

# AUTOMOTIVE (AUTO)

## **AUTO 101 # - Introduction to General Mechanics** **Units: 4**

An introductory course describing the principles of operation, design, construction and maintenance of automobiles. Activities include shop safety emphasis, use of service manuals, use of tools and fasteners, general maintenance of cooling systems, lubricating systems; an overview and demonstration of electrical, fuel and ignition systems; an overview and explanation of chassis, steering, suspension and brake systems. Human relations, leadership and work ethics related to the automotive industry will also be covered.

*Transferability: May not transfer towards an NSHE bachelor's degree*

## **AUTO 111 # - Automotive Electricity** **Units: 4**

Foundation course in concepts and theories of light duty vehicle electrical circuits and components. Emphasis is placed on application of principles to operate electrical meters, scope meters, and other electrical test equipment. Schematic wiring diagrams will be used to interpret circuit operation and formulate diagnostic procedures. This course satisfies 20 hours of instruction toward completing the embedded math curriculum requirements, in accordance with Embedded Curriculum Guidelines Option A.

*Transferability: May not transfer towards an NSHE bachelor's degree*

*Enrollment Requirements: Prerequisite: AUTO 101 or DT 101 or DT 250*

## **AUTO 112 # - Automotive Electricity II** **Units: 4**

Building on prior training, AUTO 112 examines the fundamental operation and testing of electronic devices and components. Operation and diagnostic methods for testing and repair of the battery, charging systems, and starting systems.

*Transferability: May not transfer towards an NSHE bachelor's degree*

*Enrollment Requirements: Prerequisite: AUTO 111 or instructor permission.*

*Course may be taken concurrently with AUTO 111.*

## **AUTO 136 # - Engine Repair** **Units: 5**

This course introduces the theory and operation of internal combustion engines and related sub-systems used in light duty vehicles. Different types of light duty engines will be disassembled; parts will be identified and inspected. The engine will be reassembled to manufacturer's specification. This course satisfies 5 hours of instruction toward completing the embedded math curriculum requirements, in accordance with Embedded Curriculum Guidelines Option A. This course satisfies 20 hours of instruction toward completing the embedded human relations curriculum requirements, in accordance with Embedded Curriculum Guidelines Option A.

*Transferability: May not transfer towards an NSHE bachelor's degree*

*Enrollment Requirements: Prerequisite: AUTO 101 or instructor permission.*

## **AUTO 145 # - Automotive Brakes** **Units: 5**

This course introduces the theory and design requirements for brake systems used on automotive and light truck application. Emphasis is placed on mechanical, hydraulic and vacuum system operations. Students will be introduced to principles of hands-on skills for service and repair of brake systems. Student will be introduced to principles of operation and repair of anti-lock brake systems. This course satisfies 5 hours of instruction toward completing the embedded math curriculum requirements, in accordance with Embedded Curriculum Guidelines Option A. This course satisfies 10 hours of instruction toward completing the embedded human relations curriculum requirements, in accordance with Embedded Curriculum Guidelines Option A.

*Transferability: May not transfer towards an NSHE bachelor's degree*

*Enrollment Requirements: Prerequisite: AUTO 101 or instructor permission.*

## **AUTO 150 # - Steering and Suspension Systems** **Units: 5**

This course introduces theory and practical application of operation, diagnosis, and hands-on skills to maintain and repair light duty vehicle steering and suspension systems. Emphasis will be placed on front wheel and rear wheel vehicles, four wheel drive, and all wheel drive vehicles. Students will be introduced to wheel alignment strategies and alignment procedures. Tire and wheel maintenance will be included. This course satisfies 5 hours of instruction toward completing the embedded math curriculum requirements, in accordance with Embedded Curriculum Guidelines Option A. This course satisfies 5 hours of instruction toward completing the embedded human relations curriculum requirements, in accordance with Embedded Curriculum Guidelines Option A.

*Transferability: May not transfer towards an NSHE bachelor's degree*

*Enrollment Requirements: Prerequisite: AUTO 101 or instructor permission.*

## **AUTO 165 # - Auto Heating and Air Conditioning** **Units: 5**

This course introduces students to theory, diagnosis, and hands-on skills to service and repair light duty vehicle climate control and air conditioning systems. Presented in this course are operation of air distribution systems, refrigeration system and computer controlled systems. Students will be introduced to safe handling of refrigerant, recovery/recycling, and recharge of the refrigerant system. Students may apply for the ASE recovery and recycle license during class.

*Transferability: May not transfer towards an NSHE bachelor's degree*

*Enrollment Requirements: Prerequisite: AUTO 111 or instructor permission.*

## **AUTO 198 # - Special Topics in Auto** **Units: 0.5-6**

Various short courses and experimental classes covering a variety of subjects. The course will be a variable credit of one-half to six credits depending on the course content and number of hours required. This course may be repeated for up to six credits.

*Transferability: May not transfer towards an NSHE bachelor's degree*

## **AUTO 205 # - Manual Drive Trains and Axles** **Units: 4**

This course covers theory and operation of the automotive and light truck manual drive trains and axles. Emphasis is placed on the manual transmissions, clutches, transfer cases and drive axles. Components will be checked for wear or failed parts. The drive train components will be reassembled to manufacturer's specifications.

*Transferability: May not transfer towards an NSHE bachelor's degree*

*Enrollment Requirements: Prerequisite: AUTO 101 or instructor permission.*

## **AUTO 216 # - Automatic Transmissions** **Units: 5**

Study of theory and fundamental principles of automotive and light truck automatic transmissions and transaxles. Emphasis is placed on the mechanical, hydraulic, and electrical control systems of the transmission. Student will be introduced to service operations and hands-on skills needed for repair and overhaul of a variety of transmissions.

*Transferability: May not transfer towards an NSHE bachelor's degree*

*Enrollment Requirements: Prerequisite: AUTO 101 or instructor permission.*

## **AUTO 225 # - Engine Performance I** **Units: 4**

Foundation course for engine performance concerns, testing, and repair. Study of operation and relationships of basic mechanical engine components, ignition system, and fuel delivery systems. Develop hands-on skills while testing and repair using specialized test equipment. This course satisfies 5 hours of instruction toward completing the embedded math curriculum requirements, in accordance with Embedded Curriculum Guidelines Option A. This course satisfies 5 hours of instruction toward completing the embedded human relations curriculum requirements, in accordance with Embedded Curriculum Guidelines Option A.

*Transferability: May not transfer towards an NSHE bachelor's degree*

*Enrollment Requirements: Prerequisite: AUTO 111 or instructor permission.*

**AUTO 227 # - Engine Performance II****Units: 4**

Building on prior training, AUTO 227 introduces the student to computerized fuel injection control sensors and components. Presented in this course are OBD 11 strategies, emission systems, and hands-on diagnostic skills for engine performance concerns. Use of wiring diagrams, specialized test equipment, and advanced problem-solving techniques will be used for repair or failed system or component. This course satisfies 5 hours of instruction toward completing the embedded math curriculum requirements, in accordance with Embedded Curriculum Guidelines Option A. This course satisfies 5 hours of instruction toward completing the embedded human relations curriculum requirements, in accordance with Embedded Curriculum Guidelines Option A.

*Transferability: May not transfer towards an NSHE bachelor's degree*

*Enrollment Requirements: Prerequisite: AUTO 225.*

**AUTO 235 # - Engine Performance III****Units: 4**

Integrates all previous engine performance course content in a systematic approach to isolate drivability concerns. Formulate repair strategies for complex powertrain CAN/BUS control systems. Students will be introduced to hybrid vehicle propulsion systems and service procedures. Successful students will be prepared to take ASE A-8 and L-1 exams.

*Transferability: May not transfer towards an NSHE bachelor's degree*

*Enrollment Requirements: Prerequisite: AUTO 227 and AUTO 265.*

**AUTO 265 # - Electrical/Electronic Systems III****Units: 4**

Advanced course in trouble-shooting, diagnosis and problem solving for computer based body and chassis electrical/electronic systems. Employ the use of appropriate specialized test equipment and advance strategies to identify system or component failures. Successful students will be prepared to take ASE A-6 exam.

*Transferability: May not transfer towards an NSHE bachelor's degree*

*Enrollment Requirements: Prerequisite: AUTO 112 or instructor permission.*

**AUTO 290 # - Internship in Automotive Level I****Units: 1-6**

The purpose of this course is to provide Automotive Industry Technicians with the opportunity to supplement course work with practical work experience related to the student's first three semesters of classroom and lab experiences. The course is an extension to and application of the classroom training through work experience under immediate supervision of experienced personnel at the industry work site. A qualified faculty member directly supervises the student's internship experience by working closely with the student and the employer through telephone contact, site visitations, student reports and reports from the student's supervisor. Credit is awarded (at a rate of 75 hours of work per credit) for the accomplishment of individualized specific occupational learning objectives written by the employer, student, and faculty member; maintenance of time sheets; and final project. Student grades will be assigned as a cooperative effort between the faculty member and the job supervisor.