



DEPARTMENT OF HEAVY EQUIPMENT

THINKBIG SERVICE TECHNICIAN COURSE OUTLINE – WINTER 2021

JANUARY 4 – FEBRUARY 26, 2021

HES211 VA23 – STARTING AND CHARGING SYSTEMS – 2.0 (56 HOURS)

INSTRUCTOR: Richard McGrail **PHONE:** 780.835.6778
OFFICE: FPS 110 **E-MAIL:** rmcgrail@gprc.ab.ca
OFFICE HOURS: 8.00am to 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 Block 1 and HES190 work placement.

REQUIRED TEXT/RESOURCE MATERIALS:

Caterpillar Material

Electrical Fundamentals:

Unit 4: Machine Electrical Systems

Lesson 2: Charging System

Lesson 3: Starting System

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

190205a – Charging System and Control Circuit Fundamentals

190205b – Charging System Testing and Service

190205c – Cranking System Fundamentals and Motor Drives

- 190205d – Cranking System Control Circuits
- 190205e – Cranking System Testing and Service
- 190205f – Non-Electric Cranking Systems

CALENDAR DESCRIPTION: This course examines 12 and 24 volt charging and 12, 24 and non-electrical starting systems. There is an emphasis on testing and troubleshooting.
 Delivery Option: Fairview Campus Only

CREDIT/CONTACT HOURS: Credits: 2.0 / Contact Hours: 56.

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%**.

**Starting and Charging Systems..... 56 / 240 hours = 23 %
 of Semester 2 mark**

Exams Average =	_____	x 45%
Class Assignments/Quizzes =	_____	x 30%
Shop Total	_____	x 25%

HES 211 VA23 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:

- 12, 24 and Series Parallel Systems
- Starting Motors
- Starter Drive Systems
- Thermal Protection
- Safety Systems
- Troubleshooting
- Alternators
- Generators
- Troubleshooting