

**Raritan Valley Community College
Course Outline**

AUTC 203 – Steering & Suspension Systems I

I. Basic Course Information

- A. Course Number and Title: AUTC 203 – Steering & Suspension Systems I
- B. New or Modified Course: Modified
- C. Date of Proposal: Fall 2017
- D. Effective Term: Fall 2018
- 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. Co-requisite: A grade of C or better in AUTC 101 – Automotive Introduction, Fundamentals, and Safety
- I. Laboratory 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
Divisional Dean: Sarah Imbriglio, sarah.imbriglio@raritanval.edu

II. Catalog Description

Co-requisite: A grade of C or better in AUTC 101 – Automotive Introduction, Fundamentals, and Safety. This course will cover the theory involved in front and rear suspension, steering geometric angles, weight distribution, wheel balancing and alignment. Practice is provided in diagnosing and servicing these systems of an automobile.

In the lab, students will learn a hands-on strategy to perform basic maintenance of steering and suspension systems and learn how to use a variety of hand 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. Technicians are needed that understand steering geometry and are able to think abstractly. The demand for these people will never decrease as the vehicles are constantly being improved and upgraded. Understanding the structure and function of steering and suspension systems in automobiles and their maintenance are integral elements for the education of well-trained technicians in the field. Efficiency, performance and compliance with EPA regulations (State and Federal) are mandatory in this field as well as customer satisfaction. This course is intended to enhance the student's knowledge beyond understanding.
- B. Lab assignments for the course will introduce students to the basic maintenance and repair of steering and suspension components while maintaining instruction that reinforces the safety practices in a demonstrative environment.
- C. Course transferability: The course transfers as one of the core fundamental courses for the Automotive Technology major and includes a laboratory component; for New Jersey schools go to the NJ Transfer website, 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. For all other colleges and universities go to their individual sites.

V. Outline of Course Content

- 1. Chassis Types, Design and Safety
- 2. Tires, Rims and Pre-Alignment Inspection
- 3. Wheel Bearing and Hub Assemblies; Alignment Principles
- 4. Drive Axles; Front, Rear, AWD, Camber, Caster, Toe, Thrust

5. CV and Plung Joints; Theory and Service
6. Steering System Components and Alignment Diagnosis
7. Alignment Diagnosis and Service
8. Shocks and Struts
9. Steering Gears: Recirc. Ball, Rack & Pinion
10. Steering Gears: Rear Systems
11. N.H.V. Studies
12. Structural Damage Diagnosis
13. Tire Pressure Monitoring Systems

VI. General Educational and Course Learning Outcomes

A. General Educational Learning Outcomes

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

1. identify techniques to troubleshoot, repair, maintain, and solve problems with steering and suspension systems (GE NJ 4)
2. apply quantitative reasoning to issues with the maintenance of automotive steering and suspension systems (GE NJ 2)
3. discuss issues involving automotive steering and suspension systems (GE NJ 1)

B. Course Learning Outcomes

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

1. Analyze the structure and function of steering and suspension used in automobiles.
2. Compare and contrast various steering and suspension systems with layout and type of systems.
3. Inspect, test, and replace steering and suspension components according to manufacturer's specifications.
4. Examine steering and suspension components and identify appropriate tools and measuring instruments used during diagnosis and repair.
5. Appraise tire pressure monitoring systems
6. Demonstrate skill required to perform four wheel alignments
7. Perform lab experiments and tasks to competent skill level as listed on the NATEF curriculum standards.

C. 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. AllData
 - 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 Steering and Suspension system components
- L. Instructional videos/DVDs
- M. Auto mechanics shop facility at RVCC workforce building