

**TRANSPORTATION TRADES DEPARTMENT**

**THINKBIG SERVICE TECHNICIAN COURSE OUTLINE – WINTER 2023**

**FEBRUARY 27 – APRIL 21, 2023**

**HES421 VA53 POWER TRAIN I – 4.0 (112 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                      **PHONE:** 780.897.9298  
**OFFICE:** FPS 110    **E-MAIL:** Pscheidegger@gprc.ab.ca  
**OFFICE HOURS:** 8.30am to 4.30pm

**CALENDAR DESCRIPTION:** This course will cover power train components that are mechanical power transfer units. These include clutches, driveline, manual transmissions, transfer cases and drive axle assemblies. Also covered will be gear principles, transmission shifting and the servicing of the previous assemblies.

Delivery Option: Fairview Campus Only

**PREREQUISITE(S)/COREQUISITE:** Successful completion of courses for Block 1-4.  
Please read all modules before they are presented in class.

## **RESOURCE MATERIALS:**

### **Caterpillar Material**

#### ***Power Train I:***

##### *Unit 1: Introduction to Power Train*

Lesson 1: Power Train Main Components and Theory of Operation

Lesson 2: Power Transfer Methods

Lesson 3: Gears and Gear Sets

##### *Unit 2: Couplings*

Lesson 1: Flywheel Clutch

##### *Unit 3: Transmissions*

Lesson 1: Manual Shift Transmissions

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

190401a – Clutch Fundamentals and Service (On-Road)

190401b – Driveline Fundamentals and Service

190401c – Gearing Principles

190401dA – Transmission Fundamentals – Part A

190401dB – Transmission Fundamentals – Part B

190401e – Transmission Shifting

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

190401fA – Transmission Service – Part A

190401fB – Transmission Service – Part B

190401g – Transfer Case and Auxiliary Drives

190401h – Drive Axle Assembly Fundamentals (On-Road)

190401i – Drive Axle Assembly Service (On-Road)

## **DELIVERY MODE(S):**

In person – Onsite. This course is delivered in person at the NWP Fairview campus.

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%**.

**Power Train I ..... 112 / 240 hours = 47 %  
of Block 5 mark**

Exams Average = \_\_\_\_\_ x 45%

Class Assignments/Quizzes/DPC = \_\_\_\_\_ x 30%

Shop Total \_\_\_\_\_ x 25%

**HES421 VA53 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:**

- Fundamentals
- Components
- Gear Sets
- Couplings
- Manual Shift Transmissions

**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](http://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):**