NORTHWESTERN POLYTECHNIC
Fairview Campus

DEPARTMENT OF TRANSPORTATION TRADES

THINKBIG SERVICE TECHNICIAN COURSE OUTLINE – FALL 2022

AUGUST 29, 2022 - OCTOBER 21, 2022

HES131 VA12 ELECTRICAL FUNDAMENTALS – 1.5 (48 HOURS)

INSTRUCTOR: Peter Scheidegger **PHONE:** 780.897.9298

OFFICE: FPS 110 **E-MAIL:** pscheidegger@nwpolytech.ca

OFFICE HOURS: 8.00am to 4.30pm

PREREQUISITE(S)/COREQUISITE: None

FALL 2022 DELIVERY:
In person – Onsite. This course is delivered in person at the NWP Fairview campus.
Note: NWP reserves the right to change the course delivery.

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): In person 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%.**

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 VA12 FINAL MARK = _____ %

NORTHWESTERN POLYTECHNIC			
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 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:

Refer to the Student Conduct section of the NWP Calendar at http://www.nwpolytech.ca/programs/calendar/ Pages 44 to 46 or the College Policy on Student Misconduct: Plagiarism and Cheating at http://www.nwpolytech.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