

Diesel/Diesel Electric (DESL)

Courses

DESL 1101 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. PREREQ: Minimum score of 14 on ALEKS or equivalent. D

DESL 1102 Introduction to Electrical: 2 semester hours.

Introduction to electrical theory, basic CAN BUS networking, and essential electrical system formulas. PREREQ: Minimum score of 14 on ALEKS or equivalent. F, S

DESL 1103 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, charging systems, batteries, troubleshooting, and lighting systems. PREREQ: Minimum score of 14 on ALEKS or equivalent. F, S

DESL 1107 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. PREREQ: Minimum score of 14 on ALEKS or equivalent. D

DESL 1109 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 1113 Diesel Engine Fuel Systems: 3 semester hours.

Introduces diesel fuel system interactions through CAN BUS applications in 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 as part of introduction to Tier 4 emission controls. F, S

DESL 1115 Diesel Hydraulics I: 2 semester hours.

Provides an introduction to diesel hydraulics and their operation. Basic principles of flow, pressure, and conversion 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 1125 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. PREREQ: Minimum score of 14 on ALEKS or equivalent. D

DESL 1184 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 1186 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. F,S

DESL 1190 Diesel Engine Emission Systems: 2 semester hours.

Provides instruction in theory and application of new federal emissions compliance standards for diesel powered vehicles. Advanced Tier 4 topics include advanced concepts of exhaust treatment, testing of emission control devices, emissions monitoring, troubleshooting, and corrective action for emissions compliance and maximum power output. F,S

DESL 2215 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. F,S

DESL 2217 Advanced Engine Electronics Systems: 5 semester hours.

Provides instruction in theory and operation of electronic control systems, introduction to Tier 4 emissions, electronic control modules, and electronic governors through advanced CAN BUS networking. Practical application and use of multi-meters, engine diagnostic software, and troubleshooting techniques are provided. F,S

DESL 2231 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 2232 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 2241 On Site Power Generation I: 8 semester hours.

Principles, diagnosis, repair and trouble shooting on operable on-site power generation equipment. F, S

DESL 2243 On Site Power Generation II: 8 semester hours.

A continuation of DESL 2241. F, S

DESL 2296 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 2298 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