

DEPARTMENT OF TRANSPORTATION TRADES
THINKBIG SERVICE TECHNICIAN COURSE OUTLINE – WINTER 2023
JANUARY 3 – FEBRUARY 24, 2023
HES211 VA23 – STARTING AND CHARGING SYSTEMS – 2.0 CREDITS
(56 HOURS)

Northwestern Polytechnic acknowledges that our campuses are located on Treaty 8 territory, the ancestral and present-day home to many diverse First Nations, Metis, and Inuit people. We are grateful to work, live and learn on the traditional territory of Duncan's First Nation, Horse Lake First Nation and Sturgeon Lake Cree Nation, who are the original caretakers of this land.

We acknowledge the history of this land and we are thankful for the opportunity to walk together in friendship, where we will encourage and promote positive change for present and future generations.

INSTRUCTOR: Richard McGrail **PHONE:** Office 780.835.6778
OFFICE: FPS 110 **E-MAIL:** rmcgrail@nwpolytech.ca
OFFICE HOURS: 8 AM to 4:30 PM

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

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

DELIVERY MODE(S): In person delivery.

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

COURSE OBJECTIVES:

LEARNING OUTCOMES:

TRANSFERABILITY: None.

EVALUATIONS:

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 Systems56 / 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 = _____ %

Alpha Grade	4-point Equivalent	Percentage Guidelines		Alpha Grade	4-point Equivalent	Percentage Guidelines
A+	4.0	90-100		C+	2.3	67-69
A	4.0	85-89		C	2.0	63-66
A-	3.7	80-84		C-	1.7	60-62
B+	3.3	77-79		D+	1.3	55-59
B	3.0	73-76		D	1.0	50-54
B-	2.7	70-72		F	0.0	00-49

COURSE SCHEDULE/TENTATIVE TIMELINE:

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

STUDENT RESPONSIBILITIES: This is an adult education environment. Enrolment at Northwestern Polytechnic 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 NWP College calendar assist us all in maintaining an adult learning environment. Please refer to the Student Rights and Responsibilities policy in the Northwestern Polytechnic Calendar or at www.nwpolytech.ca/downloads/documents/StudentRightsandResponsibilities.pdf.

STATEMENT ON PLAGIARISM AND CHEATING:

Cheating and plagiarism will not be tolerated and there will be penalties. For a more precise definition of plagiarism and its consequences, refer to the Student Conduct section of the Northwestern Polytechnic Calendar at <https://www.nwpolytech.ca/programs/calendar/> or the Student Rights and Responsibilities policy which can be found at <https://www.nwpolytech.ca/about/administration/policies/index.html>.

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

Additional Information (Optional):