Diesel/Diesel Electric (DESL)

Courses

**DESL 0101 Safety and Introduction to Shop Practices: 2 semester hours.**
Theory and application of shop safety, tool and equipment usage, precision measuring, basic welding, and oxy-acetylene skills. D

**DESL 0102 Introduction to Electrical: 1 semester hour.**
Fundamental electrical theory concepts and basic electrical system formulas. F, S

**DESL 0103 Electrical Systems: 3 semester hours.**
Troubleshooting and repair procedures for heavy-duty electrical systems, including electrical principles as they relate to the components used in trucks and heavy equipment, wiring schematics, and lighting along with the associated testing and repair procedures for each system. Topics include basic electricity fundamentals, starters, charting systems, batteries, troubleshooting, and lighting systems. F, S

**DESL 0107 Basic Diesel Electrical Systems: 2 semester hours.**
Theory, application, and practice in basic electricity and electronic principles to include wiring circuits, charging, and starting systems found in diesel powered vehicles. Emphasis will be given to diagnosis of electrical systems and use of diagnostic equipment. D

**DESL 0109 Cab Climate Control: 2 semester hours.**
Fundamentals of mobile air conditioning and heating systems including electronic climate controls and principles, basic refrigeration concepts, evacuation and recharging, and repair and testing of systems. Students will become familiar with environmental regulations and proper disposal of refrigerants. D

**DESL 0113 Diesel Engine Fuel Systems: 2 semester hours.**
Introduces diesel fuel systems, mechanical fuel pumps, governors, air-to-fuel ratios, and the chemistry of combustion. Classroom theory will be followed by practical lab application including setting valve lash, adjusting injector settings, and other tune-up related procedures to increase efficiency and decrease pollution. D

**DESL 0115 Diesel Hydraulics I: 2 semester hours.**
Provides an introduction to diesel hydraulics and their operation. Basic principles of flow, pressure, and transmission of fluid power into mechanical power; relationship of Pascal's Law and relating it to the fundamentals of hydraulic principles; and identification of the components in a basic hydraulic circuit and variations of those circuits used in modern hydraulic systems. D

**DESL 0125 Heavy Duty Power Trains: 8 semester hours.**
Provides training in heavy duty power train components from engine flywheel through the final drives on heavy duty truck, construction equipment, and farm implements. Practical theory and application to perform repair procedures, troubleshooting, diagnosing, failure analysis, preventative maintenance, and adjustments of heavy-duty power trains. Manually operated, power-shift actuated, differentials, and planetary final drives will be covered. Introduction to maintenance and repair of heavy duty brake systems is included. D

**DESL 0184 Diesel Engine Technology: 5 semester hours.**
Instruction in diesel power theory fundamentals and operation of diesel engines in mining, agriculture, and trucking applications. Classroom theory is combined with laboratory sections consisting of overhaul procedures, repair, diagnostic testing, and final adjustment of components or systems. D

**DESL 0186 Diesel Engine Electrical Systems: 2 semester hours.**
Provides instruction in theory and application of computerized engine management systems, understanding the relationship of electronic components to overall engine performance, and employ diagnostic equipment to test and monitor engine systems. COREQ: DESL 0184 and DESL 0190. PRE-or-COREQ: DESL 0101. D

**DESL 0188 Diesel Engine Emission Systems: 1 semester hour.**
Provides instruction in theory and application of new federal emissions compliance standards for diesel powered vehicles. Topics include principles of exhaust treatment, testing of emission control devices, emissions monitoring, troubleshooting, and corrective action for emissions compliance and maximum power output. PREREQ: DESL 0101. D

**DESL 0215 Advanced Hydraulics: 6 semester hours.**
Addresses troubleshooting hydraulic and hydrostatic drive systems. Fundamentals of GPS operation as they relate to hydraulic controls in agriculture and construction equipment. Emphasis on the proper use of diagnostic procedures, electronic test equipment, and interpretation of schematic drawings. Perform tests and make repairs to mechanical or electronic components. Students will use a variety of electronic meters to diagnose and correct problems. COREQ: DESL 0107. PREREQ: DESL 0101 and DESL 0115. D

**DESL 0217 Advanced Engine Electronics: 4 semester hours.**
Provides instruction in theory and operation of electronic control systems, electronic control modules, and electronic governors. Practical application and use of multi-meters, engine diagnostic software, and troubleshooting techniques are provided. COREQ: DESL 0109, DESL 0113, DESL 0125, DESL 0184, DESL 0186, and DESL 0190. PREREQ: DESL 0101 and DESL 0107. D

**DESL 0231 Live Work Capstone Class: 8 semester hours.**
Synthesis of all prior learning. Provides opportunities for diagnosis, troubleshooting, and service of diesel powered equipment by repairing customer equipment in a controlled lab environment. Includes diagnosis of faults, preparation of service reports, ordering parts, installation of parts for repair, and final testing of all work performed. D

**DESL 0232 Internship Capstone Class: 8 semester hours.**
Used as a final phase of training in an actual equipment repair facility performing all types of repair work. The participant will utilize all previously learned skills in an industrial setting and will be closely supervised. F, S, Su

**DESL 0241 On Site Power Generation I: 8 semester hours.**
Principles, diagnosis, repair and trouble shooting on operable on-site power generation equipment. F, S

**DESL 0243 On Site Power Generation II: 8 semester hours.**
A continuation of DESL 0241. F, S

**DESL 0296 Independent Study: 1-8 semester hours.**
Addresses specific learning needs of individuals for the enhancement of knowledge and skills within the program area under the guidance of an instructor. May be repeated. Graded S/U, or may be letter-graded. PREREQ: Permission of the instructor. D

**DESL 0298 Special Topics: 1-8 semester hours.**
Addresses the specific needs of industry, enabling students to upgrade technical skills that are not included in the current program curriculum. May be repeated. Graded S/U, or may be letter-graded. PREREQ: Permission of instructor. D