



## **Second 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

### **Craig Cail – Chair**

Office CC117 – Clearwater Campus

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### **Kyle Forrest - Instructor**

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### **Jason Lalonde - Instructor**

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### **Patricia Luedee - Instructor**

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### **Dawn Ohama - Instructor**

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### **Tim Thomas - Instructor**

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### **Tim Weldon - Instructor**

Office CC117 – Clearwater Campus

Office Phone 780-792-5123

[timothy.weldon@keyano.ca](mailto: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 2000310

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

### **Optional References:**

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

***Alternating Current Fundamentals by Duff-Herman – 8<sup>th</sup> Edition***  
Stephen L. Herman, Thomson Delmar Learning, ISBN9781111125271

***Electric Motor Control by Alerich – 10<sup>th</sup> Edition – Cengage***  
Stephen L. Herman, Delmar, ISBN 978-113702818

[http://www.tradesecrets.gov.ab.ca/trades/pdf/trade\\_textbooks/003\\_textbooks.pdf](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 520 is recommended)
- CSA approved safety boots
- Safety Glasses
- Gloves – Mechanix are recommended
- Electrical stencil is recommended

## Learning Outcomes

**Upon successful completion of Section One – *Alternating Current (ac) Circuit Properties* – you will be able to:**

1. Perform second period math calculations.
2. Describe the fundamentals of alternating current (ac).
3. State and analyze the characteristics of ac circuits.
4. Connect and analyze inductors in circuits.
5. Connect and analyze capacitors in circuits.
6. Calculate power, reactive power and apparent power in ac circuits.

**Upon successful completion of Section Two – *RLC Circuits* – you will be able to:**

1. Connect and analyze ac series circuit containing resistors, inductors or capacitors.
2. Connect and analyze ac series circuits that contain resistors and inductors and circuits that contain resistors and capacitors.
3. Connect and analyze ac series circuits that contain resistors, inductors and capacitors.
4. Analyze parallel ac circuits containing resistors, inductors or capacitors.
5. Connect and analyze ac parallel circuits containing resistors, inductors and capacitors.
6. Connect and analyze single phase power factor correction circuits.

**Upon successful completion of Section Three – *Heating and Cooling Systems* – you will be able to:**

1. State the principles of automatic controls for heating and cooling systems.
2. State the principles of operation for temperature sensing and control devices.
3. Connect and troubleshoot control circuits in a gas-fired, forced-air heating system.
4. Connect and troubleshoot control circuits in an efficient gas-fired, forced-air heating system.
5. Connect and troubleshoot control circuits in a hot water heating system.
6. Connect and troubleshoot control circuits in a heating and cooling system.
7. Connect and troubleshoot control circuits in a commercial HVAC unit.
8. Describe the components and characteristics of heat trace systems.

**Upon successful completion of Section Four – *Magnetic Control and Switching Circuits* – you will be able to:**

1. Interpret electrical control drawings.
2. Connect and analyze relays and contactors.
3. Connect and analyze timers and smart relays.
4. Select control and protective devices for a motor branch circuit.
5. Identify the components and applications of magnetic motor starters and overload protection devices.
6. Convert between wiring and schematic diagrams for magnetic controls and switching circuits.
7. Connect and analyze motor control circuits.
8. Connect and analyze NEMA and IEC reversing motor starters.

**Upon successful completion of Section Five – Canadian Electrical Code – Part I / Plans and Diagrams – you will be able to:**

1. Determine the minimum ampacity of conductors to single dwellings.
2. Determine the requirements of a service for a single dwelling.
3. Determine the branch circuit and feeder requirements for a single dwelling.
4. Determine the grounding and bonding requirements for a single dwelling.
5. Determine the service, feeder and branch circuit requirements of an apartment building.
6. Determine the requirements for equipment protection, control, grounding and bonding for apartments and similar buildings.
7. Determine wiring and equipment requirements for capacitor bank installations.
8. Determine the code requirements for sections 68, 72, and 76.
9. Interpret electrical drawings and schematic diagrams.
10. Apply specifications to electrical installations.
11. Interpret commercial electrical construction drawings.

## 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.

AC Current & Circuit Properties	15%
RLC Circuits	31%
Heating & Cooling Systems	17%
Magnetic Control & Switching	18%
Code, Plans & Diagrams	19%
<b>Total Theory Component</b>	<b>100%</b>
Lab/Shop	100%
<b>Total Practical Component</b>	<b>100%</b>

## 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, Electrical Program 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.*
  
- **Suzanne Beveridge, Alberta AIT** **1-800-248-4823**  
*Call Suzanne 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 Cashier's Office when you go to pay your program fees.

#### **Parking Fees: (2019-2020)**

2 Weeks	\$12.87
1 Month	\$24.77
2 Months	\$39.63

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>

# CLEARWATER CAMPUS MAP

For classroom MAPS please refer to  
SAKC STUDENT HANDBOOK

