Raritan Valley Community College
Course Outline

AUTC 209 – Advanced Brake Systems

I. Basic Course Information

A. Course Number and Title: AUTC 209 – Advanced Brake Systems

B. New or Modified Course: New

C. Date of Proposal: Fall 2017

D. Effective Term: Fall 2018

E. Sponsoring Departments: *Science and Engineering Department*

F. Semester Credit Hours: 3

G. Weekly Contact Hours: 5 Lecture: 2
Laboratory: 3
Out of class student work per week: 5.5

H. Prerequisite: A grade of C or better in courses AUTC 102 – Automotive Brake Systems and AUTC 203 – Steering & Suspension Systems I

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

Prerequisite: A grade of C or better in courses AUTC 102 – Automotive Brake Systems and AUTC 203 – Steering & Suspension Systems I. This course will cover the theory involved in advanced suspension and steering diagnosis and Anti-Lock Brake systems. These two systems work in conjunction with each other for advanced safety systems including traction control and anti-roll stability controls. Practice is provided in diagnosing and servicing these systems of an automobile.

In the lab, students will learn a hands-on strategy to perform advanced diagnostic strategies of steering, suspension, and anti-lock brakes systems and learn how to use a variety of diagnostic

tools, 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. This course covers the advanced steering, suspension, and anti-lock brakes systems, and builds critical thinking skills to improve diagnostic skills. Understanding the operation of advanced steering, suspension, and ABS systems in automobiles and their maintenance are integral elements for the education of well-trained technicians in the field.

B. Lab assignments for the course will introduce students to advanced diagnostic strategies of steering, suspension, and anti-lock brakes systems, 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. ABS Components and Operation
2. Advanced Brake System
3. ABS System Principles
4. Anti-Lock Brake Systems
5. Diagnosis of ABS systems
6. Wheel Speed Sensor Diagnosis
7. Anti-Skid & Stability Control System Operation
8. Stability Control System Diagnosis

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 various steering and suspension systems (GE NJ 4)
2. apply quantitative reasoning to problems with the maintenance of automotive steering and suspension systems (GE NJ 2)
3. discuss issues of 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 advanced steering, suspension, and brake systems.
2. Investigate complex maintenance and repair issues in advanced steering, suspension, and brake systems.
3. Compare and contrast the layout and types of advanced steering, suspension, and brake systems
4. Inspect, test, and replace advanced steering, suspension, and brake components with appropriate tools and instruments according to manufacturer's specifications.
5. Appraise tire pressure monitoring systems
6. Demonstrate skill required to diagnose stability control and ABS systems
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. Text Book
C. AllData
D. Shop Key Pro
E. Snap On Industries
F. NAPA Pro-Link
G. Published Automotive Magazines
H. Lab/Shop Tools and Equipment
I. Electude Interactive Courseware
J. Safety equipment
K. Lubricants and various automotive fluids
L. Sample Steering and Suspension system components
M. Instructional videos/DVDs
N. Auto mechanics shop facility at RVCC workforce building