

El Camino College

COURSE SYLLABUS

Fall 2015

Course Information

Course Title and Section:	ATEC-1-7258	Credit Hours: 2
Length of Course:	16 Weeks	Contact Hours: 4
Lecture/Lab Hours:	2 hours lecture & 2 hours lab	Room: 136 lecture 130 lab
Class Meeting Times:	Lecture: Wednesday, 6:00p-8:05p Lab: Wednesday, 8:15p-10:20p	
Instructor:	Edward Matykiewicz	
Email:	ematykiewicz@elcamino.edu	
Phone:	(310) 660-3593 or Ext: 3593	
Office:		
Office Hours:	Monday through Thursday 1:00pm-2:00pm	

Catalog Description

This 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.

Prerequisites

None

Course Objectives

- Provide students an overview of automotive systems, theories of operation, & service skills consistent with automotive industry standards for work in various automotive service areas.
- Summarize systems training designed to develop critical thinking skills, allowing the student to competently understand how the major automotive systems function as a whole.
- Conduct systematic inquiries with students on current industry business practices.
- Enhance students' reading, mathematical, writing, and communication skills necessary to compete successfully in the automotive service market.

- Develop in students an understanding of automotive industry business practices and ethical and professional conduct while serving the public's automotive needs.

Student Learning Outcomes

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

Weeks One and Two

Course Overview, Shop, Tool, Equipment & Safety Policies, Jobs in the Automotive Industry

- Explain the basic policies to be used in further automotive classes.
- Define the terms normally used to describe shop equipment.
- Use tools & equipment in a safe manner that they're designed for.
- Describe the different possible types of hazards in working in the automotive industry.
- List of basic types of fire extinguishers.
- Describe the differences between different types hazardous waste.
- Name the various areas of the El Camino automotive shop.
- Describe different kinds of automotive repair facilities.
- Understand how education provides a clear career path.
- Describe how to obtain various jobs in the automotive industry.

Weeks Three and Four

Measurement, Fasteners, Tread Repair, Service Information, Vehicle Identification, Inspection, & Lifting

- Explain how to read different measurement devices.
- Describe the different parts/types of fasteners.
- Compare different types tread repair methods.
- Explain how to complete a retreading process.
- Describe the different types of vehicle identification that are used in the automotive industry.
- Describe the different type of frames used on cars.
- Explain the effects of lifting a vehicle incorrectly.
- Describe how to safely use jacks and jack stands.
- Explain safety precautions and rules associated with lifting a vehicle.
- Describe how to safely use various vehicle hoists.
- Describe a visual inspection of the under hood components.
- Compare the types of fluids found in an under hood inspection and determine their condition.
- **QUIZ ONE**

Weeks Five and Six

Gas/Diesel Engine Operation, Lubrication, & Cooling

- Explain the four stroke process.
- List the components of the engine.

- Identify the process needed for compression testing & cylinder leak down testing.
- Compare the different types of motor oil used.
- List the components of various ignition systems.
- Explain how the ignition system functions.
- Identify firing order and ignition timing.
- Define how to change engine oil.
- Describe the operation of the cooling system.
- List the components of the cooling system.
- Describe how to change the engine coolant.
- Compare the different types of belts used in various automotive applications.

Weeks Seven and Eight

Steering and Suspensions Systems, Wheels and Tires

- Explain the function of the suspensions systems.
- Identify the parts of the power steering system.
- Identify the major components of the steering and suspensions systems.
- Explain the purposes of the major parts of the steering system.
- Explain tire information displayed on the sidewall of a tire.
- Identify the different types of tires.
- Describe the different parts and lug patterns on a wheel rim.
- Explain the features of tread patterns.

MIDTERM EXAM

Weeks Nine and Ten

Brakes, Manual Transmissions & Automatic Transmissions

- Explain the function of the braking systems.
- Identify the parts of the brake system.
- List the components and describe how to inspect disc/drum brakes.
- Compare the different types of valves in various automotive brake applications.
- Describe the function of the Anti-locking Brake Systems.
- Identify the major components of the power train.
- Compare the different types of transmissions used.
- List the types of power train layouts and understand each part's function.
- Define gear ratios.
- Examine/Identify the condition, type, and amount of the fluid used in transmissions, transfer cases and differentials.
- Describe how to exchange the fluid from transmissions, transfer cases, and differentials.

Weeks Eleven and Twelve

Starting/Charging Systems, Automotive Batteries, Fuel System

- Explain the purpose of a battery.
- Describe the basic parts of an automotive battery.
- Compare conventional and maintenance-free batteries.
- Explain the chemical reaction that occurs to produce current in a battery.
- Test capacity and conductance of a battery.
- Describe how to slow-and fast-charge a battery.
- Describe different types of ratings used with batteries.
- Explain the effects of temperature on battery output.

- Explain safety precautions and rules associated with servicing batteries.
- Explain the purpose of the starting/charging system.
- List components of the starting system, starting circuit, and control circuit.
- Explain how a starter motor operates.
- Identify the major components of the charging system.
- Explain the purposes of the major parts of an AC generator.
- Identify the parts of the fuel system.
- Explain the purpose of the fuel system.
- List the parts of a fuel pressure regulator and fuel pump.
- Perform a fuel pressure test and determine what the results are.
- List the different alternative fuel types used.
- **QUIZ TWO**

Weeks Thirteen and Fourteen **Hybrid & Electric Vehicles, Professionalism, ASE**

- Explain the difference between a hybrid, extended range hybrid, extended range electric vehicle, and an all electrical vehicle.
- Describe the different types of hybrids.
- Explain safety precautions and rules associated with hybrid & electric vehicles.
- Understand all of the different types of ASE certifications.
- Discuss how to automotive repairs in a safe, profitable, and professional manner.

Weeks Fifteen and Sixteen **PROJECT PRESENTATIONS & FINAL EXAM**

Required Texts

- *Introduction to Automotive Service*, 1st edition (2013), by James D. Halderman. Pearson Prentice Hall, Upper Saddle River, NJ 07458.
- ISBN-13: 978-0-13-254008-7
- ISBN-10: 0-13-254008-8

Required Materials

- safety eyewear
- basic hand tools
- one-inch, three-ring binder
- college-ruled notebook

Methods of Evaluation/Grade Scale

A – 90-100%	Excellent execution or competency. Minimal room for further development.
B – 80-89%	Above average execution or competency. Moderate room for further development.
C – 70-79%	Satisfactory execution or competency. Ample room for further development.
D – 60-69%	Substandard execution or competency. Significant room for further development.
F – 0-59%	The student's performance was inadequate relative to the established expectations for the course.

Quiz	50 points	4%
Class Writing Assignment	140 points	11%
Mid-term	125 points	9%
Homework	290 points	22%
Project	100 points	7%
Lab exercises & participation	500 points	38%
Final	125 points	9%
Total	1330 points	100% grade total

Methods of Assessment

A student's grade will be based on multiple measures of performance:

- Grades from written quizzes and examinations
- Grades from practical examination of competency skills
- Completion of course assignments
- Class writing assignment
- Class participation and leadership
- Demonstrated skills competency in performing laboratory assignment
- Ability to internalize information and perform task requiring learned skills

Methods of Instruction

In this class, we will utilize various methods of instructions, including:

- Lectures
- Multimedia demonstrations
- In-class discussions based on assignments
- Computer-based training
- Lab-based learning
- Quizzes
- Class participation and leadership
- Writing assignments
- Homework assignments
- Reading assignments

Statement of Active Pursuit

No food. No sleeping. No phone use. Leaving during class to use your phone – and coming and going in and out of the classroom during the class session in general – is unacceptable and will not be tolerated. Inattentiveness to the course material and other forms of inappropriate class behavior

will result, at minimum, in a reduced grade. Students will be notified at the start of class when the break in class time will be given.

No Show Policy

If a student registered for the course before the start time of the first class period but 1) did not attend the first two classes, or 2) attended only one of the first three classes and failed to notify the instructor of his or her intentions to continue the class, the student will be removed from the course.

Academic Integrity

Plagiarism: El Camino College places a high value on the integrity of its student scholars. When an instructor determines that there is evidence of dishonesty in any academic work (including, but not limited to cheating, plagiarism, or theft of exam material), disciplinary action appropriate to the misconduct as defined in BP 5500 may be taken. A failing grade on an assignment in which academic dishonesty has occurred and suspension from class are among the disciplinary actions for academic dishonesty (AP 5520). Students with any questions about the Academic Honesty or discipline policies are encouraged to speak with their instructor in advance.

Cheating: Cheating of any kind is also a serious breach of academic integrity.

Penalties for Plagiarism and Cheating: In the first instance of academic integrity violation, the instructor will assign a grade of zero/F to the assignment and counsel the student accordingly. If a second violation occurs, the instructor will contact the Department Chair and Dean to determine a course of disciplinary action.

Accommodations

It is the policy of the El Camino Community College District to encourage full inclusion of people with disabilities in all programs and services. Students with disabilities who believe they may need accommodations in this class should contact the campus Special Resource Center (310) 660-3295, as soon as possible. This will ensure that students are able to fully participate.

Student Conduct

Students are expected to conduct themselves in a manner which is considerate of the rights of others and which will not impair the educational mission of the College. Misconduct for which students are subject to College Discipline (e.g. expulsion) may include the following: (1) all forms of dishonesty such as stealing, forgery, (2) obstruction or disruption of teaching, research, administration, disciplinary proceeding, (3) physical or verbal abuse, threats, intimidation, harassment, and/or other conduct that threatens or endangers the health or safety of any person, and (4) carrying or possession of weapons, ammunition or other explosives.

HOMEWORK

Homework will be assigned for each class session. Student should plan on 2 to 4 hours of homework per week. Homework will consist of reading assignments, review questions, and ASE Certification-type questions from the required text. You are expected to complete the reading assignments and homework **before** they are covered in class. See course outline for homework schedule from text. Homework from text will be due at the start of each class session five minutes after the scheduled class start time. There will also be worksheets and other activities assigned as

necessary; assigned worksheets and activities will be due the next class session. Homework assignments will be collected for credit.

Attendance

Be on time. If you are late, and do not call before the class start time, you may be asked to leave and will not receive credit for the assignment that day. Attendance is expected for all class meetings. If you are sick or have a personal emergency, **e-mail the instructor**. If you do not contact me, an unexcused absence will be recorded. There will be only **two** excused absences per semester. Absences will affect your grade and may impact whether you receive a passing grade for the class. Any student on the roster who does not attend the first two class sessions and does not contact the instructor may be dropped without notice. **If you attend the first few class sessions but then stop coming to class, it is YOUR responsibility to drop the class.**

Late Work & Make Up Work Policy

Late assignments (those that are submitted after 6:05pm on the due date) will **not** be accepted and cannot be made up after the assignment has been collected and discussed in class.

Makeup Exams

If a student knows he or she will miss an upcoming exam, he or she must notify the instructor **before** the exam date in order to schedule a makeup exam. Makeup exams will only be allowed if the instructor has been notified prior to missing the exam. In case of illness, jury duty, or other exceptional circumstances, a makeup exam may be offered only if the student brings the instructor an official note from a doctor, court official, or other authority.

QUIZZES/EXAMS

Exams will consist of written and hands-on portions; be prepared to work in the laboratory for the hands-on portion of each exam. One make-up exam is allowed if a student is absent for an exam due to illness or personal emergency. The student must make arrangements with the instructor for a make-up exam; it is the student's responsibility. In case of illness, jury duty, or other exceptional circumstances, a makeup exam may be offered only if the student brings the instructor an official documentation from a doctor, court official, or other authority. If no arrangements are made to make up the exam, the grade will be zero. **There is no make-up allowed for the final exam.**

Extra Credit

None

Course Outline

Week 1 Aug 26

- Syllabus
- Introductions

Week 2 Sept 2

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|----------------|--|--------------|
| ○ Ch. 2 | Careers in the Automotive Industry | chapter quiz |
| ○ Ch. 3 | Starting a Career in the Automotive Industry | chapter quiz |
| ○ Ch. 6 | Shop Safety | chapter quiz |
| ○ Ch. 7 | Environmental and Hazardous Materials | chapter quiz |

Week 3 Sept 9

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|----------------|-----------------------------|--------------|
| ○ Ch. 8 | Fasteners and Thread Repair | chapter quiz |
| ○ Ch. 9 | Hand Tools | chapter quiz |

○ Ch.10 Power Tools and Shop Equipment	chapter quiz
○ Ch.11 Measuring Systems and Tools	chapter quiz
Week 4 Sept 16	
○ Ch. 1 Automotive Background and Overview	chapter quiz
○ Ch. 12 Service Information	chapter quiz
○ Ch. 13 Vehicle Identification and Emission Ratings	chapter quiz
○ Ch. 17 Under Hood Inspection	chapter quiz
○ Ch. 18 Vehicle Lifting and Hoisting	chapter quiz
Week 5 Sept 23	
○ Ch. 14 Gasoline Engine Operation	chapter quiz
○ Ch. 15 Diesel Engine Operation	chapter quiz
○ Ch. 30 Ignition Systems	chapter quiz
Week 6 Sept 30	
○ Ch. 16 Engine Lubrication and Cooling Systems	chapter quiz
○ Ch. 19 Lube-Oil and Filter Service	chapter quiz
Week 7 Oct 7	
○ Ch. 35 Tires and Wheels	chapter quiz
○ Ch. 37 Suspension and Steering Systems	chapter quiz
○ Lab Binder Due	
Week 8 Oct 14	
○ Midterm exam	
○ Midterm lab exam	
Week 9 Oct 21	
○ Ch. 36 Brakes and Antilock Brake Systems	chapter quiz
Week 10 Oct 28	
○ Ch. 38 Manual Transmissions and Transaxles	chapter quiz
○ Ch. 39 Automatic Transmissions and Transaxles	chapter quiz
Week 11 Nov 4	
○ Ch. 23 Starting & Charging systems	chapter quiz
Week 12 Nov 11	
○ Veterans Day Holiday (Campus Closed)	
Week 13 Nov 18	
○ Ch. 28 Gasoline and Alternative Fuels	chapter quiz
○ Ch. 31 Fuel Injection Systems	chapter quiz
○ Ch. 33 Hybrid Electric Vehicles	chapter quiz
Week 14 Nov 25	
○ Ch. 4 Working as a Service Technician	chapter quiz
○ Ch. 5 Technician Certification	chapter quiz
Week 15 Dec 2	
○ Final exam / Final Project Presentations / Binders due	
Week 16 Dec 9	
○ Final exam review / Final project presentations / Binder & final grade sign off	

CRITICAL DATES

Last Day to Drop Without Notation on Permanent Record	Friday, September 4, 2015
Last Day to Drop for an Enrollment Fee Refund	Friday, September 4, 2015
Last Day to Challenge Residency Stat for Current Semester	Friday, September 4, 2015
Labor Day Holiday (Campus Closed)	Monday, September 7, 2015

Last Day to Apply for Degrees and Certificates (Fall)
Veterans Day Holiday (Campus Closed)
Last Day to Drop with a "W"
Thanksgiving Holiday (Campus Closed)
Last Day of Semester

Friday, October 9, 2015
Wednesday, November 11, 2015
Friday, November 13, 2015
Thursday, November 26 –
Sunday, November 29, 2015
Friday, December 11, 2015

SAFETY

Safety is paramount! Never perform any unsafe shop practice. Never operate any equipment or use any tool unless you have gone over the safety practices related to that particular piece of equipment. Immediately inform the instructor or shop foreman of any unsafe conditions in the classroom, in the shop or with a vehicle. Do not allow your fellow students to perform any unsafe shop practices. Shop safety practices and material use will be reviewed prior to going into the shop. Points covered will include tool safety, chemicals, and potential hazards when working on a vehicle. **SAFETY VIOLATIONS WILL NOT BE TOLERATED.** Safety violations may result in your grade being lowered or removal from the class, as deemed by the instructor.

LAB ACTIVITIES

The class will be divided into teams and each team will select a team leader. The team leader will be responsible for his or her team's performance during lab activities, assuring that shop safety practices are followed, tools and equipment are properly put away, and the assigned work area is cleaned after the activities. Each team member must complete all of the assigned lab activities. Lab sheets for the week are the responsibility of each individual student to print. Printing can be done in the library, a public library, or a store with printing services. Students may not print their papers in the automotive lab.

Professional Attitude & Workmanship

Be respectful of others and their vehicles. Always use floor mats, seat covers, and fender covers. When servicing, troubleshooting, or repairing a vehicle, you are expected to make quality repairs, returning the vehicle to factory specifications. Carefully and completely perform each task. This includes verifying the repair has been made and the vehicle is safe to drive and in good working order, cleaning up your work area, and returning any tools and equipment to their proper location(s). Quality workmanship is required. Do not take shortcuts or be hasty when servicing, troubleshooting, or repairing vehicles. Always follow the manufacturer prescribed procedures. This course is designed to be approximately 1/2 lecture, 1/2 shop and lab activities. Some sessions will be all classroom, others all shop/lab, and some will be split. Be prepared for shop/lab activities at each class meeting. Discuss bringing in your own vehicle with the instructor. Relevant work may be permitted by the instructor on a case-by-case basis.

Tools & Equipment

SAFETY GLASSES ARE REQUIRED!!! You are expected to treat tools and equipment with the highest level of professionalism. These items are expensive and must be used by a large number of students each semester. Any abuse, misuse, or lack of care for tools or equipment will result in the loss of use. In regard to tool & equipment usage, you are expected to:

- Use them in accordance with safety guidelines
- Use them only for designed purposes
- Return them to the assigned location in the shop, tool room, or boxes at the end of each lab session (they are to be clean and properly put back in their case)
- Sweep and mop your work area after each lab session

- Wash shop vehicles as needed

Shop Clothing/ Food & Beverages

Your apparel should be professional. You are expected to wear appropriate shop clothing. When working in the shop, you **MUST WEAR SAFETY GLASSES AT ALL TIMES**, work boots/shoes (must enclose entire foot), and a shop type shirt and pants. Shorts are not acceptable. For safety, all jewelry must be removed and long hair must be tied back. Food and beverages are not allowed in the classroom or shop with the exception of water.

Computer Usage

Use of Automotive/Advanced Transportation desktop and laptop computers is restricted to course related work. Any abuse, misuse, or inappropriate use will result in loss of access to the computers. Any and all use must comply with El Camino College STUDENT CONDUCT STANDARDS and computer usage standards. Students may use computers for course work other than automotive depending on availability.

E-mail Policy

1. **Students must use the e-mail account provided by El Camino College as their official means of email communication for all business related to this course.** Any email that does not come directly from your El Camino College e-mail (*username@elcamino.edu*) may be filtered by spam or junk mail filters, may get deleted, or may get a delayed response. This means if you choose to forward your El Camino College e-mail account to some other e-mail account (such as *username@comcast.net*, or *username@yahoo.com*, or *username@gmail.com*), then do **not** send a response to the instructor from that third party account. All responses should come directly from your El Camino College account.
2. **The subject line of all e-mail to the instructor must begin with the course number AND section number followed by the topic.** The course number and section for this course is: **ATEC-1-7258**. Here are some examples:
 - Subject: ATEC-1-7258, Missed class - When is quiz #2?
 - Subject: ATEC-1-7258, When will my Lab 3 grade be posted?
 - Subject: ATEC-1-7258, Question on assignment 12
 - Subject: ATEC-1-7258, Final Exam DateE-mail without a subject may not be read and will probably be deleted.
3. **The body of the e-mail must include at least one complete sentence AND be “signed” with your full first and last name.** When asking for help, please do your best to be specific about the question(s) and always “sign” your e-mail at the bottom by typing your full first and last name. If you are requesting a phone call back, include your phone number with area code.

AUTOMOTIVE STUDENT POLICY

- Students will arrive at their assigned classrooms at the scheduled start time of the class.
- Operation of any shop equipment without safety training is grounds for removal from the course.

- Before any vehicle can be inspected, serviced, diagnosed, or repaired, an El Camino College Repair Order must be completed including the ***signature of the registered owner***.
- No electronic recording devices are allowed without special permission from the instructor.
- Use of indecent or abusive language by students towards an instructor or fellow student will not be tolerated. Any student observed using such language will be dismissed from class for the remainder of the day. Repeated violation will result in disciplinary action up to and including dismissal from the automotive program.
- Students and instructors will make sure that areas in which they work are cleaned at the end of each class.
- Students will not solicit automotive repair work for personal gain (money).
- Student vehicle parking is restricted to the designated student parking lot. Students will not park their vehicles in the areas located on the entrance side of the Automotive Technology area unless authorized by the instructor. Vehicles found in violation of parking restrictions will be ticketed and/or towed.
- If you **leave class early** or **do not sign out** at the end of the day, you will lose points from the days activities. If leaving early **causes you to miss over two hours** of class time, it will automatically be considered an **absence** (see Attendance rules above).
- Report to the instructor any defective/inoperable equipment.
- Respect property belonging to other students or to the college.
- Prevent waste of materials.
- Students will supply their own set of hand tools for performing basic operations in the lab. Specialty tools are available through a check-out system from the tool room.
- Students are urged to have identification marks on all of their tools and equipment.
- Tools will be taken from the tool room using a tag checkout system. A PICTURE I.D. IS REQUIRED TO CHECK OUT ANY TOOLS/EQUIPMENT FROM THE TOOL ROOM.
- Tools must be cleaned before returning them to the tool room.
- All student projects must be removed from the automotive lab before the end of the semester. Projects left at the end of the semester will be disposed of.

Minimum tool list

1. Combination wrench set; metric/SAE
2. Socket set; 3/8" drive ratchet
3. 3/8" drive universal
4. 3/8" drive extensions (3", 6", 12")
5. 3/8" drive metric/SAE 6 point sockets,
6. Standard screwdrivers (3 total), 2", 4", & 6"
7. Phillips screwdriver (3 total) **2** - No. 2 tip long and short & **1** - No. 3 tip long
8. Combination pliers 6"
9. Diagonal side cutters 6"
10. Needle nose pliers 6"
11. Allen wrench set (US & metric)
12. Torx driver set
13. Hammer, Ball peen
14. Rubber mallet
15. Tire pressure gauge
16. Feeler gauges Standard and metric

SAFETY GLASSES ARE REQUIRED FOR ALL AUTO TECH CLASSES

EL Camino College

COURSE SYLLABUS

Fall 2015

ATEC-1-7258

I have read and understand all of the regulations, requirements, and grading procedures of this course.

I acknowledge that the progression of the course outline presented by the instructor is a guideline and that actual course progression may differ.

I must strictly observe El Camino College's and the instructor's attendance requirements, safety regulations, shop rules, and student policies or be terminated from the course.

Signature

Date