

Colorado CTE Course – Scope and Sequence

Course Name	Sport Vehicle Technology II		Course Details	Credit = 2.0 Prerequisite: Sport Vehicle Technology CTE Credential: CTE Transportation	
			Course = 0.50 Carnegie Unit Credit		
Course Description	Sport Vehicle Repair Technology II is a continuation of Sport Vehicle Repair Technology I. Students will continue study in engine design and advancing their knowledge in lubrication systems, cooling systems, fuel systems, basic electricity, safety systems and ignition systems. Students will participate in the overhaul of two and four stroke engines. Students at this level will be gaining intermediate level skills, which should enhance their employment skill set.				
Note:	This is a suggested scope and sequence for the course content. The content will work with any textbook or instructional resource. If locally adapted, make sure all essential knowledge and skills are covered.				
SCED Identification #	20102	Schedule calculation based on 60 calendar days of a 90-day semester. Scope and sequence allows for additional time for guest speakers, student presentations, field trips, remediation, or other content topics.			
All courses taught in an approved CTE program must include Essential Skills embedded into the course content. The Essential Skills Framework for this course can be found at https://www.cde.state.co.us/standardsandinstruction/essentialskills					
Instructional Unit Topic	Suggested Length of Instruction	CTE or Academic Standard Alignment	Competency / Performance Indicator	Outcome / Measurement	CTSO Integration
Safety and Industry Practices		Understand personal safety and environmental practices in accordance with OSHA safety regulations. Identify employers' expectations regarding safe and appropriate work habits, ethical conduct, and environmental responsibilities in the fields of automotive service.	Understand and identify work standards for the Sport Vehicle Industry. Student is expected to: A) Identify procedures to ensure compliance with personal and environmental safety practices associated with clothing; respiratory protection; eye	Student demonstrates safe employment shop practices: - Identifies general shop safety rules and procedures. - Utilizes safe procedures for handling of tools and equipment. - Utilizes proper ventilation procedures for working within the lab/shop area. Demonstrate appropriate industry working practices	

		Understand and identify work standards for the Sport Vehicle Industry.	protection; hand tools; power equipment; proper ventilation; and the handling, storage, and disposal of chemicals/materials in accordance with local, state, and federal safety and environmental practices; B) Identify various sport vehicle types and the characteristics of each as it pertains to the repair and service process; C) Identify major structural and non-structural components, sections, and assemblies of various types of sport vehicles; D) Interpret Vehicle Identification Number (VIN) plate; E) Identify common hand tools used in the sport vehicle repair industry; F) Identify various pneumatic, electric	for verification of VIN numbers and use of standard documentation and repair tools, equipment, and processes. Demonstrate understanding of industry certification requirements and how those are used locally for employment hiring and advancement.	
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			and hydraulic tools and equipment used in the sport vehicle repair industry; G) List various job titles and identify specific areas of employment within the sport vehicle repair industry, and describe the working environment; H) Determine the demand for entry-level technicians, and list skills employers expect of entry-level technicians and I) Determine the amount of training and education necessary to enter into the sport vehicle repair industry, and the requirements for becoming manufacture certified.		
Hydraulics		Understand and apply advanced knowledge of hydraulics to sport vehicles services and repairs.	Understand and apply advanced knowledge of hydraulics to sport vehicles		

			services and repairs. Student is expected to: (A) Identify the basic parts of a power train and discuss how power is transmitted through the power train; (B) Identify types of gears and calculate gear ratio, rotation, and gear speed; (C) Describe the operation of a hydraulic pump and valves; (D) Diagnose and repair pumps, cylinders, motors, and fluid/seal leaks; (E) Identify major components of a hydraulic system; and (F) Explain the function of hydraulic system components.		
Fuel and Emissions		Understand and apply advanced knowledge of fuel and emissions to sport vehicles services and repairs.	Understand and apply advanced knowledge of fuel and emissions to sport vehicles services and repairs. Student is expected to:		

			A) Identify and explain the basic components of the fuel system; B) Explain how the fluids flow through the fuel system; C) Identify and change fuel filters; D) Remove, service, and test carburetor and injection systems; E) Install and repair various types of fuel pumps and carburetors; and F) Identify newly designed engines that meet current EPA regulations, including new combustion cylinder design, multi-valve cylinders, and hybrid engine design.		
Diesel Engines		Understand and apply knowledge of diesel engines to sport vehicle service and repair.	Understand and apply knowledge of diesel engines to sport vehicle service and repair. Student is expected to: A) Identify basic parts of a diesel engine		

			and match parts with their functions; B) Discuss the operation of the diesel engine; C) Distinguish the difference in the diesel engine and the gasoline engine; D) Explain the basic difference between a four-stroke cycle and a two-stroke cycle engine; E) Demonstrate parts identification and service procedures; and F) Demonstrate efficiency with special equipment such as micrometers, cylinders gauges, electrical testing equipment, and various other necessary tools.		
Rolling Chassis		Understand and apply advanced knowledge of rolling chassis components and systems to sport vehicles services and repairs.	Understand and apply knowledge of rolling chassis components and systems to sport vehicle service and repair. Student is expected to:		

			A) Demonstrate through repeated hands-on Application the ability to inspect and repair frames that show flaws or damage; B) Document through written media the repair procedure used in a given instance of repairing a motorcycle frame; C) Apply appropriate procedures used to inspect and repair motorcycle frames; D) Justify the repair technique used in a given instance of repairing a motorcycle frame; E) Demonstrate through repeated hands-on Application the ability to inspect and repair motorcycle suspension systems that show flaws or damage; F) Document through written media the		
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			repair procedure used in a given instance of repairing a motorcycle suspension system; G) Apply appropriate procedures used to inspect and repair motorcycle suspension systems; H) Justify the repair technique used in a given instance of repairing a motorcycle suspension system; I) Demonstrate through repeated hands-on Application the ability to inspect and repair tires and wheels that show flaws or damage; J) Document through written media the repair procedure used in a given instance of repairing a motorcycle tire or wheel system; K) Apply appropriate procedures used to inspect and repair		
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			motorcycle tire or wheel systems; L) Justify the repair technique used in a given instance of repairing a motorcycle tire or wheel system; M) Demonstrate through repeated hands-on Application the ability to inspect and repair motorcycle brake systems that show flaws or damage; N) Document through written media the repair procedure used in a given instance of repairing a motorcycle brake system; O) Apply appropriate procedures used to inspect and repair motorcycle brake systems; and P) Justify the repair technique used in a given instance of repairing a motorcycle brake system.		
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Electrical Systems		Understand and apply advanced knowledge of electrical systems to sport vehicles services and repairs.	Understand and apply advanced knowledge of electrical systems to sport vehicles services and repairs. Student is expected to: A) Demonstrate ability to use Circuit Diagrams in the repair of Sport Vehicle Electrical systems focusing on Ignition and Charging Components; B) Document through written media the repair procedure used in a given instance of repairing Sport Vehicle Electrical System; C) Apply appropriate procedures used to inspect and repair a Sport Vehicle Electrical System; and D) Justify the inspection and repair technique used in a given instance of repairing a Sport		
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			Vehicle Electrical System.		
Advanced 2/4 Engines		Understand and apply advanced knowledge of 2 and 4-cycle engines to sport vehicles services and repairs.	Understand and apply advanced knowledge of 2 and 4-cycle engines to sport vehicles services and repairs. Student is expected to: A) Inspect engine assembly for fuel, oil, coolant and other leaks; B) Diagnose unusual engine noise or vibration; C) Diagnose unusual exhaust color, odor and sound; D) Perform engine absolute (vacuum/boost) manifold pressure tests; E) Perform cylinder power balance test, cylinder compression test and cylinder leakage test; and F) Diagnose engine mechanical, electrical, electronic, fuel and ignition concerns with diagnostic		

			equipment and determine necessary action(s).		

Academic Standards Alignment

Colorado CTE courses are required to integrate academic and essential skills into course content. The following academic standards have been identified as aligned to this course and should be integrated throughout instruction.

[CO CTE Academic Standards Resources](#) (Rubrics, integration strategies, etc) [CDE Colorado Academic Standards Online](#) (Online standards lookup tool)

Reading, Writing, & Communicating

Standard 1: Oral Expression and Listening

- **Prepared Graduate 1:** Collaborate effectively as group members or leaders who listen actively and respectfully; pose thoughtful questions, acknowledge the ideas of others; and contribute ideas to further the group's attainment of an objective.

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- **Reading, Writing, & Communicating**

- **Standard 1: Oral Expression and Listening**

- **Prepared Graduate 1:** Collaborate effectively as group members or leaders who listen actively and respectfully; pose thoughtful questions, acknowledge the ideas of others; and contribute ideas to further the group's attainment of an objective.

- **Prepared Graduate 2:** Deliver effective oral presentations for varied audiences and varied purposes.

- **Standard 2: Reading for All Purposes**

- **Prepared Graduate 3:** Read a wide range of literary texts to build knowledge and to better understand the human experience.

- **Prepared Graduate 4:** Read a wide range of informational texts to build knowledge and to better understand the human experience.

- **Prepared Graduate 5:** Understand how language functions in different contexts, command a variety of word-learning strategies to assist comprehension, and make effective choices for meaning or style when writing and speaking.

- **Standard 3: Writing and Composition**

- **Prepared Graduate 6:** Craft arguments using techniques specific to the genre.

- **Prepared Graduate 7:** Craft informational/explanatory texts using techniques specific to the genre.
- **Prepared Graduate 8:** Craft narratives using techniques specific to the genre.
- **Prepared Graduate 9:** Demonstrate mastery of their own writing process with clear, coherent, and error-free polished products.
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- **Standard 4: Research Inquiry and Design**
- **Prepared Graduate 10:** Gather information from a variety of sources; analyze and evaluate its quality and relevance; and use it ethically to answer complex questions.
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- *Note: Mathematics and Science standards will be added in the future. Visit the [Colorado Academic Standards](#) page for the most current version.*

Standard 2: Reading for All Purposes

Prepared Graduate 4: Read a wide range of informational texts to build knowledge and to better understand the human experience.

- **Prepared Graduate 5:** Understand how language functions in different contexts, command a variety of word-learning strategies to assist comprehension, and make effective choices for meaning or style when writing and speaking.

Standard 3: Writing and Composition

- **Prepared Graduate 9:** Demonstrate mastery of their own writing process with clear, coherent, and error-free polished products.

Standard 4: Research Inquiry and Design

- **Prepared Graduate 10:** Gather information from a variety of sources; analyze and evaluate its quality and relevance; and use it ethically to answer complex questions.

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