



DEPARTMENT OF HEAVY EQUIPMENT
THINKBIG SERVICE TECHNICIAN COURSE OUTLINE – FALL 2014
SEPTEMBER 2 – OCTOBER 24, 2014
HES131 ELECTRICAL FUNDAMENTALS – 1.5 (48 HOURS)

INSTRUCTOR:	Richard McGrail Richard Byam Rob Young	PHONE:	780.835.6778 780.835.6723 780.835.6730
OFFICE:	FM4 101	E-MAIL:	rmcgrail@gprc.ab.ca rbyam@gprc.ab.ca ryoung2@gprc.ab.ca

OFFICE HOURS: 8.00am to 4.30pm

PREREQUISITE(S)/COREQUISITE: None

REQUIRED TEXT/RESOURCE MATERIALS:

Caterpillar Material

Electrical Fundamentals

Unit 1: Introduction to Electricity

- Lesson 1 – Electricity, How It Works
- Lesson 2 – Magnetism

Unit 2: Electrical Circuits

- Lesson 1 – Ohm's Law
- Lesson 2 – Basic Circuit Theory
- Lesson 3 – Digital Multimeter
- Lesson 4 – Electrical Measurement
- Lesson 5 – Circuit Faults

Unit 3: Electrical Components and Symbols

- Lesson 1 – Basic Electrical Components
- Lesson 2 – Solid State Electrical Components
- Lesson 3 – Electrical Schematics

Unit 4: Machine Electrical Systems

Lesson 1 – Battery

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

190104a – Electrical Theory.

190104b – Electrical Circuits

190104c – Magnetism

190104d – Test Equipment

190104e – Battery Fundamentals and Service

190104f – Electrical Wiring, Lighting Circuits and Circuit Protection

190104g – Basic Electronics

190104h – Electronic Control Systems

CALENDAR DESCRIPTION: This course will introduce students to basic electrical and electronic fundamentals. Topics included are: electrical circuits; electrical components, schematics and symbols; the use of test equipment and battery service and testing.
Delivery Option: Fairview Campus Only

CREDIT/CONTACT HOURS: Credits: 1.5 / Contact Hours: 48.

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%.**

**Electrical Fundamentals 48 / 240 hours = 20 %
of Semester 1 mark**

Exams Average = _____ x 45%

Class Assignments/Quizzes = _____ x 30%

Shop Total _____ x 25%

HES 131 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:

- Electrical Theory
- Electrical Circuits
- Magnetism
- Test Equipment
- Batteries Fundamentals and Service
- Wiring
- Basic Electronics
- Electronic Control Systems