



DEPARTMENT OF HEAVY EQUIPMENT
THINKBIG SERVICE TECHNICIAN COURSE OUTLINE – SPRING 2018
APRIL 23 – 15 JUNE, 2018
HES362 VA34 – ENGINE DIAGNOSTICS/REPAIR –

1.5 CREDITS (40 HOURS)

INSTRUCTOR: Richard McGrail **PHONE:** 780.835.
OFFICE: FM4 101 **E-MAIL:** rmcgrail@gprc.ab.ca
OFFICE HOURS: 8.00am to 4.30pm

PREREQUISITE(S)/COREQUISITE: Successful completion of Blocks 1 and 2.
Please read all modules before they are presented in class.

REQUIRED TEXT/RESOURCE MATERIALS:

Caterpillar Material

Engine Diagnostics and Repair:

Unit 1: Diagnosis and Troubleshooting.

Lesson 1 – Diagnosis and Troubleshooting.

Unit 2: Engine Oil and Lubrication Systems.

Lesson 3 – Lubrication System Testing and Troubleshooting.

Unit 3: Engine Air Induction Systems.

Lesson 2 – Caterpillar Air Induction System Testing.

Lesson 3 – Air System Troubleshooting.

Unit 4: Engine Cooling Systems.

Lesson 2 – Cooling System Calculations.

Lesson 3 – Cooling System Troubleshooting.

Lesson 4 – Cooling System Maintenance.

Unit 5: Engine Fuel Systems.

Lesson 1 – Fuel System Inspection and Testing.

Lesson 2 – Fuel System Calibration and Monitoring

Lesson 3 – Engine Timing.

Machine Specific:

As per available units.

CALENDAR DESCRIPTION: Primarily a lab based course where the student's knowledge will be challenged and troubleshooting skills developed. Students will be required to successfully diagnose and repair engine faults in a real world setting.

CREDIT/CONTACT HOURS: Credits: 1.5 / Contact Hours: 40

DELIVERY MODE(S): Primarily lab based.

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%.**

**HES362 Engine Diagnostics / Repair 40/240 hours = 17 %
of Semester 3 mark**

Exams Average = _____ x 30%

Class Assignments/Quizzes/DPC = _____ x 30%

Shop Total _____ x 40%

HES362 VA34 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:

Machine Electronics

- Machine Electronic Components
- Electronically Controlled Engines
- CAT ET
- Data View

Machine Diagnostics

- Introduction to Diagnostics and Troubleshooting

Engine Diagnostics and Repair

- Diagnosis and Troubleshooting
- Engine Oil and Lubrication Systems
- Engine Air Induction Systems
- Engine Cooling Systems
- Engine Fuel Systems

Machine Specific

- 980K Wheel Loader - Electro Hydraulic Control System.
- Compact Construction Equipment.
- 320E Excavator.
- D5H Crawler
- D7E Crawler
- Articulated Dump Truck.
- Skid Steers
- M Series Motor Graders.
- Challenger Tractor
- IT Integrated Tool Carrier
- 426 Backhoe
- CP-54B Vibratory Compactor