



**CREDIT COURSE OUTLINE**

**I. COVER PAGE**

(1) AUTOT 11	(2) Automotive Technician Program	(3) 16
Number	Title	Units

(4) Lecture / Lab Hours:	(8) Classification:	
Course Hours		
Weekly Lec hours: 9.00	Degree applicable:	X
Weekly Lab hours: 21.00	Non-degree applicable:	
Total Contact hours: 540.00	Basic skills:	
Lec will generate __ hour(s) outside work.	(9)RC Fulfills AS/AA degree requirement: (area)	
Lab will generate __ hour(s) outside work.	General education category:	
(5) Grading Basis: Grading Scale Only X	Major: Automotive Technician Program	
Pass/No Pass option	Certificate of:	
Pass/No Pass only	Certificate in:	
(6) Advisories:	(10)CSU Baccalaureate:	X
(7) Pre-requisites (requires C grade or better): • Automotive 9 Math 250 Eng 260	(11)Repeatable: (A course may be repeated three times)	0
Corequisites: •	(12)C-ID:	
	Proposed Start Date:	Fall 2012

(12) Catalog Description:  
 This course, Automotive Technology-11, in concert with Automotive Technology -10, will prepare the student with the knowledge and skills to perform diagnosis and repair of various automotive components and enter the automotive service industry at the advanced apprentice level. Subjects include: safety, ethics, regulations, brakes, suspension and steering, differentials, axles, engine electrical and electronic systems, engine performance and emissions, air conditioning and heating, and Bureau of Automotive Repair (BAR) emissions (smog), brake and lamp license preparation. Most tools and equipment are provided, however the student is expected to furnish Digital Volt Ohm Meter (DVOM), Vacuum gauge, personal safety items, and a materials fee.

**II. COURSE OUTCOMES:**

*(Specify the learning skills the student demonstrates through completing the course and link critical thinking skills to specific course content and objectives.)*

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

- I. identify the industry standards for the Automotive Repair Industry.
- II. work safely in an automotive repair environment.
- III. correctly choose and utilize hand and power tools.
- IV. diagnose and repair the engine fuel delivery and emissions systems.
- V. diagnose and repair the engine electrical and electronics systems.
- VI. diagnose and repair brake systems.
- VII. diagnose and repair suspension and steering systems.
- VIII. diagnose and repair air conditioning and heating systems.
- IX. diagnose and repair the differential and axle systems.
- X. know the application process for the California State Emissions, Brake, and Lamp Licenses.

**III. COURSE OBJECTIVES:**

*(Specify major objectives in terms of the observable knowledge and/or skills to be attained.)*

In the process of completing this course, students will:

- I. identify the industry standards for the Automotive Repair Industry.
- II. identify shop safety and hazardous materials regulations and standards.
- III. perform the correct use of hand and power tool utilization.
- IV. comprehend and critically evaluate the engine fuel delivery and emissions systems.
- V. comprehend and critically evaluate the electrical and electronics systems.
- VI. comprehend and critically evaluate brake systems.
- VII. comprehend and critically evaluate the suspension and steering systems.
- VIII. comprehend and critically evaluate the air conditioning and heating systems.

- IX. comprehend and critically evaluate the differential and axle systems.
- X. identify and comprehend the rules and regulations regarding the California State Emissions, Brake, and Lamp Licenses.

**IV. COURSE OUTLINE:**

**Lecture Content:**

- A. Automotive Industry Standards.
- B. Safety and Hazardous Waste Regulations and Standards.
- C. Hand and Power identification and operation.
- D. Engine Fuel Requirements and Delivery.
- E. Engine Emissions and California Automotive Emissions Regulations and Standards.
- F. Automotive and Light Duty Truck Electrical and Electronics Systems.
- G. Automotive and Light Duty Truck Brake Systems and California Automotive Brake Regulations and Standards.
- H. Automotive and Light Duty Truck Suspension and Steering Systems.
- I. Automotive and Light Duty Truck Air Conditioning and Heating Systems.
- J. Automotive and Light Duty Truck Differential and Axle Systems.
- K. California State Emissions, Brake, and Lamp Application and Requirement Updates.

**Lab Content:**

Lab includes lecture and hands-on of the subjects listed below:

- 1. Safe utilization of tools and equipment.
- 2. Safe vehicle repair.
- 3. Brake system diagnosis and repair.
- 4. Steering, suspension, and alignment diagnosis and repair.
- 5. Engine performance and emissions diagnosis and repair.
- 6. Electronic systems diagnosis and repair.
- 7. HVAC diagnosis and repair.

**V. APPROPRIATE READINGS**

**Reading assignments may include but are not limited to the following:**

- I. Sample Text Title:
  - 1. Recommended - James Halderman *Diagnosis and Troubleshooting of Automotive Electrical, Electronics, and Computer Systems*, ed. 6th Prentice Hall, Upper Saddle River, New Jersey, 2012,
  - 2. Recommended - Don Knowles *Automotive Suspension and Steering*, ed. 5th Delmar, Independence, KY, 2011,
  - 3. Recommended - Cliff Owen *AUTOMOTIVE BRAKE SYSTEMS*, ed. 5th Delmar, Independence, KY, 2011,
  - 4. Recommended - Tom Birch *AUTOMOTIVE HEATING AND AIR CONDITIONING*, ed. 5th Pearson, Upper Saddle River, New Jersey, 2010,
  - 5. Recommended - James Halderman and James Linder *Fuel Emissions Control Systems*, ed. 3rd Prentice Hall, Upper Saddle River, New Jersey, 2011,

II. Other Readings

- Global or international materials or concepts are appropriately included in this course
- Multicultural materials and concepts are appropriately included in this course

If either line is checked, write a paragraph indicating specifically how global/international and/or multicultural materials and concepts relate to content outline and/or readings.

**VI. METHODS TO MEASURE STUDENT ACHIEVEMENT AND DETERMINE GRADES:**

Students in this course will be graded in at least one of the following four categories. Please check those appropriate. A degree applicable course must have a minimum of one response in category A, B, or C.

<b>A. Writing</b>	
Check either 1 or 2 below	
X	<b>1. Substantial writing assignments are required. Check the appropriate boxes below and provide a written description in the space provided.</b>
	<b>2. Substantial writing assignments are NOT required. If this box is checked leave this section blank. For degree applicable courses you must complete category B and/or C.</b>
a)	essay exam(s)
b)	term or other paper(s)
c)	laboratory report(s)
d)	written homework
e)	reading reports
f)	other (specify)
X	Subject area technical reports and repair orders

**Required assignments may include but are not limited to the following:**

- Employment applications and resume
- Technical reports
- Repair orders

<b>B. Problem Solving</b> Computational or non-computational problem-solving demonstrations, including:			
X	a) exam(s)	X	d) laboratory reports
X	b) quizzes		e) field work
	c) homework problems	X	f) other (specify): Ohm's law measurement and calculation

**Required assignments may include but are not limited to the following:**

Ohm's law  
Measurement and calculations

<b>C. Skill demonstrations, including:</b>			
X	a) class performance(s)	X	c) performance exams(s)
	b) field work		d) other (specify)

**Required assignments may include but are not limited to the following:**

Engine manifold pressure (vacuum) diagnosis, electrical charging diagnosis, and starter/battery voltage diagnosis

<b>D. Objective examinations including:</b>			
X	a) multiple choice		d) completion
	b) true/false		e) other (specify):
X	c) matching items		

**COURSE GRADE DETERMINATION:**

Description/explanation: Based on the categories checked in A-D, it is the recommendation of the department that the instructor's grading methods fall within the following departmental guidelines; however, the final method of grading is still at the discretion of the individual instructor. The instructor's syllabus must reflect the criteria by which the student's grade has been determined. (A minimum of five (5) grades must be recorded on the final roster.)

If several methods to measure student achievement are used, indicate here the approximate weight or percentage each has in determining student final grades.

EXAMS-----30% QUIZZES-----30% LAB REPORTS-----30% EMPLOYABILITY  
SKILLS---10% 100%--90%----A 89%--80%----B 79%--70%----C 69%--60%----D 59%-----F

**VII. EDUCATIONAL MATERIALS**

For degree applicable courses, the adopted texts, as listed in the college bookstore, or instructor-prepared materials have been certified to contain college-level materials.

Validation Language Level (check where applicable):	College-Level Criteria Met	
	YES	NO
Textbook	<u>  X  </u>	_____
Reference materials	<u>  X  </u>	_____
Instructor-prepared materials	<u>  X  </u>	_____
Audio-visual materials	<u>  X  </u>	_____

Indicate Method of evaluation:

Used readability formulae (grade level 10 or higher) \_\_\_\_\_  
Text is used in a college-level course \_\_\_\_\_  
Used grading provided by publisher \_\_\_\_\_  
Other: (please explain; relate to Skills Levels)   X     Industry Standards  

<i>Computation Level</i> (Eligible for MATH 101 level or higher where applicable)	<u>  X  </u>	_____
Content		
Breadth of ideas covered clearly meets college-level learning objectives of this course	<u>  X  </u>	_____
Presentation of content and/or exercises/projects:		
Requires a variety of problem-solving strategies including inductive and deductive reasoning.	<u>  X  </u>	_____
Requires independent thought and study	<u>  X  </u>	_____
Applies transferring knowledge and skills appropriately and efficiently to new situations or problems.	<u>  X  </u>	_____
List of Reading/Educational Materials		
Recommended - James Halderman <i>Diagnosis and Troubleshooting of Automotive Electrical, Electronics, and Computer Systems</i> , ed. 6th Prentice Hall, Upper Saddle River, New Jersey, 2012,		
Recommended - Don Knowles <i>Automotive Suspension and Steering</i> , ed. 5th Delmar, Independence, KY, 2011,		
Recommended - Cliff Owen <i>AUTOMOTIVE BRAKE SYSTEMS</i> , ed. 5th Delmar, Independence, KY, 2011,		
Recommended - Tom Birch <i>AUTOMOTIVE HEATING AND AIR CONDITIONING</i> , ed. 5th Pearson, Upper Saddle River, New Jersey, 2010,		
Recommended - James Halderman and James Linder <i>Fuel Emissions Control Systems</i> , ed. 3rd Prentice Hall, Upper Saddle River, New Jersey, 2011,		

Comments:

- This course requires special or additional library materials (list attached).
- This course requires special facilities:  
Automotive Repair Facility (Lab)

Attached Files:

**BASIC SKILLS ADVISORIES PAGE** The skills listed are those needed for eligibility for English 125, 126, and Math 201. These skills are listed as the outcomes from English 252, 262, and Math 250. In the right hand column, list at least three major basic skills needed at the beginning of the target course and check off the corresponding basic skills listed at the left.

Check the appropriate spaces.

- Eligibility for Math 201 is advisory for the target course.
- Eligibility for English 126 is advisory for the target course.
- Eligibility for English 125 is advisory for the target course.

If the reviewers determine that an advisory or advisories in Basic Skills are all that are necessary for success in the target course, stop here, provide the required signatures, and forward this form to the department chair, the appropriate associate dean, and the curriculum committee.

**REQUISITES**

**Prerequisite -- AUTOT 9 Automotive Essentials**

- |  |  |
|--|--|
| 1.Introduction to industrial safety. 2.Introduction to tool safety. 3.Introduction to equipment safety. 4.Understanding vehicle repair safety. | 1.Utilization of industrial safety. 2.Utilization of tool safety. 3.Utilization of equipment safety. 4.Utilize safety measures during vehicle repairs. |
|--|--|

**ESTABLISHING PREREQUISITES OR COREQUISITES**

Every prerequisite or corequisite requires content review plus justification of at least one of the seven kinds below. Prerequisite courses in communication and math outside of their disciplines require justification through statistical evidence. Kinds of justification that may establish a prerequisite are listed below.

Check one of the following that apply. Documentation may be attached.

Significant statistical evidence indicates that the absence of the prerequisite course is related to unsatisfactory performance in the target course.

Justification: Indicate how this is so.

The health or safety of the students in this course requires the prerequisite.

Justification: Indicate how this is so.

The prerequisite course is part of a sequence of courses within or across a discipline.

The prerequisite is required in order for the course to be accepted for transfer to the UC or CSU systems.

Justification: Indicate how this is so.

The prerequisite/corequisite is required by law or government regulations.

Explain or cite regulation numbers:

The safety or equipment operation skills learned in the prerequisite course are required for the successful or safe completion of this course.

Justification: Indicate how this is so.

The safety or equipment operation skills learned in the prerequisite course are required for the successful or safe completion of this course.

Justification: Indicate how this is so.

Three CSU/UC campuses require an equivalent prerequisite or corequisite for a course equivalent to the target course:

**Justification:**

**Prerequisite -- ENGL 260 BASIC READING**

- |   |  |
|---|--|
| 1.Provides the basic skills in reading comprehension. 2.Provides the skills in basic vocabulary development. 3.Provides the basic skills in comprehension, determining main ideas, and the importance of details. | 1.Automotive instructions need to be correctly followed. 2.Automotive specifications need to be located and correctly followed. 3.Automotive system diagnoses must be understood and evaluated. 4.An automotive repair order must be correctly written and understood. |
|---|--|

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Check one of the following that apply. Documentation may be attached.

Significant statistical evidence indicates that the absence of the prerequisite course is related to unsatisfactory performance in the target course.

Justification: Indicate how this is so.

The health or safety of the students in this course requires the prerequisite.

Justification: Indicate how this is so.

The prerequisite course is part of a sequence of courses within or across a discipline.

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Three CSU/UC campuses require an equivalent prerequisite or corequisite for a course equivalent to the target course:

**Justification:**

#### **Prerequisite -- MATH 250 COLLEGE ARITHMETIC**

1.Arithmetic operations on whole numbers, fractions, and decimals. 2.Word problems and applications of arithmetic using ratios, proportions, and percents.

1.Understanding and calculation of final drive ratios. 2.Understanding and use of the Metric measurement system. 3.Understanding and use of the English standard measurement system. 4.Understanding and use of linear measurement. 5.Understanding and use of automotive measurement tools. 6.Electrical measurement.

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Check one of the following that apply. Documentation may be attached.

Significant statistical evidence indicates that the absence of the prerequisite course is related to unsatisfactory performance in the target course.

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The health or safety of the students in this course requires the prerequisite.

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Three CSU/UC campuses require an equivalent prerequisite or corequisite for a course equivalent to the target course:

**Justification:**

## **JUSTIFICATION OF LIMITATION ON ENROLLMENT**

Enrollment in courses or blocks of courses may be limited based on performance, honors, or other performance based criteria. Be mindful of the disproportionate impact the limitation will have on specific groups of students. It is important to determine if the limitation will disproportionately keep under-represented students from enrolling in the course or block of courses.

Describe the reasons for limiting the enrollment.

Course Designator: AUTOT 11

Course Title(s): Automotive Technician Program

Rationale for Limiting Enrollment:

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