

# AUTOMOTIVE TECHNOLOGY PROGRAM OF STUDY

## *AUTOMOTIVE TECHNOLOGY I, II and SUPERVISED SCHOOL-to-CAREERS*

### SYLLABUS

*Automotive Technology Instructor  
ASE Master Technician*

### PROGRAM DESCRIPTION

The Automotive Technology Program of Study is designed for students who wish to make the field of automotive service and repair their chosen occupation. This training program is evaluated every five years by the National Automotive Technicians Education Foundation (NATEF), and is currently certified by the National Institute for Automotive Service Excellence (ASE). Students will be prepared for employment and/or further education, with instruction by ASE certified personnel in the areas they teach, through theory, demonstration, and practical safe work experiences on vehicles in the lab.

The instruction will be related to the various systems of the automobile as outlined by the standards for ASE. Areas of ASE study includes brakes, suspension and steering, engine performance, and electrical/electronics with partial instruction in engine repair, heating and air conditioning, automatic transmission/transaxles, manual drivetrain/axles and hybrid/fuel cell vehicles. Additional topics are: careers in automotive service – safety, environmental and health concerns – tools, shop equipment and measuring – principles of math and materials – vehicle service and routine maintenance. Second year students complete a forty-hour internship at local dealerships. The optional third year Supervised School-to-Careers provides a structured learning experience by combining classroom instruction with on the job training.

**TEXT BOOK:** Automotive Technology Principles, Diagnosis, and Service  
Halderman, James D., Pearson Prentice Hall, 2009.

#### **Automotive Technology I**

|   |          |
|---|----------|
| Careers in the Automotive Service Area.....                 | Ch 1-5   |
| Safety, Environmental and Health Concerns...                | Ch 6-7   |
| Tool, Shop Equipment, and Measuring.....                    | Ch 8-12  |
| Principles, Math and Materials.....                         | Ch 13-14 |
| Vehicle Service Information and Routine<br>Maintenance..... | Ch 15-17 |
| Engine Repair.....  | Ch 18-21 |
| Electrical and Electronic Systems.....                      | Ch 31-39 |
| Brakes.....   | Ch 67-82 |
| Suspension and Steering.....                                | Ch 83-93 |

#### **Automotive Technology II**

|  |                  |
|--|------------------|
| Engine Repair.....                       | Ch 22-24         |
| Engine Performance.....                  | Ch 52-63         |
| Electrical / Electronic Systems.....     | Ch 32-38 & 40-46 |
| Hybrid and Fuel Cell Vehicles.....       | Ch 64-66         |
| Heating and Air Conditioning.....        | Ch 48-51         |
| Manual Drivetrain and Axles.....         | Ch 94-99         |
| Automatic Transmission / Transaxles..... | Ch 100-102       |

## PROFICIENCIES

### AUTOMOTIVE TECHNOLOGY II

**The Student will be able to:**

1. Work safely in the automotive lab environment, becoming aware of OSHA, Right-To-Know, hazards and pollution regulations.
2. Understand systems and perform services required in Automotive Technology I.
3. Understand basic engine systems and repair techniques; perform diagnosis of engine condition.
4. Perform engine tune-up, diagnose and repair engine performance problems utilizing specialized equipment, checking computerized control systems for ignition, fuel, air, exhaust and emissions.
5. Understand electrical system theory and operation. Diagnose and repair electrical system problems utilizing meters and oscilloscopes.
6. Understand principles of diesel engine operation, alternative fueled vehicles, electric/solar powered vehicles and hybrid safety.
7. Evaluate the condition and operation of heating, ventilation and air conditioning systems. Perform minor services.
8. Understand driveline components and operating principles. Perform on-vehicle services of clutches, manual and automatic transmissions, final drive systems.
9. Understand safe welding practices. Utilize oxyacetylene, MIG and electric arc welding equipment safely.
10. Become an active member of the Skills USA student organization, developing leadership, communication and workplace preparedness skills for employment.
11. Develop minimum entry-level skills from the ASE/NATEF Task Lists.
12. Complete the 40 hour CARS (Careers in Automotive Repair and Service) mentorship program at a Flemington Car and Truck Dealership.
13. Complete a portfolio including a resume, pictures, certificates, etc.

## STUDENT EVALUATION PROCEDURES

Students are evaluated daily through various means appropriate to the lesson topic, content and particular activity as follows:

### **Automotive Technology I & II**

- Integration of NJ Core Curriculum Content Standards within curriculum
- Quizzes, written/performance tests and exams–NA3SA written/NOCTI performance (Auto II)
- Hands-on performance/testing and NATEF skill development with lab worksheets
- Homework: Journal topics - Reading textbook - Answering chapter questions
- Written and oral technical article summaries
- Class participation and communication
- Discipline, attitude and attendance
- Work habits, cleanup practices
- Safety knowledge and practices
- Student internships (when applicable) and field trips

In addition to mid-term and final exams, Automotive Technology I & II students will receive grades for each marking period based on the following:

#### Classroom 50%

- Tests, quizzes and homework
- Participation and communication
- Discipline, attitude and attendance

#### Lab work 50%

- Hands-on performance/testing and NATEF skill development with lab worksheets
- Safety knowledge and practices
- Work habits and cleanup practices
- Internships (when applicable) and field trips

### **Automotive Technology Supervised School-to-Careers**

- Attitude concerning work and others
- Responsibility, Initiative and professionalism
- Dependability, punctuality, attendance and personal appearance
- Safety practices
- Technical performance, skill development and task completion
- Evaluations obtained through automotive technology instructor and employer.

In addition to mid-term and final exams, Automotive Technology Supervised School-to-Careers students will receive grades for each marking period based on the criteria above.