



DEPARTMENT OF HEAVY EQUIPMENT
THINKBIG SERVICE TECHNICIAN COURSE OUTLINE – WINTER 2021
JANUARY 4 – FEBURARY 26, 2021
HES410 VB43 MACHINE HYDRAULIC SYSTEMS - 3.5 (96 HOURS)

INSTRUCTOR: Jeremy Parker **PHONE:** 780.835.6795
OFFICE: FPS 112 **E-MAIL:** jparker@gprc.ab.ca
OFFICE HOURS: 8.00am – 4.30pm

WINTER 2021 DELIVERY:

Mixed Delivery – Remote and Onsite. This course is delivered remotely with some face-to-face/onsite components at the GPRC Fairview campus.

- For the remote delivery components: students must have a computer with a webcam and reliable internet connection. Technological support is available through helpdesk@gprc.ab.ca.
- For the onsite components: students must supply their own mask [and/or face shield] and follow [GPRC Campus Access Guidelines and Expectations](#).

Note: GPRC reserves the right to change the course delivery.

PREREQUISITE(S)/COREQUISITE: Successful completion of Blocks 1 through 3.
Please read all modules before they are presented in class.

REQUIRED TEXT/RESOURCE MATERIALS:

Caterpillar Material

Hydraulic Fundamentals

Unit 3: Hydraulic System Components

Lesson 3 – Hydraulic Pumps and Motors

Lesson 4 – Pressure Control Valves

Lesson 5 – Direction Control Valves

Lesson 6 – Flow Control Valves.

Unit 4: Pilot Operated Hydraulic System

Lesson 1 – Pilot Operated Implement Hydraulic System

Machine Hydraulic Systems

Unit 1: Pilot Operated Hydraulic Systems

Lesson 1 – 950G Pilot Operated Implement Hydraulic System

Unit 2: Load Sensing, Pressure Compensated Hydraulic Systems

Lesson 1 – Basic LS/PC Hydraulic Systems

Lesson 2 – LS/PC Hydraulic Pumps and NFC Hydraulic Systems

Machine Hydraulic Systems *continued* . . .

Unit 3: Proportional, Priority, Pressure Compensated Hydraulic Systems

Lesson 1 – PPPC Hydraulic System

Unit 4: Hydrostatic Systems

Lesson 1 – Basic Hydrostatic Systems

Lesson 2 – Hydrostatic System Controls

Lesson 4 – C Series Skid Steer Loader Hydrostatic Drive System.

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

190301a – Hydraulic Principles

190301b – Hydraulic Pump Fundamentals

190301c – Hydraulic Pump Service

190301d – Hydraulic Actuator Fundamentals

190301e – Hydraulic Actuator Service

190301fA – Hydraulic Valve II – Part A

190301fB – Hydraulic Valve II – Part B

190301g – Hydraulic System Types

190301h – Hydraulic System Testing and Service

190301i – Electrohydraulic

650401a – Alberta's Industry Network.

650401b – Workplace Coaching Skills.

650401c – Interprovincial Standards Red Seal Program.

CALENDAR DESCRIPTION: This course is designed to teach the system operations and the testing and adjusting procedures for the pilot operated hydraulic system, the load sensing, pressure compensated (LSPC) hydraulic system, the electro-hydraulic system, and the hydrostatic system. Students will identify the system components, state the component function and trace the oil flow through the component. This section will be covered on different types of machines.

Delivery Option: Fairview Campus Only

CREDIT/CONTACT HOURS: Credits: 3.5 / Contact Hours: 96.

DELIVERY MODE(S): Mixed delivery

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%**.

**Machine Hydraulic Systems 96 / 240 hours = 40 %
of Semester 4 mark**

Exams Average = _____ x 45%

Class Assignments/Quizzes/DPC = _____ x 30%

Shop Total _____ x 25%

HES410 VB43 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.