



El Camino College Course Syllabus

ATEC 21 Introduction to Engine Tune-Up

Section # 7261

Instructor Name: *Mr. Anderson*Phone Number: *310-660-3600 ext. 3303*E-mail: *mianderson@elcamino.edu*Class Hours: *Wed. 6:00pm-10:20pm*

Course Description:

This course covers the study of minor engine tune-up, electrical systems and fuel systems theory and application. Laboratory activities stress the proper use of test equipment utilized in the industry.

Recommended Preparation: Automotive Technology 1 or equivalent.

Student Learning Outcomes:

Upon completion of this course, students will be able to:

- 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 an analysis of an engine using the Automotive Compression/Cylinder Leakage Test/Vacuum Testing lab worksheet to manufacturer specifications.
- The student will be able to test the performance of the automotive battery charging and starting systems using the automotive Battery/ Charging/ Starting Systems testing lab worksheet and manufacturer specifications.

Required Textbooks:

Automotive Engine Performance, 4th Edition, James D. Halderman, Pearson Education Inc., ISBN-10: 0-13-302775-9, ISBN-13: 978-0-13-302775-4

Course Content: Weekly Course Topics

Week 1: Course Introduction, Safety

- *Safety Test*

Week 2: Gasoline Engine Operation, Parts, and Specifications

- *Chapter 3*

Week 3 & 4: Engine Condition Diagnosis, Cooling System Operation and Diagnosis

- *Chapter 13 & 8* Exam Ch. 3& 8 Sept. 17, 2014

Week 5: Lubrication System Operation and Diagnosis, Gasoline

- *Chapter 9 & 5*

Week 6: In-Vehicle Engine Service, Basic Electrical Review

- *Chapter 14* Exam Ch. 5, 9 & 13 Oct. 1, 2014

Week 7 & 8: Advanced Starting and Charging Systems Diagnosis

- *Chapter 15* Exam Ch. 14 & 15 Oct. 15, 2014

Week 9: Intake and Exhaust Systems, Ignition System Components and Operation

- *Chapter 10 & 16*

Week 10: Variable Valve Timing Systems, Ignition System Diagnosis and Service

- *Chapter 11 & 17*

Week 11: Fuel Pumps, Lines and Filters, Fuel Injection Components and Operation

- *Chapter 26 & 27* Exam Ch. 10, 11, 16 & 17 Nov. 5, 2014

Week 12: Computer and Network Fundamentals, Onboard Diagnosis

- *Chapter 18 & 19*

Week 13: Temperature Sensors, Throttle Position Sensors, MAP/BARO Sensors

- *Chapter 20, 21 & 22* Exam Ch. 18, 19, 26, 27 Nov. 19, 2014

Week 14: Mass Air Flow Sensors, Oxygen sensors

- *Chapter 23 & 24*

Week 15: Fuel Injection System Diagnosis and Service

- *Chapter 30* Exam Ch. 20-24 Dec. 3, 2014

Week 16: **Final Exam** **Wednesday Dec. 10, 2014**

Instructional Methods:

The course will be delivered through a variety of methodologies, including the following:

- ♦ Lectures combined with presentations using computer software (PowerPoint), the Internet, and videos/DVDs
- ♦ Interactive discussions in which students will be expected to actively participate
- ♦ Written assignments-Homework
- ♦ Lab/shop assignments
- ♦ Group work/shop activities
- ♦ Bi-weekly Exams and a Final Exam

Grading Criteria:

The following grading scale will be used in calculating the final grade:

Homework, Lab Assignments	25%
Exams	25%
Attendance	25%
<u>Final Exam</u>	<u>25%</u>
	100%

Grading Scale:

90 – 100%	A
80 – 89%	B
70 – 79%	C
65 – 69%	D
Below 65%	F

Policies/Procedures:

- Students must attend class. Cell phone use in class is prohibited. No food in classroom.
- Students are expected to dress and act professionally on a daily basis. Students are also required to follow all safety precautions and requirements while in shop and laboratories.
- **NO PARKING IN THE SHOP UNLESS APPROVED BY YOUR INSTRUCTOR.**
TURN OFF ALL Cellular phones, I-pods, MP3, Radios, etc. during class time.
- No smoking inside of the building.
- **IT IS THE STUDENTS RESPONSIBILITY TO KEEP THE SHOP AREA CLEAN.**

Disability: El Camino College adheres to all applicable federal, state and local laws, regulations and guidelines with respect to providing reasonable accommodations for students with temporary and permanent disabilities. If you have a disability that may adversely affect your work in this class, I encourage you to register with the Special Resource Center (SRC).