



DEPARTMENT OF HEAVY EQUIPMENT

HEAVY EQUIPMENT SERVICE COURSE OUTLINE – WINTER 2014

JANUARY 6 – FEBRUARY 28, 2014

HES421 POWER TRAIN I – 4.0 (112 HOURS)

INSTRUCTOR:	Harry Frykas Rudy Hrynkiw	PHONE:	780.835.6795 780.8356757
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OFFICE HOURS:	8.00am to 4.30pm		

PREREQUISITE(S)/COREQUISITE: Successful completion of Semesters 1 through 3.

REQUIRED TEXT/RESOURCE MATERIALS:

Caterpillar Material

Power Train I:

Unit 1: Introduction to Power Train

Lesson 1: Power Train Main Components and Theory of Operation

Lesson 2: Power Transfer Methods

Lesson 3: Gears and Gear Sets

Unit 2: Couplings

Lesson 1: Flywheel Clutch

Unit 3: Transmissions

Lesson 1: Manual Shift Transmissions

**Alberta Apprenticeship and Industry Training Individual Learning Modules
Heavy Equipment Technician (HET)**

190303jA – Drive Axle and Carrier Fundamentals Service (Off-Road) – Part A

190303jB – Drive Axle and Carrier Fundamentals Service (Off-Road) – Part B

190303k – Clutch Fundamentals and Service (Off-Road)

190401a – Clutch Fundamentals and Service (On-Road)

190401b – Driveline Fundamentals and Service

190401c – Gearing Principles

190401dA – Transmission Fundamentals – Part A

190401dB – Transmission Fundamentals – Part B

190401e – Transmission Shifting

**Alberta Apprenticeship and Industry Training Individual Learning Modules
Heavy Equipment Technician (HET) *continued...***

- 190401fA – Transmission Service – Part A
- 190401fB – Transmission Service – Part B
- 190401g – Transfer Case and Auxiliary Drives
- 190401h – Drive Axle Assembly Fundamentals(On-Road)
- 190401i – Drive Axle Assembly Service (On-Road)

CALENDAR DESCRIPTION: This course will cover power train components that are mechanical power transfer units. These include clutches, driveline, manual transmissions, transfer cases and drive axle assemblies. Also covered will be gear principles, transmission shifting and the servicing of the previous assemblies.

Delivery Option: Fairview Campus Only

CREDIT/CONTACT HOURS: Credits: 4.0 / Contact Hours: 112.

DELIVERY MODE(S): Lecture and lab.

TRANSFERABILITY: None.

GRADING CRITERIA: Students must complete all required courses with a grade point average of no less than 2.7 and no failing (F) grades. A passing grade in this course is a **minimum of 70%**.

**Power Train I..... 112 / 240 hours = 47 %
of Semester 4 mark**

Exams Average = _____ x 45%

Class Assignments/Quizzes = _____ x 30%

Shop Total _____ x 25%

HES421 FINAL MARK = _____ %

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	
F	0.0	67 – 69	FAIL
F	0.0	63 – 66	
F	0.0	60 – 62	
F	0.0	55 – 59	
F	0.0	50 – 54	
F	0.0	0 – 49	
WF	0.0	0	FAIL, withdrawal after the deadline

STUDENT RESPONSIBILITIES:

This is an adult education environment. Enrolment at Grande Prairie Regional College assumes that the student will become a responsible citizen of the College. As such, each student will display a positive work ethic, take pride in and assist in the maintenance and preservation of Institute property, and assume responsibility for his/her education by researching academic requirements and policies, demonstrating courtesy and respect toward others; and respecting instructor expectations concerning attendance, classroom and shop rules, safety, assignments, deadlines and appointments. Students are learning skills to prepare them for the work environment.

Following the guidelines in “Student Rights and Responsibilities” in the GPRC College calendar assist us all in maintaining an adult learning environment. Please refer to the Student Rights and Responsibilities policy in the Grande Prairie Regional College Calendar or at www.gprc.ab.ca/downloads/documents/StudentRightsandResponsibilities.pdf.

STATEMENT ON PLAGIARISM AND CHEATING:

Refer to the Student Conduct section of the GPRC Calendar at <http://www.gprc.ab.ca/programs/calendar/> Pages 44 to 46 or the College Policy on Student Misconduct: Plagiarism and Cheating at <http://www.gprc.ab.ca/about/administration/policies/>. **

**Note: all Academic and Administrative policies are available on the same page.

COURSE SCHEDULE/TENTATIVE TIMELINE:

- Fundamentals
- Components
- Gear Sets
- Couplings
- Manual Shift Transmissions