

**RARITAN VALLEY COMMUNITY COLLEGE  
ACADEMIC COURSE OUTLINE**

**AUTC 225 xEV Level One: Electrically Aware person**

**I. Basic Course Information**

- A. Course Number and Title: AUTC 225 xEV Level One: Electrically Aware Person
- B. New or Modified Course: New
- C. Date of Proposal: Fall 2025
- D. **Effective Term: Fall 2026**
- E. Sponsoring Departments: *Science and Engineering Department*
- F. Semester Credit Hours: 2
- G. Weekly Contact Hours: 4  
Lecture: 1  
Laboratory: 3  
Out of class student work per week: 3.5
- H.  Prerequisite:  
AUTC 101 Automotive Introduction, Fundamentals & Safety  
  
 Corequisite (s):  
  
AUTC 204 Automotive Electrical Systems II  
AUTC 208 Engine Performance & Diagnosis II  
AUTC 221 Engine Systems & Emission Control II  
AUTC 290 Automotive Cooperative Education I  
(Students must be registered in the same section for each course)
- I. Additional Fees: Yes
  - o NFPA 70E (2023): Standard for Electrical Safety in the Workplace Certification
  - o xEV Level One Certification

**II. Catalog Description**

(Prerequisites: AUTC 101 Automotive Introduction, Fundamentals & Safety; Corequisites: AUTC 204 Automotive Electrical Systems II, AUTC 208 Engine Performance & Diagnosis II, AUTC 221 Engine Systems & Emission Control II, AUTC 290 Automotive Cooperative Education I) This course will

prepare students to take the ASE Electrified Propulsion Vehicle (xEV) Level One: Electrically Aware Person certification. In this course, students will develop the skills necessary to identify the hazards associated with working on or near electrified propulsion vehicles (xEVs) and the high-voltage components of electrified propulsion vehicles. This course will provide an overview of the electric vehicle and its components, will improve safety awareness for professionals who work near electric vehicles, and will provide high-voltage safety training to reduce risks and identify hazards, and the related procedures. This course is essential for service professionals, technicians, and automotive specialists.

### **III. Statement of Course Need**

- A. With the increase in the number of hybrid and electric vehicles on the road, there is significant demand for automotive technicians who can safely service and repair these vehicles.
- B. Lab assignments for the course will cover the tasks required by the ASE xEV Level One: Electrically Aware Person standards. In the lab, students will learn how to establish an electrically safe working condition, identify risks associated with electric vehicle repair, safety related work best practice, and de-energizing an electric vehicle.
- C. This course is not intended for transfer.

### **IV. Place of Course in College Curriculum**

- A. Free Elective
- B. This course meets a program requirement for the Automotive Technology AAS degree program and the Hybrid and Electric Vehicles Certificate of Completion.
- C. Course transferability; for New Jersey schools go to the NJ Transfer website, [www.njtransfer.org](http://www.njtransfer.org). For all other colleges and universities go to their individual sites.

### **V. Outline of Course Content**

- A. Electric vehicles
  - a. Introduction to the electric vehicle
  - b. Electric and electronic principles
  - c. Electric vehicle technology
- B. Purpose and definitions
  - a. Purpose of xEV
  - b. Working individual definition
    - i. Level One – Electrically Aware Person
- C. General requirements for electrical safety-related work practices
  - a. Risks associated with electric vehicle repair

- b. Aiding persons subjected to high voltage
- c. Physical barriers, signage, and boundary guarding
  - i. Shop safety alerting techniques
- D. Establishing an electrically safe working condition
  - a. Level one knowledge and skills
    - i. Maintain proficiency in electrical safety
    - ii. Safety concepts on and around an electric vehicle
  - b. Employer responsibilities
    - i. Provide emergency response training and equipment in the case of an electrocution or injury
    - ii. Provide first aid training and skills assessment including CPR
    - iii. Shops shall align with existing safety requirements and regulations
- E. Safety related work practices
  - a. High voltage lithium-ion batteries and systems
    - i. Accident risks
  - b. Wiring/cabling –SAE standards for nominal system voltage up to 1000V (AC rms or DC)
  - c. Working on or near electric vehicles
  - d. NFPA 70E (2023): Standard for electrical safety in the workplace
- F. De-Energizing
  - a. Lockout/Tagout
- G. ASE xEV Level One Certification

## **VI. A. Course Learning Outcomes**

### **At the completion of the course, students will be able to:**

1. Explain safety techniques with working on or near electric vehicles.
2. Identify appropriate tools for use of safety on or near electric vehicles
3. Discuss the theory and operations of electric vehicles
4. Compare and contrast the different types of electric vehicles.
5. Perform lab experiments and tasks to competent skill level as listed on the ASE xEV curriculum standards.
6. Identify techniques to troubleshoot and solve problems related to the electrically aware person (GE-4)
7. Apply quantitative reasoning to problems with the safety of the electrically aware person (GE-2)
8. Discuss issues involving the electrically aware person (GE-1)

## **B. Assessment Instruments**

1. lectures
2. demonstrations
3. laboratory work
4. instructional videos/DVDs

5. laboratory performance
6. examinations
7. ASE xEV Standards

## **VII. Grade Determinants**

- A. lab performance
- B. examinations
- C. class participation
- D. technical writing
- E. interactive simulations

Primary formats, modes, and methods for teaching and learning that may be used in the course:

- A. lecture/discussion
- B. small-group work
- C. group discussion
- D. computer-assisted instruction
- E. laboratory
- F. simulation/role playing
- G. demonstration
- H. student collaboration

## **VIII. Text and Materials**

- B. ASE xEV standards <https://www.ase.com/ev>
- C. Electude xEV Electrical Awareness Certification (level 1) study guide
- D. Electric & Hybrid Vehicles 3<sup>rd</sup> Edition, *Copyright 2024*, Tom Denton & Hayley Pells, ISBN 9781032556796
- E. Electric Vehicles: A Systems Approach, *Copyright 2024*, Sean Bennet, ISBN 978-1-68584-267-3
- F. Students will be required to wear clothing appropriate for auto shop safety at all classes. Student are required to wear a standard industry uniform. Safety glasses will also be required at all classes.
- G. The Automotive Program utilizes online curriculum and online industry service and repair information from the following sources:
  - o AllData
  - o Snap On Industries III. Shop Key Pro
  - o Motologic
- H. Various Automotive Magazines
- I. Students are provided the use of RVCC technology during the course

Please note: The course outline is intended only as a guide to course content and resources. Do not purchase textbooks based on this outline. The RVCC Bookstore is the sole resource for the most up-to-date information about textbooks.

## **IX. Resources**

- A. Reference books
- B. AllData
- C. Shop Key Pro
- D. Motologic
- E. Snap On Industries
- F. NAPA Pro-Link
- G. Published Automotive Magazines
- H. Lab/Shop Tools and Equipment
- I. CDX Interactive Courseware
- J. Safety equipment
- K. Lubricants and various automotive fluids
- L. Sample automotive system components
- M. Instructional videos/DVDs
- N. Auto mechanics shop facility at RVCC workforce building
- O. CCAR
- P. Electude
- Q. ASE xEV standards

**X. Check One:**  Honors Course  N/A