Keyano COLLEGE

Fourth Period Technical Training

- Industrial Mechanic (Millwright) -

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

Darren Stacey
Chair, Metal Trades & Industrial Mechanic (Millwright)
780-792-2675
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Instructor(s):

Tom MacLellan – Instructor
780-792-5075
Tom.MacLellan@keyano.ca

Terry Seaward – Instructor
Terry.Seaward@keyano.ca
780-791-4909

Office Hours:
Monday through Friday: 8:00 am to 4:30 pm

Required Textbooks: ILM 4th Period (available at Keyano College Bookstore approximately 2 weeks prior to start date)

Fourth Period Millwright Apprenticeship ILMs w/supplemental texts
Alberta Learning
Edmonton: Author, 1998–, SKU 2001395

Industrial Mechanic (Millwright) 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; Casio FX 260 is recommended)
- Coveralls or smock
- CSA approved safety boots
- Safety Goggles with side shields
- Work gloves
- 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 Fourth Period Technical Training you will learn about:

1. Stationary Engines.
2. Turbines and Governors.
3. Process Piping Systems.
4. Condition Monitoring, Balancing and Advance Alignment.
5. Mechanical Systems with Electrical Controls.
6. Material Handling and Career Development.

Learning Outcomes

Upon successful completion of Section One – Stationary Engines - you will be able to

1. Service stationary engines.
2. Describe stationary engine operating principles, components, and applications.
3. Describe stationary engine lubrication, cooling, exhaust, fuel, and electrical systems.
4. Describe stationary engine system troubleshooting.
5. Describe stationary engine performance optimizations.
6. Describe auxiliary systems.
7. Service auxiliary systems.

Upon successful completion of Section Two – Turbines and Governors - you will be able to

1. Demonstrate principles, installation, start-up, maintenance and repair procedures for steam turbines.
2. Describe principles, installation, start-up, maintenance and repair procedures for gas turbines.
3. Demonstrate operation, installation and maintenance of governors.

Upon successful completion of Section Three – Process Piping Systems - you will be able to

1. Service process piping systems.
2. Describe process-piping system components.
3. Describe process piping assembly equipment.
4. Describe mechanical joint assemblies.
5. Perform calculations related to process piping systems.
6. Perform mechanical joint assemblies.
7. Describe insulation systems, materials, application procedures, and system maintenance.

Upon successful completion of Section Four – Condition Monitoring, Balancing and Advanced Alignment - you will be able to

1. Use condition monitoring tools and instruments.
2. Describe condition-monitoring methods, applications, tools, and instruments.
3. Perform balancing procedures.

4. Describe balancing theory, methods, and procedures.
5. Describe effects of imbalance.
6. Solve balancing related calculation.
7. Describe and perform advanced alignment.
8. Apply analytical troubleshooting processes.
9. Describe and apply failures analysis processes.

Upon successful completion of Section Five – Mechanical Systems with Electrical Controls - you will be able to

1. Troubleshoot systems containing electrical components.
2. Describe hazards associated with electricity.
3. Describe principles or electricity.
4. Describe principles of magnetism and electromagnetism.
5. Describe the application of a multi-meter.
6. Describe application of industrial control components.
7. Describe industrial control systems.
8. Perform calculations using Ohms law.

Upon successful completion of Section Six – Material Handling and Career Development - you will be able to

1. Service mechanical material handling systems.
2. Describe mechanical material handling components, system hazards, system functions, and system maintenance procedures.
3. Demonstrate mechanical material handling system maintenance.
4. Service pneumatic material handling systems.
5. Identify pneumatic material handling systems.
6. Describe pneumatic material handling components, hazards, system functions, and system maintenance procedures.
7. Demonstrate pneumatic material conveyance.
8. Apply emerging technologies.
9. Identify and describe emerging technologies.
10. Analyze and apply emerging trends in the Industrial Mechanic (Millwright) trade.
11. Use maintenance management systems.
12. Describe maintenance management systems and purposes.
13. Apply leadership development skills.
14. Describe the process of coaching an apprentice.
15. Describe the role of the network of industry committees that represent trades and occupations in Alberta.
16. Use Red Seal products to challenge an Interprovincial examination.

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.

Stationary Engines	19%
Turbines and Governors	20%
Process Piping Systems	11%
Condition Monitoring, Balancing and Advanced Alignment	17%
Mechanical Systems with Electrical Controls	13%
Material Handling and Career Development	20%
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

- **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.

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

<h2 style="text-align:center">Information Regarding Fees and Procedures</h2>

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

CLEARWATER CAMPUS MAP | For classroom **MAPS** please refer to **SAKC STUDENT HANDBOOK**