

AUTOMOTIVE SERVICES TECHNOLOGY I

Automotive Services Technology I is a one year course that encompasses the sub topics of the NATEF/ASE identified areas of Steering and Suspension and Braking Systems. This one year course offering may be structured in a series of two topics per year offered in any combination of instructional strategies of semester based or yearlong instruction. Additional areas of manual transmissions, differentials, automatic transmissions, air conditioning, and engine repair will be covered as time permits. This one year offering must meet the NATEF program certifications for the two primary areas offered in this course. Mathematical skills will be reinforced through precision measuring activities and cost estimation/calculation activities. Scientific principles taught and reinforced in this course include the study of viscosity, friction, thermal expansion, and compound solutions. Written and oral skills will also be emphasized to help students communicate with customers, colleagues, and supervisors.

- DOE Code: 5510
- Recommended Grade Level: Grade 11-12
- Recommended Prerequisites: Introduction to Transportation
- Credits: 2-3 credits per semester, maximum of 6 credits
- Counts as a Directed Elective or Elective for the General, Core 40, Core 40 with Academic Honors and Core 40 with Technical Honors diplomas
- This course is aligned with postsecondary courses for Dual Credit:
 - Ivy Tech
 - AUTC 101-Suspension and Steering
 - AUTC 121-Brakes
 - Vincennes University
 - AUTO 105-Transportation Fundamentals

Dual Credit

This course provides the opportunity for dual credit for students who meet postsecondary requirements for earning dual credit and successfully complete the dual credit requirements of this course.

Application of Content and Multiple Hour Offerings

Intensive laboratory applications are a component of this course and may be either school based or work based or a combination of the two. Work-based learning experiences should be in a closely related industry setting. Instructors shall have a standards-based training plan for students participating in work-based learning experiences. When a course is offered for multiple hours per semester, the amount of laboratory application or work-based learning needs to be increased proportionally.

Career and Technical Student Organizations (CTSOs)

Career and Technical Student Organizations are considered a powerful instructional tool when integrated into Career and Technical Education programs. They enhance the knowledge and skills students learn in a course by allowing a student to participate in a unique program of career and leadership development. Students should be encouraged to participate in SkillsUSA, the CTSO for this area.

Content Standards

Domain 1 – Employability

Core Standard 1 Students apply and adapt appropriate workplace behaviors and characteristics to prepare for automotive careers.

Standards

- ASTI-1.1 Demonstrate effective interpersonal skills
- ASTI-1.2 Develop leadership skills
- ASTI-1.3 Research, analyze, and use data for work assignments
- ASTI-1.4 Apply written communication skills
- ASTI-1.5 Demonstrate effective listening and speaking skills
- ASTI-1.6 Perform appropriate mathematical calculations correctly
- ASTI-1.7 Exhibit a responsible work ethic
- ASTI-1.8 Demonstrate accepted standards for ethical behavior
- ASTI-1.9 Establish a personal career goal and develop objectives for achieving the goal
- ASTI-1.10 Create a continuing education plan that identifies further education and training options
- ASTI-1.11 Prepare for exams leading to certifications recognized by business and industry
- ASTI-1.12 Develop skills needed to enter the workforce
- ASTI-1.13 Evaluate resources that keep workers current in the career field
- ASTI-1.14 Apply effective money management strategies
- ASTI-1.15 Use and identify tools and equipment used to repair brake systems

Domain 2 – Knowledge/Understanding

Core Standard 2 Students analyze vehicle components and system operations to establish accurate diagnosis and repair procedures.

Standards

- ASTI-2.1 Allocate the appropriate resources for task completion
- ASTI-2.2 Read and interpret written materials
- ASTI-2.3 Demonstrate knowledge of vehicle system
- ASTI-2.4 Explain safety procedures
- ASTI-2.5 Disable supplemental restraint systems in accordance with manufactures' procedures
- ASTI-2.6 Describe steering and alignment geometry
- ASTI-2.7 Score satisfactory grade on tests, quizzes, and lab assignments
- ASTI-2.8 Demonstrate proper shop safety practices while using brake tools and equipment
- ASTI-2.9 Use and identify tools and equipment used to repair brake systems
- ASTI-2.10 Identify and explore operation, construction, and nomenclature of braking system components including hydraulic control devices
- ASTI-2.11 Identify and explore operation and repair on and ABS and traction control systems

Domain – Diagnosis

Core Standard 3 Students analyze vehicle system defects to determine necessary service.

Standards

- ASTI-3.1 Apply effective critical thinking, decision making, and problem-solving techniques
- ASTI-3.2 Evaluate resources that keep workers current in the career field
- ASTI-3.3 Conduct other related engine service activities

- ASTI-3.4 Examine brake systems
- ASTI-3.5 Analyze suspension and steering systems performance and determine repairs
- ASTI-3.6 Diagnose power steering systems and determine need for replacement
- ASTI-3.7 Diagnose steering and suspension components to determine need for replacement
- ASTI-3.8 Analyze suspension and steering systems performance and determine repair
- ASTI-3.9 Remove and replace steering and suspension components
- ASTI-3.10 Diagnose McPherson strut assembly according to industry standards
- ASTI-3.11 Diagnose rear suspension system and determine needed service or repair
- ASTI-3.12 Remove, inspect and service or replace front or rear wheel bearings
- ASTI-3.13 Check and adjust all 4-wheel alignment angles and measurements
- ASTI-3.14 Inspect, rotate, mount, and balance tires
- ASTI-3.15 Perform pre-alignment checks according to industry standards
- ASTI-3.16 Use and identify tools and equipment used to repair brake systems
- ASTI-3.17 Diagnose and repair ABS and traction control systems
- ASTI-3.18 Troubleshoot, clean, and replace components of transmission system.

Domain – Repair

Core Standard 4 Students select appropriate industry tools and procedures to perform service and repairs on various vehicle components and systems.

Standards

- ASTI-4.1 Select and use appropriate tools and technology
- ASTI-4.2 Implement quality assurance measures and safeguards
- ASTI-4.3 Develop skills needed to enter the workforce
- ASTI-4.4 Evaluate resources that keep workers current in the career field
- ASTI-4.5 Conduct other related engine service activities
- ASTI-4.6 Service brake systems
- ASTI-4.7 Disable supplemental restraint systems in accordance with manufactures' procedures
- ASTI-4.8 Diagnose steering and suspension components to determine need for replacement
- ASTI-4.9 Remove and replace steering and suspension components
- ASTI-4.10 Remove and replace McPherson struts according to industry standards
- ASTI-4.11 Remove, inspect and service or replace front or rear wheel bearings
- ASTI-4.12 Demonstrate proper shop safety practices while using brake tools and equipment
- ASTI-4.13 Use and identify tools and equipment used to repair brake systems
- ASTI-4.14 Identify and explore operation and repair on and ABS and traction control systems