

# DIESEL TECHNOLOGY (DTEC)

## **DTEC 105. Diesel Powertrains I. (4 Credits)**

A course covering the operation, diagnosis, and repair of power transmission components on Heavy Equipment and Over-The-Road Tractors. Topics addressed will include: Clutches, Standard Transmissions, Torque Converters, Automatic Transmissions, and Drive shafts. 4 credits (3 lecture hours, 2 laboratory hours), spring semester

## **DTEC 110. Diesel Powertrains II. (4 Credits)**

A course covering the operation, diagnosis, and repair of chassis components on Heavy Equipment and Over-The-Road Tractors. Topics addressed will include: Chassis systems, alignment, PTOs, single and tandem rear axles, springs, shocks and other suspension components, tires, wheels, and bearings, and braking systems including ABS and brake chamber servicing. 4 credits (3 lecture hours, 2 laboratory hours), spring semester

## **DTEC 125. Diesel Electrical Systems. (4 Credits)**

An introduction to the fundamentals of electricity and their application in diesel engines and equipment. Basic theory of AC and DC systems used for charging, starting, lighting, and accessory circuits is covered. Lectures emphasize understanding of common circuit configurations and sample wiring schematics. Labs emphasize testing of components, troubleshooting circuits, and common repair techniques. 4 credits (3 lecture hours, 2 laboratory hours) fall semester

## **DTEC 150. Diesel Systems. (3 Credits)**

Theories and principles of diesel operation and construction. Engine removal, inspection, disassembly, part analysis, and rebuilding. Engine run-in, dyno testing, and principles of troubleshooting will be discussed. 3 credits (2 lecture hours, 2 laboratory hours), fall semester

## **DTEC 151. Seminar Caterpillar Power Syst. (2 Credits)**

Theories and principles of caterpillar diesel engines, operation and construction, engine removal, inspection dis-assembly and rebuild are covered in this course. Caterpillar-specific software and reference material will be used. Co-requisites: DTEC 150 or permission of the instructor. 2 credits (1 lecture hour, 2 laboratory hours), fall semester

## **DTEC 225. Diesel Electronics. (4 Credits)**

A continuation of DTEC 125. Expanding on basic AC and DC theory, to include multiplexing, active and passive sensors and digital electronics, this course addresses more complex wiring schematics, sensor troubleshooting and wiring harness repair. Students will use diagnostic equipment, lap top computers and current manufacturers' software and communication adapters to analyze and repair digital electronic systems found on construction, on highway, agricultural and electric power generation systems. Pre- or co-requisite: DTEC 125 or MAGN 101, or permission of instructor. 4 credits (3 lecture hours, 2 laboratory hours) spring semester.

## **DTEC 250. Mechanical Injection Systems. (3 Credits)**

Principles of injection systems, design, and construction of different systems. Inspection, tear down, and service of various components. Use of special testing and calibrating equipment. Special emphasis on diesel equipment used on farm tractors and power equipment. 3 credits (2 lecture hours, 2 laboratory hours), fall semester

## **DTEC 290. Diesel Equip Tech Internship 1. (1 Credit)**

This course is designed for Diesel Equipment Technology majors to complete a limited time internship as part of their program. The student must select a diesel industry employer to work for during a college break most likely during the winter break. Students will be introduced to on-the-job skills as well as interpersonal skills necessary to maintain a job. Prerequisite: DTEC 150 or AGEN 100, or permission of instructor; cumulative GPA of 2.0. 1 credit, spring semester (internship to take place during winter break).

## **DTEC 295. Diesel Equip Tech Internship 3. (1 Credit)**

This course is designed for Diesel Equipment Technology majors to complete a limited time internship as part of their program. The student must select a diesel industry employer to work for during a college break most likely during the winter break. Students will be introduced to on-the-job skills as well as interpersonal skills necessary to maintain a job. Concentration will be on advanced skills and management systems. Prerequisites: Final semester status in diesel program, permission of instructor, overall GPA of 2.0. 1 credit, spring semester (internship to take place during winter break)

## **DTEC 300. Diesel Equip Tech Internship 2. (4 Credits)**

This course is designed for Diesel Equipment Technology majors to complete a summer internship as part of their program. The student must select a diesel industry employer to work for during the summer (or other extended break from college) between their first and second year of study. Students will learn on-the-job skills as well as interpersonal skills necessary to maintain a job. Prerequisites: DTEC 150, AGEN 100, DTEC 125, DTEC 105, permission of instructor, overall GPA of 2.0. 4 credits, fall semester

## **DTEC 325. Electrical Power Generation. (3 Credits)**

Students will develop the knowledge and skills necessary to install, troubleshoot and service on-site power generation systems up to 50kW. This course emphasizes various generator types driven by both typical and atypical methods. Instruction is provided in the areas of diesel and gaseous fueled engines, control systems and governors. Advanced instruction is provided in electrical components necessary in the generation, storage, conversion, switching, and transmission of electric power. Students develop the practical skills needed to work with on-site electrical power generation equipment and related systems. Prerequisites: DTEC 125 or ELEC 190 & DTEC 150 or AGEN 210 or by permission of instructor Co-requisites: MAGN 101 3 credits (2 hours lecture, 2 hour lab), fall semester

## **DTEC 350. Advanced Diesel Fuel Systems. (3 Credits)**

A continuum of DTEC 250 involving more advanced concepts of diesel engines, injection systems, two and four cycle engines, use of advanced testing and calibration equipment. Electronic control of diesel fuel injection systems, operating principles and computer diagnostics will be addressed. Prerequisite: DTEC 250 3 credits (2 lecture hours, 2 laboratory hours), spring semester