

DEPARTMENT – INDUSTRY PARTNER TRAINING
THINKBIG SERVICE TECHNICIAN COURSE OUTLINE – WINTER 2025
HES362 VZ32– ENGINE DIAGNOSTICS/REPAIR – 1.5 CREDITS (40
HOURS) 8 WEEKS (1-0-4)

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

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OFFICE HOURS: 8 AM to 4:30 PM

CALENDAR DESCRIPTION: Primarily a lab-based course where the student's knowledge will be challenged and troubleshooting skills developed. Students will be required to successfully diagnose and repair engine faults in a real-world setting.

PREREQUISITE(S) Successful completion of Blocks 1 and 2 and HES190, 290 & 390 work placements. Successful completion of Second period AIT.

COREQUISITE:

REQUIRED TEXT/RESOURCE MATERIALS:

Caterpillar Material

Engine Diagnostics and Repair:

Unit 1: Engine Diagnostics

Lesson 1 – Caterpillar 7 – Step Diagnostic Process

Unit 2: Engine Oil and Lubrication Systems.

Lesson 1 – Introduction to Engine Oil

Lesson 2 – Engine Lubrication Systems

Lesson 3 – Lubrication System Testing and Troubleshooting

Unit 3: Engine Air Induction Systems.

Lesson 1 – Introduction to Air Induction Systems

Lesson 2 – Caterpillar Air Induction System Testing and Troubleshooting

Unit 4: Engine Cooling Systems.

Lesson 1 – Introduction to Cooling Systems

Lesson 2 – Cooling System Principles and Troubleshooting

Lesson 3 – Cooling System Maintenance

Unit 5: Engine Fuel Systems.

Lesson 1 – Low Pressure Fuel System Inspection and Testing

Lesson 2 – Mechanical Fuel Systems Troubleshooting

Lesson 3 – Mechanical Electronic Unit Injector (MEUI) Systems Troubleshooting

Lesson 4 – Hydraulic Electronic Unit Injector (HEUI) Systems Troubleshooting

Lesson 5 – Common Rail Fuel Systems Troubleshooting

Machine Specific:

As per available units.

DELIVERY MODE:

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

- NWP reserves the right to change the course delivery.

LEARNING OUTCOMES:

TRANSFERABILITY: None

EVALUATION:

Engine Diagnostics/Repair 40 hours

Exams Average = _____ x 45%

Class Assignments/Quizzes = _____ x 30%

Shop Total _____ x 25%

HES 321 VB31 FINAL MARK = _____ %

GRADING CRITERIA:

Students must complete all required courses with no failing (F) grades. A passing grade in this course is a **minimum of 70%**. Grades for this course will be assigned as a percentage. Failure to achieve a minimum grade of 70% will result in removal from the Think BIG program.

COURSE SCHEDULE/TENTATIVE TIMELINE:

STUDENT RESPONSIBILITIES:

This is an adult education environment. Enrolment at Northwestern Polytechnic assumes that the student will become a responsible citizen of NWP. 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. Non-academic misconduct, including the possession, use, or distribution of intoxicants, will be addressed through the Student Rights and Responsibilities policy.

Students are expected to attend all class and shop hours. Students who miss more than 21 hours or 3 days of classes may be removed from the course.

Absences will be monitored and recorded by the instructors.

- Upon reaching 7 hours missed time in a single semester the student will be required to meet with the Instructor.
- Upon reaching 14 hours missed time in a single semester the student will be required to meet with the Instructor and Program Chair.

- Upon reaching 21 hours missed time in a single semester the student will be required to meet with the Instructor, Program Chair, and the Dean to evaluate the students' ability successfully continue in the Think BIG program.

STATEMENT ON ACADEMIC MISCONDUCT:

Academic Misconduct will not be tolerated. For a more precise definition of academic misconduct and its consequences, refer to the Student Rights and Responsibilities policy available at <https://www.nwpolytech.ca/about/administration/policies/index.html>

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