



# CHIPOLA COLLEGE

## COURSE SYLLABUS

Chipola's website: [www.chipola.edu](http://www.chipola.edu)

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**COURSE TITLE:**

Automotive Electrical/Electronic System Technician

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**COURSE NUMBER:**

AER 0360V

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**COURSE DESCRIPTION (with prerequisites):**

This course prepares the student to test, diagnose, and repair starting, charging, lighting, and associated electrical systems. Electrical measurement and circuit tracing are stressed, along with an introduction to the operation of basic components associated with electrical and electronic systems. Components include lecture/discussion, written assignments, and hands-on experience. 300 clock hours

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**NAME(S) OF INSTRUCTORS:**

John Gardner, Workforce Development Building "WD", Room 134, Telephone 718-2306, Fax 718-2304. College extension 2306. Office hours as posted. ASE Master Certified & A.S. degree Automotive Technology

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**EFFECTIVE ACADEMIC YEAR:**

2023-2024

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**REQUIRED TEXTBOOKS AND INSTRUCTIONAL MATERIALS:**

*Fundamentals of Automotive Technology* (bundle), 3rd Edition, (textbook, workbook, and 2-year Access Code), ISBN: 9781284271669.

*Modern Automotive Technology* (textbook), 10<sup>th</sup> ed., ISBN: 9781645646907.

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**GRADING POLICY:**

The standing of a student in each course is expressed by one of the following letters and corresponding grading system:

**A – 90 – 100**

**B – 80 – 89**

**C – 70 – 79**

**D – 60 – 69**

**F – 59 or less**

The Chipola Catalog provides policies and procedures regarding the grading system. A student's Grade Point Average is derived from the grading system/quality point scale.

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**ATTENDANCE AND WITHDRAWAL POLICIES:**

Chipola College expects regular attendance of all students, and all instructors record attendance daily. Students who are absent from classes for any reason other than official college activities must satisfy the instructor concerned that the absence was due to illness or other clearly unavoidable reasons. Otherwise, the student may suffer grade loss at the discretion of the instructor. Chipola policy allows each instructor to specify in

the Instructor First Day Handout whether or not an absence is excusable and what affect the absence or tardy may have on the grade.

A student is allowed to repeat a course a maximum of three (3) times. **On the third attempt a student (1) must bear the full cost of instruction (unless waived by Student Services), (2) cannot withdraw, and (3) must receive a grade.**

#### **MAKE-UP POLICY:**

Chipola allows each instructor to specify in the Instructor First Day Handout the makeup policy.

#### **ACADEMIC HONOR CODE POLICY:**

Students are expected to uphold the Academic Honor Code. Chipola College's Honor Code is based on the premise that each student has the responsibility to (1) uphold the highest standards of academic honesty in his/her own work; (2) refuse to tolerate academic dishonesty in the college community; and (3) foster a high sense of honor and social responsibility on the part of students. Further information regarding the Academic Honor Code may be found in the Chipola Catalog, Student Governance section.

#### **STUDENTS WITH DISABILITIES POLICY:**

Chipola College is committed to making all programs and facilities accessible to anyone with a disability. Chipola's goal is for students to obtain maximum benefit from their educational experience and to effectively transition into the college environment. Students with disabilities are requested to voluntarily contact the Office of Students with Disabilities to complete the intake process and determine their eligibility for reasonable accommodations.

#### **NOTICE OF EQUAL ACCESS/EQUAL OPPORTUNITY AND NONDISCRIMINATION:**

Chipola College does not discriminate against any persons, employees, students, applicants or others affiliated with the college with regard to race, color, religion, ethnicity, national origin, age, veteran's status, disability, gender, genetic information, marital status, pregnancy or any other protected class under applicable federal and state laws, in any college program, activity or employment.

Wendy Phippen, Associate Vice President of Human Resources, Equity Officer and Title IX Coordinator, 3094 Indian Circle, Marianna, FL 32446, Building A, Room 183C, 850-718-2269, [pippenw@chipola.edu](mailto:pippenw@chipola.edu).

#### **LIBRARY AND ON-LINE REFERENCE MATERIALS:**

The library is a comprehensive learning resource center providing information in print, electronic, and multimedia format to support the educational objectives of the College. On-line catalogs, e-books and electronic databases can be accessed by using the *LINCCWeb* icon on the Chipola Library website at [www.chipola.edu/library](http://www.chipola.edu/library). If you have questions about database usage consult the "How to Use the Chipola Databases" on the Library website or call the Library at 850/718-2274 during regular hours. Library hours are posted each semester at the building entrance and on the Library website.

See your Instructor First Day Handout for individual instructor recommendations and resources.

**TECHNOLOGY RESOURCES:**

The college’s learning management system is **Canvas**. Classes become available on Canvas on the first day of the semester. It is the student’s responsibility to log onto the Canvas system the first day of class to establish the first day of attendance and to check announcements. All official class communication must be through Canvas. For further information, contact your instructor or the Director of eLearning. The Canvas support hotline is available online in live chat and on the phone, toll-free, at 855-308-2812 for any issues in accessing or utilizing Canvas. The **Technology Center**, located in the library, is equipped with computer workstations. Lab hours are posted each semester at the building entrance and on the Library website.

**FREE TUTORING RESOURCES:**

The Academic Center for Excellence (**ACE**) Lab, located in Building L, offers free tutoring from 8 a.m. to 5 p.m. and is equipped with computer workstations. ACE lab hours are posted each semester at the room entrance and on the website. Additionally, live online tutoring conferences and individual tutoring sessions are available for a variety of courses through ACE@Home. For a conference schedule or to schedule an individual appointment, visit “ACE Tutoring” in the left navigation from any course in Canvas.

**ELECTRONIC DEVICE USAGE STATEMENT:**

Classrooms should be free of all unnecessary distractions from the task of learning. Therefore, as a general rule, students should silence and avoid use of all electronic devices (laptops, phones, tablets, etc.) not being used for coursework. Consult first-day handouts for any specific policies related to the use of electronic devices in the classroom, as they may vary depending upon the nature of the course or the guidelines of the instructor. Faculty reserve the right to regulate the use of electronic devices and their accessories in class.

**DISCIPLINE SPECIFIC COMPETENCIES / LEARNING OUTCOMES:**

Automotive Technology focuses on broad, transferable skills and stresses understanding and demonstration of the following elements of the automotive industry: See chart below.

<b>LINKING COURSE-LEVEL STUDENT LEARNING OUTCOMES WITH DISCIPLINE-SPECIFIC COMPETENCIES, ASSESSMENT METHODS, AND ARTIFACTS</b>			
<b>COURSE-LEVEL STUDENT LEARNING OUTCOMES FOR</b> <b>AER 0360V</b>	<b>DISCIPLINE-SPECIFIC GENERAL EDUCATION COMPETENCIES</b>	<b>ASSESSMENT METHODS FOR COURSE LEVEL STUDENT LEARNING OUTCOMES</b>	<b>LEARNING ARTIFACTS FOR AA PROGRAM ASSESSMENT</b>

<p>The student will be able to:</p> <ol style="list-style-type: none"> <li>1. Perform voltage and pulse measurement, and engine control system diagnosis utilizing scan tools, D.V.O.M. and lab scope.</li> <li>2. Perform engine control system diagnosis utilizing the latest industry standard equipment.</li> <li>3. Identify exhaust restrictions, fuel delivery problems, ignition malfunctions, and determine the mechanical condition of an engine by utilizing an engine analyzer in conjunction with dynamometer load testing.</li> <li>4. Perform exhaust emissions testing utilizing a 5-gas analyzer; diagnose and repair performance problems caused by improper operation of a catalytic converter.</li> <li>5. Diagnose selected drivability problems with multiple malfunctions, utilizing appropriate test equipment within a designated time limit. Perform routine service and periodic maintenance on electronic fuel injected vehicles.</li> <li>6. Perform flow testing and cleaning procedures on fuel injected vehicles.</li> <li>7. Utilize self-diagnosis to correctly diagnose malfunctioning circuits or components.</li> <li>8. Measure injector and cylinder head temperature, resistances, and perform air flow meter tests.</li> <li>9. Diagnose and repair malfunctioning electrical circuits and components on EFI and PFI vehicles; perform i/o system voltage checks</li> <li>10. Identify all components used in the vehicles fail-safe (limp-home) mode. Start and run a vehicle with all fail-safe components disconnected.</li> <li>11. Utilize a systematic approach to troubleshooting fuel injection problems.</li> <li>12. Diagnose and repair malfunctioning emissions systems.</li> <li>13. Identify all current ignition systems.</li> <li>14. Demonstrate knowledge of the operation of the crank angle sensor, power transistor, and ignition pulse signal in an ECU controlled ignition.</li> <li>15. Install a distributor, and time a vehicle with an electronic ignition system in which the timing marks have been misaligned.</li> <li>16. Perform a battery cranking, coil cranking, and coil run voltage test on a vehicle. 17. Perform coil primary and secondary, and secondary wire resistance tests.</li> <li>18. Inspect a fuel evaporative emission and a crankcase ventilation control system. 19. Examine spark plug condition to determine common engine operating conditions.</li> <li>20. Demonstrate a knowledge of the operation of the dual ignition systems, and the D.I.S. ignition systems.</li> <li>21. Perform an idle speed/ignition timing/idle mixture ratio inspection on a vehicle.</li> <li>22. Adjust an automotive oscilloscope for inspection of primary and secondary ignition patterns; analyze primary and secondary ignition patterns to diagnose faults in an automotive ignition system. ]</li> </ol>	<p>AUT Outcome 1: Demonstrate mastery of Automotive Service Technology knowledge and skills.</p> <p>AUT Outcome 2: Demonstrate safety skills appropriate for employees in an Automotive Service work setting.</p> <p>AUT Outcome 3: Apply critical thinking and diagnostic skills as appropriate for Automotive Service Technicians.</p> <p>AUT Outcome 4: Exhibit interpersonal and ethical skills as appropriate for Automotive Service Technicians.</p> <p>AUT Outcome 5: Exhibit leadership, organizational, and professional skills appropriate for Automotive Service Technicians.</p> <p>AUT Outcome 6: Students exhibit employability and/or entrepreneurship skills as appropriate for employees in an Automotive</p>	<p>T, Q, F, SP, SD, Proj, SK Check</p>	
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<b>**Assessment Codes</b>			
<b>T</b> = Tests	<b>RPT</b> = Report/Presentation	<b>Proj.</b> = Projects	<b>BO</b> = Behavioral Observation
<b>Pre/Post</b> = Pre- and Post-Tests	<b>SP</b> = Skills Performance	<b>Exp.</b> = Experiments	<b>Clin.</b> = Clinicals
<b>OT</b> = Objective Tests	<b>SD</b> = Skills Demonstration	<b>Cap. Proj.</b> = Capstone Project	<b>CS</b> = Case Study
<b>UT</b> = Unit Tests	<b>W</b> = Writing Assignments	<b>Cap. Course</b> = Capstone Course	<b>CP</b> = Case Plan
<b>Q</b> = Quizzes	<b>E</b> = Essays	<b>Prac.</b> = Practicum	<b>Port.</b> = Portfolio
<b>F</b> = Final Examination	<b>DE</b> = Documented Essays	<b>Intern.</b> = Internship	<b>Obs.</b> = Teacher Observation
<b>CF</b> = Cumulative Final	<b>RP</b> = Research papers	<b>H</b> = Homework	<b>Sk. Check</b> = Skills Check-off Curriculum Frameworks
<b>EX</b> = Departmental Exam	<b>J</b> = Jury	<b>PS</b> = Problem Solving	<b>JP</b> = Judged Performance/Exhibition
<b>SE</b> = Nat'l or State Standardized Exam	<b>R</b> = Recital	<b>DB</b> = Discussion Board	

### **MEANS OF ACCOMPLISHING STUDENT LEARNING OUTCOMES:**

The course is competency-based and self-paced using handouts, videotapes, textbooks, computer-assisted instruction and instructor demonstrations.

1. Attending classes, completing book and computer assignments along with laboratory work.
2. Completing reading and homework assignments.
3. Studying/maintaining handouts.
4. Reading current publications from the automotive industry.

Student must demonstrate an understanding theory of operating principles prior to stating lab sheets. Have the instructor or lab assistant sign and verify your lab sheets after completing each lab assignment. Turn in your lab sheets to the instructor or lab assistant for grading and recording.

You will be assigned a specific lab station work area. The equipment you will use is rugged and reliable. However, with abuse or misuse, it will malfunction and become inoperable. Be careful and have the instructor/instructional aide demonstrate the use of the equipment before using it for the first time. Read all instructions carefully and ask questions prior to use. Keep your lab bench work area clean and orderly while performing assignments. Return all equipment/lab components to the proper storage area before departing at the end of the day. Lab and shop will be clean and secured at the end of each project or day whichever comes first. If a lab assignment will take more than one day notify the instructor and secure all parts and project at the end of the day.

### **EXAMINATIONS:**

The course examinations consist of written knowledge examinations and performance evaluations. A knowledge examination is given upon completion of each assignment on the course outline. If you take an exam and score less than 70%, you are allowed to retake the exam on the next class day. First, restudy your textbook, quizzes, lab experiments, etc. and make another attempt. If you have taken the exam three or more times to pass, your grade can never be more than 60. Performance evaluation must be mastered before proceeding to the next assignment. Student will be able to repeat performance evaluations till complete mastery is achieved. Students are encouraged to take the nationally and industry recognized Automotive Service Excellence (ASE) exam upon completion of each automotive area.

### **ASSIGNMENT AND/OR COURSE OUTLINE**

See your Instructor First Day Handout for individual instructor assignment schedule.