DEPARTMENT OF HEAVY EQUIPMENT PROGRAMS

COURSE OUTLINE – FALL SEMESTER 1

HE 1200 SUSPENSION, WHEELS AND SYSTEMS - 6.5 (100 HRS/16 WEEKS)14 LECTURE – 86 LAB/SHOP

INSTRUCTOR: Gaylord Toews **PHONE:** 780 835 6729
OFFICE: FTI 239 **E-MAIL:** gtoews@gprc.ab.ca

OFFICE HOURS: Monday to Friday

PREREQUISITE(S)/COREQUISITE:

English 20-1, English 20-2 or equivalent

Math 20-1, Math 20-2, Math 20-3 or equivalent

A 20-level Science or equivalent

Although a high school diploma is not required for entrance to this program, students should be aware that some employers may require a High School Diploma as a prerequisite to employment.

Applicants who do not meet these requirements may be admitted to the program but they will be required to pass the Apprenticeship & Industry Training (AIT) Trades Entrance Exam during the first semester, if choosing to pursue an apprenticeship

REQUIRED TEXT/RESOURCE MATERIALS: 1st and 2nd Period Heavy Equipment Technician ILM Modules.

CALENDAR DESCRIPTION: Explain the operating principles and design features of common frame and suspension systems. Repair common types of frame and suspension systems. Service common bearings and seals. Service wheels, tires and hubs. Identify common trailer systems and components. Service trailer coupling systems and landing gear. Explain trailer inspection according to CVI regulations. Explain typical maintenance programs used with off-road and on road equipment.

CREDIT/CONTACT HOURS: 6.5 Credits – 100 Contact Hours – 6 hours per week

DELIVERY MODE(S):

Instructor led classroom theory (14 hours), instructor led lab/shop (86 hours)

OBJECTIVES (OPTIONAL):

The program has been developed to provide students with entry level skills as a Heavy Equipment Technician. After obtaining a requisite number of hours in the work force, the student would be eligible to continue with Alberta Apprenticeship and Industry training in the Heavy Equipment Technician trade towards journeyman certification.

TRANSFERABILITY: None

GRADING CRITERIA: A grade of 65% or higher is required to pass this course. Students must complete all required courses with a grade point average of no less than 2.0 and no failing (F) grades.

GRANDE PRAIRIE REGIONAL COLLEGE			
GRADING CONVERSION CHART			
Alpha Grade	**4-point Equivalent**	**Percentage Guidelines**	**Designation**
A+	**4.0**	**90 – 100**	**EXCELLENT**
A	**4.0**	**85 – 89**	
A-	**3.7**	**80 – 84**	**FIRST CLASS STANDING**
B+	**3.3**	**77 – 79**	
B	**3.0**	**73 – 76**	**GOOD**
B-	**2.7**	**70 – 72**	
C+	**2.3**	**67 – 69**	**SATISFACTORY**
C	**2.0**	**65 – 66**	
F	**0.0**	**60 – 64**	**FAIL**
F	**0.0**	**55 – 59**	
F	**0.0**	**50 – 54**	
F	**0.0**	**0 – 49**	
WF	**0.0**	**0**	**FAIL, withdrawal after deadline**

EVALUATIONS:

Theory portion will be made up of quizzes and tests worth 35%.
Shop portion will be made up of shop projects worth 65%.

Students who have successfully completed the program and also completed an acceptable Alberta Apprenticeship Prior Learning Assessment Application (fee payable to Alberta Apprenticeship) may have the opportunity to challenge the Alberta

Apprenticeship and Industry Training (AIT) first year Heavy Equipment Technician apprentice exam.

STUDENT RESPONSIBILITIES:

Please refer to the Student Rights and Responsibilities policy in the Grande Prairie Regional College Calendar or at www.gprc.ab.ca/downloads/documents/StudentRightsandResponsbilities.pdf

STATEMENT ON PLAGIARISM AND CHEATING:

Please refer to pages 49-50 of the College calendar regarding plagiarism, cheating and the resultant penalties. These are serious issues and will be dealt with severely.

COURSE SCHEDULE/TENTATIVE TIMELINE:

A. Frame and Suspension Fundamentals .....14 Hours
Outcome: Explain the operating principles and design features of common frame and suspension systems.
1. State the functions of a vehicle frame.
2. Identify types, designs and components of frames commonly used in truck and trailer applications.
3. State the functions of a vehicle suspension system.
4. Explain the operating principles of common suspension systems.

B. Frame and Suspension Service ..... 20 Hours
Outcome: Repair common types of frame and suspension systems.
1. Explain frame inspection and repair procedures.
2. Explain the causes of suspension system malfunction.
3. Explain suspension system repair procedures.

C. Bearings and Seals .....16 Hours
Outcome: Service common bearings and seals.
1. State bearing functions and applications.
2. State seal functions and applications.
3. Diagnose common bearing and seal faults.
4. Perform bearing and seal service.

D. Wheels, Tires, and Hubs .....16 Hours
Outcome: Service wheels, tires and hubs.
1. Identify common wheel types and mounting designs.
2. Explain tire construction, care and maintenance in relation to design.
3. State the safety procedures required when handling wheels and tires.
4. Perform wheel removal, inspection and installation.
5. Explain wheel balancing – static and dynamic.
6. Diagnose wheel and tire faults.

E. Trailer Systems and Components ..... 6 Hours
Outcome: Identify common trailer systems and components.

1. Describe types and configurations of on highway trailers.
2. Identify trailer configurations according to number of axles and hitch points.
3. Identify trailer axle configurations; fixed and steering.

F. Coupling Units and Landing Gear Fundamentals and Service ..... 12 Hours
Outcome: Service trailer coupling systems and landing gear.
1. Identify common types of trailer coupling units.
2. Service a fifth wheel assembly.
3. Service a no-slack pintle hitch.
4. Identify common types of trailer landing gear.
5. Service common types of trailer landing gear.
6. Explain procedures and safety precautions required when coupling and uncoupling trailer systems.

G. Orientation To Trailer Inspection ..... 8 Hours
Outcome: Explain trailer inspection according to CVI regulations.
1. Outline trailer inspection regulations.
2. Identify conditions caused by damage, wear or corrosion, which would make a trailer unsafe or inoperable.

H. Preventive Maintenance ..... 8 Hours
Outcome: Explain typical maintenance programs used with off-road and on road equipment.
1. Explain the types of maintenance systems.
2. Explain the principles of preventive maintenance.
3. Explain the principles of predictive maintenance.
4. Demonstrate basic preventive maintenance and service procedures.