

**EL CAMINO COLLEGE  
COURSE OUTLINE OF RECORD - Approved**

<b>Subject:</b>	NATE
<b>Course Number:</b>	4
<b>Descriptive Title:</b>	Noncredit Automotive Manufactures Training 2
<b>Division:</b>	Industry and Technology
<b>Department:</b>	Automotive Technology
<b>Course Disciplines:</b>	Automotive Technology
<b>Catalog Description:</b>	This is the second of two courses designed to prepare students for entry-level employment from an automotive manufactures dealership training program to meet the requirements set by the learning management system. The principles of electrical, heating, air conditioning, engine management, hybrid and electric vehicles systems will be vital topics defined by the manufacture. Topics are to be administered according to the student's course of study.
<b>Recommended Preparation:</b>	Automotive Technology 23 or Automotive Technology 24 or Automotive Technology 25 or Automotive Technology 26 or Automotive Technology 81
<b>Course Length:</b>	Full Term
<b>Hours Lecture (per week):</b>	2.5
<b>Hours Laboratory (per week):</b>	0
<b>Outside Study Hours:</b>	5
<b>Total Course Hours:</b>	45
<b>Course Units:</b>	0
<b>Grading Method:</b>	Pass/No Pass only
<b>Credit Status:</b>	Non Credit
<b>Transfer CSU:</b>	No
<b>Effective Date:</b>	
<b>Transfer UC:</b>	No
<b>Effective Date:</b>	
<b>General Education ECC:</b>	
<b>Term:</b>	
<b>Other:</b>	
<b>CSU GE:</b>	
<b>Term:</b>	
<b>Other:</b>	
<b>IGETC:</b>	
<b>Term:</b>	
<b>Other:</b>	

<p><b>Student Learning Outcomes:</b></p>	<p><b>SLO #1 Safety</b> Recognize and identify shop safety, environmental hazards and sustainable environmental practices in an automotive shop.</p> <p><b>SLO #2 Basic Skills</b> Develop the skills needed to perform maintenance and light repairs on electrical, heating, air conditioning, engine management, hybrid and electric vehicles systems.</p> <p><b>SLO #3 Research</b> Perform basic maintenance according to research on proper safety precautions, established maintenance scheduling, accurate inspection processes and repair procedures resulting in efficient repairs.</p>
<p><b>Course Objectives:</b></p>	<ol style="list-style-type: none"> <li>1. Comply with shop safety, ethical business and documentation practices established by learning management system.</li> <li>2. Perform basic maintenance related to electrical, heating, air conditioning engine management, hybrid vehicle and electric vehicle systems as defined by the manufactures standards.</li> <li>3. Understand new models training needs that are set with each new model year.</li> <li>4. Student is given a vehicle with a customer maintenance or light repair issues, evaluate the cause of the complaint and determine the corrective action needed that complies manufacturer's specifications as described by the course content.</li> <li>5. Understand the various fluid level check points, fluid characteristics and filling procedure for each fluid for multiple automotive systems as described by the course content.</li> <li>6. Perform multipoint vehicle inspection, identifying and documenting various maintenance components and systems as described by the course content.</li> <li>7. Identify damaged, defective, or inoperable components as described by the course content.</li> <li>8. Follow preventive maintenance schedule as defined by the manufacturer, based on the type of driving done as described by the course content.</li> <li>9. Accurately document repairs and maintenance procedures on a service repair order as described by the course content.</li> <li>10. Be able to recognize maintenance indicators used for various systems and research how to properly reset maintenance indicators based on various factors as described by the course content.</li> </ol>
<p><b>Major Topics:</b></p>	<p><b>I. Orientation, Safety, and Best Practices (5 hours, lecture)</b></p> <ol style="list-style-type: none"> <li>A. Course requirements &amp; policies</li> <li>B. Hazardous materials training</li> <li>C. Harassment-free workplace</li> <li>D. Data security</li> <li>E. Parts sales</li> <li>F. Equal employment opportunity</li> <li>G. People skills</li> <li>H. Diversity &amp; discrimination</li> </ol> <p><b>II. Research, Documentation, Process, and Inspection (5 hours, lecture)</b></p> <ol style="list-style-type: none"> <li>A. On-line service publication navigation</li> <li>B. Service process &amp; skills</li> <li>C. Technical service hotline</li> <li>D. Wind noise &amp; water leaks</li> <li>E. Anti-money laundering</li> </ol>

	<p><b>III. Vehicle Service (5 hours, lecture)</b></p> <ul style="list-style-type: none"> <li>A. Quick lane</li> <li>B. Pre delivery inspection</li> <li>C. Certified pre-owned</li> <li>D. Model D service</li> <li>E. Model E service</li> <li>F. Model F service</li> </ul> <p><b>IV. Electrical 1 ( 6 hours, lecture)</b></p> <ul style="list-style-type: none"> <li>A. Basic electrical theory &amp; operation</li> <li>B. Diagnosis tools &amp; testing</li> <li>C. Battery starting &amp; charging theory operations</li> <li>D. Power opening systems</li> <li>E. Instrument cluster &amp; lighting</li> </ul> <p><b>V. Electrical 2 (6 hours, lecture)</b></p> <ul style="list-style-type: none"> <li>A. Electronics theory &amp; operation</li> <li>B. Anti-theft</li> <li>C. Information &amp; entertainment</li> <li>D. Module &amp; network diagnosis</li> <li>E. Supplemental restraint</li> </ul> <p><b>VI. Heating, Ventilation and Air Conditioning (HVAC) (2.5 hours, lecture)</b></p> <ul style="list-style-type: none"> <li>A. Climate control theory, operation &amp; diagnostics</li> <li>B. Electronic climate control theory, operation &amp; diagnostics</li> </ul> <p><b>VII. Engine Management 1 (6 hours, lecture)</b></p> <ul style="list-style-type: none"> <li>A. Fuel &amp; air theory operation</li> <li>B. Ignition theory operation</li> <li>C. Introduction to engine performance</li> <li>D. Diagnostic Trouble Codes (DTC's), Parameter Identification (PID's), &amp; Digital Multimeter (DMM)</li> <li>E. Intermittent diagnostics</li> </ul> <p><b>VIII. Engine Management 2 (6 hours, lecture)</b></p> <ul style="list-style-type: none"> <li>A. Oscilloscope, Signal Generator (SGM) &amp; Programmable Module Installation (PMI)</li> <li>B. Diagnostic processes &amp; routines</li> <li>C. System Relationships &amp; on-board diagnostic (OBD) II Monitors</li> <li>D. Exhaust &amp; emissions theory operation</li> </ul> <p><b>IX. Hybrid &amp; Electric Vehicle (3.5 hours, lecture)</b></p> <ul style="list-style-type: none"> <li>A. Introduction</li> <li>B. Components operation</li> <li>C. High voltage systems safety</li> <li>D. Plug-in Hybrid Technology</li> </ul>
<b>Total Lecture Hours:</b>	45
<b>Total Laboratory Hours:</b>	0
<b>Total Hours:</b>	45
<b>Primary Method of Evaluation:</b>	2) Problem solving demonstrations (computational or non-computational)
<b>Typical Assignment Using Primary Method of Evaluation:</b>	Complete various web-based training associated with the automotive course being completed by the student to be assigned by participating manufacturer's representative and reviewed by the instructor.

<b>Critical Thinking Assignment 1:</b>	Internet research at manufacturer or industry websites; exploring the various jobs available in the automotive industry. Documenting the various local employment opportunities through a report submitted to the instructor and evaluated by rubric.
<b>Critical Thinking Assignment 2:</b>	Using service information, students will demonstrate the correct technique for performing automotive manufactures maintenance services, observed and graded by instructor.
<b>Other Evaluation Methods:</b>	Class Performance, Completion, Homework Problems, Matching Items, Multiple Choice, Objective Exam, Performance Exams, Quizzes, Term or Other Papers, True/False, Written Homework
<b>If Other:</b>	
<b>Instructional Methods:</b>	Demonstration, Discussion, Field trips, Guest Speakers, Lecture, Role play/simulation, Group Activities, Multimedia presentations
<b>If other:</b>	
<b>Work Outside of Class:</b>	Answer questions, Observation of or participation in an activity related to course content (such as theatre event, museum, concert, debate, meeting), Problem solving activity, Required reading, Skill practice, Study, Written work (such as essay/composition/report/analysis/research)
<b>If Other:</b>	
<b>Up-To-Date Representative Textbooks:</b>	
<b>Alternative Textbooks:</b>	Access to Manufactures LMS
<b>Required Supplementary Readings:</b>	
<b>Other Required Materials:</b>	
<b>Requisite Category</b>	
<b>Requisite course:</b>	
<b>Requisite and Matching skill(s): Bold the requisite skill. List the corresponding course objective under each skill(s).</b>	
<b>Requisite Skill:</b>	
<b>Requisite Skill and Matching skill(s): Bold the requisite skill(s). if applicable</b>	
<b>Requisite course:</b>	Automotive Technology 23 or Automotive Technology 24 or Automotive Technology 25 or Automotive Technology 26 or Automotive Technology 81

<p><b>Requisite and Matching skill(s): Bold the requisite skill. List the corresponding course objective under each skill(s).</b></p>	<p><b>Evaluate and diagnose various engine management, electrical, and heating and air conditioning faults and make appropriate repairs.</b>  ATEC 23 - Evaluate and test engine condition and performance using engine analyzer/scanner.  ATEC 24 -Analyze computer controlled engine data and form a conclusion of recommended needed repairs.  ATEC 25 - Diagnose and repair electrical circuits.  ATEC 26 -Analyze electrical testing data and recommend repairs.  ATEC 81 - Select testing strategies to confirm the proper operation of computerized automatic air conditioning systems.</p>
<p><b>Requisite Skill:</b></p>	
<p><b>Requisite Skill and Matching skill(s): Bold the requisite skill. List the corresponding course objective under each skill(s). if applicable</b></p>	
<p><b>Enrollment Limitations and Category:</b></p>	
<p><b>Enrollment Limitations Impact:</b></p>	
<p><b>Course Created by:</b></p>	Edward Matykiewicz
<p><b>Date:</b></p>	11/15/21
<p><b>Original Board Approval Date:</b></p>	01/18/2022