

Diesel Technology

Student Information



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Diesel Technology is a two-year program designed to prepare students for the many employment opportunities in the diesel industry leading to an Associate of Applied Science Degree. The Diesel Technology program is accredited by the AED Foundation.

NDSCS Program Coordinator/Instructor

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The material in this packet is intended solely for information purposes. The North Dakota State College of Science reserves the right to make changes in curricula, rules and fees whenever such changes are deemed necessary. The announcements in this material are subject to change without notice and may not be regarded as binding obligations on the institution or the state of North Dakota



INTRODUCTION

The Diesel Technology program is an Associate of Applied Science degree (A.A.S.) that is designed to develop technically competent, professional service technicians.

Students receive state-of-the-art technical training on construction, over the road truck, agricultural equipment and related products through a combination of classroom instruction, hands-on laboratory instruction, and cooperative educational work experience at a participating OEM dealership.

The Diesel Tech program takes four semesters or approximately 18 months to complete. The four semesters are divided into eight terms, each approximately eight weeks in length.

Classroom and laboratory instruction at NDSCS covers the basics of each subject plus the latest developments in equipment. Work experience at an OEM dealership is structured to relate to the most recent classroom subjects covered at NDSCS and includes projects to improve the student's skill level.

Students are responsible for tuition, fees, textbook, uniform and tool costs.



DIESEL TECHNOLOGY PROGRAM

(AAS Degree)

CURRICULA			Credits	Related/General Education Courses			Credits
DTEC 109	Air Conditioning for Diesel Technology	2	CIS 101	Computer Literacy	2		
DTEC 110	Diesel Equipment Maintenance	3	DTEC 101	Science of Success: Intro to Diesel	1		
DTEC 115	Introduction to Light and Medium Duty Engines	4	ENGL 105	Technical Communications	3		
DTEC 125	Introduction to Heavy Duty Drive Systems	3	HPER	Electives	2		
DTEC 135	Medium/Heavy Duty Brake Systems	2	MATH 120	Basic Mathematics I	2		
DTEC 155	Electricity for Diesel Technology	4	MATH 123	Basic Mathematics II	2		
DTEC 164	Introduction to Mobile Hydraulics	4	MATH 125	Basic Mathematics III	2		
DTEC 215	Heavy Duty Diesel Engines	7	PSYC 100	Human Relations in Organizations	2		
DTEC 225	Heavy Duty Drive Systems	7					
DTEC 255	Heavy Duty Chassis Electrical Systems	7					
DTEC 265	Mobile Hydraulic Systems Diagnostics and Repair	7					
DTEC 297	Cooperative Education	2					
MFGT 110	Industrial Shop Practices	2					

Class schedule may change without notice.

COURSE DESCRIPTIONS

DTEC 109 Air Conditioning for Diesel Technology (2 credits)

A lecture, discussion and lab-type course covering the design and principles of operations of various air conditioning systems, including agriculture, construction and trucking equipment. Work in lab consists of leak detecting, evacuation, reclaiming, charging, component comprehension, electrical systems and troubleshooting for various units.

DTEC 110 Diesel Equipment Maintenance (3)

A theory and lab course covering general maintenance and service procedures performed on diesel powered equipment. This course includes instructions for safe operation of various types of diesel powered equipment for the technician to perform general service procedures required by the manufacturer. Proper use of shop tools, equipment, safety techniques and industry standards will be covered. This is a 3 credit 8-week course, 80 hour class. (F, S)

DTEC 115 Introduction to Light and Medium Duty Engines (4)

A theory and lab course covering rebuilding of heavy duty gas and light- and medium-duty diesel engines. Students will troubleshoot, disassemble, rebuild and assemble an engine during this class. Learning modules include: measurement fundamentals, basic engine operating principals, cylinder and piston service, cylinder head rebuilding and valve reconditioning, crankshaft and bearing service, and lubrication and cooling systems. Engines designed for the use of alternative fuels such as LPG and CNG are also covered. This class is a prerequisite for DTEC 215, CIH 215 and JDAT 215.

DTEC 125 Introduction to Heavy Duty Drive Systems (3)

A lecture and lab type course which provides the student with theory and hands-on operation and repair of shop safety, operation, bearings-seals, heavy duty steer axles, drive axles, medium and heavy duty truck suspension, wheel end assemblies. This is a 3 credit, 8-week course and 80-hour class. (F, S)

DTEC 135 Medium/Heavy Duty Brake Systems (2)

A theory and lab course covering the operation and repair of air and hydraulic brake systems used in light, medium, heavy duty trucks and diesel powered equipment. This course covers all brake systems, diagnosis and repair of power, manual, anti-lock brakes and parking brakes. DOT inspection procedures are also covered in this class. This is a 2 credit, 8-week course and a 64-hour class. (F, S)

DTEC 155 Electricity for Diesel Technology (4)

An introductory lab/theory class in electrical fundamentals. A practical approach to the study of electricity including Ohm's Law, power, series and parallel circuits, direct and alternating current, with strong emphasis on diagrams and troubleshooting. This class is designed for technicians in the Diesel Technology field. (F, S)

DTEC 164 Introduction to Mobile Hydraulics (4)

This course is a study of hydraulic system fundamentals and various components used in a typical mobile hydraulic system. Component disassembly and reassembly will take place to aid in the understanding of component and system operation. Various components will be tested on a test bench to help the student understand how the components contribute to the overall operation of the system and will be used to evaluate the students' performance. Experiments will be performed on lab equipment to aid in the understanding of mobile hydraulic principles.

DTEC 215 Heavy Duty Diesel Engines (7)

A lecture and lab type course of current heavy-duty diesel engines. Students gain knowledge in operation, troubleshooting, rebuilding and tuning all types of diesel engines. Work includes disassembly, assembly, injection timing and adjustment common to diesel engines used in the agricultural, transportation and industrial industries.

DTEC 225 Heavy Duty Drive Systems (7)

A lecture and lab type course which provides the student with theory and hands-on operation and repair of the latest types of heavy-duty drive systems that the agricultural, transportation and industrial industries use on their equipment.

DTEC 255 Heavy Duty Chassis Electrical Systems (7)

A lecture and lab type course covering the theory of operation, repair and diagnostic procedures used on heavy-duty truck and tractor electrical systems, electronic engines and transmissions. This is a half-semester course. (F, S)

DTEC 265 Mobile Hydraulic Systems Diagnostics and Repair (7)

DTEC 265 is a lab/lecture course covering the service diagnostics and repair of the hydraulic functions on agricultural and industrial equipment. Open center, closed center, and closed center load sensing systems are covered as well as steering, hydrostatic drives, 3 point hitches, and hydraulic functions of today's equipment. Prerequisite: DTEC 164.

DTEC 297 Cooperative Education for Diesel Technology (1-5)

The Cooperative Education program for Diesel Technology allows the students to apply classroom study with a paid work experience related to their fields of study at a department approved work site. It is recommended that the student has completed one year of Diesel Technology. (Su)

MFGT 110 Industrial Shop Practices (2)

An introduction to the procedures and practices used to develop fundamental industrial shop skills. Students enrolled in this class will learn and apply a variety of practical skills used to aid in any entry level industrial mechanical service occupation. The topics covered in this course are: general shop safety; MIG welding set-up and operation as well as welding simulation; Oxy-Fuel torch set-up and operation; basic measuring methods using tape measures, rulers, calipers, and micrometers; identification of SAE and ISO metric measuring systems; proper use and identification of basic shop tools; identification of twist drills and sharpening; identification and use of hand taps; fastener type and grade identification; Helicoil insert use; bolt extraction; properly demonstrate the use of mechanical type torque wrenches; properly demonstrate the use of electronic type torque wrenches; properly demonstrate the ability to torque according to industry standards.

ENGL 105 Technical Communications (3)

This course concentrates on business correspondence, informal report writing, technical communication, job preparation, and oral presentation. Prerequisite: Placement test. (F, S, Su-O)

MATH 120 Basic Mathematics I (2)

A review of whole numbers, fractions and decimal numbers in conjunction with the fundamental application of ratios, rates, unit rates, proportions, and percentages in solving everyday problems. Business and consumer mathematics such as simple interest, compound interest, and purchasing. (F, S)

MATH 123 Basic Mathematics II (2)

Introduction of statistical data reading and calculating. Problem solving involving length, width, and capacity in the U.S. and metric systems. Application problems involving perimeter, area, volume, and fundamental geometry. (F, S, Su)

MATH 125 Basic Mathematics III (2)

Basic concepts and features of beginning algebra with an emphasis on critical thinking and problem solving. Topics include properties of real and rational numbers, arithmetic operations of numbers and expressions, translating verbal expressions/equations to variable expressions/equations, and application of word problems. (F, S)

CIS 101 Computer Literacy (2)

This course is designed to provide non-Computer Science majors with an introductory-level course in computer usage that prepares them for contemporary work environments. It is a hands-on lab-based course intended to introduce the student to the Windows operating system, Word, Excel, and PowerPoint. Windows PC required. (Credit awarded for CIS 101 or CSCI 116, not both.) (F, S, Su, O) ND:COMPSC

PSYC 100 Human Relations in Organizations (2)

This course focuses on building successful and effective interpersonal relationships within organizational and other social environments. It includes an examination of human relations in business and industry with emphasis on how people can work effectively in groups to satisfy both organizational and personal goals. Motivation, emotional and mental health, communication techniques, and coping with stress are explored. Activities are used to encourage the application of concepts to enhance personal growth and insight and to increase social skills. (F, S, Su-as needed, O) ND:SS

DTEC 101 Science of Success: Intro to Diesel (1)

This is a practical one-credit course that provides the tools and skills necessary to get a strong start with the transition for new students at NDSCS. This course will introduce the students to campus resources, policies and procedures and cover topics such as time management, study skills, goal setting, wellness, financial literacy, and professional development. (F, S, O)

HPER Electives

(See NDSCS Catalog for details)

STUDENT ADMISSION & SELECTION PROCEDURE

Students enroll in the Diesel Technology program at the beginning of any eight week period, providing enrollment space is available. Students are accepted into the program upon completion of admission into NDSCS. Students should do the following:

Apply for admission to NDSCS through the Enrollment Services office. Enrollment Services will not accept faxed applications for any program.

- Submit high school transcripts or GED to Enrollment Services.

ADMISSIONS

Students should contact the NDSCS Enrollment Services office (701-671-2173) to receive information on the college, financial aid and housing. Students should complete the applications and return them to NDSCS promptly.

HIGH SCHOOL OR GED TRANSCRIPTS

Applicants must demonstrate completion of high school or GED equivalency. Students should contact their high school guidance office and request that their transcript be submitted to NDSCS Enrollment Services.

ORIENTATION

All freshmen must complete an orientation. Orientation includes a tour of the NDSCS campus, financial aid counseling, scheduling (academic advising) and registration.

COLLEGE EXPENSES

Contact the Director of Enrollment Services for tuition costs.

NOTE: All tuition, fees, room and board costs are tentative and are subject to change. Personal costs are rough estimates of personal spending. Contact the NDSCS Enrollment Services office for a current information sheet.

STUDENT TOOL LIST

Students are responsible for purchasing or providing their own tools. Below is a list of required tools for the program. These tools can be purchased from NDSCS at a substantial discount through the Bookstore. Find more information at NDSCSbookstore.com.

QTY	DESCRIPTION	CATALOG #	VENDOR
1	6 pc., 3/8" Dr., Comb. Square Adapter Set	1206GS	Snap-On
1	11 pc., 3/8" Dr., 12 pt. Sae Deep Socket Set	211SFY	Snap-On
1	12 pc., 3/8" Dr., 12 pt. Metric Shallow Socket Set	212FMY	Snap-On
1	12 pc., 3/8" Dr., 6 pt. Metric Deep Socket Set	212SFSMY	Snap-On
1	18 pc., 3/8" Dr., 12 pt. SAE Shallow General Service Socket Set	218AFP	Snap-On
1	13 pc., 1/2" Dr., 12 pt. Metric Shallow Socket Set	313SWMYA	Snap-On
1	17 pc., 1/2" Dr., PT SAE General Service Socket Set	317MSPC	Snap-On
1	Strap Oil Filter Wrench	A91F	Snap-On
1	Stainless Steel Wire Brush	AC59C	Snap-On
1	Female Quick Coupler	AHC24D	Snap-On
4	Male Air Line Adaptor	AHC24MD	Snap-On
1	12" Adjustable Joint Pliers	AWP120	Snap-On
1	9 pc. Metric Ball Hex Wrench Set	BHM9A	Snap-On
1	13 pc. SAE Hex Wrench Set	BHS13A	Snap-On
1	Curved Locking Jaw Pliers	BLP10	Snap-On
1	62 pc. 1/4" Dr. SAE/Metric General Service Set	BLPGSS1462	Snap-On
1	87 pc. Torx® & Hex Bit Socket Set	BLPTH87	Snap-On
1	16 oz. Ball Peen Hammer	BPN16B	Snap-On
1	0-1" Micrometer	CNT3M101	Snap-On
1	14-1/8" Rigid Carbon Scraper	CSA14C	Snap-On
1	Bent Blade Feeler Gauge Set	FB300A	Snap-On
1	38 pc. Straight Feeler Gauge Blade Set	FBST338	Snap-On
1	Dual-Foot Air Chuck	GA356B	Snap-On
1	Dial Indicator Extension	GA3601	Snap-On
1	Magnetic Base Dial Test Indicator Set	GA3640A	Snap-On
1	Black Frame Safety Glasses	GLASS31BK	Snap-On
1	48 oz. Soft Grip Dead Blow Hammer	HBFE48	Snap-On
1	4 lb. Hand Drilling Fiberglass Hammer	HD4SG	Snap-On
1	Blow Gun	JT13B	Snap-On
1	5/16" 12 pt. Combination Wrench	OEX10B	Snap-On
1	14 pc. 12 pt. SAE Combination Wrench Set	OEX714KB	Snap-On
1	6mm 12 pt. Metric Short Combination Wrench	OEXM6B	Snap-On
1	10 pc., 12 pt. Combination Metric Wrench Set	OEXM710B	Snap-On
1	7mm 12 pt. Metric Short Combination Wrench	OEXM7B	Snap-On
1	8mm 12 pt. Metric Short Combination Wrench	OEXM8B	Snap-On
1	9mm 12 pt. Metric Short Combination Wrench	OEXM9B	Snap-On
1	4 pc. Prybar Set	PBS704	Snap-On
1	Pencil Tire Pressure Gauge	PGPL150	Snap-On
1	3-19/32" Single Bevel Putty Knife	PK53A	Snap-On
1	3 pc. Pliers Set	PL307ACF	Snap-On
1	US/Metric Dial Type Caliper	PMF147A	Snap-On
1	8" Bronze Drift Punch	PPB826A	Snap-On
1	20" Oval Bearing Race Punch	PPC20LB	Snap-On
1	11 pc. Punch & Chisel Set	PPC710BK	Snap-On
1	Telescoping Magnet Pick Up Tool	PT5C	Snap-On
1	Round Pocket Mirror	PTM143	Snap-On
1	Wire Stripper/Cutter/Crimper/Bolt Cutter	PWC9	Snap-On
1	3/8" Dr. SAE Adj. Click-Type Flex-Head Torque Wrench	QD2FR75B	Snap-On
1	1/2" Dr. SAE Adj. Click-Type Flex-Head Torque Wrench	QD3FR250A	Snap-On
1	3/8" Dr. 6 pt. SAE 3/16" Dr. Shallow Spark Plug Socket	S9704KA	Snap-On

QTY	DESCRIPTION	CATALOG #	VENDOR
1	3/8" Dr. 6 pt. SAE 5/16" Dr. Shallow Spark Plug Socket	S9706KA	Snap-On
1	Flat Tip Pocket Screwdriver W/Magnet	SDD2240	Snap-On
1	Instinct AWL	SG7ASABR	Snap-On
1	4 pc. Soft Grip Mini Pick Set	SGASA204CR	Snap-On
1	8 pc. Combination Screwdriver Set	SGDX80BR	Snap-On
1	2 pc. Striking Prybar Set	SPBS704AO	Snap-On
1	8-7/8" Long Snap Ring Pliers	SRP2B	Snap-On
1	14" Long Snap Ring Pliers	SRP4	Snap-On
1	Convertible Retaining Ring Pliers	SRPC7000	Snap-On
1	1/2" Dr. 12 pt. 10mm Shallow Socket	SWM101A	Snap-On
1	1/2" Dr. 12 pt. 11mm Shallow Socket	SWM111A	Snap-On
1	1/2" Dr. 12 pt. 25mm Shallow Socket	SWM251	Snap-On
1	1/2" Dr. 12 pt. 26mm Shallow Socket	SWM261	Snap-On
1	1/2" Dr. 12 pt. 27mm Shallow Socket	SWM271	Snap-On
1	Torqometer	TE25A	Snap-On
1	Deutsch Terminal Removal Tool Kit	THX483	Snap-On
1	Socket, Shallow 1-1/4" 12- pt.	TW401	Snap-On
1	Brush, Wire, Brass, Miniature, 2"	WBBS2	Snap-On
1	Oil Filter Slip Joint Pliers	YA4274A	Snap-On
1	Oil Filter Pliers	YA4275	Snap-On
1	Welding Gloves	YA427B	Snap-On
1	Welding Sleeve	YA4280	Snap-On
1	Fluke Multimeter 87-V	2074974(F)	Fluke
1	US/Metric Measuring Tape	33-215	Stanley
1	Cut 1 Dipped Gloves SML-2XL (Sized)	48-22-8903	Milwaukee
1	Lifting Brackets	7100U1	Custom
1	.300-.400" Hole Gauge	CEN-4313	Central Tools
1	4' Endless Sling	EN1-801TX4	Tuff-Edge
1	Box of 100 Nitrile Gloves (Sized)	63-332	Ambi-Dex
1	Quiet Bands Hearing Protection	QB2HYG	Supra-Aural
1	Mini LED 2-cell AAA Flashlight	SP32116	Maglite
1	Welding Pliers	770150	Hobart
1	Soapstone Holder/Marker	326-SP-800-1	Wypo
1	Auto Darkening Welding Helmet	S26100	Sellstrom
1	Super Scraper	SS-4U	Inn. Tools

2ND YEAR OPTIONAL

QTY	DESCRIPTION	CATALOG #	VENDOR
SNAP-ON TOOLS			
1	3/8" Dr. X-long Handle Flex-Head Ratchet	FHLLX80	Snap-On
1	6 pc. 12 pt. SAE Midget Wrench Combo Set	OXI706B	Snap-On
1	10 pc. 12 pt. Metric Midget Wrench Combo Set	OXIM710B	Snap-On
1	9-1/4" Hose Clamp Pliers	PHP1A	Snap-On
1	14" Hose Clamp Pliers	PHP2A	Snap-On
1	Cooling System Vacuum/Filler	RADKITPLUSA	Snap-On
1	1/2" Dr. Long Handle Ratchet	SF80A	Snap-On
MILWAUKEE DRILL/DRIVE IMPACT SET			
1	M18 Fuel 1/2" Brushless Compact Drill/Driver Kit	2903-22	Milwaukee
1	M18 Fuel 3/8" Impact Wrench - Bare Tool	2854-20	Milwaukee
1	M18 Fuel 1/2" High Torq. Impact Wrench - Bare Tool	2967-20	Milwaukee

A partial kit may be itemized as a special order. Special orders are subject to availability, vendor discretion, and may not receive the standard educational pricing. To request a special order quote, contact the NDSCS Bookstore Tool Department. Vendors reserve the right to substitute items due to changes in supply chain with items deemed of equal or greater quality. Prices are subject to change without notice due to unforeseen vendor cost increases.

CORRESPONDENCE

All correspondence should be directed to the following address:

Diesel Technology
 Enrollment Services
 North Dakota State College of Science
 800 Sixth St. N.
 Wahpeton, ND 58076



CONTACT INFORMATION

Students should direct all inquiries to the following contact persons.

North Dakota State College of Science Primary Contacts:

Terry Marohl

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 Diesel Technology
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Jenny Schmitt

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 Diesel Technology
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DIESEL TECHNOLOGY PARTNERSHIP PROGRAMS

The following programs are partnerships with NDSCS and participating corporate and dealer sponsors. For information on the partnership programs please contact the program coordinator listed.



JOHN DEERE

John Deere Tech

Tyler Slettedahl, *Program Coordinator*
 800-342-4325 ext. 2726
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CAT Dealer Service

Michael Seedorf, *Program Coordinator*
 800-342-4325 ext. 2101
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JOHN DEERE

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NORTH DAKOTA STATE COLLEGE OF SCIENCE

NDSCS.edu/Diesel