AUTOMOTIVE ELECTRICAL/ELECTRONICS ADVANCED (III)

Course Syllabus

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Course Number: EL103
Instructor: Ron Rader
OCAS Code:
Phone Number: 580-327-0344
Course Length: 105 hours
Email: rrader@nwtech.edu
Career Cluster: Transportation
Campus: Alva, OK
Career Pathway: Automotive Service
Program: Automotive Service Technology
Career Major: Automotive Service Technician, Air Conditioning Technician, Automotive Drivability Technician
Pre-requisite: Automotive Introduction, Automotive Electrical/Electronics Introduction, Automotive Electrical/Electronics Fundamentals

Course Description: This course will cover diagnosing and repairing accessories such as motor driven accessory circuits, cruise controls, electrical heated seats and mirrors and factory installed audio systems. This course will cover the Supplemental Restraint Systems (SRS) service as well as safety procedures to prevent accidental deployment. Students will learn to about module communication, including the Controller Area Network (CAN).

Instructional Philosophy: To provide a training program that is of merit both educationally and ethically while effectively providing the individual learner the opportunities, knowledge and skills necessary to succeed in the workplace as well as life.

Course Goals: Upon successful completion of this course, the student will be able to:

Competencies:

Battery Diagnosis and Service

Identify high voltage circuits of electric or hybrid electric vehicle and related safety precautions

Identify electronic modules, security systems and/or radios that require reinitialization or code entry following battery disconnect.

Identify hybrid vehicle auxiliary (12v) battery service, repair and test procedures.

Identify system voltage and safety precautions associated with high intensity discharge headlights.

Gauges, Warning Devices, and Driver Information Systems Diagnosis and Repair

Diagnose the cause of incorrect operation of warning devices and other driver information systems; determine necessary action.

Inspect and test sensors, connectors, and wires of electronic instrument circuits; determine necessary action.

Accessories Diagnosis and Repair

Remove and reinstall door panel

Diagnose incorrect operation of motor-driven accessory circuits; determine necessary action.

Diagnose incorrect heated glass operation; determine necessary action.

Diagnose incorrect electric lock operation; determine necessary action.

Diagnose incorrect operation of cruise control systems; repair as needed.

Diagnose incorrect heated seat operation; determine necessary action.

Diagnose supplemental restraint system (SRS) concerns; determine necessary action. (Note: Follow manufacturer's safety procedures to prevent accidental deployment.)

Disarm and enable the airbag system for vehicle service.
Diagnose radio static and weak, intermittent, or no radio reception; determine necessary action.
Diagnose body electronic system circuits using a scan tool; determine necessary action.
Check for module communication (including CAN/BUS systems) errors using scan tool.
Diagnose the cause of false, intermittent, or no operation of anti-theft systems.

Major Course Projects:

Students will perform tasks relating to the Automotive Service Industry as per standards identified by the National Automotive Technicians Education Foundation (NATEF). Students will complete repair orders each day and will document completion of competencies on competency profiles tracking individual progress and accomplishment.

Project Outline:

Projects will include performing tasks on mock ups, shop vehicles, and live work as student skills progress. These projects will reinforce classroom theory instruction and will require the student to consult industry service information during the course of task performance.

Instructional Delivery Plan:

The instruction for this course will be comprised of multiple methods designed to promote and accommodate different learning styles including classroom lecture, classroom demonstrations, shop demonstrations, hands on learning activities, classroom discussion, interactive media, textbook, computer based learning activities, research projects, guest speakers, student presentations, and interactive learning with CPS (Classroom Performance System). Students will be required to practice the skills associated with the instructional content and will be required to work independently and also in teams. Assignments will require students to use academic skills in math, science, and language arts.

Assessment Plan:

Students will be assessed according to three basic kinds of learning. Knowledge: Does the student possess the required knowledge to perform a specific competency? Skills: Does the student possess the necessary coordination to perform the task/competency? Attitude: Will the student perform the task/competency on the job after learning to do it? Students will also be assessed according to the basic work skills of attendance and promptness. Soft skills will be assessed in the Academic Career Center.

50%	Daily work- Performance of technical skills on job, work habits, safety, clean-up, participation
50%	Written assignment- Repair orders, textbook assignments, etc.

Grading Scale:

A	90-100	Exceeds expectations
B	80-89	Meets industry standards and expectations
C	70-79	Passing grade, but does not meet some standards
D	60-69	Passing, but only meets the minimum standards
F	Below 60	Failing, does not meet minimum standards

Alliance Credit Offered:

OSU Okmulgee

Industry Alignments:

ASE Certification, ODCTE Certification,

End of Instruction Industry Assessment:

ASE Certification, ODCTE Certification,

Resources:

Automotive Excellence Vol. 1 and Vol. 2

Modern Automotive Technology
Introduction to Automotive Service: Fundamental Concepts
CDX Global Interactive Training
Snap On Shop Key
Alldata

Attachments: See Automotive Service Technology Task List Competency Handbook