Washtenaw Community College Comprehensive Report

ATT 281 Emerging Vehicle Technologies
Effective Term: Fall 2025

Course Cover

College: Advanced Technologies and Public Service Careers
Division: Advanced Technologies and Public Service Careers
Department: Transportation Technologies
Discipline: Automotive & Transportation Tech (new)
Course Number: 281
Org Number: 14100
Full Course Title: Emerging Vehicle Technologies
Transcript Title: Emerging Vehicle Technologies
Is Consultation with other department(s) required: No
Publish in the Following: College Catalog , Time Schedule , Web Page
Reason for Submission: New Course
Change Information:
Rationale: The transportation industry is rapidly changing, but unlike in the past, older vehicle technologies are not being abandoned. This presents a substantial challenge to transportation faculty to add emerging vehicle technology training to existing courses without omitting current curriculum and training materials. Having a 2 credit course in emerging vehicle technologies would provide a platform to integrate new training materials, technology, and curriculum for Transportation Technologies students.
Proposed Start Semester: Fall 2025
Course Description: In this course, students will be trained in vehicle technologies that include automotive ethernet, advanced driver assist systems, advanced fuel delivery systems, connected vehicle networks, over-the-air update systems, and high-voltage charging systems for electric vehicle (EV) charging. Students will also explore diagnostic and troubleshooting methods for these emerging technologies through hands-on lab exercises and theoretical analysis. Real-world applications will be emphasized, helping students prepare to work with modern vehicle communication and propulsion systems in an evolving industry.

Course Credit Hours

Variable hours: No
Credits: 2
Lecture Hours: Instructor: 30 **Student:** 30
The following Lab fields are not divisible by 15: Student Min, Instructor Min
Lab: Instructor: 22.5 **Student:** 22.5
Clinical: Instructor: 0 **Student:** 0

Total Contact Hours: Instructor: 52.5 **Student:** 52.5
Repeatable for Credit: NO
Grading Methods: Letter Grades
Audit
Are lectures, labs, or clinicals offered as separate sections?: NO (same sections)

College-Level Reading and Writing

College-level Reading & Writing

College-Level Math

No Level Required

Requisites
Prerequisite
ATT 256 minimum grade "C"; may enroll concurrently

General Education

Request Course Transfer
Proposed For:

Student Learning Outcomes

1. Recognize, diagnose, and repair advanced driver assist systems.
   Assessment 1
   Assessment Tool: Outcome-related exam questions
   Assessment Date: Winter 2028
   Assessment Cycle: Every Three Years
   Course section(s)/other population: All Sections
   Number students to be assessed: All Students
   How the assessment will be scored: Answer key
   Standard of success to be used for this assessment: 70% of the students will score 70% or higher.
   Who will score and analyze the data: Departmental faculty
   Assessment 2
   Assessment Tool: Outcome-related checklist
   Assessment Date: Winter 2028
   Assessment Cycle: Every Three Years
   Course section(s)/other population: All Sections
   Number students to be assessed: All Students
   How the assessment will be scored: Departmentally-developed rubric
   Standard of success to be used for this assessment: 70% of the students will score 70% or higher.
   Who will score and analyze the data: Departmental faculty

2. Recognize, inspect, and diagnose connected vehicle technologies including over-the-air updates and automotive ethernet.
   Assessment 1
   Assessment Tool: Outcome-related checklist
   Assessment Date: Winter 2028
   Assessment Cycle: Every Three Years
   Course section(s)/other population: All Sections
   Number students to be assessed: All Students
   How the assessment will be scored: Departmentally-developed rubric
   Standard of success to be used for this assessment: 70% of the students will score 70% or higher.
   Who will score and analyze the data: Departmental faculty
   Assessment 2
   Assessment Tool: Outcome-related exam questions
   Assessment Date: Winter 2028
   Assessment Cycle: Every Three Years
   Course section(s)/other population: All Sections
   Number students to be assessed: All Students
   How the assessment will be scored: Answer key

Standard of success to be used for this assessment: 70% of the students will score 70% or higher.
Who will score and analyze the data: Departmental faculty

3. Recognize, inspect and test advanced propulsion systems including direct injection internal combustion engine (ICE) systems and battery electric vehicle systems.
   Assessment 1
   Assessment Tool: Outcome-related checklist
   Assessment Date: Winter 2028
   Assessment Cycle: Every Three Years
   Course section(s)/other population: All Sections
   Number students to be assessed: All Students
   How the assessment will be scored: Departmentally-developed checklist
   Standard of success to be used for this assessment: 70% of the students will score 70% or higher.
   Who will score and analyze the data: Departmental faculty
   Assessment 2
   Assessment Tool: Outcome-related exam questions
   Assessment Date: Winter 2028
   Assessment Cycle: Every Three Years
   Course section(s)/other population: All Sections
   Number students to be assessed: All Students
   How the assessment will be scored: Common departmental exam will be scored using an answer sheet.
   Standard of success to be used for this assessment: 70% of the students will score 70% or higher.
   Who will score and analyze the data: Department Faculty

Course Objectives

1. Recognize, inspect, and diagnose Controller Area Network (CAN) malfunctions.
2. Recognize, inspect, and diagnose automotive ethernet malfunctions.
3. Recognize and inspect pre-collision Advanced Driver Assistance Systems (ADAS) systems.
4. Recognize and inspect lane-departure and blind spot detection ADAS systems.
5. Recognize and inspect adaptive cruise control ADAS systems.
6. Perform ADAS re-calibration procedures using Launch and Hunter service equipment.
7. Recognize, inspect, and test direct injection fuel system performance using a chassis dynamometer or engine dynamometer.
8. Recognize, inspect, and test battery electric vehicle (BEV) powertrain performance using a chassis dynamometer.
9. Recognize the protocol utilized to effectuate over-the-air updates.
10. Recognize vehicle connectivity systems that would permit third-party penetration.
11. Demonstrate the use of a J2534 compliant device, or third-party/open-source device, to execute a module reflash, including key programming.
12. Recognize BEV connectivity systems and test communication with electric vehicle supply equipment (EVSE).

New Resources for Course

Course Textbooks/Resources

Textbooks
Manuals
Periodicals
Software

Equipment/Facilities

Level I classroom

Reviewer	Action	Date
Faculty Preparer:		
Rocky Roberts	*Faculty Preparer*	*Mar 19, 2024*
Department Chair/Area Director:		
Rocky Roberts	*Recommend Approval*	*Aug 15, 2024*
Dean:		
Eva Samulski	*Recommend Approval*	*Aug 20, 2024*
Curriculum Committee Chair:		
Randy Van Wagnen	*Recommend Approval*	*Mar 20, 2025*
Assessment Committee Chair:		
Jessica Hale	*Recommend Approval*	*Mar 20, 2025*
Vice President for Instruction:		
Brandon Tucker	*Approve*	*Mar 21, 2025*