NORTHWESTERN POLYTECHNIC

DEPARTMENT OF TRANSPORTATION TRADES

THINKBIG SERVICE TECHNICIAN COURSE OUTLINE – FALL 2022

OCTOBER 24 – DECEMBER 16, 2022

HES131 VB12 ELECTRICAL FUNDAMENTALS – 1.5 (48 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:	Peter Scheidegger Welding Instructor TBA	**PHONE:**	Office 780.835.6757 Cell 780.897.9298
OFFICE:	FPS 110	**E-MAIL:**	pscheidegger@nwpolytech.ca
OFFICE HOURS:	8 AM to 4:30 PM		

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.

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

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%.**

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 VB12 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:

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

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):