

DIESEL HEAVY EQUIPMENT II (412)

Information provided includes course descriptions by subject only.
For complete 2021-2022 programs/academic plans, please refer to
Academic Programs (<http://catalog.blackhawk.edu/academics/>).

412-100 Introduction to Heavy Diesel

Credits: 0.5-1

In this course students will be introduced to the heavy duty diesel field. Students will explore the definition, purpose, and function of heavy duty vehicles. Students will identify career paths within the diesel technician field. Students will identify and practice shop safety procedures.

Aid Code: 10 - undefined.

Complete Course Listing

412-101 Brake Service 1

Credits: 0.5-1

In this course students will explore the fundamental concepts of braking, including friction, heat, and pressure. Students will practice inspecting, testing, servicing, and repairing air brake circuits.

Aid Code: 10 - undefined.

Co-requisites: (412-100)

Complete Course Listing

412-102 Brake Service 2

Credits: 0.5-1

In this course students will practice inspection, diagnosis, service, and repair of heavy duty vehicle s-cam and air disc brake systems.

Aid Code: 10 - undefined.

Co-requisites: (412-101)

Complete Course Listing

412-103 Brake Service 3

Credits: 0.05-1

In this course students will identify the purpose and function of anti-lock braking systems, stability control, and collision avoidance systems. Students will identify, test, diagnose, and repair these systems to manufacturer specifications.

Aid Code: 10 - undefined.

Co-requisites: (412-102)

Complete Course Listing

412-104 Brake Service 4

Credits: 0.05-1

In this course students will identify the purpose and function of heavy diesel hydraulic braking systems and air over hydraulic braking systems. Students will inspect, diagnose, adjust, and repair hydraulic brake systems.

Aid Code: 10 - undefined.

Co-requisites: (412-103)

Complete Course Listing

412-105 Steering & Suspension 1

Credits: 0.5-1

In this course students will define the purpose and function of wheel end components. Students will identify, inspect, test, adjust, and repair tires, wheels, rims and hubs to manufacturer specifications.

Aid Code: 10 - undefined.

Co-requisites: (412-100)

Complete Course Listing

412-106 Steering & Suspension 2

Credits: 0.5-1

In this course students will explore front-end, alignment factors, and frames as they pertain to heavy diesel vehicles. Students will inspect, test, and repair front axles, frames, and attaching hardware. Students will identify electronic alignment and alignment factors that contribute to heavy duty vehicle instability.

Aid Code: 10 - undefined.

Co-requisites: (412-105)

Complete Course Listing

412-107 Steering & Suspension 3

Credits: 0.5-1

In this course students will identify the purpose and function of heavy duty vehicle suspension systems and their components. Student will explore and identify air suspension, leaf spring suspension, aligning devices, equalizer systems, and all attaching hardware. Students will inspect, adjust, test and repair heavy duty vehicle suspension systems.

Aid Code: 10 - undefined.

Co-requisites: (412-106)

Complete Course Listing

412-108 Steering & Suspension 4

Credits: 0.5-1

In this course students will identify the purpose and function of steering systems and components. Students will practice diagnostic, inspection and repair procedures of heavy duty vehicle steering systems.

Aid Code: 10 - undefined.

Co-requisites: (412-107)

Complete Course Listing

412-109 Drivetrain 1

Credits: 0.5-1

In this course students will identify the purpose and function of heavy duty vehicle clutches and their components. Students will practice servicing, inspection, and replacement of several different types of heavy duty clutches.

Aid Code: 10 - undefined.

Co-requisites: (412-100)

Complete Course Listing

412-110 Drivetrain 2

Credits: 0.05-1

In this course students will identify supporting principles and functions of manual transmission and gear concepts. Students will explore different gearing concepts, and how these concepts apply to standard transmissions used in the heavy diesel industry. Students will inspect, diagnose, service and repair standard transmission auxiliary assemblies to manufacturer specification.

Aid Code: 10 - undefined.

Co-requisites: (412-109)

Complete Course Listing

412-111 Drivetrain 3

Credits: 0.05-1

In this course students identify the purpose and function of automated transmissions within the heavy duty industry. Students will explore controls associated with various types of modern automated transmissions.

Aid Code: 10 - undefined.

Co-requisites: (412-110)

Complete Course Listing

412-112 Drivetrain 4

Credits: 0.5-1

In this course students will identify the purpose and function of drive shafts and driven axles. Students will practice inspection, service, and repair of diesel and heavy duty vehicle drive shafts and drive axles.

Aid Code: 10 - undefined.

Co-requisites: (412-111)

Complete Course Listing

412-113 Electrical Fundamentals 1

Credits: 0.5-1

In this course students will explore applications of fundamental principles and theories of electricity within the heavy duty vehicle industry.

Aid Code: 10 - undefined.

Co-requisites: (806-315)

Complete Course Listing

412-114 Electrical Fundamentals 2

Credits: 0.5-1

In this course students identify the purpose and function of electrical circuits, circuit control devices, and electrical instrumentation. Students will practice testing individual and system circuits using a multimeter.

Aid Code: 10 - undefined.

Co-requisites: (412-113)

Complete Course Listing

412-115 Electrical Fundamentals 3

Credits: 0.5-1

In this course students will identify the purpose and function of commercial vehicle batteries, as well as advanced battery technology and placement. Students will inspect, test, charge, and replace heavy duty commercial batteries to manufacturer specifications.

Aid Code: 10 - undefined.

Co-requisites: (412-114)

Complete Course Listing

412-116 Electrical Fundamentals 4

Credits: 0.5-1

In this course students will identify the purpose and function of heavy duty vehicle starting and charging systems and their components. Students will practice testing, repairing, and replacing heavy duty vehicle starters, alternators and other electrical system components.

Aid Code: 10 - undefined.

Co-requisites: (412-115)

Complete Course Listing

412-117 Electrical Troubleshooting 1

Credits: 0.5-1

In this course, students will explore heavy duty vehicle electrical wiring. Students will practice reading and interpreting electrical wiring schematics.

Aid Code: 10 - undefined.

Co-requisites: (412-116 or 070-341)

Complete Course Listing

412-118 Electrical Troubleshooting 2

Credits: 0.5-1

In this course students practice inspecting, testing and repairing electrical lighting circuits and instrumentation on vehicles.

Aid Code: 10 - undefined.

Co-requisites: (412-117)

Complete Course Listing

412-119 Electrical Troubleshooting 3

Credits: 0.5-1

In this course students will explore heavy duty vehicle electrical signal processing. Students will identify the purpose and function of sensors and sensor information, as well as control module processing of related information. Students will practice the use of electrical signal testing equipment.

Aid Code: 10 - undefined.

Co-requisites: (412-118)

Complete Course Listing

412-120 Electrical Troubleshooting 4

Credits: 0.5-1

In this course students will identify the purpose and function of on-board vehicle diagnostic systems. Students will inspect, test diagnose, and repair multiple different systems to manufacturer specifications using information from control modules.

Aid Code: 10 - undefined.

Co-requisites: (412-119)

Complete Course Listing

412-121 Diesel HVAC 1

Credits: 0.5-1

In this course students will explore basic principles of diesel vehicle heating and air conditioning, as well as heating and air conditioning controls and operation.

Aid Code: 10 - undefined.

Co-requisites: (412-120 or 412-342)

Complete Course Listing

412-122 Diesel HVAC 2**Credits:** 0.5-1

In this course students practice inspecting, diagnosing, and servicing diesel vehicle heating and air conditioning systems per manufacturer, EPA, and MVAC standards. This course will prepare students to become MVAC 609 certified.

Aid Code: 10 - undefined.**Co-requisites:** (412-121)

Complete Course Listing

412-123 Diesel HVAC 3**Credits:** 0.5-1

In this course students identify the purpose and function of trailer refrigeration systems and their components.

Aid Code: 10 - undefined.**Co-requisites:** (412-122)

Complete Course Listing

412-124 Advanced Safety Procedures**Credits:** 0.5-1

In this course students will identify and perform safe work practices in accordance with OSHA requirements. These practices will be applicable to diesel shops, as well as other environments in the diesel industry.

Aid Code: 10 - undefined.

Complete Course Listing

412-125 Engine Fundamentals 1**Credits:** 0.5-1

In this course students will identify the purpose and function of various engines and their components. Students will practice calculating horsepower and torque, as well as identifying and describing unique features and characteristics of diesel engines.

Aid Code: 10 - undefined.**Co-requisites:** (412-124 or 412-305)

Complete Course Listing

412-129 Engine Service Repair I 1**Credits:** 0.5-1

In this course students will practice diesel engine service and troubleshooting, including cleaning, inspecting, and determining corrective action for a variety of components.

Aid Code: 10 - undefined.**Co-requisites:** (412-128 or 070-308)

Complete Course Listing

412-134 Engine Service Repair II 3**Credits:** 0.5-1

In this course students will identify the purpose and function of diesel engine exhaust gas recirculation systems and their components. Students will practice performing inspection and diagnostic procedures on these systems.

Aid Code: 10 - undefined.**Co-requisites:** (412-133)

Complete Course Listing

412-136 Hydraulics I 2**Credits:** 0.5-1

In this course students will read and interpret hydraulic system diagrams and schematics. Students will perform temperature, pressure, flow, and cycle time tests on hydraulic systems.

Aid Code: 10 - undefined.**Co-requisites:** (412-135)

Complete Course Listing

412-137 Hydraulics II 1**Credits:** 0.5-1

In this course students will practice the inspection, tear down, and reassembly of major hydraulic components.

Aid Code: 10 - undefined.**Co-requisites:** (412-136 or 070-340) and (806-315)

Complete Course Listing

412-138 Hydraulics II 2**Credits:** 0.5-1

In this course students will identify the purpose and function of automatic transmission systems and their components. Students will compare automatic and manual transmission systems.

Aid Code: 10 - undefined.**Co-requisites:** (412-137)

Complete Course Listing

412-140 Diesel Fuel Systems 2**Credits:** 0.5-1

In this course students will identify the purpose and function of high-pressure fuel injection systems in diesel applications. Students will practice inspection and diagnostic procedures for these systems.

Aid Code: 10 - undefined.**Co-requisites:** (412-139)

Complete Course Listing

412-141 Diesel Fuel Systems 3**Credits:** 0.5-1

In this course students will identify the purpose and function of various fuel pumps. Students will practice maintenance and repair of various fuel pumps.

Aid Code: 10 - undefined.**Co-requisites:** (412-140)

Complete Course Listing

412-142 Diesel Fuel Systems 4**Credits:** 0.5-1

In this course students will identify the function and construction of various fuel systems. Students will practice maintenance, reconditioning, and repairs of common fuel systems.

Aid Code: 10 - undefined.**Co-requisites:** (412-141)

Complete Course Listing

412-143 Inspection & Maintenance Procedures 1

Credits: 0.5-1

In this course students will define preventative maintenance practices. Students will identify regulations related to the maintenance and operation of commercial vehicles, and identify best practices for establishing preventative maintenance and inspection schedules.

Aid Code: 10 - undefined.

Pre-requisites: (412-304 or 412-142) and (412-138 or 070-342) and (412-120 or 412-342) and (412-104 or 412-310) and (412-112 or 070-318) and (412-108 or 412-311) and (412-123 or 070-321) and (412-124 or 412-305)

Complete Course Listing

412-144 Inspection & Maintenance Procedures 2

Credits: 0.5-1

In this course students will define the importance of preventative maintenance and practice following a preventative maintenance schedule, including reviewing inspection requirements and performing inspections and maintenance.

Aid Code: 10 - undefined.

Co-requisites: (412-143)

Complete Course Listing

412-145 Inspection & Maintenance Procedures 3

Credits: 0.5-1

In this course students will identify the requirements of preventative maintenance and inspection plans and programs. Students will practice preventative maintenance record keeping. Students will identify the qualifications for vehicle inspectors and brake inspectors.

Aid Code: 10 - undefined.

Co-requisites: (412-144)

Complete Course Listing

412-146 Inspection & Maintenance Procedures 4

Credits: 0.5-1

In this course students will practice activities that make up the preventative maintenance inspection process, such as locating information about recalls, distinguishing between shop and vehicle rules, and identifying specialty tools.

Aid Code: 10 - undefined.

Co-requisites: (412-145)

Complete Course Listing

412-147 NATEF Certification Review

Credits: 0.5-1

In this course students will apply standards practiced throughout the program in preparation for ASE certification and the diesel technician career field.

Aid Code: 10 - undefined.

Co-requisites: (412-146 or 412-347)

Complete Course Listing

412-304 Diesel Fuel Systems

Credits: 1-4

This course focuses on diesel fuel system designs and principles. Learners will analyze the basics of diesel fuel system injection pumps, injectors, and injections system operation, as well as the maintenance and troubleshooting of electronic fuel systems per OEM/NATEF standards. Learners will be able to perform diagnostic service and repairs on current medium and heavy diesel engine fuel systems within the trucking industry.

Aid Code: 32 - undefined.

Complete Course Listing

412-305 Advanced Safety Procedures

Credits: 0.5-1

This course will focus on OSHA, and safety within a shop setting. Learners will work towards and receive a certificate for crane training per OSHA training requirements. Knowledge gained will give the learner the ability to operate a crane and to work safely within a diesel shop as well as other diesel industry environments.

Aid Code: 32 - undefined.

Complete Course Listing

412-306 Diesel Engine Service Repair I

Credits: 1-3

This course is a continuation of the Engine Fundamentals course. Learners will apply their knowledge of diesel engine parts and functions to perform emissions tests (intakes and exhaust sensors) as well as troubleshoot electrical system issues. Learners will be able to perform these diagnostics to the level of EPA regulations and standards.

Aid Code: 32 - undefined.

Co-requisites: (070-308)

Complete Course Listing

412-307 Diesel Engine Service Repair II

Credits: 1-3

This course is a continuation of Diesel Engine Service Repair I. Learners will breakdown and put together complete diesel engine systems, applying knowledge of external parts and functions, while paying close attention to the internal parts and functions. Learners will be able to perform diagnostics on all systems combined, ensuring that intake and exhaust systems meet EPA standards and entire engine systems are rebuilt to full working capacity.

Aid Code: 32 - undefined.

Co-requisites: (070-308)

Complete Course Listing

412-308 NAETF Certification Review

Credits: 0.05-1

Applying the NATEF standards practiced throughout this program, this course is designed to prepare the learner for future ASE certifications while practicing in the field as a Diesel Technician.

Aid Code: 32 - undefined.

Pre-requisites: (412-349)

Complete Course Listing

412-310 Brake Service Fundamentals**Credits:** 1-4

This course introduces the learner to current trucking industry braking systems. Using OEM/NATEF standards, learners perform diagnosis, service and repairs on air, hydraulic, manual, and electric parking brakes as well as antilock braking systems that include wheel-end procedures. Learners apply the fundamentals of braking systems to perform proper diagnostics and repairs to current diesel vehicles.

Aid Code: 32 - undefined.

Complete Course Listing

412-311 Truck Steering & Suspension**Credits:** 1-4

This course focuses on the multiple steering and suspension systems used on current medium and heavy duty diesel vehicles. Using OEM/NATEF standards and specifications, students engage in proper inspection and repairs on leaf spring, solid rubber, air ride, torsion bar suspension, and power steering as well as manual steering units. Learners will be able to perform electronic alignment procedures and repair suspension as well as steering problems commonly found within the diesel trucking industry.

Aid Code: 32 - undefined.

Complete Course Listing

412-400 Diesel Engine Electrical**Credits:** 0.2-3**Aid Code:** 47 - undefined.

Complete Course Listing

412-405 Diesel Engines**Credits:** 0.2-2.5**Aid Code:** 47 - undefined.

Complete Course Listing

412-406 Diesel Truck & Prev Maint**Credits:** 0.2-6**Aid Code:** 47 - undefined.

Complete Course Listing

412-411 Forklift Trainer - 6**Credits:** .6

This course will teach adult learning styles, the OSHA regulations for Powered Industrial Trucks, sample training programs, sample forms as well as other effective trainer insight for experienced forklift operators.

Aid Code: 47 - undefined.

Complete Course Listing

412-412 Forklift Trainer - 8**Credits:** .8

This 8-hour course will teach adult learning styles, the OSHA regulations for Powered Industrial trucks, sample training programs, sample forms as well as other effective trainer insight for experienced forklift operators.

Aid Code: 47 - undefined.

Complete Course Listing

412-413 Life Truck Train the Trainer**Credits:** 0.05-4.8

Course will include the basics of the learning cycle along with adult learning methods for trainers. Participants will learn how to develop a training program for employees using OSHA standards, and specific to safe operation of lift trucks in manufacturing settings.

Aid Code: 47 - undefined.

Complete Course Listing

412-450 Introduction to Heavy Diesel**Credits:** 0.5-1

In this course students will be introduced to the heavy duty diesel field. Students will explore the definition, purpose, and function of heavy duty vehicles. Students will identify career paths within the diesel technician field. Students will identify and practice shop safety procedures. Lecture times/dates will be announced in the program orientation.

Aid Code: 32 - undefined.

Complete Course Listing

412-451 Brake Service 1**Credits:** 0.05-1

In this course students will explore the fundamental concepts of braking, including friction, heat, and pressure. Students will practice inspecting, testing, servicing, and repairing air brake circuits. Lecture times/dates will be announced in the program orientation.

Aid Code: 32 - undefined.**Co-requisites:** (412-100 or 412-450)

Complete Course Listing

412-452 Brake Service 2**Credits:** 1-2

In this course students will practice inspection, diagnosis, service, and repair of heavy duty vehicle s-cam and air disc brake systems. Lecture times/dates will be announced in the program orientation.

Aid Code: 32 - undefined.

Complete Course Listing

412-453 Brake Service 3**Credits:** 0.05-1

In this course students will identify the purpose and function of anti-lock braking systems, stability control, and collision avoidance systems. Students will identify, test, diagnose, and repair these systems to manufacturer specifications. Lecture times/dates will be announced in the program orientation.

Aid Code: 32 - undefined.**Co-requisites:** (412-102 or 412-452)

Complete Course Listing

412-454 Steering & Suspension 1**Credits:** 0.5-1

In this course students will define the purpose and function of wheel end components. Students will identify, inspect, test, adjust, and repair tires, wheels, rims and hubs to manufacturer specifications. Lecture times/dates will be announced in the program orientation.

Aid Code: 32 - undefined.**Co-requisites:** (412-100 or 412-450)

Complete Course Listing

412-455 Steering & Suspension 2

Credits: 0.5-1

In this course students will explore front-end, alignment factors, and frames as they pertain to heavy diesel vehicles. Students will inspect, test, and repair front axles, frames, and attaching hardware. Students will identify electronic alignment and alignment factors that contribute to heavy duty vehicle instability. Lecture times/dates will be announced in the program orientation.

Aid Code: 32 - undefined.

Co-requisites: (412-105 or 412-454)

Complete Course Listing

412-456 Steering & Suspension 3

Credits: 0.5-1

In this course students will identify the purpose and function of heavy duty vehicle suspension systems and their components. Student will explore and identify air suspension, leaf spring suspension, aligning devices, equalizer systems, and all attaching hardware. Students will inspect, adjust, test and repair heavy duty vehicle suspension systems. Lecture times/dates will be announced in the program orientation.

Aid Code: 32 - undefined.

Co-requisites: (412-106 or 412-455)

Complete Course Listing

412-457 Steering & Suspension 4

Credits: 0.5-1

In this course students will identify the purpose and function of steering systems and components. Students will practice diagnostic, inspection and repair procedures of heavy duty vehicle steering systems. Lecture times/dates will be announced in the program orientation.

Aid Code: 32 - undefined.

Co-requisites: (412-107 or 412-456)

Complete Course Listing

412-458 Drivetrain 1

Credits: 0.5-1

In this course students will identify the purpose and function of heavy duty vehicle clutches and their components. Students will practice servicing, inspection, and replacement of several different types of heavy duty clutches. Lecture times will be announced in program orientation.

Aid Code: 32 - undefined.

Co-requisites: (412-100 or 412-450)

Complete Course Listing

412-459 Drivetrain 2

Credits: 0.5-1

In this course students will identify supporting principles and functions of manual transmission and gear concepts. Students will explore different gearing concepts, and how these concepts apply to standard transmissions used in the heavy diesel industry. Students will inspect, diagnose, service and repair standard transmission auxiliary assemblies to manufacturer specification. Lecture times will be announced in program orientation.

Aid Code: 32 - undefined.

Co-requisites: (412-109 or 412-458)

Complete Course Listing

412-460 Drivetrain 3

Credits: 0.5-1

In this course students identify the purpose and function of automated transmissions within the heavy duty industry. Students will explore controls associated with various types of modern automated transmissions. Lecture times will be announced in program orientation.

Aid Code: 32 - undefined.

Co-requisites: (412-110 or 412-451)

Complete Course Listing

412-461 Drivetrain 4

Credits: 0.5-1

In this course students will identify the purpose and function of drive shafts and driven axles. Students will practice inspection, service, and repair of diesel and heavy duty vehicle drive shafts and drive axles. Lecture times will be announced in program orientation.

Aid Code: 32 - undefined.

Co-requisites: (412-111 or 412-460)

Complete Course Listing

412-462 Electrical Fundamentals 1

Credits: 0.5-1

In this course students will explore applications of fundamental principles and theories of electricity within the heavy duty vehicle industry.

Aid Code: 32 - undefined.

Co-requisites: 806-315

Complete Course Listing

412-463 Electrical Fundamentals 2 Electrical Fundamentals 2 Electrical Fundamentals 2 Electrical Fundamental

Credits: 0.5-1

In this course students identify the purpose and function of electrical circuits, circuit control devices, and electrical instrumentation. Students will practice testing individual and system circuits using a multimeter.

Aid Code: 32 - undefined.

Co-requisites: (412-113 or 412-462)

Complete Course Listing

412-464 Electrical Fundamentals 3

Credits: 0.5-1

In this course students will identify the purpose and function of commercial vehicle batteries, as well as advanced battery technology and placement. Students will inspect, test, charge, and replace heavy duty commercial batteries to manufacturer specifications.

Aid Code: 32 - undefined.

Co-requisites: (412-114 or 412-463)

Complete Course Listing

412-465 Electrical Fundamentals 4

Credits: 0.5-1

In this course students will identify the purpose and function of heavy duty vehicle starting and charging systems and their components. Students will practice testing, repairing, and replacing heavy duty vehicle starters, alternators and other electrical system components.

Aid Code: 32 - undefined.

Co-requisites: (412-115 or 412-464)

Complete Course Listing

412-466 Electrical Troubleshooting 1**Credits:** 0.5-1

In this course, students will explore heavy duty vehicle electrical wiring. Students will practice reading and interpreting electrical wiring schematics.

Aid Code: 32 - undefined.**Co-requisites:** (412-116 or 070-341 or 412-465)

Complete Course Listing

412-467 Electrical Troubleshooting 2**Credits:** 0.5-1

In this course students practice inspecting, testing and repairing electrical lighting circuits and instrumentation on vehicles.

Aid Code: 32 - undefined.**Co-requisites:** (412-117 or 412-466)

Complete Course Listing

412-468 Electrical Troubleshooting 3**Credits:** 0.5-1

In this course students will explore heavy duty vehicle electrical signal processing. Students will identify the purpose and function of sensors and sensor information, as well as control module processing of related information. Students will practice the use of electrical signal testing equipment.

Aid Code: 32 - undefined.**Co-requisites:** (412-118 or 412-467)

Complete Course Listing

412-469 Electrical Troubleshooting 4**Credits:** 0.5-1

In this course students will identify the purpose and function of on-board vehicle diagnostic systems. Students will inspect, test diagnose, and repair multiple different systems to manufacturer specifications using information from control modules.

Aid Code: 32 - undefined.**Co-requisites:** (412-119 or 412-468)

Complete Course Listing

412-470 Diesel HVAC 1**Credits:** 0.5-1

In this course students will explore basic principles of diesel vehicle heating and air conditioning, as well as heating and air conditioning controls and operation.

Aid Code: 32 - undefined.**Co-requisites:** (412-120 or 412-342 or 412-469)

Complete Course Listing

412-471 Diesel HVAC 2**Credits:** 0.5-1

In this course students practice inspecting, diagnosing, and servicing diesel vehicle heating and air conditioning systems per manufacturer, EPA, and MVAC standards. This course will prepare students to become MVAC 609 certified.

Aid Code: 32 - undefined.**Co-requisites:** (412-121 or 412-470)

Complete Course Listing

412-472 Diesel HVAC 3**Credits:** 0.5-1

In this course students identify the purpose and function of trailer refrigeration systems and their components.

Aid Code: 32 - undefined.**Co-requisites:** (412-122 or 412-471)

Complete Course Listing

412-473 Advanced Safety Procedures**Credits:** 0.5-1

In this course students will identify and perform safe work practices in accordance with OSHA requirements. These practices will be applicable to diesel shops, as well as other environments in the diesel industry. Lecture times/dates will be announced in the program orientation.

Aid Code: 32 - undefined.

Complete Course Listing

412-474 Engine Fundamentals 1**Credits:** 0.5-1

In this course students will describe the development of diesel technology, Students will identify the various applications of diesel engines and identify how major technologies and strategies are used to reduce diesel engine emissions. Lecture times/dates will be announced in the program orientation.

Aid Code: 32 - undefined.**Co-requisites:** (412-124 or 412-305 or 412-473)

Complete Course Listing

412-475 Engine Fundamentals 2**Credits:** 0.5-1

In this course students will identify the purpose and function of various diesel engines and their components. Students will practice calculating horsepower and torque, as well as identifying and describing unique features and characteristics of diesel engines. Lecture times/dates will be announced in the program orientation.

Aid Code: 32 - undefined.**Co-requisites:** (412-125 or 412-474)

Complete Course Listing

412-476 Engine Fundamentals 3**Credits:** 0.5-1

In this course students will identify and describe the categories of noxious emissions from diesel engines, as well as the operations that produce them. Students will identify emissions standards for diesel vehicles and the various monitoring and controls systems used to manage emissions. Lecture times/dates will be announced in the program orientation.

Aid Code: 32 - undefined.**Co-requisites:** (412-126 or 412-475)

Complete Course Listing

412-477 Engine Fundamentals 4

Credits: 0.5-1

In this course students will explore and identify characteristics and components of diesel compression ignition systems. Students will identify and explain the effects of fuel system properties on diesel combustion as well as practice inspecting and repairing these systems. Lecture times/dates will be announced in the program orientation.

Aid Code: 32 - undefined.

Co-requisites: (412-127 or 412-476)

Complete Course Listing

412-478 Engine Service Repair 1

Credits: 0.5-1

In this course students will practice diesel engine service and troubleshooting, including cleaning, inspecting, and determining corrective action for a variety of components. Students will explore the repairing of diesel engine cylinder block and crankshaft assemblies. Lecture times/dates will be announced in the program orientation.

Aid Code: 32 - undefined.

Co-requisites: (070-308 or 412-128 or 412-477)

Complete Course Listing

412-479 Engine Service Repair 2

Credits: 0.5-1

In this course students will identify the purpose and function of cylinder heads and valve train mechanisms. Students will practice inspecting, troubleshooting, diagnosing, and repairing diesel engine cylinder heads. Lecture times/dates will be announced in the program orientation.

Aid Code: 32 - undefined.

Co-requisites: (412-129 or 412-478)

Complete Course Listing

412-480 Engine Service Repair 3

Credits: 0.5-1

In this course students will identify characteristics and components of diesel lubrication and cooling systems. Students will practice inspecting and repairing these systems. Lecture times/dates will be announced in the program orientation.

Aid Code: 32 - undefined.

Co-requisites: (412-130 or 412-479)

Complete Course Listing

412-481 Engine Service Repair 4

Credits: 0.5-1

In this course students will identify the purpose and function of air intake and crankcase ventilation systems and their components. Students will practice performing inspections, diagnostic, maintenance procedures for these systems. Lecture times/dates will be announced in the program orientation.

Aid Code: 32 - undefined.

Co-requisites: (070-308 or 412-128 or 412-477)

Complete Course Listing

412-482 Engine Service Repair 5

Credits: 0.5-1

In this course students will identify the purpose and function of turbochargers and their components. Students will practice inspection, testing, and diagnostic procedures for fixed and variable turbocharger systems. Lecture times/dates will be announced in the program orientation.

Aid Code: 32 - undefined.

Co-requisites: (412-132 or 412-481)

Complete Course Listing

412-483 Engine Service Repair 6

Credits: 0.05-1

In this course students will identify the purpose and function of diesel engine exhaust gas re-circulation and after-treatment systems and their components. Students will practice performing inspection and diagnostic procedures on these systems. Lecture times/dates will be announced in the program orientation.

Aid Code: 32 - undefined.

Co-requisites: (412-133 or 412-482)

Complete Course Listing

412-484 Hydraulics 1

Credits: 0.5-1

In the course students will identify the purpose and function of hydraulic systems, as well as everyday applications of those systems. Students will read and interpret hydraulic system diagrams and schematics and students will perform temperature, pressure, flow, and cycle time tests on hydraulic systems.

Aid Code: 32 - undefined.

Pre-requisites: 806-315

Complete Course Listing

412-485 Hydraulics 2

Credits: 0.05-1

In this course students will practice the inspection, tear down, and reassembly of major hydraulic components. Students will identify the purpose and function of hydraulic braking systems used in on and off highway equipment.

Aid Code: 32 - undefined.

Co-requisites: (412-135 or 412-484)

Complete Course Listing

412-486 Hydraulics 3

Credits: 0.5-1

In this course students will identify the purpose and function of automatic transmission systems and their components. Students will identify the purpose and function of torque converters and the planetary gear concept.

Aid Code: 32 - undefined.

Pre-requisites: (806-315

Co-requisites: 412-136 or 070-340 or 412-485)

Complete Course Listing

412-487 Hydraulics 4**Credits:** 0.05-1

In this course students will identify the purpose and function of hydraulic and electronic controlled automatic transmission systems and their components. Students will practice maintenance and servicing the automatic transmission system.

Aid Code: 32 - undefined.**Co-requisites:** (412-137 or 412-486)

Complete Course Listing

412-488 Diesel Fuel Systems 1**Credits:** 0.5-1

In this course students will identify and describe the properties and characteristics of diesel fuel, fuel additives, and fuel systems. Students will practice inspection and servicing problems associated with low-pressure fuel systems.

Aid Code: 32 - undefined.**Pre-requisites:** 806-315**Co-requisites:** (412-136 or 070-340 or 412-485)

Complete Course Listing

412-489 Diesel Fuel Systems 2**Credits:** 0.05-1

In this course students will identify the purpose and function of high-pressure fuel injection systems in diesel applications. Students will practice inspection and diagnostic procedures for these mechanical fuel injection systems.

Aid Code: 32 - undefined.**Co-requisites:** (412-139 or 412-488)

Complete Course Listing

412-490 Diesel Fuel Systems 3**Credits:** 0.05-1

In this course students will identify the purpose and function of various electronic fuel injection systems. Students will practice maintenance and repair of various electronic fuel injection systems.

Aid Code: 32 - undefined.**Co-requisites:** (412-140 or 412-489)

Complete Course Listing

412-491 Diesel Fuel Systems 4**Credits:** 0.05-1

In this course students will identify the function and construction of common rail fuel systems. Students will practice maintenance, reconditioning, and repairs of common rail fuel systems.

Aid Code: 32 - undefined.**Co-requisites:** (412-141 or 412-490)

Complete Course Listing

412-492 Inspection & Maintenance Procedures 1**Credits:** 0.5-1

In this course students will define preventative maintenance practices. Students will identify regulations related to the maintenance and operation of commercial vehicles, and identify best practices for establishing preventative maintenance and inspection schedules.

Aid Code: 32 - undefined.**Co-requisites:** (412-491 or 412-142 or 412-304) and (412-469 or 412-120 or 412-342) and (412-453 or 412-104 or 412-310) and (412-457 or 412-108 or 412-311) and (412-472 or 412-123)

Complete Course Listing

412-493 Inspection & Maintenance Procedures 2**Credits:** 0.05-1

In this course students will define the importance of preventative maintenance and practice following a preventative maintenance schedule, including reviewing inspection requirements and performing inspections and maintenance.

Aid Code: 32 - undefined.**Co-requisites:** (412-143 or 412-492)

Complete Course Listing

412-494 Inspection & Maintenance Procedures 3**Credits:** 0.05-1

In this course students will identify the requirements of preventative maintenance and inspection plans and programs. Students will practice preventative maintenance record keeping. Students will identify the qualifications for vehicle inspectors and brake inspectors.

Aid Code: 32 - undefined.**Co-requisites:** (412-144 or 412-493)

Complete Course Listing

412-495 Inspection & Maintenance Procedures 4**Credits:** 0.05-1

In this course students will practice activities that make up the preventative maintenance inspection process, such as locating information about recalls, distinguishing between shop and vehicle rules, and identifying specialty tools.

Aid Code: 32 - undefined.**Co-requisites:** (412-145 or 412-494)

Complete Course Listing

412-496 ASE Certification Review**Credits:** 0.5-1

In this course students will apply standards practiced throughout the program in preparation for ASE certification and the diesel technician career field.

Aid Code: 32 - undefined.**Co-requisites:** (412-146 or 412-495)

Complete Course Listing