



MOTORCRAFT® UNIVERSITY **COURSE CATALOG**

7338 REV073126



MotorcraftUniversity.com
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800-517-0173

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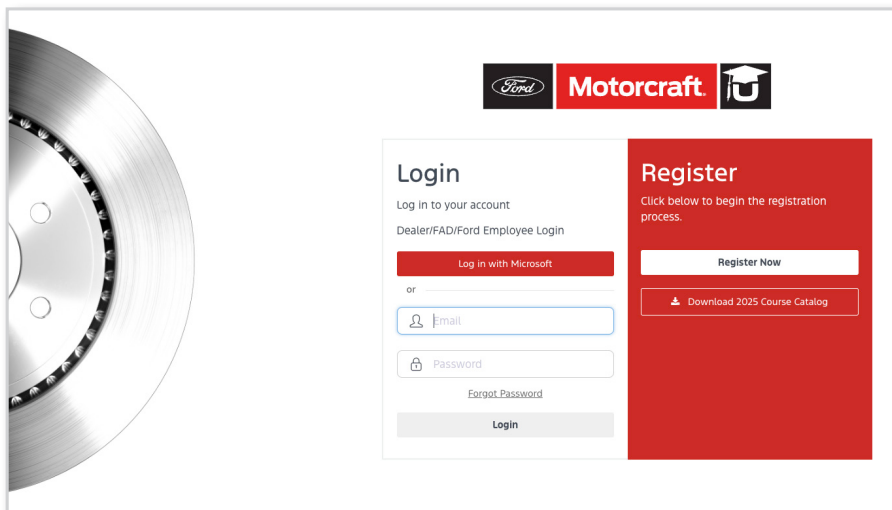
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MOTORCRAFT UNIVERSITY

PORTAL FEATURES

Login Page

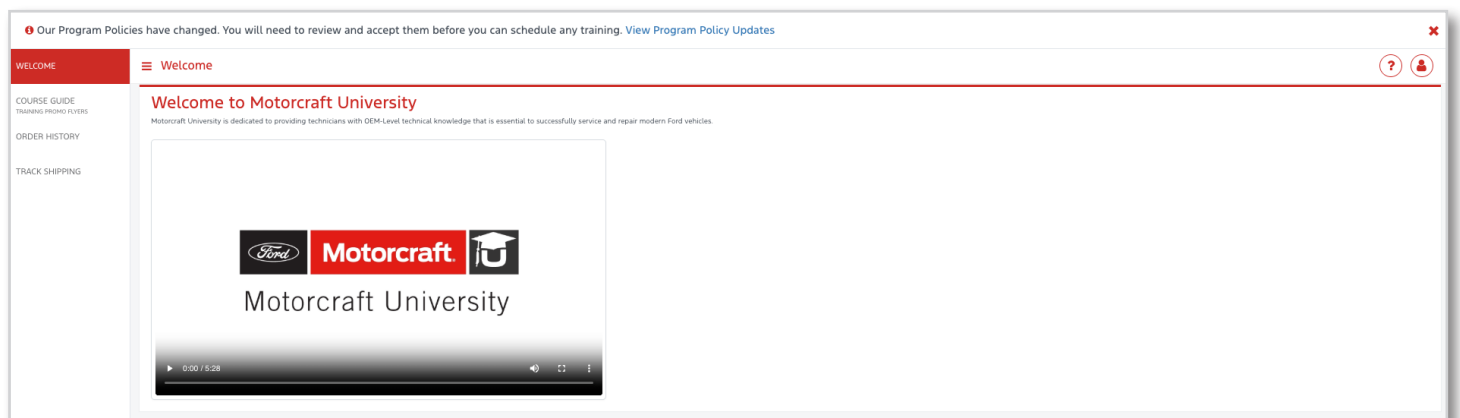
When you first visit MotorcraftUniversity.com, you will be instructed to log in or register for an account. To log in using a CDS ID, click the red Dealer/FAD/Ford Employee Login button. To log in using an already registered account, fill in your email address and password.



The screenshot shows the Motorcraft University login and registration interface. On the left is a large image of a car wheel. The main content area has a white background with a red header bar containing the Ford, Motorcraft, and University logos. Below the header, there are two columns. The left column is titled 'Login' and contains the text 'Log in to your account' and 'Dealer/FAD/Ford Employee Login'. It features a red button for 'Log in with Microsoft', an 'or' separator, an email input field, a password input field, a 'Forgot Password' link, and a 'Login' button. The right column is titled 'Register' and contains the text 'Click below to begin the registration process.' It features a 'Register Now' button and a 'Download 2025 Course Catalog' button.

Requester Homepage

Once you have registered/logged in, you will be taken to the Welcome page. Additional navigation is available on the left-hand menu, and the Training Request Form button is found at the top of the Welcome Page.



The screenshot shows the Motorcraft University Welcome page. At the top, there is a red banner with a message: 'Our Program Policies have changed. You will need to review and accept them before you can schedule any training. View Program Policy Updates'. Below the banner, there is a red header bar with the 'Welcome' button and a user profile icon. The main content area has a white background with a red header bar containing the Ford, Motorcraft, and University logos. Below the header, there is a video player showing the Motorcraft University logo and the text 'Motorcraft University'. The video player has a progress bar at the bottom showing '0:00 / 5:28'. On the left side, there is a red sidebar menu with the following items: 'WELCOME', 'COURSE GUIDE', 'TRAINING REQUEST FORM', 'ORDER HISTORY', and 'TRACK SHIPPING'.

Training Registration Form – Complete the Form for One or Multiple Sessions

Fill in the Contact Information section. Required information to submit your form includes: Primary Contact, Ford Contact and Billing P&A Code. Secondary contacts can be added as needed.

Training Session

STEP 1

Contact Information

P&A Code - Required

Primary P&A C...

Add a different P&A Code for billing?

NO

Primary Contact - Required

First Name

Last Name

Phone

Email

Add a Secondary Contact?

NO

Ford Contact 1 - Required

First Name

Last Name

Phone

Email

Select Training

Select your course options. Required information includes:
Training Date(s), Time, and Alternate Date and Time.

STEP
2

Select Training

Select course scheduling options.

Each request allows you to book one live training session.

The training course participant maximum is 50 attendees per course. An additional charge of \$100 per person will be billed to your P&A account for each attendee over the 50-participant limit, based on actual attendance.

Motorcraft University schedules training on a first-come, first-served basis, which also considers instructor availability. Please be sure to choose at least one alternate date when requesting training.

Choose a Date ⓘ - Required



Select a Date

Choose a Time ⓘ - Required



Select a time

Choose an Alternate Date ⓘ - Required



Select a Date

Choose an Alternative Time ⓘ - Required



Select a time

Choose Course Language ⓘ

☒ English

☐ Spanish

Choose a Course ⓘ

I don't know my course selection at this time

Choose Participants

Max 50 ⓘ



Please Select

Training Location & Shipping Location

Enter your Training and Shipping Location information. Required information to submit your form includes: Training/Shipping City and State.

Notes or special requests can also be added to a training request at the bottom of the form by switching the toggle from No to Yes.

Then add another session to your request by selecting “Add Another Order,” or submit your completed request and go to your Order Summary.

STEP 3

Training Location & Shipping Location

The City and State of your Training Location are required for registration. If you do not have the full address, you may fill in the remainder of the address at a later date. If any information changes, contact Motorcraft University Headquarters at 800-517-0173 or headquarters@motorcraftu.com.
NOTE: SECURE LOCATION AT LEAST 30 DAYS PRIOR TO EVENT OR CANCELLATION FEE MAY APPLY.

Training Location

Location Name / Street Address

1234 Main St

Address 2

Apartment, studio, or floor

City Required

State Required

Choose...

ZIP Code

Shipping Location

Shipping location is the same as the training location. ☐ NO

Location Name / Street Address

1234 Main St

Address 2

Apartment, studio, or floor

City

State

Choose...

ZIP Code

Order Summary

Review and accept the terms and confirm that all Order Summary information is correct.

Thank you for your request. Please review and accept the terms below and confirm that all Order Summary information is correct.

Billing Recently Updated

Motorcraft University in-person training sessions are \$3,500 per course. This includes one in-person course.

Consecutive sessions (during the same week) are reduced to \$3,000 each. Headcount overage, travel to a second location for a consecutive session beyond 120 miles, or travel to Hawaii/Alaska will incur additional fees.

Training must be paid in full upon scheduling confirmation and will be billed on your Parts Statement. Motorcraft University schedules training on a first-come, first-served basis, which also considers instructor availability. Please be sure to choose at least one alternate date when requesting training.

☒ I Accept

Billing Estimator

Dealer / FAD will be billed after the session, or sessions, have taken place.

Billing occurs on the Dealer / FAD Parts Statement. It is the Dealer / FAD responsibility to ensure sufficient Business Growth Funds or Aftermarket Promo Funds are available to cover all Motorcraft University expenses. If sufficient funds are not available, a debit will be made to the Dealer / FAD Parts Statement.

Your estimated cost will be approximately:

\$3500

This cost may be offset through some incentive programs which will be provided with your invoice.

☒ I Accept

Training Location Requirements

Appropriate classroom facilities (tables, chairs, projection screen and power source for instructor). Training materials are shipped approximately one week prior to training date(s).

☒ I Accept

Cancellation Policy Recently Updated

If you must cancel OR reschedule a course that has been previously scheduled and paid for, the following timetable for Motorcraft University credit will apply:

- 61 days or greater from scheduled training date - 100% credit
- 60 - 46 days from scheduled training date - 50% credit
- 45 days or less from scheduled training date - 0% credit

If the requestor or Motorcraft University must reschedule due to an act of God or other unforeseen event that prevents the assigned Instructor from performing his or her duties, a credit will be issued toward a future Motorcraft University course. In such case, Motorcraft University is not responsible for any cancellation fees incurred from the requestor's training support suppliers or vendors.

☒ I Accept

Order Summary

Training Request

Print

Contact

PBA Code	Billing PBA Code	Name	Phone Number	Email
00000	00000	Laura Shuck	(123) 456-7890	lshuck@email.com

Ford Contact

Name	Phone Number	Email
Bridget Hadley	(123) 456-7890	bhadley@ford.com

Training

Course Name	Status	
Integrated Diagnostic Software (DS) Operation and Utilization	Pending	
First Date Choice	First Time Choice	Participants
11/28/2025	8:30 AM	31-35
Alternative Date Choice	Alternative Time Choice	Additional Comments
11/26/2025	9:00 AM	-

- Registration Request Receipt Confirmation
- Training Confirmation
- Billing Estimate
- Training Cancellation Date Approaching
- Training Reminder
- Shipment Notifications

Cancellation Policy

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Billing

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Training must be paid in full upon scheduling confirmation and will be billed on your Parts Statement. Motorcraft University schedules training on a first-come, first-served basis, which also considers instructor availability. Please be sure to choose at least one alternate date when requesting training.

Success!

Thank you for submitting your training request. You will receive a Training Confirmation email once your date has been confirmed.

Next Steps

Download your training promo flyer(s) and share it with your team.

[Integrated Diagnostic Software \(DS\) Operation and Utilization](#)

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View Order History

Review status of requested training and training details from the Order History tab.

The screenshot shows the 'Order History' section of the Motorcraft University portal. At the top, there's a 'Next Training' section with a table showing a 'Pending' status. Below this is the 'Order History' section, which includes a search filter and a table of training events. The table has columns for Status, Training Date, Ref #, Course Name, Training Location, M&M, Trainer, Comm., and Req. Form. Two events are listed, both with a 'Pending' status.

Status	Training Date	Ref #	Course Name	Training Location	M&M	Trainer	Comm.	Req. Form
Pending		10841	Integrated Diagnostic Softe...	Detroit, MI	Unlisted	Pending		
Pending		10842	Networks and Control Module...	Detroit, MI	Unlisted	Pending		

Review Course Guide

On the Course Guide tab, you can view a full list of available courses along with downloadable, customizable flyers to help promote your training.

The screenshot shows the 'Course Guide' section of the Motorcraft University portal. The header includes the Ford and Motorcraft logos, the 'Motorcraft University Training Registration Portal' text, and a 'REQUEST TRAINING HERE' button. The left sidebar shows navigation options: WELCOME, COURSE GUIDE (selected), ORDER HISTORY, and TRACK SHIPPING. The main content area is titled 'Course Guide' and includes a 'Download Course Guide' button. Below this is a list of courses under the 'Electrical/Electronics' category, each with a right-pointing arrow to indicate it can be expanded.

Electrical/Electronics

- > Automotive Electronics Operation and Diagnosis
- > Ford Diagnostic and Service (FDRS) and VCMM Operation
- > Ford Explorer and Lincoln Aviator Hybrid Vehicle Components and Operation
- > Networks and Control Module Operation, Diagnosis and Service
- > Integrated Diagnostic Software (IDS) Operation and Utilization
- > Body and Chassis Electrical/Electronics Systems Diagnosis and Service
- > Ford High-Voltage Vehicles Components and Operation

Track Materials Shipments

Easily track shipping of training materials and participant certificates from the Track Shipping tab.


Track Shipping




Ref #	Date	Shipment Type	Training Location	MA	Trainer	Tracking
12809	Pending	Materials	telford, PA 18969	East	.	730499145235
12828	12/19/2024	Materials	Albuquerque, NM 87131	West	Lee	730499145305
12849	12/10/2024	Materials	Montgomery, AL 36116	Southeast	Eichhorn	420289909266
12836	12/05/2024	Materials	Georgetown, TX 78628	Central	Lee	420289909222
12835	12/04/2024	Materials	Georgetown, TX 78628	Central	Lee	420289909185
12848	11/26/2024	Materials	Bailey's Crossroads, VA 22041	East	Lee	730499148017
12834	11/21/2024	Materials	San Bernardino, CA 92402	West	Barber	730499147937
12847	11/20/2024	Materials	fort Washington, PA 19034	East	Johnson	730499147308
12837	11/19/2024	Materials	Eureka, CA 95503	West	Barber	730499147282
12841	11/19/2024	Materials	Bridgewater, NJ 08807	East	Johnson	730499147970
12832	11/14/2024	Materials	JANESVILLE, WI 53545	Great Lakes	Eichhorn	730499147238
12831	11/13/2024	Materials	OCONOMOWOC, WI 53066	Great Lakes	Eichhorn	730499147190
12679	11/12/2024	Materials	BROKEN ARROW, OK 74012	Central	Lee	730499120415
12830	11/12/2024	Materials	MENOMONEE FALLS, WI 53051	Great Lakes	Eichhorn	730499147135
12850	11/11/2024	Materials	Atlanta, GA 30354	Southeast	Plunkett	730499146941

MOTORCRAFT UNIVERSITY IS DEDICATED TO PROVIDING TECHNICIANS WITH OEM-LEVEL TECHNICAL KNOWLEDGE THAT IS ESSENTIAL TO SUCCESSFULLY SERVICING AND REPAIRING MODERN FORD VEHICLES.

FIX IT RIGHT THE FIRST TIME

Motorcraft University offers courses on critical Ford and Lincoln systems that can benefit repair facilities of all sizes.

With the insight that only Ford can provide, Technicians at Installers can get insider tips and tricks that complement Ford OE and Motorcraft part installation to deliver a quality repair for their Customers.

Our three-hour in-person sessions let aftermarket Technicians get up to speed and back to the shop the same day. And, class size is limited to focus on the needs of those attending, allowing for questions to be answered when they arise.

COURSE STRUCTURE

- Available to Ford and Lincoln dealerships and Ford Authorized Distributors (FADs) only
- Each course is designed to be three hours in length
- Presented in a live training format with up to 50 attendees
- Courses are usually scheduled in evenings, after normal work hours, but can be scheduled at any time during the day to accommodate local needs
- Allows for one-on-one interaction between Dealer/Distributor and participants
- Course cost may be offset by parts purchase offers for attending the training. Dealers/Distributors may also fund certain events with:
 - Promotional Growth Funds/Business Growth Funds
- Courses are usually held at a local venue or the Dealer/Distributor facility
- It's customary for the hosting Dealer/Distributor to begin the seminar with a meal

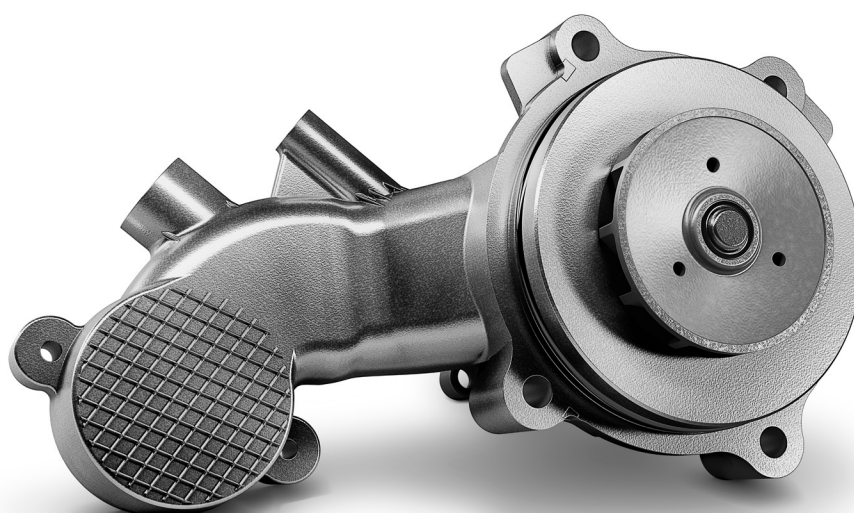
COURSE STRUCTURE (continued)

MOTORCRAFT UNIVERSITY TECHNICAL TRAINING – ADVANTAGE: YOU

Motorcraft knows that many Aftermarket Technicians receive limited technical training, especially if they happen to work in a smaller facility. **Through Motorcraft University, Motorcraft provides OEM-level training on vehicle systems and technologies, which Technicians may have seen and worked on, but without a full understanding.**

Motorcraft University training gives Independent Repair Facilities the confidence to deliver high-quality Ford and Lincoln parts and service from every bay.

But Motorcraft University doesn't just benefit the Technician. **By offering training, Customer relationships with the dealership or Distributor can be created when trying to win over new Customers, or enhanced with existing Customers.** And, in addition to Motorcraft University training being an instant headliner for an open house or other event, the goodwill created can lead to higher recall when Customers are shopping for parts, and eventually, greater parts sales.



MOTORCRAFT UNIVERSITY COURSE MAP

MOTORCRAFT® UNIVERSITY
COURSE OVERVIEW MAP
**ELECTRICAL/ELECTRONICS**
Advanced Driver Assistance Systems (ADAS) Operation, Service and Diagnosis NEW

■ ■ ■ Intermediate

Learning Objective: Upon completion of this course, Technicians will be able to describe the operation strategies, components, calibration and service procedures and diagnostic techniques needed to service and repair Ford's Advanced Driver Assistance Systems (ADAS).

Advanced Driver Assistance Systems (ADAS) Theory and Operation

■ ■ ■ Intermediate

Recommended Prior Knowledge: Working knowledge of vehicle electronics, including networks.

Learning Objective: This course provides students with the foundation required to understand the latest ADAS technologies being used on today's Ford vehicles.

Advanced Electronics Diagnosis and Service

■ ■ ■ Advanced

Recommended Prior Knowledge: Working knowledge of vehicle electrical/electronics systems.

Learning Objective: This course provides Technicians with the knowledge needed to service Ford electronic systems accurately.

Automotive Electronics Operation and Diagnosis

■ ■ ■ Basic

Learning Objective: Provide Technicians with essential current information on automotive electrical/electronics components and systems.

Body and Chassis Electrical/Electronics Diagnosis and Service

■ ■ ■ Intermediate

Recommended Prior Knowledge: Working knowledge of vehicle electrical/electronics systems.

Learning Objective: Enhance Technician ability to effectively diagnose and service vehicle electrical/electronics systems.

Electrical Theory and Testing

■ ■ ■ Basic

Learning Objective: Provide Technicians with the foundational information needed to perform electrical testing during diagnosis.

Ford Battery Electric Vehicles (BEVs)

■ ■ ■ Intermediate to Advanced

Recommended Prior Knowledge: Electrical and electronic system operation.

Learning Objective: This course provides Technicians with the fundamentals needed to understand high-voltage operation, and the knowledge required to service Ford Battery Electric Vehicles (BEVs) safely and accurately.

Ford Diagnostic and Repair System (FDRS) and VCMM Operation

■ ■ ■ Basic to Intermediate

Learning Objective: Provide Technicians with the knowledge needed for the FDRS Program and VCMM Tool.

Ford E-Transit Operation, Diagnosis and Service

■ ■ ■ Advanced

Recommended Prior Knowledge: Electrical and electronic system operation.

Learning Objective: This course provides Technicians with the fundamentals needed to understand high-voltage operation and the knowledge required to service the Ford E-Transit safely and accurately.

Ford Explorer and Lincoln Aviator Hybrid Vehicle Components and Operation

■ ■ ■ Basic to Intermediate

Learning Objective: Expand Technician knowledge needed to service the latest hybrid systems from Ford.

Ford F-150 Lightning Operation, Diagnosis and Service

■ ■ ■ Intermediate to Advanced

Learning Objective: This course provides Technicians with the fundamentals needed to understand high-voltage operation and the knowledge required to service the Ford F-150 Lightning safely and accurately.

Ford High-Voltage Vehicles Components and Operation

■ ■ ■ Intermediate

Learning Objective: Provide Technicians with knowledge on Ford high-voltage vehicle technology components and operation so that they can complete repairs on Ford hybrid and Electric Vehicles.

Integrated Diagnostic Software (IDS) Function, Operation and Utilization

■ ■ ■ Basic to Intermediate

Learning Objective: Provide Technicians with key knowledge for the use of the Ford Rotunda Integrated Diagnostic Software (IDS) Scan Tool for optimal utilization.

Networks and Control Modules Operation, Diagnosis and Service

■ ■ ■ Intermediate

Recommended Prior Knowledge: Working knowledge of vehicle electrical/electronics systems.

Learning Objective: Deliver current information to Technicians on electronic networking systems, including components, strategies, symptoms, diagnosis and testing, so that they can properly repair Ford network and control module issues.

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MOTORCRAFT UNIVERSITY COURSE OVERVIEW MAP

ENGINE PERFORMANCE AND DRIVEABILITY
Emission Control Relationships for Driveability Diagnosis

■ ■ ■ **Intermediate**

Learning Objective: Technicians will be able to identify symptoms that can occur in modern engine on-board tests based on system and operating configuration.

Ford EcoBoost® Engine Operation, Diagnosis and Service

■ ■ ■ **Basic**

Learning Objective: Technicians will be able to understand how Ford EcoBoost® engine technologies and systems operate so that Technicians can service these popular Ford engines.

Gasoline Engine Performance and Driveability

■ ■ ■ **Intermediate**

Recommended Prior Knowledge: Working knowledge of engine operation, OBD II systems and Scan Tool utilization.

Learning Objective: Technicians will be able to describe driveability symptoms, diagnostic techniques and corrective actions for vehicle performance and driveability concerns.


BODY AND CHASSIS
Advanced Air Conditioning Diagnosis and Testing

■ ■ ■ **Intermediate**

Learning Objective: Conduct a comprehensive analysis of modern climate control systems that will allow Technicians to properly service them.

Advanced Brakes and Interactive Vehicle Dynamics (IVD)

■ ■ ■ **Intermediate**

Learning Objective: Understand the operation and function of advanced vehicle brake systems, including key diagnostic approaches to Interactive Vehicle Dynamics (IVD), so that Technicians can effectively service Ford Motor Company vehicles.

Electronic Steering and Suspension Operation, Diagnosis and Service

■ ■ ■ **Basic to Intermediate**

Learning Objective: Describe the function and operation of electronically controlled steering and suspension systems for optimal diagnosis and service.

Passive Restraints and Anti-Theft Systems

■ ■ ■ **Basic to Intermediate**

Learning Objective: Enable Technicians to safely and confidently work with and near passive restraints and anti-theft systems.


POWERTRAIN
Ford 10-Speed Automatic Transmission Operation **NEW**

■ ■ ■ **Intermediate**

Learning Objective: Upon completion of this course, Technicians will be able to describe the hydraulic, mechanical and electronic operations of the Ford 10-speed automatic transmission.

Ford Automatic Transmission Operation, Diagnosis and In-Vehicle Service

■ ■ ■ **Intermediate**

Learning Objective: Provide Technicians with automatic transmission basic operation and diagnostics that may be needed when servicing Ford vehicles.

Four-Wheel Drive and All-Wheel Drive Operation, Diagnosis and Service

■ ■ ■ **Basic to Intermediate**

Learning Objective: Provide Technicians with the knowledge needed to service the four-wheel drive (4x4) and all-wheel drive (AWD) systems on Ford vehicles.

Gasoline Engine Diagnosis and Repair

■ ■ ■ **Basic**

Learning Objective: Provide Technicians with core diagnosis and repair information related to Ford naturally aspirated gasoline engines.

MOTORCRAFT UNIVERSITY COURSE OVERVIEW MAP



MAINTENANCE AND LIGHT REPAIR

Ford Medium Duty Truck Brakes Theory and Operation

■ ■ ■ Basic to Intermediate

Learning Objective: Describe the components, operation and diagnosis of Ford Medium Duty truck brake systems.

Maintenance and Light Repair (MLR) Procedures, Inspections and Service

■ ■ ■ Basic

Learning Objective: Provide Technicians with key knowledge in identifying the Maintenance and Light Repair (MLR) tasks and guidelines for several common vehicle systems.

Noise, Vibration and Harshness Diagnosis and Service

■ ■ ■ Basic to Intermediate

Learning Objective: Provide Technicians with the knowledge needed to service NVH issues on Ford vehicles.



DIESEL ENGINES

3.0L Power Stroke® Common-Rail Fuel System

■ ■ ■ Intermediate to Advanced

Learning Objective: At the conclusion of this course, the student will be able to describe the 3.0L Power Stroke® common-rail fuel system components, operation, diagnosis and service.

3.0L Power Stroke® Diesel Components and Operation

■ ■ ■ Basic to Intermediate

Learning Objective: Provide Technicians with the knowledge needed to service the Ford 3.0L diesel engine.

3.2L Diesel Components, Operation and Service

■ ■ ■ Basic to Intermediate

Learning Objective: Provide Technicians with the knowledge that they need to service the Ford 3.2L diesel engine.

3.2L Fuel, Air and Exhaust Systems

■ ■ ■ Intermediate to Advanced

Learning Objective: At the conclusion of this course, the student will be able to describe the 3.2L Power Stroke® high-pressure fuel system, air management system and EGR and exhaust system components, operation, diagnosis and service.

6.0L and 6.4L Diesel Components and Operation

■ ■ ■ Basic to Intermediate

Recommended Prior Knowledge: Take this course PRIOR to attending 6.0L Diesel Advanced Diagnosis and Testing or 6.4L Diesel Advanced Diagnosis and Testing courses.

Learning Objective: Provide Technicians with key knowledge and insights on the location and operation of important aspects of two Ford diesel engines so that they can complete any necessary repairs on these engines.

6.0L Diesel Hydraulic Electronic Unit Injector (HEUI) Fuel System

■ ■ ■ Advanced

Learning Objective: At the conclusion of this course, the student will be able to describe the 6.0L Power Stroke® Hydraulic Electronic Unit Injector (HEUI) fuel system components, operation, diagnosis and service.

6.0L Power Stroke® Diesel Advanced Diagnosis and Testing

■ ■ ■ Advanced

Recommended Prior Knowledge: 6.0L and 6.4L Diesel Components and Operation course.

Learning Objective: Technicians who successfully complete this course will better understand proper diagnosis and testing for the Ford 6.0L diesel engine so that they can complete any necessary repairs on this engine.

6.4L Fuel, Air and Exhaust Systems

■ ■ ■ Intermediate to Advanced

Learning Objective: At the conclusion of this course, the student will be able to describe the 6.4L Power Stroke® high-pressure fuel system, air management system and EGR and exhaust system components, operation, diagnosis and service.

6.4L Power Stroke® Diesel Advanced Diagnosis and Testing

■ ■ ■ Advanced

Recommended Prior Knowledge: 6.0L and 6.4L Diesel Components and Operation course.

Learning Objective: Be able to understand advanced, in-depth diagnostic methods for the Ford 6.4L diesel engine.

MOTORCRAFT UNIVERSITY COURSE OVERVIEW MAP


DIESEL ENGINES (continued)
6.7L EGR and Exhaust System Operation and Service

■■■ **Advanced**

Learning Objective: At the conclusion of this course, the student will be able to describe the 6.7L Power Stroke® EGR and exhaust system components, operation, diagnosis and service.

6.7L Power Stroke® Common-Rail Fuel System

■■■ **Intermediate to Advanced**

Learning Objective: At the conclusion of this course, the student will be able to describe the 6.7L Power Stroke® common-rail fuel system components, operation, diagnosis and service.

6.7L Power Stroke® Diesel Advanced Diagnosis and Service

■■■ **Advanced**

Learning Objective: Provide Technicians with key knowledge on the diagnostic processes that will enable them to more quickly and effectively diagnose and repair the 6.7L Power Stroke® Diesel engine.

6.7L Power Stroke® Diesel Components and Operation

Available in Spanish

■■■ **Intermediate**

Learning Objective: Be able to demonstrate the knowledge that Technicians need to service the Ford 6.7L diesel engine.

6.7L Turbocharger Operation, Diagnosis and Service

■■■ **Intermediate**

Learning Objective: At the conclusion of this course, the student will be able to describe the 6.7L Power Stroke® Single Sequential Turbocharger (SST) and DualBoost Turbocharger components, operation, diagnosis and service.

7.3L and 6.0L Diesel Engine Repair

■■■ **Advanced**

Learning Objective: At the conclusion of this course, the student will be able to describe the 7.3L and 6.0L diesel engines service and repair procedures.

Air Management Systems

■■■ **Intermediate**

Learning Objective: At the conclusion of this course, the student will be able to describe the fundamental principles of diesel air management and delivery components and operation.

Diesel Aftertreatment System

■■■ **Intermediate**

Learning Objective: At the conclusion of this course, the student will be able to describe the fundamental principles of diesel air management and delivery components and operation.

Diesel Electronic Engine Control (EEC) System

■■■ **Intermediate**

Learning Objective: At the conclusion of this course, the student will be able to describe the Electronic Engine Control (EEC) system's components and operation.

Diesel Engine Theory and Operation

■■■ **Basic to Intermediate**

Learning Objective: At the conclusion of this course, the student will be able to understand the fundamentals related to diesel engine operation, electronic engine management and engine subsystems.

Diesel Maintenance and Service

■■■ **Basic**

Learning Objective: At the conclusion of this course, the student will be able to describe the periodic maintenance requirements of a diesel engine.

Understanding Diesel Fuel Systems

■■■ **Basic**

Learning Objective: At the conclusion of this course, the student will be able to describe the fundamental principles of diesel fuel system components and operation.



For full course details, see the Motorcraft University Course Catalog.

BODY AND CHASSIS

Electronic Steering and Suspension Operation, Diagnosis and Service

Modern vehicles have steering and suspension systems that are electronically controlled by computers. These systems adjust to vehicle loading and road and driving conditions. To help Technicians stay competitive, this training will describe the components, operation, diagnosis and service of these systems.

Topics Include:

- Electronic Power-Assisted Steering (EPAS)
- Variable-Assist Power Steering
- Rear Load-Leveling Suspension
- Four-Wheel Electronic Suspension
- Automatic Ride Control (ARC) Suspension
- Interactive Vehicle Dynamics (IVD) Suspension

Technical Content: Basic to Intermediate

Learning Objective: Describe the function and operation of electronically controlled steering and suspension systems for optimal diagnosis and service.

Passive Restraints and Anti-Theft Systems

Two of the most common systems found on vehicles today are passive restraints and anti-theft. Every Technician, regardless of specialty, must be able to work with and around these systems.

Topics Include:

- Supplemental Restraint System (SRS) Components and Operation (Single-Stage and Dual-Stage)
- SRS Diagnosis
- SRS Service
- Remote Keyless Entry (RKE) Components and Operation
- Perimeter Anti-Theft System Operation
- Passive Anti-Theft System (PATS) Components and Operation
- PATS Service

Technical Content: Basic to Intermediate

Learning Objective: Enable Technicians to safely and confidently work with and near passive restraints and anti-theft systems.

BODY AND CHASSIS (continued)

Advanced Brakes and Interactive Vehicle Dynamics (IVD)

Working on today's brake systems can be challenging. No longer is it just installing new pads and turning the rotors. Modern systems use more electrohydraulic controls than ever to control braking, vehicle traction and stability control. Technicians must understand how these systems work and what to look for when they do not work.

Topics Include:

- Anti-Lock Brake System (ABS) Operation
- Traction Control System Operation
- Interactive Vehicle Dynamics (IVD) Operation
- ABS/IVD Input and Output Components
- ABS/IVD Diagnosis
- Hybrid Vehicle Regenerative Braking
- Hydraulic Full-Power Brake Systems (Medium Trucks)
- Hydro-Max™ and Hydro-Boost™ Brake Systems (Medium Trucks)

Technical Content: Intermediate

Learning Objective: Understand the operation and function of advanced vehicle brake systems, including key diagnostic approaches to Interactive Vehicle Dynamics (IVD), so that Technicians can effectively service Ford Motor Company vehicles.

Recommended Prior Knowledge: Base brake system operation and service

Advanced Air Conditioning Diagnosis and Testing

You know how to recharge an air conditioning system, but do you know what makes it tick? Modern climate control systems are much more than a compressor and tubes; they are complete computer-controlled systems. Technicians must understand the different operating strategies and components of these systems to effectively service them.

Topics Include:

- EPA Regulatory Requirements for MVAC Service
- Refrigerant System Testing – R-134a and R-1234yf
- AC Testing Setup Procedure
- Register Discharge Air Temperature Test
- Leak Testing
- Refrigerant Pressure Concerns
- General Service Procedures
- Refrigerant Analyzer
- Refrigerant System Service

Technical Content: Intermediate

Learning Objective: Conduct a comprehensive analysis of modern climate control systems that will allow Technicians to properly diagnose and service them.



DIESEL ENGINES

Diesel Maintenance and Service

All diesel engines require periodic maintenance to operate optimally. Diesel engines create extreme high pressure for combustion to occur. Lack of maintenance can prematurely age and damage engine components. This course describes maintenance and service procedures to keep Ford diesel-equipped vehicles in top-running condition.

Topics Include:

- Maintenance Overview
- Engine Overviews
- Recommended Maintenance Intervals
- Inspection Process
- Air Management System Maintenance and Service
- Under-Vehicle Inspections
- Lubrication Maintenance and Service
- Fuel Quality
- Fuel System Service
- Cooling System Maintenance and Service
- DPF Maintenance and Service
- SCR Reductant Maintenance and Service

Technical Content: Basic

Learning Objective: At the conclusion of this course, the student will be able to describe the periodic maintenance requirements of a diesel engine.

Understanding Diesel Fuel Systems

The function of the diesel fuel system is to inject a precise amount of atomized and pressurized fuel into each engine cylinder at the proper time. This course provides a basic understanding of the components, operation and strategies used to ensure the correct amount of fuel is delivered to the engine. A brief overview of fuel system component failures and symptoms is included. This course is not engine specific, instead it provides a broad range of information on various Ford systems.

Topics Include:

- Diesel and Gasoline Comparison
- Diesel Fuel System Overview
- Low-Pressure Fuel System Components and Operation
- Fuel Quality
- Engine Control Components
- High-Pressure Fuel System Components and Operation
- High-Pressure Fuel System Warnings
- Fuel System Failures and Symptoms

Technical Content: Basic

Learning Objective: At the conclusion of this course, the student will be able to describe the fundamental principles of diesel fuel system components and operation.

DIESEL ENGINES (continued)

Diesel Engine Theory and Operation

Provides a basic overview of diesel engine operation, including low- and high-pressure fuel systems, electronic engine control management system, air intake system and exhaust and emissions system.

Topics Include:

- Engine Operation
- Diesel Four-Stroke Process
- Powertrain Control Systems
- Fuel System
- Intake System
- Emission System
- Inputs
- Outputs
- Modules

Technical Content: Basic to Intermediate

Learning Objective: At the conclusion of this course, the student will be able to understand the fundamentals related to diesel engine operation, electronic engine management and engine subsystems.

3.0L Power Stroke® Diesel Components and Operation

This course will describe the 3.0L Power Stroke® Diesel components and operation. This includes turbocharger, low- and high-pressure fuel systems, diesel particulate filter and selective catalytic reduction systems.

Topics Include:

- Engine
 - Overview
 - System
 - Maintenance
 - Component Location
 - Cooling System
- Fuel Charging and Controls
 - High-Pressure Fuel System
 - Turbocharging System
 - Glow Plug System
- Emissions Control System
 - Diesel Particulate Filter (DPF)
 - Exhaust
 - Selective Catalytic Reduction (SCR) System
- Networks and Control Modules
- Electronic Engine Controls

Technical Content: Basic to Intermediate

Learning Objective: Provide Technicians with the knowledge needed to service the Ford 3.0L diesel engine.

DIESEL ENGINES (continued)

3.2L Diesel Components, Operation and Service

The 3.2L Duratorq® I-5 diesel engine is an in-line 5-cylinder, common-rail, turbocharged diesel engine from Ford, a member of the global Puma engine family. This course helps Service Technicians better understand the engine's components and operation in order to more effectively diagnose and service its systems.

Topics Include:

- Engine Overview
- Engine Components
- Cooling System
- Lubrication System
- Air Management System
- Fuel System
- Fuel Management System
- Electrical/Electronics
- Exhaust System

Technical Content: Basic to Intermediate

Learning Objective: Provide Technicians with the knowledge that they need to service the Ford 3.2L diesel engine.

Air Management Systems

Diesel engines require clean and efficient air delivery. This course provides a basic understanding of the components, operation and strategies used to ensure air is delivered to the engine. This includes turbocharger and EGR operation. Although the fundamentals are not diesel engine-specific, examples of the 6.7L and 3.2L air management systems are included.

Topics Include:

- Air Management Overview
- Air Inlet System
- Electronic Air Management Control
- Intake Air Management Operation
- Turbocharger
- Turbocharger Configurations
- Exhaust Gas Recirculation
- Air Management Fault Symptoms
- 6.7L Air Management System
- 3.2L Air Management System

Technical Content: Intermediate

Learning Objective: At the conclusion of this course, the student will be able to describe the fundamental principles of diesel air management and delivery components and operation.

DIESEL ENGINES (continued)

Diesel Aftertreatment System

The Diesel Aftertreatment System is a series of components that cleans the diesel exhaust emitted by the engine prior to releasing it through the tailpipe and into the atmosphere. Its purpose is to reduce the emission of harmful pollutants into the environment. This course provides the student with fundamental knowledge of system operation and diagnosis. This course is not engine-specific, instead it provides a broad range of information on various Ford systems.

Topics Include:

- Diesel Engine Exhaust Gases
- Aftertreatment System Overview
- Diesel Oxidation Catalyst (DOC)
- Diesel Particulate Filter (DPF) System
- Selective Catalyst Reduction (SCR) System
- Aftertreatment System Symptoms
- Cold Weather Aid Overview
- Glow Plug System
- Cold Weather Aid Symptoms
- Aftertreatment Diagnostic Process

Technical Content: Intermediate

Learning Objective: At the conclusion of this course, the student will be able to describe the fundamental principles of diesel air management and delivery components and operation.



DIESEL ENGINES (continued)

Diesel Electronic Engine Control (EEC) System

The Electronic Engine Control (EEC) System provides optimum control of the engine through the PCM. This course provides the fundamental knowledge students need to understand electronic engine control operation. This includes the design and operation of modules, engine input sensors, switches, output devices and communication networks found on Ford diesels.

Topics Include:

- Network Overview
- Network Components
- Network Operation
- Modules
- Powertrain Control Module (PCM)
- Glow Plug Control Module (GPCM)
- Reductant Pump Control Module
- NOx Sensor Module
- Inputs
- Temperature Sensors
- Pressure Sensors
- Position Sensors
- Additional Sensors
- Outputs
- Solenoids
- Relays
- Additional Outputs

Technical Content: Intermediate

Learning Objective: At the conclusion of this course, the student will be able to describe the Electronic Engine Control (EEC) System's components and operation.

6.0L and 6.4L Diesel Components and Operation

This Motorcraft University training focuses on the Ford 6.0L and 6.4L diesel engines. Technicians will learn how these engines operate, as well as the location and operation of key components.

Topics Include:

- Fuel and Lubricants
- Air Management System
- Low-Pressure Fuel System
- 6.0L High-Pressure Oil and Fuel System
- 6.4L High-Pressure Fuel System
- Cooling Systems
- Maintenance

Technical Content: Intermediate

Learning Objective: Provide Technicians with key knowledge and insights on the location and operation of important aspects of two Ford diesel engines so that they can complete any necessary repairs on these engines.

Recommended Prior Knowledge: Take this course PRIOR to attending 6.0L Diesel Advanced Diagnosis and Testing or 6.4L Diesel Advanced Diagnosis and Testing courses.

DIESEL ENGINES (continued)

6.7L Power Stroke® Diesel Components and Operation

Available in Spanish

The Ford 6.7L diesel engine is found on a wide variety of Ford heavy-duty vehicles. This popular engine has evolved over the years, and is now in its 3rd generation to meet the demands of the medium duty truck industry. This course focuses on expanding Technician knowledge and skills to effectively service these powerplants.

Topics Include:

- Engine Components and Specifications
- Fuel and Lubricants
- Air Inlet and Turbocharger
- EGR System Operation
- Diesel Particulate Filter (DPF) Operation
- Selective Catalytic Reduction (SCR) Operation
- Low-/High-Pressure Fuel Systems
- Engine Electronic Input and Output Operation, Diagnosis and Service
- Primary and Secondary Cooling Systems
- Vehicle Maintenance Procedures

Technical Content: Basic to Intermediate

Learning Objective: Be able to demonstrate the knowledge that Technicians need to service the Ford 6.7L diesel engine.

6.7L Turbocharger Operation, Diagnosis and Service

Turbocharged engines burn more fuel and air by providing large amounts of air into the engine cylinders, thus creating greater power. This course explains turbocharger operation, diagnosis and service. The course specifically describes the 6.7L Power Stroke® turbocharger systems, including both the Single Sequential Turbocharger (SST) and DualBoost Turbocharger.

Topics Include:

- Intake Air Management System
- Turbocharger Fundamentals
- 6.7L Turbocharger Configurations
- 6.7L Turbocharger System Components
- Exhaust Gas Recirculation
- Exhaust System
- Electronic Air Management Control
- Turbocharger System Operation
- Air Management Fault Symptoms
- Turbocharger System Diagnosis
- General Service Procedures

Technical Content: Intermediate

Learning Objective: At the conclusion of this course, the student will be able to describe the 6.7L Power Stroke® Single Sequential Turbocharger (SST) and DualBoost Turbocharger components, operation, diagnosis and service.

DIESEL ENGINES (continued)

3.0L Power Stroke® Common-Rail Fuel System

The common-rail diesel engine delivers more power to the vehicle while consuming less fuel and producing fewer emissions than previous systems. This course provides a detailed look at the 3.0L Power Stroke® fuel system. The course includes specific information on the 3.0L common-rail fuel system components, operation, electronic control strategies and diagnosis and service.

Topics Include:

- Fuel Quality
- Low-Pressure Fuel System Components and Operation
- Optimizing Fuel System Performance
- Low-Pressure Fuel System Service
- High-Pressure Fuel System Components and Operation
- Piezo Fuel Injectors Operation and Service
- Fuel System Diagnosis and Service
- High-Pressure Fuel System Warnings

Technical Content: Intermediate to Advanced

Learning Objective: At the conclusion of this course, the student will be able to describe the 3.0L Power Stroke® common-rail fuel system components, electronic control strategies, operation, diagnosis and service.

3.2L Fuel, Air and Exhaust Systems

The diesel fuel, air and exhaust systems are the backbone of unique diesel engine operation. This course provides the students with a detailed look at the 3.2L Power Stroke® fuel, air and exhaust systems. Included is key information from each system regarding operation, diagnosis and service.

Topics Include:

- Diesel/Gas Engine Similarities and Differences
- 3.2L Fuel Supply System
- 3.2L High-Pressure Fuel System
- 3.2L Fuel Injectors
- Air Management System
- Turbocharger
- Exhaust Gas Recirculation (EGR)
- Electronic Air Management Control
- Air Management System Operation
- Diesel Engine Exhaust Gases
- 3.2L Exhaust System Components
- DPF Regeneration
- Exhaust System Diagnosis
- 3.2L Service Procedures
- Air Management Fault Symptoms
- Turbocharger System Diagnosis

Technical Content: Intermediate to Advanced

Learning Objective: At the conclusion of this course, the student will be able to describe the 3.2L Power Stroke® high-pressure fuel system, air management system and EGR and exhaust system components, operation, diagnosis and service.

DIESEL ENGINES (continued)

6.4L Fuel, Air and Exhaust Systems

The diesel fuel, air and exhaust systems are the backbone of unique diesel engine operation. This course provides the students with a detailed look at the 6.4L Power Stroke® fuel, air and exhaust systems. Included is key information from each system regarding operation, diagnosis and service.

Topics Include:

- Diesel/Gas Engine Similarities and Differences
- 6.4L Fuel Supply System
- 6.4L High-Pressure Fuel System
- 6.4L Fuel Injectors
- Air Management System
- Turbocharger
- Exhaust Gas Recirculation (EGR)
- Electronic Air Management Control
- Air Management System Operation
- Diesel Engine Exhaust Gases
- 6.4L Exhaust System Components
- DPF Regeneration
- Exhaust System Diagnosis
- 6.4L Service Procedures
- Air Management Fault Symptoms
- Turbocharger System Diagnosis

Technical Content: Intermediate to Advanced

Learning Objective: At the conclusion of this course, the student will be able to describe the 6.4L Power Stroke® high-pressure fuel system, air management system and EGR and exhaust system components, operation, diagnosis and service.

6.7L Power Stroke® Common-Rail Fuel System

The common-rail diesel engine delivers more power to the vehicle while consuming less fuel and producing fewer emissions than previous systems. This course provides a detailed look at the 6.7L Power Stroke® fuel system. The course includes specific information on the 6.7L common-rail fuel system components, operation, electronic control strategies, diagnosis and service.

Topics Include:

- Fuel Quality
- Low-Pressure Fuel System Components and Operation
- Optimizing Fuel System Performance
- Low-Pressure Fuel System Service
- High-Pressure Fuel System Components and Operation
- Piezo Fuel Injectors Operation and Service
- High-Pressure Fuel System Warnings
- Fuel System Diagnosis and Service

Technical Content: Intermediate to Advanced

Learning Objective: At the conclusion of this course, the student will be able to describe the 6.7L Power Stroke® common-rail fuel system components, operation, diagnosis and service.

DIESEL ENGINES (continued)

6.0L Diesel Hydraulic Electronic Unit Injector (HEUI) Fuel System

The Hydraulic Electronic Unit Injector (HEUI) fuel system creates high-pressure fuel injection from pressurized engine oil. This course specifically describes the 6.0L HEUI fuel system components, operation and diagnosis. It's worth noting that although the information contains 6.0L specifics, a large portion the information can be applied to the 7.3L HEUI fuel system as well.

Topics Include:

- High-Pressure Oil System Components and Operation
- Fuel System Components and Operation
- 6.0L Hydraulic Electronic Unit Injectors (HEUI)
- 6.0L Fuel Management System
- Fuel Injection Control Module (FICM)
- High-Pressure Fuel System Testing
- Fuel Quality
- Fuel System Diagnosis
- High-Pressure Oil System Diagnosis

Technical Content: Advanced

Learning Objective: At the conclusion of this course, the student will be able to describe the 6.0L Power Stroke® Hydraulic Electronic Unit Injector (HEUI) fuel system components, operation, diagnosis and service.

6.0L Power Stroke® Diesel Advanced Diagnosis and Testing

This training offers insight and information on in-depth diagnostic and testing for the 6.0L diesel engine. The course delivers on one of the most common requests for this powerplant and offers a way for Technicians to boost profit opportunities.

Topics Include:

- Preliminary Diagnostic Procedures
- Fuel System Tests
- High-Pressure Oil System Tests
- EGR Testing
- Hard-Start/No-Start Tests
- Engine Performance Tests
- Additional Tests

Technical Content: Advanced

Learning Objective: Technicians who successfully complete this course will better understand proper diagnosis and testing for the Ford 6.0L diesel engine so that they can complete any necessary repairs on this engine.

Recommended Prior Knowledge: 6.0L and 6.4L Diesel Components and Operation course.

DIESEL ENGINES (continued)

6.4L Power Stroke® Diesel Advanced Diagnosis and Testing

Many aftermarket facilities are beginning to see an increase in 6.4L-equipped Ford vehicles. This course provides in-depth diagnostic methods for this engine.

Topics Include:

- Preliminary Information
- Hard-Start/No-Start Tests
- Diesel Particulate Filter (DPF) Testing and Diagnosis
- Engine Performance Tests
- Additional Tests

Technical Content: Advanced

Learning Objective: Be able to understand advanced, in-depth diagnostic methods for the Ford 6.4L diesel engine.

Recommended Prior Knowledge: 6.0L and 6.4L Diesel Components and Operation course.

6.7L EGR and Exhaust System Operation and Service

The Diesel Aftertreatment System is a series of components that cleans the diesel exhaust emitted by the engine prior to releasing it through the tailpipe and into the atmosphere. Its purpose is to reduce the emission of harmful pollutants into the environment. This course includes 6.7L EGR, DPF and SCR systems components, operation, diagnosis and service.

Topics Include:

- Diesel/Gas Engine Similarities and Differences
- Exhaust Gas Recirculation (EGR) System Components
- EGR-Related Sensors
- EGR System Operation
- Diesel Engine Exhaust Gases
- Aftertreatment System Components
- Diesel Particulate Filter (DPF) Regeneration
- DPF Service
- Selective Catalytic Reduction (SCR) Components
- Diesel Exhaust Fluid (DEF)
- SCR Sensors and Modules
- SCR Operation
- SCR Service
- Exhaust System Symptoms
- Cold Weather Aid Components and Symptoms

Technical Content: Advanced

Learning Objective: At the conclusion of this course, the student will be able to describe the 6.7L Power Stroke® EGR and exhaust system components, operation, diagnosis and service.

DIESEL ENGINES (continued)

6.7L Power Stroke® Diesel Advanced Diagnosis and Service

The 6.7L Power Stroke® Diesel has raised the bar for power, durability and economy for modern diesel-powered vehicles. This course will use diagnostic tools and Service Publications to diagnose concerns on its high-pressure fuel system, Diesel Particulate System (DPF), Selective Catalyst Reduction (SCR) and Diesel Exhaust Fluid (DEF) system.

Topics Include:

- Fuel Control System
- Fuel Delivery Systems
- Selective Catalytic Reduction (SCR) System
- Exhaust Gas Recirculation (EGR) System
- High-Pressure Fuel System
- Engine Misfires
- NOx System and Networks

Technical Content: Advanced

Learning Objective: Provide Technicians with key knowledge on the diagnostic processes that will enable them to more quickly and effectively diagnose and repair the 6.7L Power Stroke® Diesel engine.

7.3L and 6.0L Diesel Engine Repair

This course explains the unique design features of the 7.3L and 6.0L diesel engines. Throughout the course, both 7.3L and 6.0L engine component measurements, service and repair procedures are explained.

Topics Include:

- Diesel Engine Overview
- 7.3L Diesel Engine Short Block
- 7.3L Cylinder Head and Related Components
- 7.3L High- and Low-Pressure Oil Systems
- 7.3L Diagnosis
- 6.0L Diesel Engine Short Block
- 6.0L Cylinder Head and Related Components
- 6.0L Cooling System
- 6.0L Engine Lubrication

Technical Content: Advanced

Learning Objective: At the conclusion of this course, the student will be able to describe the 7.3L and 6.0L diesel engines service and repair procedures.

ELECTRICAL/ELECTRONICS

Automotive Electronics Operation and Diagnosis

This course presents Technicians who wish to expand or refresh their knowledge and skills with the latest information on modern automotive electrical and electronic components and systems.

Topics Include:

- Electronic Switching
- Electromechanical Devices
- Electrical Circuit Testing
- Diagnostic Processes and Procedures
- Wiring Diagram Utilization and Interpretation
- Module Control of Circuits
- Control Module Strategies and Module Diagnostic Capabilities
- Electronic Signals
- Sensor Operation and Diagnosis
- Input/Output Device Operation, Diagnosis and Testing
- Scan Tool Testing
- Electrical Management System Operation
- Charging System Operation and Diagnosis
- Intermittent Electrical/Electronics Diagnosis

Technical Content: Basic to Intermediate

Learning Objective: Provide Technicians with essential, current information on automotive electrical/electronics components and systems.

Ford Diagnostic and Repair System (FDRS) and VCMM Operation

Starting in 2018, Ford Motor Company began introducing vehicles that require the use of a new, more sophisticated Diagnostic Scan Tool software. This program, Ford Diagnostic and Repair System (FDRS), introduces many new features and offers many unique benefits over IDS. This course will describe the use of this program.

Topics Include:

- Introduction to Ford FDRS
- FDRS Setup, Login and Settings
- FDRS Toolbox
- FDRS Self-Tests
- DTC Types and Interpretation
- FDRS PIDs and Data Recordings
- FDRS System and PID Information
- FDRS Datalogger
- Views, Recordings, Control, File Manager, Output State Control
- Other Tests and Service Functions
- Network Monitor, Power Balance, Relative Compression, Misfire Monitor
- Programmable Module Installation (PMI)
- FDRS Service Functions

Optional Topics of This Course Include:

- VCMM Setup and Connections
- VCMM Oscilloscope Operation and Usage
- VCMM Signal Generator Monitor Tools

Technical Content: Basic to Intermediate

Learning Objective: Provide Technicians with the knowledge needed for the FDRS Program and VCMM Tool.

ELECTRICAL/ELECTRONICS (continued)

Ford Explorer and Lincoln Aviator Hybrid Vehicle Components and Operation

This course will describe the all-new Explorer and Aviator hybrid systems. This will include the Modular 10-speed automatic transmission, 3.0L and 3.3L engines and their systems, new All-Wheel Drive System and new Electric Brake Booster.

Topics Include:

- Overview of Explorer/Aviator Hybrid Vehicles
- Vehicle Operating Modes
- Gasoline Engine Operation
- Vehicle Service Safety
- High-Voltage System Components and Operation
- High-Voltage System Diagnosis
- Low-Voltage System Components and Operation
- Electronic Cooling System
- Gasoline Engine Components and Operation
- Braking Systems
- AWD System

Technical Content: Basic to Intermediate

Learning Objective: Expand Technicians' knowledge needed to service the latest hybrid systems from Ford.

Integrated Diagnostic Software (IDS) Function, Operation and Utilization

This training provides insight on how to get the most from your investment in Ford's IDS Scan Tool software. You will learn the most effective use of IDS for day-to-day shop operation.

Topics Include:

- IDS Components
- IDS Preferences
- IDS Vehicle Identification
- Self-Tests
- Datalogger and Parameter IDs (PIDs)
- Data Recording and Playback
- Module Configuration and Programming
- Module Replacement
- System Diagnostics

Technical Content: Basic to Intermediate

Learning Objective: Provide Technicians with key knowledge for the use of the Ford Rotunda Integrated Diagnostic Software (IDS) Scan Tool for optimal utilization.

ELECTRICAL/ELECTRONICS (continued)

Body and Chassis Electrical/Electronics Diagnosis and Service

Body and chassis electronics found on modern vehicles are constantly evolving. This training provides the knowledge and skills essential for Technicians to stay on top of the operation, diagnosis and service of these systems.

Topics Include:

- Using Ford Wiring Diagrams
- Intelligent Access (IA) System
- Push-Button-Start Systems
- Remote Starting Systems
- Auto Start-Stop Systems
- Body Power Opening Systems
- Diagnosis of Body Systems Using Wiring Diagrams
- Saddle Fuel Tanks
- Conventional Speed Control
- Adaptive Cruise Control
- Blind Spot (BLIS) and Cross-Traffic (CTA) Systems
- Adaptive Headlamps
- Active Grille Shutters (AGS)

Technical Content: Intermediate

Learning Objective: Enhance Technician ability to effectively diagnose and service vehicle electrical/electronics systems.

Recommended Prior Knowledge:

Working knowledge of vehicle electrical/electronics systems.

Ford High-Voltage Vehicles Components and Operation

This course includes safety as well as detailed information on hybrids and an introduction to Electric Vehicles. Throughout the course, students learn about the components and operation of both hybrid and Electric Vehicles. High-voltage vehicle technology has become a large part of future service opportunities.

Topics Include:

- Overview of Electric Vehicle (EV) Operation
- Driving a Ford High-Voltage Vehicle
- High-Voltage Vehicle Safety
- Regenerative Braking Operation
- Hybrid Gasoline Engine Operation
- Hybrid Drivetrain
- EV Powertrain
- High-Voltage Electrical System
- Low-Voltage (LV) Systems
- Regenerative Braking System
- Climate Control System
- Warning Lights and Displays

Technical Content: Basic

Learning Objective: Provide Technicians with essential, current information on automotive electrical/electronics components and systems.

Recommended Prior Knowledge: Electrical and electronic system operation.

ELECTRICAL/ELECTRONICS (continued)

Networks and Control Modules Operation, Diagnosis and Service

Modern vehicles depend on networks and control modules for almost every system. From the wheels to the engine and everything in between, Service Technicians must understand the operation, diagnosis and service of these systems. This course includes the latest information on electronic automotive networking systems.

Topics Include:

- Overview of Modern Vehicle Networks
- Network Components, Strategies, Symptoms, Diagnosis and Testing
- Identification of Direct and Indirect Inputs and Outputs
- Specialty Modules and Network Circuitry
- Multiple Controller Area Network (CAN) Testing, Operation, Diagnosis and Service
- Network Data Transmission, Commands and Status Messages
- Resolving Scan Tool Communication Issues
- Diagnosing Networks with Digital MultiMeter and Oscilloscope
- Using Network Tests to Determine Location of a Network Fault
- Intermittent Network Faults
- Control Module Programming Using Scan Tools
- Module Calibration, Initialization, Parameter Reset, Replacement, Programming and Reprogramming (Using J2534 Devices)
- Automatically and Manually Entering As-Built Data

Technical Content: Intermediate

Learning Objective: Deliver current information to Technicians on electronic networking systems, including components, strategies, symptoms, diagnosis and testing, so that they can properly repair Ford network and control module issues.

Recommended Prior Knowledge: Working knowledge of vehicle electrical/electronics systems.

Ford F-150 Lightning Operation, Diagnosis and Service

This course includes the knowledge needed to service the Ford F-150 Lightning safely and accurately. Throughout the course, students learn about components and operation of the latest generation of Electric Vehicles. Students are also introduced to the strategies used to diagnose and repair the high-voltage and low-voltage systems found on the F-150 Lightning.

Topics Include:

- History of Ford Electric Vehicles
- High-Voltage Charging
- High-Voltage Components and Operation
- High-Voltage Diagnosis and Service Procedures
- High-Voltage Personal and Shop Safety
- Networks and Over-the-Air Updates
- Diagnostic and Service Methods for Low-Voltage Vehicle Systems
- Regenerative Braking

Technical Content: Intermediate to Advanced

Learning Objective: This course provides Technicians with the fundamentals needed to understand high-voltage operation and the knowledge required to service the Ford F-150 Lightning safely and accurately.

Recommended Prior Knowledge: Electrical and electronic system operation.

ELECTRICAL/ELECTRONICS (continued)

Electrical Theory and Testing

To service any system on today's vehicles, a Technician must understand electrical operation, wiring diagram interpretation and electrical testing. This course is designed to provide the fundamental skills and knowledge needed to perform electrical testing.

Topics Include:

- Electrical Theory
- Circuit Operation and Arrangements
- Wiring Diagrams and Current Flow
- Using a Digital Multi-Meter (DMM)
- Electrical Testing
- Abnormal Circuit Conditions
- Understanding Circuit Testing
- Wire Repair

Technical Content: Basic

Learning Objective: Provide Technicians with the foundational information needed to perform electrical testing during diagnosis.

Ford Battery Electric Vehicles (BEVs)

This course includes the knowledge needed to service Ford Battery Electric Vehicles (BEVs) safely and accurately. Throughout the course, students learn about the components and operating strategies of the latest generation of BEVs. Students are also introduced to the diagnostic strategies needed when servicing high-voltage components.

Topics Include:

- History of Ford Electric Vehicles
- Vehicle Overviews
- High-Voltage Batteries
- Plug-In Charging
- High-Voltage Safety for Service Technicians
- High-Voltage Systems
- High-Voltage Cooling Systems
- High-Voltage Diagnosis
- High-Voltage Service
- Low-Voltage Systems
- Networks
- Passive Anti-Theft System (PATS)
- Push-Button Starting
- Powertrain
- Suspension
- Braking

Technical Content: Intermediate to Advanced

Learning Objective: This course provides Technicians with the fundamentals needed to understand high-voltage operation, and the knowledge required to service Ford Battery Electric Vehicles (BEVs) safely and accurately.

Recommended Prior Knowledge: Electrical and electronic system operation.

ELECTRICAL/ELECTRONICS (continued)

Advanced Electronics Diagnosis and Service

Today's vehicles are becoming more and more advanced. These advancements are due to the increase in modules and networks. To become a Master Technician, a firm understanding of how these systems operate is needed in order to successfully diagnose and service them. This course is designed to provide the information needed to service the latest Ford electronic systems.

Topics Include:

- Diagnostic Trouble Codes (DTCs)
- Network Overview
- Network Messages
- Types of Networks
- Network Operation
- Network Diagnosis
- FDRS Network Tests
- Network Electrical Testing
- Network Repairs
- Professional Training System (PTS) Website Features
- Control Module Processes
- Module Programming Requirements
- FDRS Module Programming Process
- FDRS Module Programming Errors
- On-Demand Service OTA Update Process
- On-Demand Service OTA Update Errors
- APIM Programming Procedure
- APIM Programming Errors

Technical Content: Advanced

Learning Objective: This course provides Technicians with the knowledge needed to service Ford electronic systems accurately.

Recommended Prior Knowledge: Electrical and electronic system operation.

Advanced Driver Assistance Systems (ADAS) Operation, Service and Diagnosis **NEW**

Today's vehicles continue to improve at a rapid rate.

The Advanced Driver Assistance System (ADAS) is a key evolution to driving experience. The ADAS system provides comprehensive driver support and vehicle safety. When this course is complete, Technicians will be able to describe the operational strategies, components, calibration and service procedures and diagnostic techniques needed to service and repair Ford's ADAS systems.

Topics Include:

- All topics will include the following:
 - Components and Operational Strategies
 - Calibration and Service
 - Diagnosis
- Audible Parking Aid
- Parking Aid with Rear View Camera
- 360-Degree Camera
- Trailer Backup Assist (TBA)
- Side and Rear Vision Systems
- Lane-Keeping System
- Adaptive Cruise Control (ACC)
- ACC with Lane Centering
- BlueCruise

Technical Content: Intermediate

Learning Objective: Upon completion of this course, Technicians will be able to describe the operation strategies, components, calibration and service procedures and diagnostic techniques needed to service and repair Ford's Advanced Driver Assistance Systems (ADAS).

ELECTRICAL/ELECTRONICS (continued)

Advanced Driver Assistance Systems (ADAS) Theory and Operation

Today's vehicles are advancing rapidly. Everything from automatic high beams to self-driving technology is utilized. To properly service the latest vehicles, a Technician must understand the operation of the Advanced Driver Assistance Systems (ADAS). This includes the components, networks and operating strategies.

Topics Include:

- Overview of Driver Assist Systems
- Driver Assist System Operation
- Audible Parking Aid System
- Parking Aid with Camera System
- 360-Degree-View Camera
- Active Park Assist
- Pedestrian Alert System
- Adaptive Cruise Control
- Intelligent Adaptive Cruise Control
- Active Drive Assist (Ford BlueCruise)
- Collision Warning and Collision Avoidance
- Blind Spot Information System (BLIS) with Cross-Traffic Alert (CTA)
- Lane-Keeping System
- Supplemental Brake Assist
- Power Steering Features
- Automatic High Beams

Technical Content: Intermediate

Learning Objective: This course provides students with the foundation required to understand the latest ADAS technologies being used on today's Ford vehicles.

Recommended Prior Knowledge: Working knowledge of vehicle electronics, including networks.

Ford E-Transit Operation, Diagnosis and Service

This course includes the knowledge needed to service the Ford E-Transit safely and accurately. Throughout the course, students learn about components and operation of the latest generation of Electric Vehicles. Students are also introduced to the strategies used to diagnose and repair the high-voltage and low-voltage systems found on the E-Transit.

Topics Include:

- History of Ford Electric Vehicles
- Ford E-Transit Overview
- High-Voltage Safety for Service Technicians
- High-Voltage Systems
- Charging
- Cooling Systems
- High-Voltage Diagnosis
- High-Voltage Service
- Low-Voltage Systems
- Networks
- Passive Anti-Theft System (PATS)
- Remote Keyless Entry
- Phone as a Key (PAAK)
- Powertrain
- Regenerative Braking

Technical Content: Advanced

Learning Objective: This course provides Technicians with the fundamentals needed to understand high-voltage operation and the knowledge required to service the Ford E-Transit safely and accurately.

Recommended Prior Knowledge: Electrical and electronic system operation.

ENGINE PERFORMANCE AND DRIVEABILITY

Ford EcoBoost® Engine Operation, Diagnosis and Service

The Ford EcoBoost® engine is a prolific, compact and powerful engine found on many modern Ford vehicles, using the latest technology to enhance performance. Understanding how this engine and its systems work is a crucial skill for Technicians who must service them.

Topics Include:

- Benefits of Direct Injection
- Benefits of Turbocharging
- Overview of Gasoline Turbocharged Direct Injection (GTDI) Engine Components
- GTDI and Gasoline Direct Injection (GDI) Operation Overview and Engine Variations
- Low-/High-Pressure Fuel Systems
- Fuel Systems Diagnosis and Testing
- High-Pressure Injector Service
- Turbocharger Components, Operation, Diagnosis and Service
- Intake System
- Speed Density System
- Emissions Systems

Technical Content: Basic

Learning Objective: Technicians will be able to understand how Ford EcoBoost® engine technologies and systems operate so that Technicians can service these popular Ford engines.

Emission Control Relationships for Driveability Diagnosis

Emission-related on-board tests are the basis for OBD II technology. Every Technician that conducts driveability diagnosis must understand how these systems operate, their enabling criteria and how they prioritize testing.

Topics Include:

- Vehicle Modes of Operation
- Symptoms of Inaccurate/Degraded Input Signals on Vehicle Operation
- Purpose and Operation of OBD II Monitors
- OBD II Operating Parameters and Limitations
- Function and Operation of Continuous Monitors
- Function and Operation of Non-Continuous Monitors
- New OBD II Monitored Systems
- Enabling Criteria of OBD II Monitors
- Diagnosis of OBD II Monitor Malfunctions

Technical Content: Intermediate

Learning Objective: Technicians will be able to identify symptoms that can occur in modern engine on-board tests based on system and operating configuration.

ENGINE PERFORMANCE AND DRIVEABILITY (continued)

Gasoline Engine Performance and Driveability

Driveability is as much art as science. As vehicles evolve, Technicians that perform this service must also adapt and learn the new technology that impacts vehicle performance. This course will enhance Technician knowledge for diagnosing engine performance and driveability concerns on modern vehicles and systems.

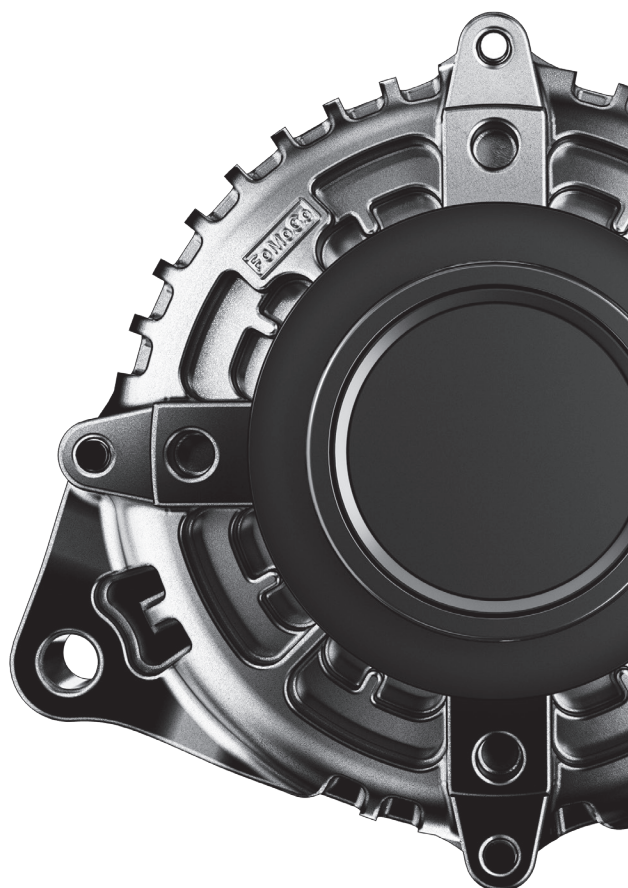
Topics Include:

- Introduction to Driveability
- Diagnosis and Testing Strategy and Process
- Navigation and Utilization of Service Publications
- Diagnostic Trouble Code (DTC) Actuation, Purpose and Category
- Engine Performance Input Device Function, Operation, Testing and Diagnosis
- Fuel System Components, Operation and Strategies
- Oxygen Sensor Types, Operation and Interpretation for Diagnosis
- Fuel Trim Function, Operation and Interpretation for Diagnosis
- DTC Diagnostics for Components and Systems
- Utilizing Wiring Diagrams for Diagnosis of Engine Performance Concerns
- Misfire Symptoms and Diagnosis
- Variable Cam Timing (VCT) Operation, Diagnosis and Service
- Output Device Diagnostic Techniques
- Intermittent Malfunction Diagnostic Techniques

Technical Content: Intermediate

Learning Objective: Technicians will be able to describe driveability symptoms, diagnostic techniques and corrective actions for vehicle performance and driveability concerns.

Recommended Prior Knowledge: Working knowledge of engine operation, OBD II systems and Scan Tool utilization.



MAINTENANCE AND LIGHT REPAIR

Maintenance and Light Repair (MLR) Procedures, Inspections and Service

No matter what new technology is introduced by auto manufacturers, vehicles will always need maintenance and service. And regardless of which company makes the car, they all have similar systems that do specific things: wheels, suspension, brakes and fluids.

Topics Include:

- MLR Technician Skills
- Using MLR Checklists
- Safety, Tools and Service Publications
- MLR Inspection Procedures
- Interior and Underhood Checks
- Tire Inspections
- Brake Inspections
- Under Vehicle Inspections
- Gasoline and Diesel Engine Oil Changes
- Engine Lubrication and Oils
- Tire Service and Repair
- TPMS Service and Repair

Technical Content: Basic

Learning Objective: Provide Technicians with key knowledge in identifying the Maintenance and Light Repair (MLR) tasks and guidelines for several common vehicle systems.

Noise, Vibration and Harshness Diagnosis and Service

Noise, vibration and harshness (NVH) concerns are tricky to diagnose because they represent a Customer's perception of an abnormal condition. And causes can range from tires to driveline to wind to suspensions and more!

This course is designed to teach you about different NVH symptoms, their characteristics and their causes. It will also introduce you to the available tools that Technicians have to pinpoint and correct these issues.

Topics Include:

- NVH Theory and Terminology
- Causes of NVH Symptoms
 - Wheels and Tires
 - Engine
 - Driveline
 - Suspension
 - Brakes
 - Wind Noise
- NVH Diagnostic Process
- Diagnosing NVH Symptoms
- NVH Diagnostic Tools
 - Noise Detectors
 - Vibration Analyzers
 - Vehicle Measurement System (VMS) Tools

Technical Content: Basic to Intermediate

Learning Objective: Provide Technicians with the knowledge needed to service NVH issues on Ford vehicles.

MAINTENANCE AND LIGHT REPAIR (continued)

Ford Medium Duty Truck Brakes Theory and Operation

Ford Medium Duty trucks can be equipped with several types of brake systems. These include Hydro-Boost™, Hydro-Max™ or air brakes. These systems vary from traditional hydraulic brake systems. An understanding of each system is critical to properly perform service. This course provides knowledge on the components, operation and diagnosis of all three systems.

Topics Include:

- Hydro-Boost™ Components
- Operation
- Diagnosis
- Service
- Hydro-Max™ Components and Operation
- Electrical Operating Systems
- Hydro-Max™ Diagnosis
- Air Brake Components and Operation
- Air Brake Anti-Lock Brake System (ABS)
- Air Brake System Diagnosis

Technical Content: Basic to Intermediate

Learning Objective: Describe the components, operation and diagnosis of Ford Medium Duty truck brake systems.





POWERTRAIN

Ford 10-Speed Automatic Transmission Operation **NEW**

The Ford 10-speed transmission maximizes efficiency and power through its optimized range and shifting abilities. The gold standard for Ford vehicles, the 10-speed transmission, must be understood when determining expected vehicle operational characteristics. Upon completion of this course, Technicians will be able to describe the hydraulic, mechanical and electronic operations of the Ford 10-speed automatic transmission.

Topics Include:

- Automatic Transmission Fundamentals
- 10-Speed Transmission Hydraulic Components and Operation
- 10-Speed Mechanical Components
- 10-Speed Transmission Cooling Systems
- 10-Speed Transmission Electronics, Including Modules, Inputs, Outputs and Control Strategies

Technical Content: Intermediate

Learning Objective: Upon completion of this course, Technicians will be able to describe the hydraulic, mechanical and electronic operations of the Ford 10-speed automatic transmission.

Ford Automatic Transmission Operation, Diagnosis and In-Vehicle Service

Ford automatic transmissions and transaxles are reliable, durable and designed to handle the stress of all types of consumer and commercial operation.

It's important for Service Technicians to know about automatic transmission basic components, operation and diagnostics to help determine the best course of action in diagnosing and servicing Ford vehicles.

Topics Include:

- Automatic Transmission Operation Overview
- Typical Transmission Components
- Torque Converter
- Hydraulic Components and Operation
- Automatic Transmission Electronics
- Solenoid Operation
- Scan Tool Utilization for Diagnosis and Service
- Automatic Transmission Diagnostic Process
- Automatic Transmission In-Vehicle Service
- Fluid Service
- Cooling Systems

Technical Content: Intermediate

Learning Objective: Provide Technicians with automatic transmission basic operation and diagnostics that may be needed when servicing Ford vehicles.

POWERTRAIN (continued)

Four-Wheel Drive and All-Wheel Drive Operation, Diagnosis and Service

Ford began offering four-wheel drive in the 1959 F-250 pickup truck. Since that time, it has been refining and improving four-wheel drive systems. Today's Ford vehicles use a variety of drivelines to transfer power to the road.

This course will cover two Ford drive systems:

- All-wheel drive (AWD), which uses a Power Transfer Unit (PTU) to transfer torque to the rear wheels
- Four-wheel drive (4WD), with a transfer case that sends torque to a front differential

Topics Include:

- Overview of Four-Wheel Drive
- Introduction to All-Wheel Drive (AWD) and Torque Vectoring
- All-Wheel Drive Components
- Power Transfer Units
- Rear-Wheel-Based AWD System
- Active Torque Coupling (ATC) Control Strategies
- AWD Symptoms, Diagnosis and Service
- Hub Lock Types and Operation
- Wheel Drive Axles
- Transfer Case Components and Operation
- Electronic Four-Wheel Drive Controls
- Diagnosis and Testing of Four-Wheel Drive Systems
- Transfer Case Service

Technical Content: Basic to Intermediate

Learning Objective: Provide Technicians with the knowledge needed to service the four-wheel drive (4×4) and all-wheel drive (AWD) systems on Ford vehicles.

Gasoline Engine Diagnosis and Repair

This course focuses on the diagnosis and repair of late-model Ford gasoline engines and their systems.

Topics Include:

- Scan Tool Engine Testing
- Engine Testing with Gauges
- Engine Pressure Testing
- Engine Leak Testing
- Variable Cam Timing (VCT)
- VCT Operation
- VCT Diagnosis
- VCT Service
- VCT Phaser Replacement
- Noise Testing
- Setting Cam Timing
- Sprocket to Block Cam Timing
- Reference Link Cam Timing

Technical Content: Basic

Learning Objective: Provide Technicians with core diagnosis and repair information related to Ford naturally aspirated gasoline engines.

ACRONYMS AND DEFINITIONS

This acronyms and definitions listing contain technical terms applicable to Ford Motor Company products. It is not intended to be an all-inclusive dictionary of components and their functions.

AAT:	Ambient Air Temperature	BPP:	Brake Pedal Position
ABS:	Anti-Lock Brake System	BTDC:	Before Top Dead Center
AC:	1. Air Conditioning 2. Alternating Current	CAC:	Charge Air Cooler
ACC:	1. Adaptive Cruise Control 2. Air Conditioning Clutch	CAN:	Controller Area Network
ACCM:	1. Air Compressor Control Module 2. Air Conditioning Control Module	CARB:	California Air Resources Board
A/D:	Analog-to-Digital Signal Conversion	CCM:	1. Comprehensive Component Monitor 2. Cruise Control Module
ADAS:	Advanced Driver Assistance Systems	Cetane:	Additive in Diesel Fuel to Enhance Fuel Burn
AEB:	Automatic Emergency Braking	CF:	Cooling Fan
APA:	Active Park Assist	CHT:	Cylinder Head Temperature
API:	American Petroleum Institute	CJB:	Central Junction Box
APIM:	SYNC Module	CKP:	Crankshaft Position
APP:	Accelerator Pedal Position	CL:	Closed-Loop
ARC:	Automatic Ride Control	CMP:	Camshaft Position
A/T:	Automatic Transmission	CO:	Carbon Monoxide
ATF:	Automatic Transmission Fluid	CO₂:	Carbon Dioxide
ATM:	Ancillary Translator Module	COP:	Coil-on-Plug
AWD:	All-Wheel Drive	CPP:	Clutch Pedal Position
BARO:	Barometric Pressure	CPU:	Central Processing Unit
BCCM:	Battery Charger Control Module	CSI:	Charge Status Indicator
BCM:	Body Control Module	CTA:	Cross-Traffic Alert
BECM:	Battery Energy Control Module	CTO:	Clean Tach Output
BJB:	Battery Junction Box	DATC:	Dual-Zone Automatic Temperature Control
BLIS®:	Blind Spot Information System	DC:	1. Direct Current 2. Duty Cycle
BOO:	Brake On/Off Switch	DDM:	Driver Door Module
BPA:	Brake Pedal Applied	DEPM:	Diesel Engine Power Monitor
		DFI:	Direct Fuel Injection

DFSO:	Deceleration Fuel Shutoff	EVAP:	Evaporative Emission
DLC:	Data Link Connector	EVAPCP:	Evaporative Emission Canister Purge Valve
DMM:	Digital Multi-Meter	EVSE:	Electric Vehicle Supply Equipment
DOT:	Department of Transportation	FAOS:	Fore-Aft Oxygen Sensor
DTC:	Diagnostic Trouble Code	FD-CAN:	Flexible Data Rate Controller Area Network
E10:	Fuel Containing 10% Ethanol	FDRS:	Ford Diagnostic and Repair System
E100:	Fuel Containing 100% Ethanol	FEPS:	Flash EEPROM Programming Signal
E85:	Fuel Containing 85% Ethanol	FFV:	Flexible Fuel Vehicle
ECT:	Engine Coolant Temperature	FLI:	Fuel Level Input
EEC:	Electronic Engine Control	FMEM:	Failure Mode Effects Management
EEGR:	Electric Exhaust Gas Recirculation	FP:	Fuel Pump
EEPROM:	Electrically Erasable Programmable Read-Only Memory	FPDM:	Fuel Pump Driver Module
EGR:	Exhaust Gas Recirculation	FPM:	Fuel Pump Monitor
EGRT:	Exhaust Gas Recirculation Temperature	FRP:	Fuel Rail Pressure
EI:	Electronic Ignition	FRPT:	Fuel Rail Pressure Temperature
EMD:	Engine Manufacturers Diagnostics	FSS:	Fan Speed Sensor
EMI:	Electromagnetic Interference	FTP:	Fuel Tank Pressure
EONV:	Engine Off Natural Vacuum	FWD:	Front-Wheel Drive
EOT:	Engine Oil Temperature	GFM:	Generic Function Module
EP:	Exhaust Pressure	GPCM:	Glow Plug Control Module
EPAS:	Electronic Power-Assisted Steering	GPIL:	Glow Plug Indicator Lamp
EPS:	Exhaust Phase Shifting	GPM:	1. Grams per Mile 2. Gallons per Minute 3. Glow Plug Monitor
ERFS:	Electronic Returnless Fuel System	GSM:	Gear Shift Module
ESC:	Electronic Stability Control	GTDI:	Gasoline Turbocharged Direct Injection
ESOF:	Electronic Shift-on-the-Fly	GVWR:	Gross Vehicle Weight Rating
ETB:	Electronic Throttle Body	GWM:	Gateway Module
ETBTACM:	Electronic Throttle Body Throttle Actuator Control Motor	H:	Hydrogen
ETBTPS:	Electronic Throttle Body Throttle Position Sensor	HC:	1. Hydrocarbon 2. High Compression
ETC:	Electronic Throttle Control	HCU:	Hydraulic Control Unit

ACRONYMS AND DEFINITIONS

HDR:	High Data Rate	LDR:	Low Data Rate
HO₂S:	Heated Oxygen Sensor	LIN:	Local Integrated Network
HSCAN:	High-Speed CAN	LKS:	Lane-Keeping System
HV:	High Voltage	LONGFT:	Long-Term Fuel Trim
HVBP:	High-Voltage Battery Pack	MAF:	Mass Airflow
HVIL:	High-Voltage Interlock	MAP:	Manifold Absolute Pressure
IAC:	Idle Air Control	MAP/IAT2:	Manifold Absolute Pressure/ Intake Air Temperature 2
IAT:	Intake Air Temperature	MECS:	Motor Electronics Cooling System
IC:	1. Instrument Cluster 2. Integrated Circuit	MFF:	Misfire Freeze Frame
ICP:	Injection Control Pressure	MIL:	Malfunction Indicator Lamp
IDM:	Injection Driver Module	mm:	Millimeter
IFS:	Inertia Fuel Shutoff	MPH:	Miles per Hour
I/M:	Inspection/Maintenance	MRFS:	Mechanical Returnless Fuel System
IMRC:	Intake Manifold Runner Control	MSCAN:	Medium Speed CAN
IMTV:	Intake Manifold Tuning Valve	MSOF:	Manual Shift-on-the-Fly
IPC:	Independent Plausibility Checker	M/T:	Manual Transmission
IPMA:	Image Processing Module A	NOX:	Nitrogen Oxides
IPR:	Injection Control Pressure	NVM:	Non-Volatile Memory
IPS:	Intake Phase Shifting	NVRAM:	Non-Volatile Random Access Memory
ISC:	Inverter System Controller	OASIS:	Online Automotive Service Information System
ISO:	International Standards Organization	OBD:	On-Board Diagnostic
KAM:	Keep Alive Memory	OL:	Open Loop
KAPWR:	Keep Alive Power	ORVR:	On-Board Refueling Vapor Recovery
K/PH:	Kilometers per Hour	OSC:	Output State Control
KOEO:	Key On Engine Off	OSR:	On-Board System Readiness
KOER:	Key On Engine Running	OSS:	Output Shaft Speed
kPa:	Kilopascal	PACM:	Pedestrian Alert Control Module
KS:	Knock Sensor	PAG:	Polyalkylene Glycol
kW:	Kilowatts	PAM:	Parking Aid Module
lb.-ft.:	Pounds per Foot	PATS:	Passive Anti-Theft System
LCA:	Lane Centering Assist	PCM:	Powertrain Control Module

PCV:	Positive Crankcase Ventilation	TCBP/CACT:	Turbocharger Boost Pressure/ Charge Air Cooler Temperature
Pd:	Palladium	TCBY:	Turbocharger Bypass
PDM:	Passenger Door Module	TCIPT:	Turbocharger Intake Pressure and Temperature
PID:	Parameter Identification	TCM:	Transmission Control Module
PIP:	Profile Ignition Pickup	TCS:	Transmission Control Switch
POE:	Polyolester	TCU:	Telematic Control Unit Module
PPM:	Parts per Million	TDC:	Top Dead Center
PSCM:	Power Steering Control Module	TFT:	Transmission Fluid Temperature
PSI:	Pounds per Square Inch	TIVCT:	Twin Independent Variable Camshaft Timing
PSP:	Power Steering Pressure	TP:	Throttle Position
Pt:	Platinum	TPPC:	Throttle Plate Position Controller
PTC:	Positive Temperature Coefficient	TR:	Transmission Range
PTS:	Professional Technician System	TSB:	Technical Service Bulletin
PWM:	Pulse-Width Modulation	TSS:	Turbine Shaft Speed Sensor
PZEV:	Partial Zero Emissions Vehicle	TWC:	Three-Way Catalytic Converter
RAM:	Random Access Memory	VAPS:	Variable-Assist Power Steering
RFA:	Remote Function Actuator	VBAT:	Vehicle Battery Voltage
RKE:	Remote Keyless Entry	VCT:	Variable Camshaft Timing
ROM:	Read-Only Memory	VECI:	Vehicle Emission Control Information
RPM:	Revolutions per Minute	VGT:	Variable Geometry Turbocharger
RWD:	Rear-Wheel Drive	VID:	Vehicle Identification
SAE:	Society of Automotive Engineers	VIN:	Vehicle Identification Number
SCCM:	Steering Column Control Module	VR:	Variable Reluctance
SFI:	Sequential Multiport Fuel Injection	VREF:	Vehicle Reference Voltage
SHRTFT:	Short-Term Fuel Trim	VSS:	Vehicle Speed Sensor
SIGRTN:	Signal Return	WIF:	Water in Fuel
SOBDMC:	Secondary On-Board Diagnostic Module C	WOT:	Wide Open Throttle
SODL:	Side Obstacle Detection Left	WSM:	Workshop Manual
SODR:	Side Obstacle Detection Right		
TAC:	Throttle Actuator Control		
TACM:	Throttle Actuator Control Motor		
TC:	Turbocharger		