

DIESEL SERVICE TECHNOLOGY I

Diesel Services Technology I introduces students to diesel engine operating principles and theories as well as fuel systems and hands-on training related to modern diesel engines. The course covers inspection, troubleshooting, overhaul and engine replacement procedures. It includes classroom and laboratory experiences concerned with all phases of repair work on diesel engines used to power buses, ships, trucks, railroad trains, electrical generators, construction machinery, and similar equipment. Instruction and practice is provided in the diagnostics and repair of engines. Students will demonstrate performance of these tasks as defined by ASE/NATEF standards. Use of technical manuals, hand and power tools and of testing and diagnostic equipment are also studied in the course.

- DOE Code: 5620
- Recommended Grade Level: Grade 11-12
- Recommended Prerequisites: Intro 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:
 - Vincennes University
 - DESL 130/L-Diesel Engine Systems and Lab

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 – Workplace Competency

Core Standard 1 Students develop employability skills to be successful in placement of a post secondary institution and/or career related area.

Standards

DSTI-1.1 Allocate the appropriate resources for task completion

- DSTI-1.2 Demonstrate effective interpersonal skills
- DSTI-1.3 Develop leadership skills
- DSTI-1.4 Establish positive relationships with people from diverse backgrounds
- DSTI-1.5 Research, analyze, and use data for work assignments
- DSTI-1.6 Apply effective critical thinking, decision making, and problem-solving techniques
- DSTI-1.7 Select and use appropriate tools and technology
- DSTI-1.8 Implement quality assurance measures and safeguards
- DSTI-1.9 Read and interpret written materials
- DSTI-1.10 Apply written communication skills
- DSTI-1.11 Demonstrate effective listening and speaking skills
- DSTI-1.12 Perform appropriate mathematical calculations correctly
- DSTI-1.13 Exhibit a responsible work ethic
- DSTI-1.14 Demonstrate accepted standards for ethical behavior
- DSTI-1.15 Practice safe working procedures during each stage of diagnosis and repair
- DSTI-1.16 Organize, research, and implement a complete preventive maintenance and inspection (P.M.I.)

Domain – Career Development

Core Standard 2 Students construct personal goals to structure successful paths recognized by business and industry.

Standards

- DSTI-2.1 Establish a personal career goal and develop objectives for achieving the goal
- DSTI-2.2 Evaluate employment and career pathway opportunities related to established career interest(s)
- DSTI-2.3 Create a continuing education plan that identifies further education and training options
- DSTI-2.4 Prepare for exams leading to certifications recognized by business and industry
- DSTI-2.5 Develop skills needed to enter the workforce
- DSTI-2.6 Evaluate resources that keep workers current in the career field
- DSTI-2.7 Demonstrate skills and attitudes needed for lifelong learning
- DSTI-2.8 Apply effective money management strategies

Domain – Engines

Core Standard 3 Students analyze diesel engine operations to diagnose and repair malfunctions.

Standards

- DSTI-3.1 Analyze the fundamentals of a diesel engine
- DSTI-3.2 Perform engine assembly and disassembly procedures
- DSTI-3.3 Diagnose engine performance
- DSTI-3.4 Identify tools and equipment used in engine service
- DSTI-3.5 Adjust or measure valve and engine brake clearance
- DSTI-3.6 Utilize scan tools for engine service
- DSTI-3.7 Identify new emission controls and serviceability
- DSTI-3.8 Perform injector replacement procedures

DSTI-3.9 Diagnose drivability concerns

DSTI-3.10 Demonstrate proper shop safety practices while servicing engines

Systems

Core Standard 4 Students examine various system to diagnose and repair malfunctions.

DSTI-4.1 Diagnose and repair fuel systems

DSTI-4.2 Evaluate and repair electrical/electronic systems

DSTI-4.3 Diagnose and repair lubrication systems

DSTI-4.4 Analyze and repair heating/cooling system

DSTI-4.5 Assess and repair intake and exhaust systems

DSTI-4.6 Perform preventative maintenance to the fuel system and lubricating system

DSTI-4.7 Service the cold starting aid system

Fluids

Core Standard 5 Students evaluate fuel and other fluids used in diesel engines to perform appropriate maintenance and optimization procedures.

DSTI-5.1 Identify the type of fuel and lubricating oil required for a diesel engine

DSTI-5.2 Service the coolant and fuel heaters