments that will be used to demonstrate learning and mastery of the standards.

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Since this is a mostly hands on class, student assessment can be done in a variety of ways.

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- traditional evaluations to show proficiency - student retakes required before moving forward

Interventions: Describe methods used to support students who fail to master unit Formative and Summative assessments.

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