

# RARITAN VALLEY COMMUNITY COLLEGE

## ACADEMIC COURSE OUTLINE

### AUTC 101 – Automotive Introduction, Fundamentals, and Safety

#### I. Basic Course Information

A. Course Number and Title: AUTC 101 – Automotive Introduction, Fundamentals, and Safety

B. New or Modified Course: Modified

C. Date of Proposal: Fall 2022

D. Effective Term: Fall 2023

E. Sponsoring Departments: *Science and Engineering Department*

F. Semester Credit Hours: 4

G. Weekly Contact Hours: 6      Lecture: 3  
Laboratory: 3  
Out of class student work per week: 7.5

H. Prerequisite (s) ☐

Corequisite (s) ☐ OR

Prerequisite (s) and Corequisite (s) ☒:

Prerequisite: Placement into MATH 020 and ENGL 060 or higher is required.

Corequisites: AUTC 104 – Automotive Electrical Systems I

AUTC 109 – Brake Systems

AUTC 201 – Engine Systems & Emissions Control I

(Students must be registered in the same section for each course)

I. Additional Fees: Yes

J. Name and Telephone Number or Email Address of Department Chair and Divisional Dean at time of approval:

Department Chair: Marianne Baricevic, [Marianne.baricevic@raritanval.edu](mailto:Marianne.baricevic@raritanval.edu) Divisional Dean:  
Sarah Imbriglio, [sarah.imbriglio@raritanval.edu](mailto:sarah.imbriglio@raritanval.edu)

#### II. Catalog Description

Prerequisite: Placement into MATH 020 and ENGL 060 or higher is required.

Corequisites: AUTC 104 – Automotive Electrical Systems I

AUTC 109 – Brake Systems

AUTC 201 – Engine Systems & Emissions Control I

(Students must be registered in the same section for each course)

This course will provide an overview of basic theory and functions of all automotive systems. This course will also introduce students to automotive industry standard practices including shop safety, use of chemicals, documenting repair estimates and work orders, identifying careers in the auto industry, and learning employability skills. Upon completion of this course, the student will be familiar with the tools, service procedures, and safety customary to the automotive field. This course will prepare students for OSHA 10 hour certifications in general industry safety.

In the lab, students will learn a hands-on strategy using different types of lifting equipment, perform basic maintenance of the shop, and learn how to use a variety of hand tools, power tools, and precision measurement tools. Students will be required to wear clothing appropriate for auto shop safety at all classes. Safety glasses will also be required at all classes.

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

- A. Automotive technicians are vital to our mobile and transport-dependent community. Understanding the importance of and need for preventive maintenance and simple repairs are integral elements for the education of well-trained technicians in the field.
- B. Lab assignments for the course will introduce students to the layout of the shop and provide instruction to reinforce the safety practices in a demonstrative environment.
- C. Course transferability: The course transfers as the first required course for the Automotive Technology major and includes a laboratory component; 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 websites.

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

- A. Free Elective
- B. This course meets the program requirement for the Automotive Technology Certificate and the Associate of Applied Science in Automotive Technology.
- 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. Shop safety procedures
  - a. Hazards and Personal Safety
  - b. Material Safety Data Sheets (MSDS)
- B. Vehicle Hoisting and Floor jacks

- C. Body Designs
- D. Engine/Transmission configuration
- E. Occupations in automotive technology
  - a. General automotive technician
  - b. Specialist automotive technician
  - c. Hybrid vehicle repair technician opportunities
  - d. Service manager
  - e. Service writer
  - f. Shop foreman
  - g. Counterman
  - h. Parts manager
  - i. Warehouse and receiving
- F. Tools, fasteners and fittings
  - a. Hand tools
  - b. Precision measuring tools
  - c. Cutting and flaring tools
  - d. Air tools and impact wrenches
  - e. Electric drills and grinders
  - f. Fasteners
    - i. S.A.E. coarse and fine thread pitch
    - ii. Metric thread pitch
    - iii. Bolt strength and marking system
    - iv. Flat and lock washers
    - v. Rivets and screws
- G. Automotive service excellence certification
  - a. Certified Master Automotive Technician (CMAT)
  - b. Certified Specialist Automotive Technician
  - c. Brakes
  - d. Alignment, suspension and steering
  - e. Engine repair and machine shop
  - f. Engine performance
  - g. Electrical
  - h. Heating and conditioning
  - i. Manual transmissions and drive lines
  - j. Automatic transmission and transaxles
- H. Repair and specification manuals and software
  - i. AllData Service and Repair
  - ii. Shop Key Pro/Mitchell repair manuals
  - iii. On-demand CD ROM software
  - iv. Work orders
- I. Vehicle Maintenance and Inspection
- J. Communication and Employability Skills
- K. Units of measurement
  - a. Metric systems

- b. English systems

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

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

1. Explain safety techniques utilized in basic automotive service maintenance procedures.
2. Identify appropriate tools for use in general automotive service procedures.
3. Discuss the theory and operations of automotive components and systems.
4. Compare and contrast various automotive maintenance schedules with driving conditions.
5. Perform lab experiments and tasks to competent skill level as listed on the NATEF curriculum standards.
6. Identify techniques to troubleshoot and solve problems related to automotive systems (GE 4)
7. Apply quantitative reasoning to problems with the maintenance of automotive systems (GE 2)
8. Discuss issues involving automotive systems (GE 1)

## **B. Assessment Instruments**

1. lectures
2. demonstrations
3. laboratory work
4. instructional videos/DVDs
5. laboratory performance
6. examinations
7. NATEF task list

## **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**

- A. Suggested Text: Automotive Technology: Principles, Diagnosis, and Service Plus MyAutomotiveLab with Pearson eText -- Access Card Package / Edition 5 by James D. Halderman (Author), Prentice Hall Publishing ISBN-10: 0134009088 / ISBN-13: 9780134009087
- B. 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.
- C. The Automotive Program utilizes online curriculum and online industry service and repair information from the following sources:
  - I. All Data
  - II. Snap On Industries III. Shop Key Pro.
- D. Various Automotive Magazines
- E. 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. Snap On Industries
- E. NAPA Pro-Link
- F. Published Automotive Magazines
- G. Lab/Shop Tools and Equipment
- H. CDX Interactive Courseware
- I. Safety equipment
- J. Lubricants and various automotive fluids
- K. Sample automotive system components

L. Instructional videos/DVDs

M. Auto mechanics shop facility at RVCC workforce building