



Second Period Technical Training

- Heavy Equipment Technician -

(8 Weeks @ 30 Hours per Week = 240 hours)

Second Period Technical Training - Heavy Equipment Technician

Instructor(s):

Chester Parisian – Chair

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Kevin Wills – HET Instructor

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Office Hours:

Monday through Friday: 8:00 am – 4:00 pm

Suncor Energy Industrial Campus (SEIC)

Course Description:

In the Second Period Technical Training you will learn about:

1. Engine Fundamentals, Service and Repair
2. Engine Systems
3. Diesel Fuel Injection Systems
4. Electronic Fuel Management
5. Heavy Duty Charging & Cranking Systems

Required Textbooks: (available at Keyano College Bookstore approximately 2 weeks prior to start date)

Second Period ILM Package and 2nd Year Keyano College handout package

Heavy Equipment Technician Program Supplies

(Required for all periods):

- 1 inch 3-ring binders and lined paper
- 6 or 12 inch ruler
- Pens, writing pencils, coloured pencils, highlighters, erasers
- Calculator (with no programmable memory; Sharp 520 or Casio FX 260 are recommended)
- Coveralls
- CSA approved safety boots and safety glasses

Learning Outcomes

Upon successful completion of Section One – ENGINE FUNDAMENTALS, SERVICE AND REPAIR - you will be able to:

1. Explain the operating principles and design features of two and four stroke internal combustion engine.
2. Describe the functions and design features of cylinder block assemblies.
3. Inspect an engine block assembly for serviceability.
4. Describe the functions and design features of pistons, piston rings and connecting rods.
5. Service a piston and connecting rod assembly.
6. Describe the functions and design features of crankshafts and their related components.
7. Service crankshafts, friction bearings and related components.
8. Describe the functions and design features of camshafts and related components.
9. Service camshaft and related components.

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10. Describe the functions and design features of cylinder heads and valve train components.
11. Service cylinder heads and valve train components.
12. Explain the operation of engine compression and exhaust brakes.

Upon successful completion of Section Two - ENGINE SYSTEMS - you will be able to:

1. Service air induction, exhaust systems and related components.
2. Service turbo charged air induction systems.
3. Service lubrication systems and related components.
4. Service liquid and air-cooling systems and related components.

Upon successful completion of Section Three - DIESEL FUEL INJECTION SYSTEMS - you will be able to:

1. Handle and store diesel fuel using safe and efficient practices.
2. Apply the theory of the combustion process to engine operation and diagnosis.
3. Explain the operation of a basic fuel injection system.
4. Explain the operation of a basic fuel injection system.
5. Explain the operation of an advanced mechanical fuel injection system.
6. Explain basic testing and adjustment procedures on diesel engines and mechanical fuel injection systems.
7. Explain the operating principles of engine shutdown and warning systems.

Upon successful completion of Section Four – ELECTRONICS FUEL MANAGEMENT - you will be able to:

1. Retrieve and interpret basic diagnostic information from a typical diesel engine electronic control system.
2. Identify and explain components of electronically controlled fuel injection systems.
3. Diagnose and service electronic controlled diesel fuel injection systems.
4. Explain the operation of emission control system.

Upon successful completion of Section Five – HEAVY DUTY CHARGING & CRANKING SYSTEMS - you will be able to:

1. Explain the operation of 12 and 24 volt charging systems.
2. Diagnose and service 12 volt and 24 volt charging systems.
3. Explain the operation of 12 volt and 24 volt cranking systems.
4. Explain the operation of cranking motor control circuits.
5. Diagnose and service cranking systems.
6. Service and maintain air and hydraulic cranking systems.

Schedule

A detailed daily class / shop schedule will be handed out on the first day of each intake.

Grading

Apprentices must successfully meet three criteria to pass technical training.

1. Minimum 65% Theory Component (cumulative weighted average)
2. Minimum 65% on each Practical Component
3. Minimum 50% on every section of study.

Engine Service & Repair	31.7%
Engine Systems	11.7%
Diesel Fuel Injection Systems	13.3%
Electronic Fuel Management	22.5%
Charging and Cranking Systems	20.8%
Total Theory Component	100%
Lab/Shop	100%
Total Practical Component	100%

Important Phone Numbers

- **Candace Trites, Administrative Assistant** **780-781-4881**
Call Candace if you will be late or absent from class.

- **Chester Parisian, HET Program Chair** **780-799-8610**
Call Chester if you have any problems with class work, your instructor, or if you need any type of academic accommodation.

Call your instructor if you need information about class work, schedules or if you need extra help to learn the material.

- **Suzanne Beveridge, Alberta AIT** **1-800-248-4823**
Call Suzanne if you have questions about attendance, apprenticeship, or your employer.

- **Keyano Security** **780-791-4911**
Call security if you feel threatened while on campus, to report a fire, if you need a door unlocked, or for parking issues.

- **Office of the Registrar**
 - **Registration Assistants** **780-791-4801**
Call this office if you have questions about fees/tuition or class availability.

- **Student Life Calendar** <https://calendar.keyano.ca/student/>
Refer to the Student Life calendar for events and important dates for students.

IMPORTANT NOTICE

Information Regarding Fees and Procedures

If the address listed on your fee assessment sheets is different from your current address, or if your address changes anytime during the duration of your program, please go to the Student Services Centre and fill out the "Change of Address" form as Keyano College requires a current address for you at all times.

Your Student ID cards are available for pick up in the Office of the Registrar. Please have your Student ID # and photo identification available. Apprentices are required to pick up a new Student ID card every Academic Year.

For information on Awards/Bursaries, please contact the Student Services Center either in person or by phone at (780) 791-4894.

Keyano College is a paid parking facility. Parking passes can be purchased at the Cashier's Office when you go to pay your program fees.

Parking Fees: (2019-2020)

2 Weeks \$12.87

1 Month \$24.76

2 Months \$39.62

Please ensure that when you are paying your program fees that you indicate to the Cashier whether or not you would like to purchase a parking pass. Unreserved, General Parking is available in lots A, B, E and F. Lots C and D are reserved staff parking. If you park in a reserved spot, you can be ticketed even if you have a hang tag or daily pass. Please see the campus map for locations of the parking lots.

Please Note:

- It is now your responsibility to submit your E.I. forms on your own time. (HRDC no longer comes to the college)
- You can submit your registration on-line
<http://www100.hrdcdrhc.gc.ca/ae-ei/dem-app/english/home2.html>
- Or link from <http://www.servicecanada.gov.ca>

Campus Map

Suncor Energy Industrial Campus

