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 Certification. He is also FCA certified in the areas that he teaches.

The National Automotive Technicians Education Foundation (NATEF), the branch of ASE which certifies and accredits automotive education programs, has accredited Dunwoody’s MoparCAP in Master Automobile Service Technology—the highest level of achievement recognized by NATEF.

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

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

Credential Earned | AAS Degree
---|---
Classes Offered | Day
Length of Program | 2 years (4 semesters + 1 summer session)
Available Starts | Fall Semester; Spring Semester
Accreditation | NATEF; Fiat Chrysler Automobiles (FCA) authorized Mopar Career Automotive Program
Further Study | Bachelor’s Completion Degree in Applied Management

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
- MCAP1011 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
- Communications Elective
- Social Sciences Elective
- COMM1150 Interpersonal Communication
- Humanities Elective
- Diversity 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
- $44,400* Annual Average Salary
- Placement Rate 100%**

How to Apply
- dunwoody.edu
- 612.374.5800
- info@dunwoody.edu

* Based on May 2015 State Occupational Employment and Wage Estimates for the state of Minnesota published by the Bureau of Labor Statistics, www.bls.gov. ** Data reflects placement for AY2015-16 graduates indicating employment in their field of study within 6 months following graduation. Full data calculations are available for review during College open hours Monday through Friday 8 a.m. to 4 p.m. CT at Career Services or contact careerservices@dunwoody.edu.

AY/2017-18 Revised: 3.29.17
NVH frequencies necessary for component diagnosis and testing of vehicle systems. Identify the terms used in vibration analysis and test procedures. Demonstrate amplitude and frequency of a vibration. Identify terms related to NVH testing and use of diagnostic tools.

Isolation of components, use of special tools, networks on vehicles. Identify operating characteristics and diagnose improper programming after replacement. Require programming after replacement and use special tools and diagnostic routines available with the Chrysler Diagnostic Scan tool.

MCAP1081 Mopar Powertrain Performance, 3 cr.
Examine the principles of fuel flow 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 primary and secondary 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.

MCAP1011 Mopar Engines, 2 cr.
Describe oil flow through the engine. Identify the components of cooling system operation and coolant flow. Identify the components and operation of the various diesel air induction systems. Test 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.

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.

MCAP1090 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.

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 sierometer 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.

MCAP1110 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.

MCAP1120 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.

MCAP1130 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.

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.

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.

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.

MCAP1011 Mopar Engines, 2 cr.
Describe engine parts, systems, and operation. Learn to service major 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.

MCAP1110 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.

MCAP1120 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.

MCAP1130 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 sierometer 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.
**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.

**COMM1150 Interpersonal Communication, 3 cr.**
Analyze the process of interpersonal communication as a dynamic and complex system of interactions. Integrate interpersonal communication theory into work, family and social relationships. Apply fundamental tools needed to provide quality customer service. Decision making, problem solving, and managing customer service processes are emphasized.