



## **First Period Technical Training**

### **- Heavy Equipment Technician-**

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

First Period Technical Training - Heavy Equipment Technician

**Craig Cail, Chair – Construction Trades and Heavy Industrial**

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**Instructor(s):**

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**Tony Gauthier – HET Instructor**

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**Kevin Wills – HET Instructor**

78-799-8618

[Kevin.Wills@keyano.ca](mailto: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)

**First Period ILM Package** and 1<sup>st</sup> 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 First Period Technical Training you will learn about:

1. Standard Workplace Safety, Materials and Tools
2. Suspensions, Wheels and Systems
3. Hydraulics I and Hydraulic Brake Systems
4. Electrical I and Electronics I
5. Air Brakes

## **Learning Outcomes**

**Upon successful completion of Section One – *Safety, Materials and Tools* - you will be able to**

1. Apply legislation, regulations and practices intended to ensure a safe work place in this trade.
2. Use industry standard practices for climbing, lifting, rigging and hoisting in this trade.
3. Apply industry standard practices for hazardous materials and fire protection in this trade.
4. Demonstrate communication skills and workshop safety as it pertains to the Heavy Equipment Technician trade.
5. Identify materials and fasteners commonly used in the trade.
6. Demonstrate the correct use of hand, shop and power tools common to the trade.
7. Demonstrate the correct use of measuring tools common to the trade.
8. Perform metal cutting and heating operations safely using oxyacetylene equipment.

**Upon successful completion of Section Two - *Suspension, Wheels and Systems* - you will be able to**

1. Explain the operating principles and design features of common frame and suspension systems.
2. Repair common types of frame and suspension systems.
3. Service common bearings and seals.
4. Service wheels, tires and hubs.
5. Identify common trailer systems and components.
6. Service trailer coupling systems and landing gear.
7. Explain trailer inspection according to CVI regulations.
8. Explain typical maintenance programs used with off-road and on road equipment.

**Upon successful completion of Section Three – *Hydraulic 1 and Hydraulic Brake Systems* - you will be able to**

1. Apply scientific principles to braking system operation.
2. Explain the operation of hydraulic drum and disc brake systems.
3. Service hydraulic drum and disc brake systems.
4. Explain power braking systems service procedures.
5. Explain service procedures of parking brake systems.
6. Explain service procedures of electric braking systems.
7. Explain hydraulic principles.
8. Explain the function of the following hydraulic system components; hydraulic oils, reservoirs, filters, conductors, and heat exchangers.
9. Explain the functions and principles of operation of hydraulic system components.

**Upon successful completion of Section Four – *Electrical 1 & Electronics 1* - you will be able to**

1. Apply scientific principles to explain electrical theory.
2. Identify electrical circuit types and circuit defects.
3. Apply scientific principles to explain the theory of magnetism.
4. Use electrical test equipment to measure electrical values and check circuit operation.
5. Service, test and charge a lead-acid battery.
6. Test and repair electrical circuits.
7. Test discrete electronic components used in the trade.
8. Describe the operation of basic computer-controlled systems.

**Upon successful completion of Section Five – *Air Brakes* - you will be able to**

1. Explain the fundamental principles of operation of an air brake system.
2. Explain the operating principles of air brake mechanical components.

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3. Explain the principles of operation of truck/tractor air brake systems.
4. Explain the principles of trailer brake system component operation.
5. Service and diagnose truck/tractor and trailer air brake systems.
6. Describe the basic operation of an air antilock brake system.

### 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.

Standard Workplace Safety, Materials and Tools	16.7%
Suspensions, Wheels and Systems	22.5%
Hydraulics I and Hydraulic Brake Systems	20.8%
Electrical I and Electronics I	21.7%
Air Brakes	18.3%
<b>Total Theory Component</b>	<b>100%</b>
Lab/Shop	100%
<b>Total Practical Component</b>	<b>100%</b>

### 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](http://Fast.com).

**System requirements:**

Microsoft Windows	Apple
<p><b>Minimum Requirements:</b></p> <p>A Windows 10 <b>computer/laptop</b></p> <ul style="list-style-type: none"> <li>· Minimum 4GB of RAM.</li> <li>· 10GB+ available hard drive storage.</li> <li>· Enough available hard drive space to install the Microsoft Office suite (approximately 3GB). <a href="#">Microsoft Office</a> software is free to all Keyano students and employees.</li> <li>· Microphone, webcam and speakers. A headset with a microphone is recommended.</li> <li>· System updates must be regularly installed.</li> <li>· Anti-Virus / Anti-Malware software</li> </ul>	<p><b>Minimum Requirements:</b></p> <p>A Macintosh (V10.14 and above) <b>computer/laptop</b></p> <ul style="list-style-type: none"> <li>· Minimum 4GB of RAM.</li> <li>· 10GB+ available hard drive storage.</li> <li>· Enough available hard drive space to install the Microsoft Office suite (approximately 3GB). <a href="#">Microsoft Office</a> software is free to all Keyano students and employees.</li> <li>· Microphone, webcam and speakers. A headset with a microphone is recommended.</li> <li>· System updates must be regularly installed.</li> <li>· Anti-Virus / Anti-Malware software.</li> </ul>
<p><b>Recommended Requirements</b></p> <ul style="list-style-type: none"> <li>· 8GB of RAM</li> <li>· 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.</li> </ul>	<p><b>Recommended Requirements</b></p> <ul style="list-style-type: none"> <li>· 8GB of RAM</li> <li>· 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.</li> </ul>
<p>Chromebooks are <b>not</b> recommended as they are not compatible with testing lockdown browsers.</p> <p>A Microsoft Surface or iPad or iPad Pro may be possible alternatives in some program areas.</p>	

**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](mailto:its.helpdesk@keyano.ca) or calling 780-791-4965.

## **Important Phone Numbers**

- **Candace Trites, Administrative Assistant** **780-791-4881**  
*Call Candace if you are going to be absent from class or have any general questions or concerns.*
  
- **Craig Cail, Construction Trades & Heavy Industrial Chair** **780-715-3902**  
*Call Craig 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.*

## **IMPORTANT NOTICE**

### **Information Regarding Fees and Procedures**

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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 Bookstore. 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 <http://www.servicecanada.gov.ca>



# Campus Map

## Suncor Energy Industrial Campus

