Second Period Technical Training

- Heavy Equipment Technician -

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

Jason Lalonde - Chair
Office CC117 – Clearwater Campus
Office Phone 780-791-4908
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Instructor(s):

Alan Dowling – HET Instructor
780-799-8625
Alan.Dowling@keyano.ca

Tony Gauthier – HET Instructor
780-792-5097
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Chester Parisian – HET instructor
780-799-8610
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Darrell Pintkowski – HET instructor
780-799-8610
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Kevin Wills – HET Instructor
78-799-8618
Kevin.Wills@keyano.ca

Office Hours:

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

Suncor Energy Industrial Campus (SEIC)

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):

- 3-ring binders, dividers, and lined paper
- 6 or 12 inch ruler
- Pens, pencils, highlighters, erasers
- Calculator (with no programmable memory; Sharp 520 is recommended)
- Coveralls
- CSA approved safety boots
- Safety goggles
- Although classes are scheduled in person, we ask that all students are prepared with the technology required for virtual classes (online) should it become necessary; Computer/laptop, microphone, camera and internet access.

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. Electronics Fuel Management
5. Heavy Duty Charging and Cranking Systems

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.
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 2 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%**

E-Learning

Technology and internet will impact your online learning experience. It's important that you are able to watch an online video and other course materials, take online quizzes, and participant in a live class with your instructor and other students.

Keyano College operates in a Windows based environment and having the correct tools for online learning is important. Here's a list of recommended system requirements:

Internet Speed

Minimum Internet speeds of 5 Mbps.
Recommended Internet speeds of 25 Mbps (especially if you are sharing your internet at home). Check your internet speed with Fast.com.

System requirements:

Microsoft Windows	Apple
Minimum Requirements: A Windows 10 **computer/laptop** · Minimum 4GB of RAM. · 10GB+ available hard drive storage. · Enough available hard drive space to install the Microsoft Office suite (approximately 3GB). Microsoft Office software is free to all Keyano students and employees. · Microphone, webcam and speakers. A headset with a microphone is recommended. · System updates must be regularly installed. · Anti-Virus / Anti-Malware software	**Minimum Requirements:** A Macintosh (V10.14 and above) **computer/laptop** · Minimum 4GB of RAM. · 10GB+ available hard drive storage. · Enough available hard drive space to install the Microsoft Office suite (approximately 3GB). Microsoft Office software is free to all Keyano students and employees. · Microphone, webcam and speakers. A headset with a microphone is recommended. · System updates must be regularly installed. · Anti-Virus / Anti-Malware software.
Recommended Requirements · 8GB of RAM · A method of backing up/synchronizing to local or cloud-based storage such as OneDrive is highly recommended. This is included if you complete the setup of KeyanoMail and download MS Office using your Keyano email for free.	**Recommended Requirements** · 8GB of RAM · A method of backing up/synchronizing to local or cloud-based storage such as OneDrive is highly recommended. This is included if you complete the setup of KeyanoMail and download MS Office using your Keyano email for free.

Chromebooks are **not** recommended as they are not compatible with testing lockdown browsers.

A Microsoft Surface or iPad or iPad Pro may be possible alternatives in some program areas.

Specific department requirements:
Business and OA programs require Windows 10.
Other programs may utilize Windows based tools as well.

Computer Software
Students will be able to get access to Microsoft Office 365 for Free using Keyano Credentials by clicking here.

Recording of lectures and Intellectual Property
Students may only record a lecture if explicit permission is provided by the instructor or by Accessibility Services. Even if students have permission to record a lecture or lecture materials, students may not publish any of the lectures or lecture materials, this includes any recordings, slides, instructor notes, etc. on any platform. Thus no student is allowed to publish or sell instructor notes without formal written permission. It is important to recognize that the Canadian Copyright Act contains provisions for intellectual property.

ITS Helpdesk
If you are having issues with your student account, you can contact the ITS Helpdesk by emailing its.helpdesk@keyano.ca or calling 780-791-4965.

Important Phone Numbers

- **Nancy Nicholle, Administrative Assistant**   **780-791-4881**
  Call Nancy if you are going to be absent from class or have any general questions or concerns.

- **Jason Lalonde, Electrician and Heavy Equipment Technician Chair 780-791-4908**
  Call Jason if you have any concerns with class work, instructors, or if you require any type of academic accommodations.

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

- **Mark Power, Alberta AIT**   **780-743-7181**
  Call Mark if you have questions about attendance, apprenticeship, or your employer.

- **Security**   **780-791-7911**
  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.*

<h1 style="color:red; text-align:center">IMPORTANT NOTICE</h1>

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 through the **Honk Mobile App**. Current rates can be found at: https://www.keyano.ca/en/about-us/parking.aspx

> When parking, please be mindful of designated areas ("Reserved", "Metered", etc.) 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 https://www.servicecanada.gov.ca

Campus Map
Suncor Energy Industrial Campus