MOPAR CAREER AUTOMOTIVE PROGRAM

Program Description
MCAP is an internship-based Dunwoody College of Technology AAS Degree manufacturer program in partnership with FIAT Chrysler Automobiles (FCA). The program is designed to train students in all aspects of vehicle repair on Chrysler, Dodge, Jeep®, Ram, and FIAT vehicles, using a combination of FCA Performance Institute and Dunwoody College of Technology training materials.

MCAP students receive cutting-edge training in automotive systems such as computer controls, BUS communication, wireless communication, telematics, HVAC, diesel, and mechanical in addition to all nine ASE Automotive Skill categories including light duty diesel.

Students in their first semester will be trained in fundamental mechanical and electrical automotive systems. During the remaining semesters, students will be in MCAP-specific classes, while spending a portion of their time interning at a sponsoring Chrysler, Dodge, Jeep®, Ram, or FIAT dealer. A portion of every semester will also be spent fulfilling Arts & Sciences course requirements. Upon graduation, MCAP Students will be Level 2 Certified in all seven FCA Performance Institute Core Skill areas.

The Dunwoody MCAP instructor is a National Institute for Automotive Service Excellence (ASE) certified Master Technician with G1 & L1 Certification. He is also FCA certified in the areas taught. The Automotive Service Excellence (ASE) Education Foundation has accredited Dunwoody’s MoparCAP in Master Automobile Service Technology—the highest level of achievement recognized by the ASE Education Foundation.

FCA has awarded Dunwoody its Outstanding Achievement Award for Innovative Ideas, illustrating the success of the longtime partnership between FCA and Dunwoody.

Dunwoody College of Technology: a non-profit, private technical college since 1914.

<table>
<thead>
<tr>
<th>Credential Earned</th>
<th>AAS Degree</th>
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<tbody>
<tr>
<td>Classes Offered</td>
<td>Day</td>
</tr>
<tr>
<td>Length of Program</td>
<td>2 years (4 semesters + 1 summer session)</td>
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<tr>
<td>Available Starts</td>
<td>Fall Semester; Spring Semester</td>
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<tr>
<td>Accreditation</td>
<td>ASE Education Foundation; Fiat Chrysler Automobiles (FCA) authorized Mopar Career Automotive Program</td>
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<tr>
<td>Further Study</td>
<td>Bachelor’s Completion Degree in Applied Management</td>
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Degree Requirements
AUTO1110 General Skills & Engine Fundamentals
AUTO1120 Brakes, Steering & Suspensions
AUTO1130 Electrical & Electronic Principles
MCAP1001 Mopar Fundamentals
MCAP1005 Noise, Vibration & Harshness
MCAP1061 Mopar Electrical & Body Systems
MCAP1071 Mopar Climate Control
MCAP2510 MCAP Internship I
MCAP2520 MCAP Internship II
MCAP1081 Mopar Powertrain Performance
MCAP1091 Mopar Diesel Systems
MCAP2530 MCAP Internship III
MCAP1041 Mopar Engines
MCAP1021 Mopar Automatic Drivetrain
MCAP1031 Mopar Manual Drivetrain
MCAP1041 Mopar Steering & Suspension Systems
MCAP1051 Mopar Braking Systems
MCAP2540 MCAP Internship IV
MCAP2550 MCAP Internship V
MCAP2560 MCAP Internship VI
MCAP2570 MCAP Internship VII
Natural Sciences/Mathematics Elective
Communications Elective
Arts & Sciences Elective
Social Sciences Elective
Arts & Sciences Elective
Humanities Elective
Arts & Sciences Elective

Common Job Titles
FIAT Chrysler Automobiles (FCA) Level 2 Certified
Automotive Service Technician
General Service Technician
Light Duty Technician

Recent Employers
Metro Area Chrysler, Dodge, Jeep ©, Ram & FIAT Dealers
Outstate Western Wisc. & North Dakota
Chrysler, Dodge, Jeep ©, Ram & FIAT Dealers

Salary Data
$44,770 Annual Average Salary

Placement Rate
100%**

How to Apply
Email: dunwoody.edu
Phone: 612.374.5800
Email: info@dunwoody.edu
Course Descriptions

AUTO1110 General Skills & Engine Fundamentals, 3 cr.
Use tools and measuring instruments. Identify fasteners and fittings, remove damaged fasteners, fabricate brake lines. Research service procedures using automotive information systems. Disassemble and assemble component engines. Describe engine parts, systems, and operation.

AUTO1120 Brakes, Steering & Suspensions, 4 cr.
Examine theory of design and principles of operation, diagnosis and repair procedures of automotive brake, steering and suspension systems. Practice performing service procedures, four-wheel alignments, tire and wheel service.

AUTO1130 Electrical & Electronic Principles, 7 cr.
Examine theory and principles of Ohm’s law, circuit principles, magnetism, electromagnetism, batteries, induction, cranking motors, charging systems, ignition systems, basic electronics including sensors and semiconductors. Use digital multimeters and wiring schematics to trace, test, and diagnose circuits. Disassemble, inspect, test, and reassemble starters and alternators. On-vehicle diagnosis of battery, starting, and charging systems. Introduction to scan tools.

MCAP1001 Mopar Fundamentals, 3 cr.
Identify the steps that should be performed for vehicle maintenance. Perform a vehicle inspection. Perform a step-by-step process to complete a New Vehicle Preparation service procedure. Practical usage of meters and lab scope operation to quickly and accurately perform electrical diagnosis. Identify the different types of sensors, control and load devices in vehicle electronic architectures. Identify modules that require programming after replacement and properly program a module after replacement. Identify operating characteristics and diagnose components of the various communication networks on vehicles.

MCAP1005 Noise, Vibration & Harshness, 1 cr.
Isolation of components, use of special tools, current problem resolution, and interpretation of system component frequencies. The six-step diagnostic approach is used along with the siometer to demonstrate amplitude and frequency of a vibration. Identify terms necessary for diagnosing NVH concerns. Calculate NVH frequencies necessary for component classification. Identify test equipment and tools used in diagnosing and correcting NVH concerns.

MCAP1061 Mopar Electrical & Body Systems, 2 cr.
Perform the manufacturer recommended diagnostic and test procedures for vehicle electrical systems. Select, connect and interpret the results of the Lab scope readings. Locate and identify restraint system components. Decode the restraint systems information from the vehicle identification number (VIN). List all components requiring replacement or inspection after air bag deployment. Identify the cause of an illuminated airbag warning lamp. Identify and diagnose stored and active DTC’s. Identify, locate, and diagnose items such as vehicle theft alarm, lighting, and power systems. Identify and use tools required to service interior and exterior trim component. Identify fasteners required to service interior and exterior body trim components. Diagnose major sources of wind noise and water leak issues. Remove and install a door module. Research proper operation of a sunroof system.

MCAP1071 Mopar Climate Control, 2 cr.
Examine the principles of heat transfer. Correlate refrigerant pressure and temperature along with their effects on the boiling point of water and refrigerant. Identify A/C components, electrical components and controls, in automotive air conditioning and heating systems. Use HVAC service procedures as well as A/C recovery and recycling equipment to repair HVAC concerns. Complete an EPA approved A/C recovery and recycling certification.

MCAP2510 MCAP Internship I, 2 cr.
Perform an internship at a sponsoring Chrysler, Dodge, Jeep® or Ram dealership; follow the procedures outlined in the MCAP Internship manual, work under the supervision of the dealership service management. The Dunwoody CAP coordinator will oversee the internship.

MCAP2520 MCAP Internship II, 2 cr.
Perform an internship at a sponsoring Chrysler, Dodge, Jeep® or Ram dealership; follow the procedures outlined in the MCAP Internship manual, work under the supervision of the dealership service management. The Dunwoody CAP coordinator will oversee the internship.

MCAP1081 Mopar Powertrain Performance, 3 cr.
Examine the principles of the speed density and mass air flow fuel injection system including methods of determining air, fuel and spark requirements. Identify idle control, and principles of major input and output circuit operation along with the major subsystems operated by the Powertrain Control Module (PCM); locate and test power, grounds, and voltage sense circuits. Identify the different types of ignition systems along with the primary and secondary circuits. Identify the operation of the Up and Downstream O2 sensor, open and closed loop operation and their effect on fuel injector pulse width. Identify the operation of the catalytic converter and other emission controls such as EGR and EVAP systems. Diagnose vehicles with manufacturer test equipment. Explain how OBDII began, how it is currently implemented along with requirements and why they are necessary. Describe current emission control systems, diagnostic tools; diagnostic trouble codes, freeze frame data, and monitors.

MCAP1091 Mopar Diesel Systems, 1 cr.
Examine the principles, operation, and diagnosis of diesel engines. Identify the components and operation of diesel air induction systems. Test the components and operation of the various diesel fuel systems. Identify the components and operation of the diesel electronic control systems as well as the components and operation of the various diesel exhaust emissions and after-treatment systems. Perform various tests and diagnostic routines available with the Chrysler Diagnostic Scan tool.

MCAP2530 MCAP Internship III, 2 cr.
Perform an internship at a sponsoring Chrysler, Dodge, Jeep® or Ram dealership; follow the procedures outlined in the MCAP internship manual, work under the supervision of the dealership service management. The Dunwoody CAP coordinator will oversee the internship.

MCAP1110 Mopar Engines, 2 cr.
Differentiate between Cam in Block and Cam in Head engines. Locate components and perform specific repair procedures. Use the manufacturer special tools developed for these engines. Inspect and service the timing system. Service upper engine components and adjustment procedures. Service lower engine components. Explain cooling system operation and coolant flow. Describe oil flow through the engine. Identify the characteristics of engine mechanical diagnosis, for the following areas of concern: engine assembly noises, cooling system problems, and oil loss. Perform selected engine mechanical diagnostic tests listed in the manufacturer service information and analyze test results to determine necessary repairs.
Course Descriptions

MCAP1021 Mopar Automatic Drivetrain, 3 cr.
Explain the purpose of automatic transmission fluid, the available fluid types, and the various ways of checking fluid level. Identify the laws of hydraulics and Pascal's law. Identify the purpose, operation, and construction of a torque converter, as well as the concepts of fluid coupling and torque multiplication. Identify the purpose, construction and operation internal gear train components, specifically planetary gear sets, clutch packs, and overrunning clutches. Explain transmission power flow, with regards to the operation of planetary gear sets to get reduction, second gear, direct drive, overdrive, and reverse. Identify purpose, construction and operation of transmission hydraulics & controls, specifically the oil pump and sump, valve body, and accumulators. Use manufacturer special tools to disassemble and reassemble automatic transmissions. Identify the purpose and operation of all transmission electrical direct input and output devices.

MCAP1031 Mopar Manual Drivetrain, 2 cr.
Disassemble, explain powerflow, and reassemble manual transmissions, transfer cases and differentials. Identify components by using the identification tag. Identify the purpose and operation of precision tools including feeler gauge set, micrometer, dial indicator, dial caliper, dial and beam style torque wrenches. Differentiate between front wheel drive and rear wheel drive transmission components. Compare the powerflow through a front wheel drive and a rear wheel drive manual transmission. Determine the lubrication requirements for the different types of manual driveline assemblies. Identify the electronic operation of the various manual driveline controls. Identify the various clutch types, components, and release components. Differentiate between 4WD and AWD systems.

MCAP1041 Mopar Steering & Suspension Systems, 1 cr.
Identify types, characteristics, and diagnostics of power steering systems. Perform power steering system pressure analysis. Identify test equipment and analyze tire pressure monitoring systems. Identify the various suspension types available for automotive applications. Explain the function of steering components as they relate to an automotive steering system.

MCAP1051 Mopar Braking Systems, 1 cr.
Identify the components and function of typical anti-lock brake systems (ABS). Identify and test the types of ABS control module inputs and outputs. Explain the procedure for bleeding brake fluid in an ABS. Use manufacturer special tools to diagnose electrical components related to the brake system. Differentiate among traction control, roll mitigation, electronic brake distribution, and electronic stability control.

MCAP2540 MCAP Internship IV, 2 cr.
Perform an internship at a sponsoring Chrysler, Dodge, Jeep® or Ram dealership, following the procedures outlined in the MCAP Internship manual, working under the supervision of the dealership service management. The Dunwoody CAP coordinator will oversee the internship.

MCAP2550 MCAP Internship V, 2 cr.
Perform an internship at a sponsoring Chrysler, Dodge, Jeep® or Ram dealership, following the procedures outlined in the MCAP Internship manual, working under the supervision of the dealership service management. The Dunwoody CAP coordinator will oversee the internship.

MCAP2560 MCAP Internship VI, 2 cr.
Perform an internship at a sponsoring Chrysler, Dodge, Jeep® or Ram dealership, following the procedures outlined in the MCAP Internship manual, work under the supervision of the dealership service management. The Dunwoody CAP coordinator will oversee the internship.

MCAP2570 MCAP Internship VII, 3 cr.
Perform an internship at a sponsoring Chrysler, Dodge, Jeep® or Ram dealership, follow the procedures outlined in the MCAP Internship manual, work under the supervision of the dealership service management. The Dunwoody CAP coordinator will oversee the internship.