HMFP – Heavy Mechanical Foundation Program

Trades

Effective Term & Year: Fall 2022
Program Outline Review Date: 2027-04-01

Program Area: Trades Foundation Training

Description:

This comprehensive 36-week Heavy Mechanical Foundation (pre-apprenticeship) program provides students with the skills, knowledge and training necessary for entry level positions in the heavy mechanical industry and covers the program competencies for Level 1 of the Apprenticeship Programs for the following trades: Heavy Duty Equipment Technician; Truck and Transport Mechanic; Transport Trailer Technician; Diesel Engine Mechanic. Content covered includes occupational skills (safety, and tools, power tools, shop equipment, bearings and seals, cutting and welding procedures), hydraulic systems and brakes, electrical systems, frames, steering and suspension systems, trailer components, heating, ventilation and air conditioning systems, engines and supporting systems, and powertrains. The program includes classroom theory, demonstrations, and practical hands-on training in a heavy mechanical shop setting. Safe work habits are emphasized, reinforced and practiced throughout the program.

Credentials Granted:

• Level 1 Technical Training credit from SkilledTradesBC for Level Heavy Duty Equipment Technician (HDET); Truck and Transport Mechanic (TTM); Transport Trailer Technician (TTT); Diesel Engine Mechanic (DEM) Apprenticeship programs
• Certificate of Completion Heavy Mechanical Foundation from SkilledTradesBC
• College of the Rockies Heavy Mechanical Foundation Certificate
• Credit for 450 work-based Training hours towards HDET, TTM, TTT, DEM from SkilledTradesBC

Delivery Methods: On-Campus (Face-to-Face), Online

Program Duration: 36 Weeks

Instructional Activity and Hours:

Activity	Hours
Instructional Hours (hrs/wk)	28 hrs/wk
Directed Studies (hrs/wk)	2 hrs/wk
Total (hrs/wk)	30 hrs/wk
Total Program Hours	1080 hours

Content Weighting:

Activity	Percentage
Theory	30%
Practical Skills	70%

Admission Requirements:

Secondary school graduation or equivalent, or completion of a College of the Rockies assessment to an acceptable level

Highly Recommended Admission Prerequisites:

The following education is **highly** recommended for student success within the program:

- Workplace MATH 10 and Apprenticeship MATH 12. Either Apprenticeship and Workplace Math 11, Trades Mathematics 11, or equivalent
- Either English Studies 12, English First Peoples 12, ENGL 090, or equivalent (refer to Course Equivalency information on the College Website).

Flexible Assessment:

Credit can be awarded for this program through Flexible Assessment.

Program Transfer Credit:

For information about block transfer agreements between programs in British Columbia, Alberta, and elsewhere, please visit http://www.cotr.bc.ca/transfer.

To minimize transfer issues, check with an academic advisor at the institution that will receive the transfer credits.

Textbooks and Required Resources:

Textbook selection varies by instructor and may change from year to year. At the Course Outline Effective Date the following textbooks were in use (most current edition):

Heavy Duty Foundation Competencies, Queen's Printer.
Trac Common Core Learning Guide Line B Math, Queen's Printer.
Heavy Truck Systems

Program Competencies and Technical Training Content:

Upon the successful completion of this program, students will be able to:

HMFP 101	**Occupational Skills** - Use Safe Work Practices - Apply Occupational Health and Safety - Use Environmental Practices - Use Hand Tools, Power Tools, and Shop Equipment - Use Fasteners and Fittings - Lift and Support Loads - Operate Equipment - Use Shop Resources and Record Keeping Practices - Service Winch Wire Rope - Identify Lubricants - Service Bearings and Seals - Apply Math and Science - Use Electronic Media - Use Cutting and Welding Equipment - Prepare Job Action - Describe Diagnostic Procedures - Prepare for Employment
HMFP 102	**Brakes** - Service and Repair Hydraulic Brakes - Service and Repair Hydraulic Power Brakes - Service and Repair Air Brakes
HMFP 103	**Hydraulics** - Describe Hydraulic Systems - Service Hydraulic Components

HMFP 104	**Electrical** - Describe Electricity - Use Electrical Testing Instruments - Service and Diagnose Batteries - Service Charging Systems - Service Starting Systems - Service Electrical Circuits
HMFP 105	**Frames, Steering and Suspension** - Service and Diagnose Tires, Wheels, and Hubs - Service Steering Systems - Service, Diagnose and Repair Suspension Systems - Remove and Install Undercarriage - Diagnose and Repair Frames
HMFP 106	**Trailer** - Service Landing Gear and Trailer Accessories - Service and Repair Coupling Systems - Service, Diagnose and Repair Trailer Body Components - Service, Diagnose and Repair Heating and Refrigeration Systems
HMFP 107	**Heating, Ventilation, Air Conditioning** - Describe, Heating and Air Conditioning Fundamentals - Diagnose and Repair Heating and Air Conditioning Systems
HMFP 108	**Engines and Supporting Systems** - Service Engine Support Systems - Service Diesel Fuel Supply Systems - Service Gasoline Fuel Systems - Remove and Install Diesel Engine - Service, Diagnose and Repair Electronic Ignition Systems
HMFP 109	**Powertrains** - Service Clutches - Service Manual Transmissions - Service Torque Converters and Dividers - Service Powershift and Automatic Transmissions - Service Drivelines - Service Drive Axles - Service Final Drives - Remove and Install Transmissions - Remove and Install Drivelines and Differentials - Remove and Install Final Drives
HMFP 110	**Structural Components and Accessories** - Identify Protective Structures - Service Cab Structures

Evaluation and Assessment:

HEAVY MECHANICAL FOUNDATION

COTR COURSE	SUBJECT COMPETENCIES	THEORY WEIGHTING	PRACTICAL WEIGHTING
HMFP 101	Occupational Skills	30%	27%
HMFP 102	Brakes	12%	10%
HMFP 103	Hydraulics	7%	6%
HMFP 104	Electrical	9%	10%
HMFP 105	Frames, Steering and Suspension	15%	16%
HMFP 106	Trailer	7%	6%
HMFP 107	Heating, Ventilation, Air Conditioning	2%	3%
HMFP 108	Engines and Supporting Systems	10%	10%
HMFP 109	Powertrains	7%	6%
HMFP 110	Structural Components and Accessories	1%	6%
	Total	**100%**	**100%**
In-School Theory/Practical Subject Competency Weighting		30%	70%
Final in-school percentage score Students must achieve a minimum 70% overall as the final in-school percentage score		**IN-SCHOOL %**	

In-school percentage score Combined theory and practical subject competency	80%
Final Exam	20%
Final percentage score	FINAL%

Pass Requirements:

- Successful completion of the in-school training is defined as a final overall minumum of 70% to meet SkilledTradesBC standards.
    - Students must maintain an acceptable level of attendance, complete all assigned projects and pass all exams to successfully complete the program.
    - Complete of allWorkplace Health and Safety courses within the program.

Students must provide their own:

- Steel-toed leather work boots
- Safety glasses
- Coveralls and flame-resistant work clothes and high visible
- Leather welding gloves
- Welding goggles with #5 lens
- Digital Multi-meter – 10 MW impedance
- Computer

- Reference manuals
- Pens, pencils, coloured pencils, three-ring binder, paper
- Calculator

Workplace Health and Safety Courses:

Workplace Hazardous Material Information System (WHMIS: PVHE-700)

Basic First Aid – (PVHE-100)

Workplace Health and Safety Courses Grade Scheme:

COM	NCG
Completed to the minimum defined standard	No credit granted – less than minimum defined standard

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Academic Policies:

College of the Rockies policies related to courses can be found at https://cotr.bc.ca/about-us/college-policies/ and include the following:

- Policy 2.4.3 Students with Documented Disabilities
- Policy 2.4.4 Student Conduct (plagiarism, other cheating, behavioral misconduct)
- Policy 2.4.8 Academic Performance
- Policy 2.5.3 Grade Appeal
- Policy 2.4.9 Student Concerns Re Faculty

Program Grade

COM	**NCG**
Completed to the defined standard – 70% or greater	No Credit Granted – less than 70%

Program Changes:

Information contained in program outlines is correct at the time of publication. Content of the program is revised on an ongoing basis to ensure relevance to changing educational, employment, and marketing needs. The instructor endeavours to provide notice of changes to students as soon as possible. The instructor reserves the right to add material to programs.

Industry Training:

The program competencies and technical training content delivered in this program follow the SkilledTradesBC Program Outline for this trade.

Safety Catalog:

WorkSafeBC regulations apply to all trades programs. Students are expected to follow all safe work practices and have high regard for the safety of others as well as of themselves. Students are responsible to wear personal protective equipment (PPE) as directed. At a minimum, students must provide and wear approved safety footwear and eyewear at all times in the shop. Additional PPE may be required for specific tasks. Students are expected to wear clothing suitable for working safely in the shop.