

# CATERPILLAR DEALER SERVICE TECHNICIAN

Dealer and Student Information



# CONTENTS

2	Introduction	6	College Expenses
3	Caterpillar “Think Big” Program	6	Financial Assistance
4	Responsibilities of Participants	7	Butler Machinery Store Locations
4	Caterpillar Dealer Service Technician	7	Contact Information
5	Course Descriptions	7	Application for Internship
6	Student Selection Procedures	8	Student Tool List

The Caterpillar “Think Big” Program is a cooperative two-year college level Student Technician education program that leads to an Associate in Applied Science degree with a major in Caterpillar Service Technology. “Think Big” is offered by CAT participating dealers and is operated by North Dakota State College of Science in Wahpeton, North Dakota.

## NDSCS Program Coordinator/Instructor

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# INTRODUCTION

The Caterpillar Dealer Service Technology Program is designed to develop technically competent entry level service technicians for Caterpillar Dealerships regionally and throughout the world. Caterpillar Company, Peoria, Ill. endorses the program and participating dealerships partner with NDSCS.

Students receive up to date technical training on Caterpillar equipment and systems through a combination of classroom instruction, hands on laboratory instruction and an internship at the participating Caterpillar Dealer. Work experience at the dealership is structured to relate to the most recent classroom/lab subjects covered at NDSCS. Upon completion of the program, graduates earn an Associate in Applied Science degree (AAS).

The Caterpillar Service Technology Program takes five semesters to complete. The five semesters are divided into nine terms, each approximately eight weeks in length. Students complete the 1st, 3rd, 5th, 7th and 9th terms on campus at NDSCS. They complete the 2nd, 4th, 6th and 8th terms at their participating dealership.

If interested, students should complete the NDSCS Admissions application. Candidates also must apply and interview with Caterpillar Dealerships for program selection.

Applicants not selected for the Caterpillar Dealer Service Technology Program are encouraged to enroll in the Diesel Technology Program at NDSCS.

# CATERPILLAR “THINK BIG” PROGRAM

## PROGRAM OBJECTIVE

The Caterpillar “Think Big” Program is a cooperative two-year college level Student Technician education program that leads to an Associate in Applied Science degree with a major in Caterpillar Service Technology. The diesel division and NDSCS works in close relationship with the partnering CAT dealers, to administer the program activities. The program is exclusively by and for the partnering CAT dealerships. It should be understood that the students selected for this program will have the opportunity for full time employment with the dealership upon successful completion of the program.

## PROGRAM PURPOSE

America’s workplace is changing. Current technology and emerging technological advances constantly increase innovation, productivity and competitiveness in a truly global economy. To meet the new challenges of advancing technology in the workplace, NDSCS is partnering with Caterpillar and its dealership to produce high-performance technicians ready to fill productive roles in both business and society, today and into the future. The purpose of the program is to upgrade the technical competency and professional I level of incoming CAT dealership service technicians. It will train CAT Dealer students to analytically diagnose service and maintain Caterpillar products using recommended procedures, special tools and service information. It will provide course content that will enable successful graduates to advance in position after additional experience, and to understand new systems and components as they are introduced.

## PROGRAM STRUCTURE

The two-year, five semester program incorporates approximately one half of the time designated for technical/academic education at North Dakota State College of Science. The remaining time is allocated for on-the job experience at partnering CAT dealerships. These time periods are approximately eight weeks in length each. It is essential for the success of the program that the student’s education at NDSCS and dealership work experiences be closely aligned for maximum student learning and retention. Since considerable time is spent at the dealership it is a requirement of the program that students have a partnering CAT dealership prior to enrollment. The primary responsibility for the dealership is to provide training-related employment for the students during their dealership learning/work experience, internship. All tuition, fees, textbooks, travel expenses and housing costs are the responsibility of the student. In addition to these costs, the students are required to purchase a prescribed tool set if they do not already have one.

## PROGRAM CURRICULUM

Technical training on Caterpillar equipment and components includes the latest developments in Engine Repair, Hydraulic Systems, Electrical and Electronic Systems, Test Procedures and Diagnostic Tools. In addition to the technical curriculum, courses will be offered in areas such as Math; Composition/ Technical Writing; Psychology and Computer Literacy to provide students with the background necessary for effective communication of ideas and the development of interpersonal skills.

## PURPOSE OF THE INTERNSHIP

The internship allows students to apply, in a real world setting, what they have learned during the previous classroom/ lab sessions. In addition, students become familiar with the dealership environment, its organizational structure, and the competencies that are expected of a professional service technician.

## STUDENT QUALIFICATIONS

Prospective students must be:

1. Eighteen years of age (or older) by the time of the first internship.
2. High School Graduate or equivalent.
3. Able to meet NDSCS and CAT Dealership admission and academic requirements.
4. Acceptance by a CAT dealership.
5. Possess a valid driver’s license and maintain an employable driving record.
6. Willing to take a drug test if requested by Dealership. (Note: for many dealerships this is a requirement for employment)
7. Sincere about becoming the best service technician he/she can be.



*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.*



# RESPONSIBILITIES OF PARTICIPANTS

## NORTH DAKOTA STATE COLLEGE OF SCIENCE

- Provide faculty dedicated solely to the CAT "Think Big" Program.
- Provide necessary time to initially train and update the faculty.
- Provide facility dedicated solely to the CAT "Think Big" program: classrooms, labs, etc.
- Appoint a CAT "Think Big" program coordinator.
- Provide advisement for CAT "Think Big" students.
- Maintain up-to-date tools and equipment.
- Grant the Associate of Applied Science degree in Caterpillar Service Technology to graduates.
- Inform dealerships of student progress.
- Assist dealerships with student selection and recruitment.
- Work with the Dealership coordinator to assure involvement in internships.
- Conduct student visitations during internships.
- Establish a CAT dealer prep advisory committee.
- Schedule advisory committee meetings.

## CAT DEALERSHIPS

- Agree to act as a partnering dealership.
- Appoint an in-dealership coordinator.
- Recruit, interview and select prospective student(s).
- Provide dealership coordinated internship experience in accordance with the program schedule for the duration of the curriculum.

- Provide related work/learning experiences that supplement the students' most recent instruction.
- Agree to pay the student during periods of dealership internship.
- Provide work uniforms for student consistent with dealership policy while at the dealership.
- Provide any other benefits in a manner consistent with other dealership employees.
- Assist in obtaining equipment and training aids.
- Participate in the advisory committee meetings.

## STUDENT

- Obtain and maintain a CAT dealership employment throughout the program.
- Provide CAT dealership with responsible and productive work effort.
- Participate in all learning activities at scheduled times.
- Maintain academic standards and adhere to academic policies (minimum 3.0) according to NDSCS policy.
- Maintain dealership attendance standards.
- Be responsible for program cost: tuition, fees, books, tools, housing, etc.
- Wear work uniforms, safety glasses and recommended personal safety equipment during campus class/labs and dealership internship experiences.

# CATERPILLAR DEALER SERVICE TECHNICIAN

## CURRICULA (FIRST YEAR)

	Credits
<b>1st Semster 1st 8-weeks mid-August thru mid-October</b>	
DCAT 111 Introduction to Caterpillar Service	2
DCAT 113 Caterpillar Fuel Systems	3
DCAT 114 Fundamentals of Electricity	3
MATH 120 Basic Mathematics I	2
DTEC 101 Science of Success: Intro to Diesel	1
<b>1st Semster 2nd 8-weeks mid-October thru mid-December</b>	
DCAT 150 Internship I	2
<b>2nd Semester 3rd 8-weeks mid-January thru mid-March</b>	
DCAT 110 Caterpillar Engine Fundamentals	4
DCAT 112 Fundamentals of Hydraulics	3
ENGL 105 Technical Communications	3
PSYC 100 Human Relations in Organizations	2
<b>2nd Semester 4th 8-weeks mid-March thru mid-May</b>	
DCAT 151 Internship II	2

## CURRICULA (SECOND YEAR)

	Credits
<b>3rd Semester June-July</b>	
DCAT 115 Air Conditioning Fundamentals	3
DCAT 116 Fundamentals of Transmission and Torque Converters	3
DCAT 117 Machine Hydraulic Systems	3
MATH 123 Basic Mathematics II	2
<b>4th Semester 1st 8-weeks mid-August thru mid-October</b>	
DCAT 250 Internship III	6
<b>4th Semester 2nd 8-weeks mid-October thru mid-December</b>	
DCAT 200 Undercarriage/Final Drives	3
DCAT 201 Machine Electronic Systems	3
MFGT 110 Industrial Shop Practices	2
CIS 101 Computer Literacy	2
MATH 125 Basic Mathematics III	2
<b>5th Semester 3rd 8-weeks mid-January thru mid-March</b>	
DCAT 251 Internship IV	6
<b>5th Semester 4th 8-weeks mid-March thru Graduation</b>	
DCAT 202 Engine Performance	2
DCAT 203 Diagnostic Testing	2
DCAT 204 Machine Specific Systems	3

*Class schedule may change without notice.  
Dates will coincide with academic calendar.*

# COURSE DESCRIPTIONS

## **DCAT 110 Caterpillar Engine Fundamentals (4 credits)**

A lecture/lab course covering engine operating principles, cylinder and piston service, valve service, crankshaft and bearing service, lubrication systems, rebuilding procedures and measurement fundamentals on Caterpillar engines. Caterpillar engines are used for lab disassembly and assembly.

## **DCAT 111 Introduction to Caterpillar Service (2)**

This course introduces the student to the Caterpillar organization history and the different parts of the company. Instruction and lab experiences in the shop include safety, shop operation and a major emphasis on how to obtain information using CAT Specific Software Systems.

## **DCAT 112 Fundamentals of Hydraulics (3)**

A lecture/lab course designed to teach the basic hydraulic fundamentals. Identification and function of the various components used in Caterpillar hydraulic systems will include vane pumps, gear pumps and piston pumps. Also covered is ISO hydraulic symbol identification and tracing oil flows used in Caterpillar hydraulic systems. Lab exercises include disassembly and assembly of Caterpillar hydraulic components.

## **DCAT 113 Caterpillar Fuel Systems (3)**

A lecture/lab course introducing the student to fuel systems used on Caterpillar engines. Combustion chamber design, injectors and injection pumps are covered in this class. Also covered are diagnosing faults in fuel injection and combustion systems, and lab exercises include disassembly and assembly of fuel components used in Caterpillar fuel systems.

## **DCAT 114 Fundamentals of Electricity (3)**

A lecture/lab course that introduces the student to basic electrical and electronic fundamentals needed by a technician to properly diagnose and repair the complex electrical systems installed on Caterpillar machines. Included is the study of Ohm's law, series and parallel circuits, test instruments and various components found on Caterpillar equipment. The course does not teach specific machine systems.

## **DCAT 115 Air Conditioning Fundamentals (3)**

A lecture, discussion and lab-type course covering the basic theory and operating principles of air-conditioning systems as they relate to Caterpillar equipment. Lab exercises consist of leak detecting, evacuation, reclaiming, charging, component repair and use of test equipment to diagnose and repair malfunctions. (Su)

## **DCAT 116 Fundamentals of Transmission and Torque Converters (3)**

A lecture/lab course that covers the basic components, clutches, torque converters, and various transmissions used in Caterpillar equipment. This course also covers constant mesh, sliding gear, hydrostatic synchromesh, and power shift transmissions involving planetaries. At the completion of this course, the student will have working knowledge of basic power train theory. (Su)

## **DCAT 117 Machine Hydraulic Systems (3)**

A lecture/lab course designed for inspecting, testing, servicing and diagnosing Caterpillar hydraulic systems and components. Students will conduct testing and adjusting procedures on Caterpillar equipment, utilizing Caterpillar service procedures and test equipment. (Su)

## **DCAT 150 Internship I (2)**

This internship is to follow DCAT 111, DCAT 113, and DCAT 114. The student will maintain a daily log book. The intern dealer will provide a mentor for the student. During the course of the internship period an evaluation will be completed between the mentor, instructor, manager, and student. (F)

## **DCAT 151 Internship II (2)**

This internship is to follow DCAT 110 and DCAT 112. The student will maintain a daily log book. The intern dealer will provide a mentor for the student. During the course of the internship period an evaluation will be completed between the mentor, instructor, manager, and student. (S)

## **DCAT 200 Undercarriage/Final Drives (3)**

A lecture/lab course that introduces the student to undercarriage and drive systems used on the many different types of Caterpillar track and wheel machines. Also covered are final drives and braking systems used in Caterpillar track and wheel equipment. This course is a continuation of DCAT 116 Fundamentals of Transmissions and Torque Converters.

## **DCAT 201 Machine Electronic Systems (3)**

A lecture/lab course that covers the electronic systems used on Caterpillar Equipment. This course provides the background needed to diagnose and repair the electronics and computerized circuits found on Caterpillar equipment and engines. Basic electronic concepts, component function and system operation are covered. Caterpillar's procedures are taught to identify malfunctions and to test the system properly.

## **DCAT 202 Engine Performance (2)**

A lecture/lab course that teaches the skills necessary to make CAT engines run at peak performance. The student will be provided with a thorough understanding of the necessary diagnostic skills required for troubleshooting Caterpillar engines and fuel systems. Emphasis will be placed upon knowledge and skills necessary to assure product reliability and performance.

## **DCAT 203 Diagnostic Testing (2)**

This course introduces the student to machine problem identification using diagnostic tooling and reference material to properly diagnose and repair logic and applications using a troubleshooting diagnosis process to solve machine faults in the power train, hydraulic system, and electrical system. The remainder of the course will focus on the solving actual machine malfunctions, utilizing all diagnostic principles, tooling, and electronic troubleshooting applications.

## **DCAT 204 Machine Specific Systems (3)**

This course is designed to expose the student to different types of specialty equipment used for various operations, utilizing CAT equipment. Testing and adjustment of this equipment will also be covered as per Caterpillar service procedures.

## **DCAT 250 Internship III (6)**

This internship is to follow DCAT 115, DCAT 116, and DCAT 117. The student will maintain a daily log book. The intern dealers will provide a mentor for the student. During the course of the internship period an evaluation will be completed between the mentor, instructor, manager and student. (F)

## **DCAT 251 Internship IV (6)**

This internship is to follow DCAT 200 and DCAT 201. The student will maintain a daily log book. The intern dealers will provide a mentor for the student. During the course of the internship period an evaluation will be completed between the mentor, instructor, manager and student. (S)

# STUDENT SELECTION PROCEDURES

Students enroll in the Caterpillar Dealer Service Technology Program at the beginning of fall semester. 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.

**Complete the CAT dealer employer application.**

- Secure approval from a participating dealer.
- Visit NDSCS and complete orientation (testing, academic advising and scheduling, and registration).

## 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.

# COLLEGE EXPENSES

Contact the Director of Enrollment Services for tuition costs. Out-of-state students in a partnership program will pay the in-state tuition rate. The exception is Minnesota students who pay the agreed-to reciprocity rate.

# FINANCIAL ASSISTANCE

Students deciding to be part of the CAT dealer “Think Big” program may have a need for financial assistance. Students involved in the program have the opportunity to earn while they learn during the dealership internship portion of the program. These earnings may be applied to program costs. Additional financial aid, through loans or grants, for tuition, books, tools, on-campus room and board, etc. may be available through various financial assistance programs. Students needing financial assistance are encouraged to complete the applications for financial aid as early as possible. Following application submittal, allow an 8-10 week period for processing. Early application assures availability of funds, if qualified, and allows the Financial Aid office to prepare a realistic financial aid package.

Financial Aid information may be obtained by calling the Student financial Aid office at 1-800-342-4325, ext. 3-2207.

**NOTE:** Tools required for the CAT “Think Big” program are considered an educational expense and should be included in education costs when applying for student financial aid.

## 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

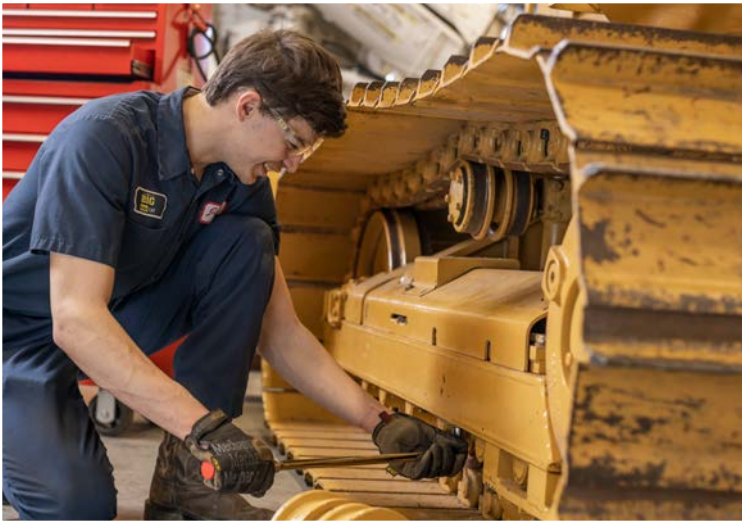
All freshmen must complete an orientation. Orientation includes a tour of the NDSCS campus, financial aid counseling, scheduling (academic advising) and registration.

## CAT DEALERSHIP APPROVAL

Students who successfully complete the admission process are eligible to interview and test with the CAT dealership of their choice. The interview should take place at the dealership and participant’s goals should be discussed. All students must have a dealership endorsement before enrollment can be completed. Should the interview prove successful, the CAT dealer coordinator will notify NDSCS of the agreement to approve the individual.

**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.





## BUTLER MACHINERY STORE LOCATIONS

### NORTH DAKOTA

Bismarck  
Devils Lake  
Dickinson  
Fargo  
Grand Forks  
Hankinson  
Hoople  
Jamestown  
Minot

### SOUTH DAKOTA

Aberdeen  
Huron  
Pierre  
Rapid City  
Sioux Falls

## CONTACT INFORMATION

Dealers and students should direct all inquiries to the following contacts:

### Terry Marohl

*Diesel Technology Department Chair/Instructor*  
North Dakota State College of Science  
800 6th Street North, Wahpeton, ND 58076  
1-800-342-4325 ext. 2308  
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### Michael Seedorf

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### Jenny Schmitt

*Diesel Technology Program Assistant*  
800-342-4325 ext. 2330  
Jenny.Schmitt@ndscs.edu

### Riley Flom

*Workforce Development Specialist*  
3401 33rd St SW  
Fargo, ND 58104  
701-298-2114  
RileyFlom@butlermachinery.com

## APPLICATION FOR INTERNSHIP

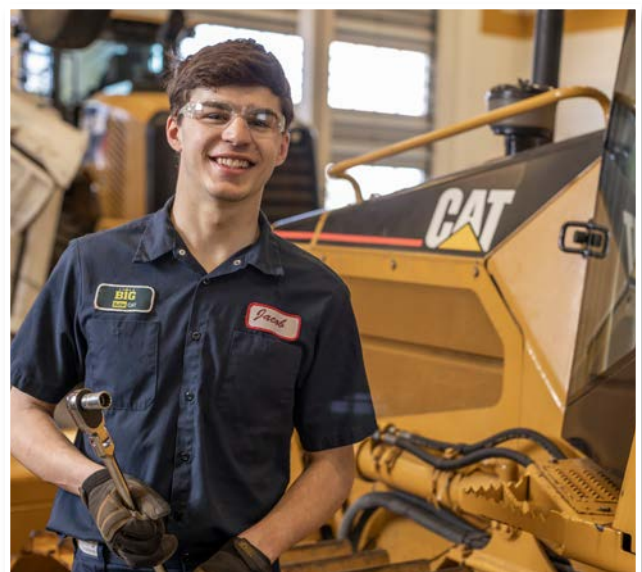
Caterpillar Dealer Service  
Technology Program

**All applicants must apply on-line at  
[www.butlermachinery.com/careers](http://www.butlermachinery.com/careers).**

If you have any questions, please contact:

### Riley Flom

701-298-2114  
RileyFlom@butlermachinery.com





# 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](http://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 Striper/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
<b>SNAP-ON TOOLS</b>			
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
<b>MILWAUKEE DRILL/DRIVE IMPACT SET</b>			
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.*