

# AUTOMOTIVE SERVICES (ASV)

## ASV 130 Automotive Maintenance (4 Credits)

45 lecture, 60 lab, 4 total contact hours

In this course, students will learn basic shop safety and accepted shop practices. In addition to basic maintenance, students will learn about fluids and lubrication services as well as cooling and exhaust system repairs. Students will also be introduced to steering, suspension, and brake repairs in the lab. Level I Prerequisite: Academic Reading Level 5; Academic Writing Level 3

## ASV 131 Automotive Electrical (4 Credits)

45 lecture, 60 lab, 4 total contact hours

In this course, students will learn basic electrical theory, use and interpretation of automotive wiring diagrams, and use of electrical testing equipment. Students will learn the skills needed to diagnose and replace a number of commonly serviced electrical components. The focus of this course allows students to gain practical experience in the laboratory. Level I Prerequisite: Academic Reading Level 5; Academic Writing Level 3

## ASV 132 Automotive Engines (4 Credits)

45 lecture, 60 lab, 4 total contact hours

In this course, students explore the theory, operation and repair of automotive gasoline engines with emphasis on component identification, operation and proper measurement techniques. Students gain skills such as disassembly, assembly and running procedures with automotive drivetrains on test stands and also develop practical skills with on-car diagnostics and repairs. Level I Prerequisite: Academic Reading and Writing Levels of 6; ASV 130, ASV 131 or MST 110, minimum grade "C"

## ASV 133 Automotive Fuel Systems (4 Credits)

45 lecture, 60 lab, 4 total contact hours

In this course, students will be introduced to the theory and operation of fuel delivery and emissions systems and their components. Using specialized diagnostic test equipment, students will develop skills to inspect, diagnose, and perform services on fuel delivery and emission systems. Safe component replacement and repair procedures will also be covered. The title of this course was previously Automotive Fuel. Level I Prerequisite: Academic Reading and Writing Levels of 6; ASV 131 minimum grade "C"

## ASV 134 Automotive Transmissions (4 Credits)

45 lecture, 60 lab, 4 total contact hours

In this course, students will discover how automatic and manual drivetrain systems operate. In the lab, students will develop an understanding on how to service, diagnose and replace faulty internal transmission and drivetrain components. Topics will also include drivetrain function and differences in both 2 and 4-wheel drive vehicles as well as identification, diagnosis and repair of major driveline components that affect transmission operation. Level I Prerequisite: Academic Reading and Writing Levels of 6; ASV 130 minimum grade "C"

## ASV 135 Facility Operations (3 Credits)

45 lecture, 30 lab, 3 total contact hours

In this course, students will develop the skills needed to execute management level transactions in automotive technical and service environments. Students will learn about safety topics that pertain to working in the automotive industry and gain knowledge about mechanic and repair facility licensing requirements. Level I Prerequisite: Academic Reading and Writing Levels of 6

## ASV 174 ASV Co-op Education I (1-3 Credits)

120 to 360 clinical/other, 1 to 3 total contact hours

In this course, students gain skills from a new experience in an approved, compensated position in the field of automotive service technology. Together with the instructor and employer, students set up work assignments and learning objectives to connect classroom learning with career-related work experience. This is the first of two possible co-op experiences. Level I Prerequisite: Academic Reading and Writing Levels of 6; consent required

## ASV 251 Engine Diagnosis and Repair (2 Credits)

30 lecture, 22.5 lab, 2 total contact hours

In this course, students will learn how to diagnose and repair automotive engine mechanical systems. The focus will involve the use of industry approved techniques and various skills in assessing engine condition before performing repairs. This course was previously ASV 241. Level I Prerequisite: Academic Reading and Writing Levels of 6; ASV 132 minimum grade "C"

## ASV 254 Suspension and Steering (2 Credits)

30 lecture, 22.5 lab, 2 total contact hours

In this course, students will learn the theory, operation, and develop skills to diagnosis, maintain and repair automotive suspension and steering systems. Students will learn how to test and evaluate major suspension and steering components that leads to component replacement. Students will also develop an understanding of the symptoms of vehicles needing a 4-wheel vehicle alignment and learn the skills to needed to properly complete alignments using industry standard equipment. Level I Prerequisite: Academic Reading and Writing Levels of 6; ASV 130 minimum grade "C"

## ASV 255 Brakes (2 Credits)

30 lecture, 22.5 lab, 2 total contact hours

In this course, students develop skills in diagnosing and repairing brake systems on vehicles, including hydraulic, mechanical, and electrical component systems. Additional topics include diagnosis and repair of anti-lock brake, stability and traction control systems. Level I Prerequisite: Academic Reading and Writing Levels of 6; ASV 130 minimum grade "C"

## ASV 256 Electrical and Electronic Systems (4 Credits)

45 lecture, 60 lab, 4 total contact hours

In this course, students learn the theory and operation of automotive electrical systems. It includes the diagnosis and repair of automotive electrical lighting, instrumentation, convenience and accessory systems. There is a focus on advanced tools and techniques used to diagnose electrical and electronic systems found in today's modern automobiles. Level I Prerequisite: Academic Reading and Writing Levels of 6; ASV 131 minimum grade "C"

## ASV 257 Heating and Air Conditioning Systems (2 Credits)

30 lecture, 22.5 lab, 2 total contact hours

In this course, students will explore automotive heating and air conditioning (A/C) systems, including servicing procedures and diagnostic techniques. Students will perform A/C system diagnosis and repair with a focus on the multiple types of control systems used in current automobiles. This course also covers the proper use, recovery, and recycling of current refrigerants. Level I Prerequisite: Academic Reading and Writing Levels of 6; ASV 130 minimum grade "C"

**ASV 258 Engine Drivability (2 Credits)**

30 lecture, 22.5 lab, 2 total contact hours

In this course, students will develop automotive troubleshooting and repair strategies for engine management systems. Using specialized automotive test equipment, the student will learn how to analyze fuel, ignition and emission systems. Inspection procedures and diagnostics of powertrain control module (PCM) fault code symptoms will be covered. Level I Prerequisite: Academic Reading and Writing Levels of 6; ASV 131 or ASV 133, minimum grade "C"

**ASV 265 Vehicle Performance and Diagnosis (4 Credits)**

15 lecture, 90 lab, 4 total contact hours

In this advanced project-based vehicle repair course, students develop the skills needed to evaluate, estimate and complete project-based learning activities. Students will track labor hours versus labor time, estimating cost of parts, special equipment and consumables required to complete each project. This course contains material previously taught in ASV 259 and ASV 263. Level I Prerequisite: Academic Reading and Writing Levels of 6; ASV 254, ASV 255 and ASV 256, minimum grade "C"

**ASV 266 Advanced Transmissions (2 Credits)**

30 lecture, 22.5 lab, 2 total contact hours

In this course, students will learn how to inspect, diagnose, and repair late-model automotive drivetrain systems. Students will learn how to diagnose and repair manual and automatic transmissions/transaxles, transfer cases, and differentials/axles. Upon successful completion, students will be able to conduct advanced in-vehicle diagnosis on all components of the drivetrain system, and repair as necessary. The drivetrain components will focus on advancing technologies and tooling representative of manufacturer trends. This course contains material previously taught in ASV 252 and ASV 253. Level I Prerequisite: Academic Reading and Writing Levels of 6; ASV 134 minimum grade "C"

**ASV 270 Automotive Test and Development (4 Credits)**

60 lecture, 45 lab, 4 total contact hours

In this course, students will learn about the application of automotive testing systems used during the development of automobiles. Students will learn the principles of component testing. The focus of this course allows students to gain practical experience in the laboratory utilizing a mapping test stand that will analyze an engine assembly for defects. The students will enter engine defects and collect data using commonly accepted test procedures to validate the testing process. Level I Prerequisite: Academic Reading and Writing Levels of 6; ASV 131 and ASV 132, minimum grade "C"

**ASV 274 ASV Co-op Education II (1-3 Credits)**

120 to 360 clinical/other, 1 to 3 total contact hours

In this course, students gain skills from a new experience in an approved, compensated, industry-related position. Together with the instructor and employer, students set up work assignments and learning objectives to connect classroom learning with career-related work experience. This is the second of two co-op courses. Level I Prerequisite: Academic Reading and Writing Levels of 6; ASV 174; consent required

**ASV 277 Automotive Powertrain Systems (4 Credits)**

60 lecture, 45 lab, 4 total contact hours

In this course, students will learn about the use of a chassis roll dynamometer for testing and validation of powertrain systems. Students will learn the principles of dynamometer operation including safety systems, road cycle testing, emissions testing, and durability testing. Students also gain practical experience in the laboratory, as well as develop and execute a test sequence for horsepower, emissions testing, and fuel system testing. Level I Prerequisite: Academic Reading and Writing Levels of 6; ASV 130 and ASV 131, minimum grade "C"

**ASV 279 Automotive Dynamometer and Test (4 Credits)**

60 lecture, 45 lab, 4 total contact hours

In this course, students will learn about data acquisition methods used in modern automotive powertrain development. Students will learn the principles of strain gauge pressure sensors and Wheatstone bridge torque transducers. Students also gain practical experience in the laboratory, calibrating and validating the signals produced from a variety of automotive testing equipment. The students will develop and execute a test validation protocol on engine dynamometer stands. Level I Prerequisite: Academic Reading and Writing Levels of 6; ASV 131 and ASV 132, minimum grade "C"