

EL CAMINO COLLEGE

COURSE OUTLINE OF RECORD

I. Course Information

Course Acronym:*

ATEC

Course Number:* 1

Descriptive Title:* Introduction to Automotive Service

Division: Industry and Technology

Department:*

Automotive Technology

Course Disciplines: Automotive Technology

Catalog Description:*

This course is an introduction to the study of automotive servicing including engine, ignition, fuel, cooling, charging, cranking, drive line, brakes and suspension systems construction and operational theories. Laboratory activities include maintenance procedures and proper use of tools utilized in the field.

Conditions of Enrollment:

Prerequisite:

Co-requisite:

**Recommended
Preparation:**

**Enrollment
Limitation:**

Course Length: Full Term

**Hours Lecture (per
week):** 2

**Hours Laboratory (per
week):** 2

Outside Study Hours:* 4

Total Course Hours:* 72

Course Units:* 2.5

Grading Method: Letter Grade only

Credit Status: Credit, degree applicable

Transfer CSU: Yes

Effective Date: Prior to July 1992

Transfer UC: No

Effective Date:

General Education:
ECC

Term:

Other:

CSU GE:

Term:

Other:

IGETC:

Term:

Other:

II. Outcomes and Objectives

A. Student Learning Outcomes (SLOs) (The course student learning outcomes are listed below.)
SLO revisions are completed via the SLO Change Form available on the College Curriculum Committee website.

**Student Learning
Outcomes:**

SLO #1 Safety Exam

Given an in class exam, based on readings, classroom discussions and demonstrations, the student will be able to work in the Automotive Shop safely and pass the Automotive Safety Exam with 100% accuracy.

SLO #2 Under Hood Inspection

The student will perform a vehicle under hood inspection and complete a Vehicle Under Hood Inspection lab sheet.

SLO #3 Under Vehicle Inspection

The student will perform an under vehicle inspection and complete an Under Vehicle Inspection lab sheet.

B. Course Objectives (The major learning objective for in this course are listed below.)

Course Objectives:

1. Complete a safety test with 100% accuracy.
2. Select and use the proper tools.
3. Perform an analysis of engine condition by conducting a compression test.
4. Service, test and evaluate a lead-acid battery.
5. Test and evaluate a cranking system.
6. Service, test, and evaluate a liquid cooling system.
7. Perform an engine oil and filter change.
8. Inspect, test and evaluate the ignition system.
9. Adjust idle speed and air/fuel mixture.
10. Test and evaluate a charging system in accordance with industry standards.
11. Inspect, service, test and evaluate a braking system.
12. Inspect and evaluate tire wear.
13. Inspect and maintain drive line components and fluid levels.
14. Perform chassis lubrication and "top off" fluid levels for steering and suspension.

III. Outline of Subject Matter

(Topics should be detailed enough to enable an instructor to determine the major areas that should be covered to ensure consistency from instructor to instructor and semester to semester.)

Example:

I. Main Topic (3 hours, lecture)**A. Sub topics****B. Sub topics****1. Super sub topic****2. Super sub topic**

Major Topics:

I. AUTOMOTIVE SERVICE OVERVIEW (4 hours, lecture)

1. Safety information
2. Tools and usage

II. AUTOMOTIVE SERVICE OVERVIEW (4 hours, lab)

1. Safety information
2. Tools and usage
3. Lab tour

III. ENGINE (4 hours, lecture)

1. Construction and operation
2. Four stroke cycle principles
3. Compression tests

IV. ENGINE (4 hours, lab)

1. Construction and operation
2. Four stroke cycle principles
3. Compression tests

V. BATTERY (3 hours, lecture)

1. Construction and operation
2. Service and testing
3. Specific gravity, load, 3-minute charge and leakage tests

VI. BATTERY (3 hours, lab)

1. Construction and operation
2. Service and testing
3. Specific gravity, load, 3-minute charge and leakage tests

VII. COOLING SYSTEM (2 hours, lecture)

1. Construction and operation
2. Inspection, service and operational testing

VIII. COOLING SYSTEM (2 hours, lab)

1. Construction and operation
2. Inspection, service and operational testing

IX. STARTER SYSTEM (3 hours, lecture)

1. Construction and operation
2. Operation
3. Inspection, service and operational testing

X. STARTER SYSTEM (3 hours, lab)

X. STARTER SYSTEM (3 hours, lab)

1. Construction and operation
2. Operation
3. Inspection, service and operational testing

XI. IGNITION SYSTEM (4 hours, lecture)

1. Construction and operation
2. Inspecting spark plugs, points and condensers
3. Adjusting dwell and timing
4. Testing vacuum and mechanical advances
5. Measuring spark plug wire resistance
6. Inspecting rotor and distributor cap

XII. IGNITION SYSTEM (4 hours, lab)

1. Construction and operation
2. Inspecting spark plugs, points and condensers
3. Adjusting dwell and timing
4. Testing vacuum and mechanical advances
5. Measuring spark plug wire resistance
6. Inspecting rotor and distributor cap

XIII. ENGINE LUBRICATION SYSTEM (2 hours, lecture)

1. Construction and operation
2. Oil properties
3. Oil and filter change

XIV. ENGINE LUBRICATION SYSTEM (2 hours, lab)

1. Construction and operation
2. Oil properties
3. Oil and filter change

XV. FUEL SYSTEM (2 hours, lecture)

1. Construction and operation
2. Inspect and service fuel system

XVI. FUEL SYSTEM (2 hours, lab)

1. Construction and operation
2. Inspect and service fuel system

XVII. CHARGING SYSTEM (3 hours, lecture)

1. Construction and operation
2. 3-point charging circuit test using voltmeter

XVIII. CHARGING SYSTEM (3 hours, lab)

1. Construction and operation
2. 3-point charging circuit test using voltmeter

2. 3- point charging circuit test using voltmeter

XIX. TIRES, WHEELS, AND WHEEL BEARINGS (2 hours, lecture)

1. Construction and operation
2. Inspecting and evaluating tire wear

XX. TIRES, WHEELS, AND WHEEL BEARINGS (2 hours, lab)

1. Construction and operation
2. Inspecting and evaluating tire wear

XXI. BRAKING SYSTEM (3 hours, lecture)

1. Construction and operation of disc and drum brakes
2. Hydraulics
3. Inspecting lining and maintaining brake fluid levels

XXII. BRAKING SYSTEM (3 hours, lab)

1. Construction and operation of disc and drum brakes
2. Hydraulics
3. Inspecting lining and maintaining brake fluid levels

XXIII. DRIVE LINE (2 hours, lecture)

1. Construction and operation
2. Manual and automatic transmissions, manual clutch, drive shaft and universal joints and differential
3. Maintaining and changing fluid levels

XXIV. DRIVE LINE (2 hours, lab)

1. Construction and operation
2. Manual and automatic transmissions, manual clutch, drive shaft and universal joints and differential
3. Maintaining and changing fluid levels

XXV. SUSPENSION AND STEERING SYSTEMS (2 hours, lecture)

1. Construction and operations
2. Lubricate and inspect components
3. Maintaining steering box and power steering fluid levels

XXVI. SUSPENSION AND STEERING SYSTEMS (2 hours, lab)

1. Construction and operations
2. Lubricate and inspect components
3. Maintaining steering box and power steering fluid levels

Total Lecture Hours: 36

Total Laboratory 36

Hours:

Total Hours: 72

IV. Primary Method of Evaluation and Sample Assignments

A. Primary Method of Evaluation (choose one):

- 1) Substantial writing assignments
- 2) Problem solving demonstrations (computational or non-computational)
- 3) Skills demonstrations

Primary Method of Evaluation: 2) Problem solving demonstrations (computational or non-computational)

B. Typical Assignment Using Primary Method of Evaluation

Typical Assignment Using Primary Method of Evaluation: Perform a pressure test of the automobile's cooling system and check it for leaks. Complete a one-page lab report listing the results from the pressure test and submit to the instructor.

C. College-level Critical Thinking Assignments

Critical Thinking Assignment 1: Analyze the data from a vehicle inspection. Determine the recommended repairs and the parts that will be required and prepare a one-page lab report. Submit lab report to the instructor.

Critical Thinking Assignment 2: Perform a compression test on the engine, analyze the data and determine the needed repairs. List your findings and the needed repairs on a one-page lab report and submit to the instructor.

D. Other Typical Assessment and Evaluation Methods

Examples: Class Performance, Objective Exam, Clinical Evaluation, Oral Exams, Completion, Other Exams, Embedded Questions, Performance Exams, Essay Exams, Presentation, Fieldwork, Quizzes, Homework Problems, Reading Reports, Journal kept throughout course, Term or Other Papers, Laboratory Reports, True/False, Matching Items, Written Homework, Multiple Choice, Other (specify)

Other Evaluation Methods:

- Performance Exams
- Other Exams
- Quizzes
- Laboratory Reports
- Class Performance
- Multiple Choice
- Completion
- Matching Items
- True/False
- Other (Performance of Manufacturer's Service Procedures)

V. Instructional Methods

Examples: Lecture, Group Activities, Lab, Role play/simulation, Discussion, Guest Speakers, Multimedia presentations, Field trips, Demonstration, Other (specify)

Instructional Methods: Demonstration
Discussion
Group Activities
Internet Presentation/Resources
Laboratory
Lecture
Multimedia Presentations

If other: Component models

Note: In compliance with Board Policies 1600 and 3410, Title 5 California Code of Regulations, the Rehabilitation Act of 1973, and Sections 504 and 508 of the Americans with Disabilities Act, instruction delivery shall provide access, full inclusion, and effective communication for students with disabilities.

VI. Work Outside of Class

Work Outside of Class:* Study
Answer questions
Required reading
Problem solving activities
Written work

If Other:

VII. Texts and Materials

A. Up-to-date Representative Textbooks: Please use the following format(s):

Printed Text - Author, Title, Edition, Publisher, Year.

Digital Text (OER Text) - Author (last name first). Title. Edition or Version (if beyond 1st). Publisher, Publication year or Revision date. URL. License.

Sample: Dillon, Dave. *Blueprint for Success in College and Career*. Version 1.3. Rebus Community, 2018. press.rebus.community/blueprint2/. Licensed under CC BY 4.0.

If you wish to list a text that is more than 5 years old, please annotate it as a “discipline standard”.

***Multiple textbooks may be listed.**

Representative Textbooks: James Halderman. INTRODUCTION TO AUTOMOTIVE SERVICE. 1st ed. Pearson Publishing - Pearson. 2013. (Discipline Standard)

B. Alternative Textbooks: Please use the following format(s): if applicable

Printed Text - Author, Title, Edition, Publisher, Year.

Digital Text (OER Text) - Author (last name first). Title. Edition or Version (if beyond 1st). Publisher, Publication year or Revision date. URL. License.

Sample: Dillon, Dave. Blueprint for Success in College and Career. Version 1.3. Rebus Community, 2018. press.rebus.community/blueprint2/. Licensed under CC BY 4.0.

If you wish to list a text that is more than 5 years old, please annotate it as a “discipline standard”.

**Multiple textbooks may be listed.*

Alternative Textbooks:

C. Required Supplementary Readings

Required Supplementary Readings:

D. Other Required Materials

Other Required Materials: Safety glasses
Shop safe clothing
Tools: Roller, screwdrivers, pliers, wrenches, socket set

VIII. Conditions of Enrollment

A. Requisites (Course Prerequisites and Corequisites) Skills needed without which a student would be highly unlikely to succeed.

Requisite:

Category:

Requisite course(s):
List both prerequisites and corequisites in this box.

Requisite and Matching skill(s): Bold the requisite skill.
List the corresponding course objective under each skill(s).

B. Requisite Skills: (Non-Course Prerequisite and Corequisites) Skills needed without which a student would be highly unlikely to succeed.

Requisite Skill:

Requisite Skill and Matching Skill(s):
Bold the requisite skill(s). If applicable

C. Recommended Preparations (Course) (Skills with which a student's ability to succeed will be strongly enhanced.)

Requisite course:

Requisite and Matching skill(s):
Bold the requisite skill.
List the corresponding course objective under each skill(s).

D. Recommended Preparation (Non-Course) (Skills with which a student's ability to succeed will be strongly enhanced.)

Requisite Skill:

Requisite Skill and Matching skill(s):
Bold the requisite skill. List the corresponding course objective under each skill(s). If applicable

E. Enrollment Limitations

Enrollment Limitations and Category:

Enrollment Limitations Impact:

Course Created by: Robert Beaudoin

Date: 09/01/1985

Original Board Approval Date:

Last Reviewed and/or Revised by: Michael Anderson

Date: 04/06/2023

Last Board Approval Date: 07/17/2023 effective FALL 2024