

# SUBJECTS AND COURSES

## COURSE DESCRIPTIONS - DIESEL MECHANICS (DEM)

### DEM 104 Basic Engines

This course is designed to give the student knowledge of the diesel engine components and auxiliary systems, the proper way to maintain them, and the proper procedures for testing and rebuilding components. Emphasis is placed on safety, theory of operation, inspection, and measuring and rebuilding diesel engines according to factory specifications. Upon completion, students should be able to measure, diagnose problems, and repair diesel engines. Prerequisite(s): As required by College Corerequisite(s): As required by College CORE **5 Credit Hours**

### DEM 105 Preventive Maintenance

This course provides instruction on how to plan, develop, and install equipment surveillance and reliability strategies. Descriptions of various maintenance techniques for specialized preventive programs are discussed and computerized parts and equipment inventories and fleet management systems software are emphasized. Upon completion, students should be able to set up and follow a preventive maintenance schedule as directed by manufacturers. Prerequisite(s): As required by College Corerequisite(s): As required by College **5 Credit Hours**

### DEM 111 Safety-tools and Management

This course provides instruction in the fundamental of vehicle operation and safety when basic service work is to be performed in the shop. Topics include service manuals, mechanical fundamentals, preventive maintenance and component adjustment. Upon completion, students should be able to demonstrate knowledge of the fundamentals of vehicle operation and safety in the shop. Prerequisite(s): As required by College Corerequisite(s): As required by College **5 Credit Hours**

### DEM 117 Diesel and Gas Tune-up

This course introduces tune-up and troubleshooting according to manufactures' specifications. Topics include troubleshooting engine systems, tune-up procedures, and use and care of special test tools and equipment. Upon completion, students should be able to troubleshoot, diagnose, and repair engines and components using appropriate diagnostic equipment. **5 Credit Hours**

### DEM 122 Heavy Vehicle Brakes

This course covers the theory and repair of braking systems used in medium and heavy-duty vehicles. Topics include air, hydraulic, and ABS system diagnosis and repair. Upon completion, students should be able to troubleshoot, adjust, and repair braking systems on medium and heavy vehicles. Prerequisite(s): As required by College Corerequisite(s): As required by College CORE **5 Credit Hours**

### DEM 123 Pneumatics and Hydraulics

PREREQUISITE: As required by college. NOTE: There is an approved standardized plan-of-instruction for this course. This course provides instruction in the identification and repair of components found in hydraulic and pneumatic systems. Topics include schematics and symbols used in fluid power transmission and the troubleshooting of components in these systems. Upon completion, students should be able to diagnose, adjust, and repair hydraulic and pneumatic system components. **5 Credit Hours**

### DEM 124 Electronic Engine Systems

This course introduces the principles of electronically controlled diesel engines. Emphasis is placed on testing and adjusting diesel engines in accordance with manufacturers' specifications. Upon completion, students should be able to diagnose, test, and calibrate electronically controlled diesel engines. Prerequisite(s): As required by College Corerequisite(s): As required by College **5 Credit Hours**

### DEM 125 Heavy Vehicle Drive Trains

This course introduces operational principles of mechanical medium and heavy-duty vehicle transmissions. Topics include multiple counter shafts, power take offs, slider idler clutches, friction clutches, mechanical transmission power components, and hydraulics. Upon completion, students should be able to diagnose, inspect, and repair mechanical transmissions. Prerequisite(s): As required by College Corerequisite(s): As required by College CORE **5 Credit Hours**

### DEM 126 Advanced Engine Analysis

This course provides instruction in the disassembly, inspection, and rebuilding of diesel and heavy-duty gas engines. Emphasis is placed on the manufacturer's standards and factory recommended service tools and equipment. Upon completion, students should be able to disassemble, inspect, and rebuild engines according to the manufacturer's specifications. **5 Credit Hours**

### DEM 127 Fuel Systems

This course is designed to provide practice in troubleshooting, fault code diagnosis, information retrieval, calibration, repair and replacement of fuel injectors, nozzles, and pumps. Emphasis is placed on test equipment, component functions, and theory. Upon completion, students should be able to diagnose, service, and repair fuel systems and governors. **5 Credit Hours**

### DEM 130 Electrical/Electronic Fundamen

This course introduces the student to basic Electrical / Electronic concepts and fundamentals. It provides the principles of electricity, magnetism, and Ohm's Law. Emphasis is placed on batteries, starting, charging, and lighting circuits, which include series, parallel, and series-parallel circuits. Troubleshooting and repair of wiring harnesses, starting motors, charging systems, and accessories are included, along with the computerized monitoring of vehicle systems. Upon completion, students should be able to identify components, test systems, and repair minor electrical problems according to manufacturers' literature. Prerequisite(s): As required by College Corerequisite(s): As required by College CORE **5 Credit Hours**

### DEM 135 Heavy Vehicle Steering & Suspe

This course introduces the theory and principles of medium and heavy-duty steering and suspension systems. Topics include wheel and tire problems, frame members, fifth wheel, bearings, and coupling systems. Upon completion, students should be able to troubleshoot, adjust, and repair suspension and steering components, and perform front and rear wheel alignments on medium and heavy duty vehicles. Prerequisite(s): As required by College Corerequisite(s): As required by College **5 Credit Hours**

### DEM 137 Heating & AC Systems

This course provides instruction in fundamentals, diagnosis, and repair of cab and cargo heating and refrigeration systems. Topics include operation theory, safety, maintenance, recycling and recovery procedures, recharging procedures, troubleshooting procedures, refrigerant leaks, and system repairs. Prerequisite(s): As required by College Corerequisite(s): As required by College **5 Credit Hours**

### DEM 156 CDL License Test Preparation

This is a course designed to prepare students for the Alabama Commercial Driver's License written examination. The course includes a review of major topics, sample tests, as well as basic CDL information and test-taking procedures. **3 Credit Hours**