



## **Fourth Period Technical Training**

### **- Electrician -**

(12 Weeks @ 30 Hours per Week = 360 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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[Craig.Cail@keyano.ca](mailto:Craig.Cail@keyano.ca)

### **Kyle Forrest - Instructor**

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### **Jason Lalonde - Instructor**

Office CC117 – Clearwater Campus

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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)

***First Period Electrician Apprenticeship ILMs*** w/supplemental texts  
Alberta Learning, Edmonton: Author, 1998–, SKU 2001323

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

***Alberta Fire Alarm System Guide, 3<sup>d</sup> Edition 2017***  
Based upon the Alberta Building Code and Alberta Fire Code – ISBN 9788450001846

### **Optional References:**

***IPT's Electrical Handbook***  
Putz, Herb, IPT Publishing and Training, Ltd, 2008, ISBN 978-0920855980

[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)

***Direct Current Fundamentals***, 8<sup>th</sup> edition  
Herman, Stephen L., Thomson: Delmar, ISBN 978-1111127466

***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, ISBN 9781111125271

### **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 – *Machines* – you will be able to:

1. Perform fourth period math calculations.
2. State the characteristics of alternators and generators.
3. Connect and analyze dc machines
4. Connect and analyze alternators.

## Fourth Period Technical Training - Electrician Trade

5. Connect and analyze synchronous motors.
6. Connect and analyze single phase motors.

**Upon successful completion of Section Two – *Control and Switching / PLC* – you will be able to:**

1. Interpret a motor control circuit.
2. Convert between wiring and schematic diagrams.
3. Design and connect controls and switching circuits.
4. Connect and analyze special control circuits.
5. Program, connect and analyze a PLC.

**Upon successful completion of Section Three – *Fire Alarm Systems & Red Seal Program & Industry Network* – you will be able to:**

1. Describe the general principles and components of a fire alarm system.
2. Identify and describe fire detection and alarm system regulations.
3. Determine the criteria for the installation of a fire alarm system and for the location of its components.
4. Connect and troubleshoot fire alarm systems.
5. Recognize arc flash hazards in electrical installations.
6. Use Red Seal products to challenge and Interprovincial examination.
7. Describe the role of the Alberta Apprenticeship and Industry Training Board and the network of industry committees that represent the trades and occupations in Alberta.
8. Implement workplace coaching skills when training apprentices.

**Upon successful completion of Section Four – *Fire Alarm Systems & Red Seal Program & Industry Network* – you will be able to:**

1. Connect and analyze rectifiers and battery chargers.
2. Connect and analyze controlled rectifiers.
3. Connect and analyze an uninterruptible power supply (UPS) system.
4. Program, connect and analyze variable frequency drives.
5. State the characteristics of a cathodic protection system.
6. Determine the installation requirements for electric renewable energy systems.

**Upon successful completion of Section Five – *Canadian Electrical Code Part 1 / Application and Safety* – you will be able to:**

1. Determine the size of conductors and conduit.
2. Apply the grounding and bonding requirements for electrical installations.
3. Apply the rules for installation of cables, raceways and enclosures.
4. Determine protection and control device requirements for electrical installation.
5. Determine the installation requirements for lighting, emergency systems and unit equipment.
6. Determine the installation requirements for communication systems.
7. Determine the electrical requirements for single dwelling feeder and branch circuits.
8. Determine the installation requirements for motors.
9. Determine the installation requirements for capacitors and transformers.
10. Determine the installation requirements for electric welder.
11. Determine the installation requirements for hazardous and special locations.

12. Determine the installation requirements for patient care facilities.
13. Determine the requirements for high-voltage installations.
14. Determine the installation requirements for various electrical applications.

## 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.

Machines	17%
Control & Switching/PLC	20%
Fire Alarm Systems	13%
Applications of Electronics	18%
CEC & Applications, Safety	32%
<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** **780-743-7181**  
*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

