Keyano COLLEGE

Third Period Technical Training

- Electrician -

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

Instructor(s):

Office Hours:
Monday through Friday: 8:00 AM – 4:30 PM

Jason Lalonde - Chair
Office CC117 – Clearwater Campus
Office Phone 780-791-4908
jason.lalonde@keyano.ca

Kyle Forrest - Instructor
Office CC117 – Clearwater Campus
Office Phone 780-792-5736
kyle.forrest@keyano.ca

Patricia Luedee - Instructor
Office CC117 – Clearwater Campus
Office Phone 780-715-3912
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Dawn Ohama - Instructor
Office CC117 – Clearwater Campus
Office Phone 780-792-5068
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Tim Thomas - Instructor
Office CC117 – Clearwater Campus
Office Phone 780-792-5612
tim.thomas@keyano.ca

Tim Weldon - Instructor
Office CC117 – Clearwater Campus
Office Phone 780-792-5123
timothy.weldon@keyano.ca

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

Second Period Electrician Apprenticeship ILMs w/supplemental texts
Alberta Learning, Edmonton: Author, 1998–, SKU 2000312

2018 Canadian Electrical Code*, Part I, 24th edition*
Canadian Standards Association
Rexdale: Canadian Standards Association, 2018, ISBN 9781488313431

Optional References:

Electric Motor Control by Alerich – 10th Edition – Cengage
Stephen L. Herman, Delmar, ISBN 978-1133702818

Industrial Motor Control by Herman 7th Edition
Stephen L. Herman, Delmar Cengage Learning 2010, ISBN 978-1133692683

Alternating Current Fundamentals by Duff-Herman – 8th Edition
Stephen L. Herman, Thomson Delmar Learning, ISBN9781111125271

http://www.tradesecrets.gov.ab.ca/trades/pdf/trade_textbooks/003_textbooks.pdf

Electrician 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 520W, 520X, 520XT or 546XT are recommended)
- CSA approved safety boots
- Safety Glasses
- Gloves – Mechanix are recommended
- Electrical stencil is recommended
- 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 Third Period Technical Training you will learn about:

1. Three Phase Principles
2. Three-Phase Motor Principles
3. Transformers
4. Canadian Electrical Code

Learning Outcomes

Upon successful completion of Section One – *Three-Phase Principles* – you will be able to:

1. Perform third period math calculations.
2. State the characteristics of a three-phase electrical system.
3. Connect and analyze three-phase wye systems.
4. Connect and analyze three-phase delta systems.
5. Connect and analyze three-phase delta wye systems.
6. Calculate the power components of three-phase systems.
7. Measure and calculate balanced and unbalanced three-phase loads.
8. Connect and analyze circuits relating to power factor correction.

Upon successful completion of Section Two – *Three-Phase Motor Principles* – you will be able to:

1. State the characteristics of three-phase induction motors.
2. Analyze the stator and rotor parameters of three-phase induction motors.
3. Connect and analyze the operation of three-phase motors and starters.
4. Connect and analyze the operation of variable frequency drives.

Upon successful completion of Section Three – *Transformers* – you will be able to:

1. State the characteristics of single-phase transformers.
2. Connect and analyze single-phase transformers.
3. Connect and analyze an autotransformer.
4. Connect and analyze three-phase transformer connections.
5. Connect and analyze equipment used for energy measurement.

Upon successful completion of Section Four – *Canadian Electrical Code* – you will be able to:

1. Apply the rules and regulations in the CEC that pertain to bonding and grounding.
2. Determine protection and control device requirements.
3. Determine the code requirements for installation of electrical equipment.
4. Determine the installation requirements for individual motors.
5. Determine the installation requirements for motor banks.
6. Determine the classification of hazardous locations.
7. Determine the installation requirements for Class I locations.
8. Determine the installation requirements for Class II locations.
9. Determine the installation requirements for Class III locations.
10. Determine the code requirements for section 20.
11. Determine the installation requirements for Category 1 and 2 locations.

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.

3 Phase Principles	40%
3 Phase Motor Principles	24%
Transformers	14%
Code	22%
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.

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 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 http://www.servicecanada.gov.ca

CLEARWATER CAMPUS MAP

For classroom **MAPS** please refer to **SAKC STUDENT HANDBOOK**

AC122 Recital Theatre

Arts Centre (Room prefix AC)

Syncrude Sport & Wellness Centre SSWC

Arts Centre Classrooms

Keyano Theatre

General Parking

KING STREET

Elements Dining

Purple Palace

Facilities

Health Services

Elements Meeting Room

Trades Office

Security

Library

King's Lounge

Used Bookstore

Process Operations

LINC

Bob Lamb Building:
• Testing Services
• Power Engineering
• Continuing Education

Carpentry

Bookstore

Accessibility Services

Office of the Registrar

Human Resources

ITS

Finance

MAIN FLOOR

Skill Centre

Nursing

Syncrude Technology Centre (Room prefix S)

Study Lounge

Environmental Laboratory

Classrooms

Information Common

Instructor Offices

FRANKLIN AVENUE

Classrooms

Classrooms

Science Labs

Instructor Offices

Classrooms

Wellness Services

SAKC

Academic Offices

2ND FLOOR

Executive Office

Lecture Theater

Classrooms

Instructor Offices

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