



2023-2024

NWKTC Catalog and Student Handbook

Kansas Institute of Diesel TechnologySM

Description: Kansas Institute of Diesel TechnologySM is a practical and in-depth technical program designed to provide students with the skills necessary to successfully gain employment as a diesel technician. Students choose one of two pathways in the program: over-the-road or agricultural diesel technician.

Coursework and live-work projects include: electromechanical testing equipment; use of diesel calibration instruments; electrical systems; transmissions; suspensions; braking; complete engine overhaul; diesel, gasoline, and natural gas fuel systems; hydraulic systems; and air-conditioning.

As repair methods change, the curriculum is continually updated to provide instruction on the latest tools, equipment, new job procedures, as well as the older models and methods. Instruction includes both shop and classroom situations with the majority of time devoted to actual hands-on experience. Applied shop instruction involves individualized live work on customers' truck and farm equipment.

Degree/Certificates awarded:

AAS
Tech Cert C

Accreditation/Certification:

ASE Education Foundation (formerly NATEF)

Program Learning Outcomes:

Upon successful completion of the program, the student will be able to:

1. Demonstrate knowledge of safety practices, tools, fasteners, and fittings related to diesel mechanics.
2. Apply the theory of diesel mechanics to specific jobs.
3. OSHA 10-hour general industry training
4. Diagnose and repair electrical systems.
5. Diagnose charging, starting, and ignition systems.
6. Diagnose and repair fuel systems.
7. Diagnose and repair electronic systems.
8. Diagnose and repair heating and air conditioning systems.
9. Diagnose and repair hydraulic systems.
10. Diagnose and repair small engines.

11. Diagnose repair and rebuild large engines.
12. Diagnose and repair valve systems.
13. Diagnose and repair cooling and lubrication systems.
14. Diagnose and repair emissions systems
15. Diagnose and repair power train, clutches, transmission, and final drives.
16. Diagnose and repair suspension and steering systems.
17. Diagnose and repair brake systems, including air and hydraulic.
 - Demonstrate effective reading, writing, speaking, listening, and time management skills.
 - Demonstrate mathematical skills.

Program Schedule:

Students attend class at 7:00 a.m. to 3:30 p.m., Monday through Friday.

Miscellaneous Notes:

After the first year of study, students must choose one of two tracks for the second year of study. The two tracks are (1) Over the road Track and (2) Agriculture Equipment Track.

PROGRAM GUIDE

YEAR I: FIRST SEMESTER		
Course #	Course Name	Credits
CF 101	Computer Fundamentals (or Natural & Applied Science)	3
DT 100	OSHA 10/General	1
DT 105	Tools, Fasteners, & Fittings	1
DT 110	Electrical/Electronic Systems	5
DT 135	Advanced Electrical/Electronic Systems	5
DT 155	Diesel Fuel System	4
SO 100	Student Success Seminar (Required)	1
YEAR I: SECOND SEMESTER		
Course #	Course Name	Credits
ENGL 105	Technical Writing (or English Composition)	3
DT 115	Air Conditioning	3
DT 140	Preventative Maintenance	3
DT 170	Fundamentals of Hydraulics	2
DT 175	Hydraulic Pumps & Motors	2
DT 180	Hydraulic Valves & Cylinders	2
DT 215*	Small Engine Repair	4
YEAR II: FIRST SEMESTER		
Course #	Course Name	Credits
BA 215	Personal Finance (Required)	3
CDL 105*	Entry Level Driver Training Theory	2
CDL 115*	CDL Practice Driving/Trip Prep	2
DT 200	Orientation & Safety	1
DT 210*	Diesel Engine System*	2
DT 273	Diesel Engines I	5
DT 278	Electronic Controls, Sensors & Senders	3
DT 280*	Specialization/Occupational Work Experience*	4

YEAR II: SECOND SEMESTER		
Course #	Course Name	Credits
AE 205	Forklift Operator Training*	1
DT 250	Powertrains	1
DT 255	Clutches	1
DT 260	Transmission	4
DT 265	Drive Trains	4
DT 270	Suspension and Steering	3
DT 275	Brakes	3

COURSE DESCRIPTIONS

DT 100 OSHA 10/ GENERAL

1 CR

Basic principles of mechanics including shop safety, first aid, use of repair orders, and proper maintenance of shop equipment.

DT 105 TOOLS, FASTENERS & FITTINGS

1 CR

Students will learn the proper use of hand tools, measuring tools, torque devices, and identification and use of fasteners.

DT 110 ELECTRICAL/ELECTRONIC SYSTEMS

5 CR

Foundation for developing electronic skills, begins with basic electrical theories, building circuits, using test meters and scopes.

DT 115 AIR CONDITIONING

3 CR

Students will learn the theory of air conditioning systems on modern farm equipment and heavy-duty trucks. Students have the opportunity to become MACS (Mobile Air Conditioning Society) certified in this course.

DT 135 ADVANCED ELECTRICAL/ELECTRONIC SYSTEMS

5 CR

This an advanced class on electrical connectors and harnesses with an in depth look at Digital Multimeters and Diagnostic test equipment and laptops. Data bus systems, multiplexing and electronics fuel and engine management systems will also be covered.

DT 140 PREVENTATIVE MAINTENANCE

3 CR

Students will develop a preventative maintenance schedule for various live projects and complete the inspection sheets.

DT 155 DIESEL FUEL SYSTEM

4 CR

Trouble shooting and repair on diesel injection systems related to farm equipment and heavy duty truck applications.

DT 170 FUNDAMENTALS OF HYDRAULICS

2 CR

Students will learn how hydraulics work and the safety issues associated with hydraulics. Students will diagnose and test hydraulic system

DT 175 HYDRAULIC PUMPS & MOTORS

2 CR

Students will have the opportunity to disassemble radial and axial piston pumps. They will test, diagnose, replace, and overhaul hydraulic devices related to pumps and motors.

DT 180 HYDRAULIC VALVES & CYLINDERS

2 CR

In this course on hydraulics, students will test, diagnose, replace, and overhaul hydraulic devices related to valves and cylinders, which will include the electro-hydraulic valve and cylinder.

DT 200A ORIENTATION & SAFETY

1 CR

This course covers the use of task sheets, cleanup techniques, and repair orders. Students will follow procedure for personal safety and proper use of equipment and tools.

This course covers the fundamentals of operation of engines and diesel related equipment and the use of diagnosis equipment and procedures. Students will use equipment and tools to diagnose shop projects.

DT 210A DIESEL ENGINE SYSTEM

2 CR

This course covers the fundamentals of operation of engines and diesels related equipment and the use of diagnosis equipment and procedures. Students will use equipment and tools to diagnose shop projects.

DT 215 SMALL ENGINE REPAIR*

4 CR

Students will learn how a small engine operates and also how to service and overhaul a small engine.

DT 250 POWERTRAINS*

1CR

At the completion of this unit the student will be able to service, adjust, diagnosis, repair, recondition, and replace bearing and seals that are sed in power trains. The student will have an understanding of how power trains operate.

DT 255 CLUTCHES

1CR

At the completion of this unit, the student will be able to service, adjust, diagnose, repair, recondition, and replace clutches and clutch linkages. The student will understand how clutches work and how to diagnose clutch problems.

DT 260 Transmission

4CR

Students will be able to service, adjust, diagnose, repair, recondition, and replace transmissions and transmission parts used in power trains, which are normally serviceable.

DT 265 DRIVE TRAINS

4 CR

At the completion of this unit, the student will be able to service, adjust, diagnose, repair, recondition, and replace differential and final drive components, which are normally serviceable.

DT 270 SUSPENSION AND STEERING

3 CR

At the completion of this unit, the student will be able to service, adjust, diagnose, repair, recondition, and replace all parts related to suspension and steering which are normally serviceable.

DT 273A DIESEL ENGINES I

5CR

In this course, student will learn to diagnosis, teardown, inspect, rebuild, assemble and service heavy-duty diesel engines.

DT 275A BRAKES

3 CR

At the completion of this unit, the student will be able to service, adjust, diagnose, repair, recondition, and replace all parts related to brake, which are normally serviceable. They will also be able to completely rebuild and assemble an air hydraulic brake system.

DT 278 ELECTRONIC CONTROLS, SENSORS & SENDERS

3CR

In this course, students will diagnosis engine computer systems and repair sensor wires and connectors. Data Bus Systems and Multiplexin. Basics will also be covered in this course.

DT 280 SPECIALIZATION/OCCUPATIONAL WORK EXPERIENCE*

4 CR

At the completion of this unit, the student will be able to enter the job market.