

# **Basic Electrical**

## 2020-21 Academic Year

Program	Year	Semester
START-Trades Fundamentals Certificate	1	1

Course Code:	TFBE 1301	Course Equiv. Code(s):	TFBE 1351, ELEC 2411
Course Hours:	42	Course GPA Weighting:	3
Prerequisite:	N/A		
Corequisite:	N/A		
Laptop Course:	Yes No X		
Delivery Mode(s	): In class X Online	Hybrid Corresp	oondence

Pandemic remote teaching delivery mode Fu	Ily asynchronous X Combined asynchronous and synchronous
Remote proctoring required Yes No	X
Authorized by (Dean or Director): Rebecca Milburr	<b>Date:</b> June 2020

Prepared by		
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# **Course Description:**

This course is designed to introduce the student to an exhilarating trade. The student will have an understanding of electricity, basic wiring methods, components, tools, and authority standards associated with a single family electrical residential installation.

# **Campus Closure Notice**

In the event of a campus closure during which time classes cannot be conducted or attended in person, course delivery will be conducted remotely where possible. Should teaching and learning resume on campus, students may be organized into smaller groups for classroom delivery, in accordance with directions from public health authorities. In either situation, the learning plan sequence and/or evaluation methods may be adjusted to address topics requiring hands-on, practical learning activities.

# Subject Eligibility for Prior Learning Assessment & Recognition (PLAR):

Prior Learning Assessment and Recognition (PLAR) is a process a student can use to gain college credit(s) for learning and skills acquired through previous life and work experiences. Candidates who successfully meet the course learning outcomes of a specific course may be granted credit based on the successful assessment of their prior learning. The type of assessment method (s) used will be determined by subject matter experts. Grades received for the PLAR challenge will be included in the calculation of a student's grade point average.

The PLAR application process is outlined in http://www.durhamcollege.ca/plar. Full-time and part-time students must adhere to all deadline dates. Please email: PLAR@durhamcollege.ca for details.

### PLAR Eligibility

Yes X No	
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### PLAR Assessment (if eligible):

	Assignment
X	Exam
	Portfolio
	Other

# **Course Learning Outcomes**

Course Learning Outcomes contribute to the achievement of Program Learning Outcomes for courses that lead to a credential (e.g. diploma). A complete list of Vocational/Program Learning Outcomes and Essential Employability Skill Outcomes are located in each Program Guide.

### **Course Specific Learning Outcomes (CLO)**

Student receiving a credit for this course will have reliably demonstrated their ability to:

- CLO1 Identify and adhere to all health and safety requirements of the shop as well as all classrooms and Laboratories.
- CLO2 Describe the educational and career opportunities in the Electrical Trade including both the post secondary and apprenticeship models as well as various job opportunities within the profession.
- CLO3 Complete basic electrical trade related projects and labs using appropriate equipment and supplies.
- CLO4 Complete all trade related calculations in a successful manner in relation to the electrical trade.
- CLO5 Apply basic trade knowledge and related terminology to communicate effectively in the electrical trade.

### Essential Employability Skill Outcomes (ESSO)

This course will contribute to the achievement of the following Essential Employability Skills:

- X EES 1. Communicate clearly, concisely and correctly in the written, spoken, and visual form that fulfills the purpose and meets the needs of the audience.
- X EES 2. Respond to written, spoken, or visual messages in a manner that ensures effective communication.
- X EES 3. Execute mathematical operations accurately.
- X EES 4. Apply a systematic approach to solve problems.
- X EES 5. Use a variety of thinking skills to anticipate and solve problems.
- X EES 6. Locate, select, organize, and document information using appropriate technology and information systems.
- X EES 7. Analyze, evaluate, and apply relevant information from a variety of sources.
- EES 8. Show respect for the diverse opinions, values, belief systems, and contribution of others.
- X EES 9. Interact with others in groups or teams in ways that contribute to effective working relationships and the achievement of goals.
- X EES 10. Manage the use of time and other resources to complete projects.
  - EES 11. Take responsibility for one's own actions, decisions, and consequences.

# **Evaluation Criteria:**

The Course Learning Outcomes and Essential Employability Skills Outcomes are evaluated by the following evaluation criterion.

Evaluation Description	Course Learning Outcomes	EESOs	Weighting
Project: Project #1 Wiring device connection to copper#14awg wire with written questions.	CLO1, CLO3, CLO4, CLO5	EES4, EES7, EES9	5
Project: Project #2 Termination of copper and aluminum conductors with written questions.	CLO1, CLO3, CLO5	EES1, EES2, EES4, EES10	5
Project: Project #3 Terminations of flexible cord with written questions	CLO1, CLO3, CLO4, CLO5	EES1, EES2, EES7, EES10	5
Test: Test #1 Series Circuits written questions evaluation.	CLO3, CLO4	EES3, EES10	10
Project: Project#4 Termination of coaxial cable connections with written questions.	CLO1, CLO2, CLO3	EES4, EES7, EES9	5
Test: Test #2 Parallel Circuits written questions evaluation.	CLO3, CLO4	EES3, EES10	10
Project: Project #5 Termination of a Modular Data Plug with written questions.	CLO1, CLO3, CLO5	EES4, EES5, EES6, EES9	5
Project: Project #6 Installation of Residential Smoke detectors using armored and non metallic sheathed cable with written questions.	CLO1, CLO3, CLO4	EES2, EES6, EES7	5
Project: Project#7 Control of a light from one location, with written questions.	CLO1, CLO3, CLO4, CLO5	EES1, EES4, EES6, EES7, EES9, EES10	5
Project: Project#8 Control of a light from 2 locations, with written questions.	CLO1, CLO3, CLO4, CLO5	EES1, EES4, EES5, EES6, EES7, EES9, EES10	5
Project: Project#9 Control of a light from 3 locations or more, with written questions.	CLO1, CLO2, CLO3, CLO4	EES1, EES4, EES5, EES6, EES7, EES9	5
Project: Project#10 Installation of a ground fault circuit interrupter receptacle, with written questions.	CLO1, CLO3, CLO4, CLO5	EES1, EES2, EES4, EES5, EES7	5
Project: Project#11 Installation of 20 amp 120volt receptacles and circuits with written questions.	CLO1, CLO3, CLO4, CLO5	EES1, EES6, EES7	5

Project: Project#12 Installation of split switched duplex receptacles with written questions.	CLO1, CLO3, CLO4, CLO5	EES1, EES4, EES6, EES7	5
Project: Residential Cottage wiring layout with material list to be calculated to meet the Canadian Electrical code written project.	CLO2, CLO3, CLO4, CLO5	EES3, EES5, EES6, EES7, EES9, EES10	20
Total			100%

### Notes:

1. An interim mark will be determined for all first year students to identify their academic progress. This mark will be based on the results of the first test, second test and the in process grade up to the mid term date.

# **Required Text(s) and Supplies:**

1. No materials required

### **Recommended Resources (purchase is optional):**

 Electrical Code Simplified, Ontario Book 1 -House Wiring Guide.
 P.S. Knight, Based on the 25th edition of the Ontario Electrical Safety Code. ISBN # 978-0-920312-47-6

# **Policies and Expectations for the Learning Environment:**

### **General Policies and Expectations:**

General College policies related to	General policies related to
+ Acceptable Use of Information Technology	+ attendance
+ Academic Policies	<ul> <li>absence related to tests or assignment due dates</li> </ul>
+ Academic Honesty	+ excused absences
+ Student Code of Conduct	+ writing tests and assignments
<ul> <li>Students' Rights and Responsibilities can be found on-line at http://www.durhamcollege.ca/academicpolicies</li> </ul>	<ul> <li>classroom management can be found in the Program Guide (full time programs only) in MyCampus http://www.durhamcollege.ca/mycampus/</li> </ul>

### **Course Specific Policies and Expectations:**

You are expected to write all tests at the assigned place, date and time, missing a test, scores a "0" (zero). Please note that the scheduling of testing will be posted on DC Connect at the beginning of the course, these dates are when the tests MUST be written. DO NOT schedule vacations/holidays during these times as there are NO make-up dates for missing a test for vacations/holidays!

Please note that all documents(whether original, hard copied, electronic or reproductions) issued by a faculty member, are property of the Electrical Department of the School of Skilled Trades, Apprenticeship and Renewable Technology. This includes, but is not limited to: Lab Worksheets, Quizzes, Tests, and Examinations. The aforementioned documents must be returned to faculty upon request and failure to do so will be treated as academic dishonesty.

Only dedicated calculators are allowed(no cell phones or electronic devices)in class. If these rules are not followed your final mark will be reduced by 10% for each occurrence.

Durham College is committed to the health and safety of all personnel. Therefore while performing lab assignment(s)/project(s) personnel must adhere to the posted safety rules in the room. Upon failing to do so you may not attend class and your lab assignment will result in a mark of zero.

# **General Course Outline Notes:**

- 1. Students should use the course outline as a learning tool to guide their achievement of the learning outcomes for this course. Specific questions should be directed to their individual professor.
- 2. The college considers the electronic communication methods (i.e. DC Mail or DC Connect) as the primary channel of communication. Students should check the sources regularly for current course information.
- 3. Professors are responsible for following this outline and facilitating the learning as detailed in this outline.
- 4. Course outlines should be retained for future needs (i.e. university credits, transfer of credits etc.)
- 5. A full description of the Academic Appeals Process can be found at https://durhamcollege.ca/about/governance/policies/academic-policies .
- Faculty are committed to ensuring accessible learning for all students. Students who would like assistance with academic access and accommodations in accordance with the Ontario Human Rights Code should register with the Access and Support Centre (ASC). ASC is located in room SW116, Oshawa Campus and in room 180 at the Whitby Campus. Contact ASC at 905-721-3123 for more information.
- 7. Durham College is committed to the fundamental values of preserving academic integrity. Durham College and faculty members reserve the right to use electronic means to detect and help prevent plagiarism. Students agree that by taking this course all assignments could be subject to submission either by themselves or by the faculty member for a review of textual similarity to Turnitin.com. Further information about Turnitin can be found on the Turnitin.com Web site.

# Learning Plan

The Learning Plan is a planning guideline. Actual delivery of content may vary with circumstances.

Students will be notified in writing of changes that involve the addition or deletion of learning outcomes or evaluations, prior to changes being implemented, as specified in the Course Outline Policy and Procedure at Durham College.

Wk.	Hours: 3 Delivery: In Class					
1	Course Learning Outcomes					
	CLO1, CLO3, CLO4, CLO5					
	Essential Employability Skills					
	Taught:EES4, EES7, EES9Practiced:EES4, EES7, EES9					
	Intended Learning Objectives					
	Introduction to the course, outlines, and introduction to DC Connect resources. Safety equipment and requirements.					
	Intended Learning Activities					
	Demonstration on the effects of Electricity.					
	Resources and References					
	Handouts and PowerPoints					
	Evaluation Test: Test #1 Series Circuits Short Answer Questions					
Wk.	Hours: 1 Delivery: In Class					
2	Course Learning Outcomes CLO1, CLO3, CLO4, CLO5					
	Essential Employability Skills					
	Taught:EES4, EES7, EES9Practiced:EES4, EES7, EES9					
	Intended Learning Objectives					
	Introduction to Resistance, Voltage, and Current.					
	Intended Learning Activities					
	Introduction to Resistance, Voltage and Current and their relationship. Mathematical relationship and formula calculations.					
	Resources and References					
	PowerPoints					
	Evaluation Test: Test #1 Series Circuits Short Answer Questions					

Wk.	Hours: 2	Delivery:	Lab		
2	Course Learning Out	tcomes			
	CLO1, CLO3, CLO5				
	Essential Employabi	lity Skills			
	Taught: EES4,	EES7, EES	9	Practiced:	EES4, EES7, EES9
	Intended Learning Objectives				
	Project #1, Termination methods used in connecting copper wire to screw terminals. with written questions				
	Intended Learning A	ctivities			
	Project #1,Termination installation tools. with	ons of coppe h written que	er solid #14awg v estions	wire to residentia	al grade wiring devices using common
	Resources and Refe	rences			
	Project #1 handout.				
	Evaluation Project: Project #1 W written questions.	Viring device	connection to c	opper#14awg wi	Weighting re with 5
Wk.	Hours: 1	Delivery:	In Class		
	Hours: 1 Course Learning Out		In Class		
<b>Wk.</b> 3		tcomes	In Class		
	Course Learning Out	tcomes	In Class		
	Course Learning Out CLO1, CLO3, CLO5 Essential Employabi	tcomes		Practiced:	EES1, EES2, EES4, EES10
	Course Learning Out CLO1, CLO3, CLO5 Essential Employabi	tcomes lity Skills EES2, EES		Practiced:	EES1, EES2, EES4, EES10
	Course Learning Out CLO1, CLO3, CLO5 Essential Employabi Taught: EES1,	tcomes lity Skills EES2, EES bjectives	4, EES10	Practiced:	EES1, EES2, EES4, EES10
	Course Learning Out CLO1, CLO3, CLO5 Essential Employabi Taught: EES1, Intended Learning O	tcomes lity Skills EES2, EES bjectives of Ohm's Law	4, EES10	Practiced:	EES1, EES2, EES4, EES10
	Course Learning Out CLO1, CLO3, CLO5 Essential Employabi Taught: EES1, Intended Learning O Series applications of	tcomes lity Skills EES2, EES bjectives of Ohm's Law	4, EES10 v in a circuit.		
	Course Learning Out CLO1, CLO3, CLO5 Essential Employabi Taught: EES1, Intended Learning O Series applications of Intended Learning A	tcomes lity Skills EES2, EES bjectives of Ohm's Law ctivities stance, Volta	4, EES10 v in a circuit.		
	Course Learning Out CLO1, CLO3, CLO5 Essential Employabi Taught: EES1, Intended Learning O Series applications of Intended Learning A Calculations of Resis	tcomes lity Skills EES2, EES bjectives of Ohm's Law ctivities stance, Volta	4, EES10 v in a circuit.		

Wk.	Hours: 2 Delivery: Lab				
3	Course Learning Outcomes				
	CLO1, CLO3, CLO5				
	Essential Employability Skills				
	Taught:EES1, EES2, EES4, EES10Practiced:EES1, EES2, EES4, EES10				
	Intended Learning Objectives				
	Project #2, Wire Terminations using copper and aluminum wire with written questions.				
	Intended Learning Activities				
	Project #2 Wire Terminations using #8 American wire gauge copper to a stove receptacle and #2 aluminum conductors with written questions				
	Resources and References				
	Project #2 handout.				
	EvaluationWeightingProject: Project #2 Termination of copper and aluminum conductors5with written questions.5				
Wk.	Hours: 1 Delivery: In Class				
4	Course Learning Outcomes				
	CLO1, CLO3, CLO4, CLO5				
	Essential Employability Skills				
	Taught:EES1, EES2, EES7, EES10Practiced:EES1, EES2, EES7, EES10				
	Intended Learning Objectives				
	Applications of Ohm's law in a parallel circuit.				
	Intended Learning Activities				
	Circuit calculations in parallel connections.				
	Circuit calculations in parallel connections.  Resources and References				
	· · · · · · · · · · · · · · · · · · ·				

Wk.	Hours: 2 Delivery: Lab
4	Course Learning Outcomes
	CLO1, CLO3, CLO4, CLO5
	Essential Employability Skills
	Taught:EES1, EES2, EES7, EES10Practiced:EES1, EES2, EES7, EES10
	Intended Learning Objectives
	Project #3,Termination of flexible cord to 15 amp 120 volt devices. With written questions.
	Intended Learning Activities
	Assembly of 15 amp 120 volt plugs and connectors, both 2 wire and 3 wire types to a length of flexible cord and test for connections.
	Resources and References
	Lab #3 handouts
	EvaluationWeightingProject: Project #3 Terminations of flexible cord with written questions5
Wk.	Hours: 1 Delivery: In Class
5	Course Learning Outcomes CLO4
	Essential Employability Skills
	Taught:EES3, EES4, EES10Practiced:EES3, EES4, EES10
	Intended Learning Objectives
	Intended Learning Objectives Test #2 Parallel Circuits written answer questions.
	Test #2 Parallel Circuits
	Test #2 Parallel Circuits written answer questions.
	Test #2 Parallel Circuits written answer questions. Intended Learning Activities
	Test #2 Parallel Circuits written answer questions. Intended Learning Activities Parallel Circuits

Wk.	Hours: 2 Delivery: Lab
5	Course Learning Outcomes CLO1, CLO2, CLO3
	Essential Employability Skills
	Taught:EES4, EES7, EES9Practiced:EES4, EES7, EES9
	Intended Learning Objectives
	Project #4, Installation of RG/6 Coaxial cable with written questions.
	Intended Learning Activities
	Terminations of RG/6 Coaxial cable Omni seal connectors, assemble a short patch cord and testing, with written questions.
	Resources and References
	N/A
	EvaluationWeightingProject: Project#4 Termination of coaxial cable connections with written5questions.5
	questions.
Wk.	Hours: 1 Delivery: In Class
<b>Wk.</b>	•
	Iours:     1     Delivery:     In Class       Course Learning Outcomes
	Iours:     1     Delivery:     In Class       Course Learning Outcomes     CLO4
	Iours:       1       Delivery:       In Class         Course Learning Outcomes       CLO4         Essential Employability Skills
	Inclass       Delivery: In Class         Course Learning Outcomes       CLO4         Essential Employability Skills       Practiced: EES3, EES4, EES5, EES10         Taught:       EES3, EES4, EES5, EES10       Practiced: EES3, EES4, EES5, EES10
	Intended Learning Objectives
	Indurs:       1       Delivery:       In Class         Course Learning Outcomes       CLO4         Essential Employability Skills       Practiced:       EES3, EES4, EES5, EES10         Taught:       EES3, EES4, EES5, EES10       Practiced:       EES3, EES4, EES5, EES10         Intended Learning Objectives       Take up test on Parallel Circuits.       EES3, EES4, EES5, EES10       EES3, EES4, EES5, EES10
	Indurs:       1       Delivery:       In Class         Course Learning Outcomes       CLO4       Essential Employability Skills         Taught:       EES3, EES4, EES5, EES10       Practiced:       EES3, EES4, EES5, EES10         Intended Learning Objectives       Take up test on Parallel Circuits.       Intended Learning Activities
	Hours:       1       Delivery:       In Class         Course Learning Outcomes       CLO4         Essential Employability Skills       Practiced:       EES3, EES4, EES5, EES10         Taught:       EES3, EES4, EES5, EES10       Practiced:       EES3, EES4, EES5, EES10         Intended Learning Objectives       Take up test on Parallel Circuits.       Intended Learning Activities         Take up test on Parallel Circuits Introduce UTP Cable.       Take up test on Parallel Circuits Introduce UTP Cable.

Wk.	Hours: 2	Delivery:	Lab		
6	Course Learning C CLO1, CLO3, CLO				
	Essential Employa	ability Skills			
		64, EES5, EES	6, EES9	Practiced:	EES4, EES5, EES6, EES9
	Intended Learning	Objectives			
	Project #5 Termination of 4 p	air Modular Plu	ugs with writte	n questions.	
	Intended Learning	Activities			
	Termination of 4 p written questions.	bair Modular plu	igs on Cat 5e	Cable. Assemble a	nd test to ensure proper operation. With
	Resources and Re	eferences			
	Ideal Electric Data	a com handout,			
	Evaluation Project: Project #5 questions.	5 Termination o	f a Modular Da	ata Plug with writte	Weighting n 5
Wk.	Hours: 1	Delivery:	In Class		
	Hours: 1 Course Learning C	-	In Class		
<b>Wk</b> .		Dutcomes	In Class		
	Course Learning C	<b>Dutcomes</b>	In Class		
	Course Learning C CLO1, CLO3, CLC Essential Employa	<b>Dutcomes</b>		Practiced:	EES2, EES6, EES7
	Course Learning C CLO1, CLO3, CLC Essential Employa	Dutcomes D4 ability Skills S2, EES6, EES		Practiced:	EES2, EES6, EES7
	Course Learning C CLO1, CLO3, CLC Essential Employa Taught: EES Intended Learning	Dutcomes D4 ability Skills S2, EES6, EES	7		EES2, EES6, EES7
	Course Learning C CLO1, CLO3, CLC Essential Employa Taught: EES Intended Learning	Dutcomes D4 ability Skills S2, EES6, EES Objectives dential smoke o	7		
	Course Learning C CLO1, CLO3, CLO Essential Employa Taught: EES Intended Learning Installation of resid	Dutcomes D4 ability Skills S2, EES6, EES Objectives dential smoke of Activities	7 detectors and o		s for single family dwellings.
	Course Learning C CLO1, CLO3, CLO Essential Employa Taught: EES Intended Learning Installation of resid	Dutcomes D4 ability Skills S2, EES6, EES Objectives dential smoke of Activities	7 detectors and o	circuit requirements	s for single family dwellings.
	Course Learning C CLO1, CLO3, CLO Essential Employa Taught: EES Intended Learning Installation of resid Demonstrate the t	Dutcomes D4 ability Skills S2, EES6, EES Objectives dential smoke of Activities	7 detectors and o	circuit requirements	s for single family dwellings.

Wk.	Hours: 2 Delivery: Lab
7	Course Learning Outcomes
	CLO1, CLO3, CLO4
	Essential Employability Skills
	Taught:EES2, EES6, EES7Practiced:EES2, EES6, EES7
	Intended Learning Objectives
	Project #6 Installation of residential smoke detectors and circuit requirements for single family dwellings. Written questions
	Intended Learning Activities
	Installation of residential smoke detectors and 1 duplex outlet with armored cable and non metallic sheathed cables. Written questions
	Resources and References
	Lab #6 Handout.
	Evaluation Weighting
	Project: Project #6 Installation of Residential Smoke detectors using 5 armored and non metallic sheathed cable with written questions.
Wk.	Hours: 1 Delivery: In Class
8	Course Learning Outcomes
0	CLO3, CLO4, CLO5
	Essential Employability Skills
	Taught:EES4, EES5, EES6, EES7, EES10Practiced:EES4, EES5, EES6, EES7, EES10
	Intended Learning Objectives
	Installations of lighting fixtures in residential buildings.
	Intended Learning Activities
	Review of requirements for lighting fixtures in residential buildings.
	Resources and References
	PowerPoints, text reference.
	<b>Evaluation</b> Project: Residential Cottage wiring layout with material list to be calculated to meet the Canadian Electrical code written project.

Wk.	Hours: 2	Delivery:	Lab						
8	Course Learning	Outcomes							
	CLO1, CLO3, CLO4, CLO5								
	Essential Employ	ability Skills							
		S1, EES4, EES S10	6, EES7,	Practiced:	EES1, EES4, EES6, EES7, EES10				
	Intended Learnin	g Objectives							
	Project #7 Install	lation of a light fi	xtures and co	ntrol from one locat	tion with written questions.				
	Intended Learnin	g Activities							
	Installation of a l power supplied a	ight fixture contro at the switch loca	olled from one ition.	e location. Power su	upplied at the light fixture and also				
	Resources and R	References							
	N/A								
	Evaluation Project: Project# questions.	7 Control of a lig	ht from one lo	ocation, with written	<b>Weighting</b> 5				
Wk.	Hours: 1	Delivery:	In Class						
<b>Wk</b> .	Hours: 1 Course Learning		In Class						
		Outcomes	In Class						
	Course Learning	Outcomes	In Class						
	Course Learning CLO3, CLO4, Cl Essential Employ	Outcomes		Practiced:	EES1, EES4, EES5				
	Course Learning CLO3, CLO4, Cl Essential Employ	Outcomes ₋O5 yability Skills		Practiced:	EES1, EES4, EES5				
	Course Learning CLO3, CLO4, Cl Essential Employ Taught: EE	Outcomes _O5 yability Skills ES1, EES4, EES g Objectives	5		EES1, EES4, EES5				
	Course Learning CLO3, CLO4, Cl Essential Employ Taught: EE Intended Learnin	Outcomes _O5 yability Skills ES1, EES4, EES g Objectives ring for Kitchens	5		EES1, EES4, EES5				
	Course Learning CLO3, CLO4, Cl Essential Employ Taught: EE Intended Learnin Installation of win	Outcomes _O5 yability Skills ES1, EES4, EES og Objectives ring for Kitchens	5 and equipme	nt installed.	EES1, EES4, EES5				
	Course Learning CLO3, CLO4, Cl Essential Employ Taught: EE Intended Learnin Installation of win	Outcomes _O5 yability Skills ES1, EES4, EES ig Objectives ring for Kitchens ig Activities ring for Kitchens	5 and equipme	nt installed.	EES1, EES4, EES5				
	Course Learning CLO3, CLO4, Cl Essential Employ Taught: EE Intended Learnin Installation of win Intended Learnin Installation of win	Outcomes _O5 yability Skills ES1, EES4, EES ig Objectives ring for Kitchens ig Activities ring for Kitchens	5 and equipme	nt installed.	EES1, EES4, EES5				

Wk.	Hours: 2	Del	livery:	Lab			
9	Course Learning Outcomes						
	CLO1, CLO3	3, CLO5					
	Essential Em	ployability S					
	Taught:	EES1, EES EES10	64, EES	5, EES7,	Practiced:	EES1, EES4, EES5, EES7, EES10	
	Intended Lea	rning Object	tives				
	Project #8 In	stallation of 3	3 way s	witch circuits	with written questio	ns.	
	Intended Lea	rning Activit	ties				
	Installation o	of 3 way switc	ch circui	its. Power su	pplied at the lamp h	older.	
	Resources a	nd Reference	es				
	N/A						
	Evaluation Project: Proj questions.	ect#8 Contro	l of a lig	ght from 2 loc	ations, with written	<b>Weighting</b> 5	
Wk.	Hours: 1	Del	livery:	In Class			
<b>Wk.</b>	Course Learr	ning Outcom	-	In Class			
		ning Outcom	-	In Class			
	Course Learr	ning Outcom 4, CLO5	nes	In Class			
	Course Learr CLO3, CLO4	ning Outcom 4, CLO5 pployability S	nes Skills	In Class 6, EES7,	Practiced:	EES4, EES5, EES6, EES7, EES9	
	Course Learr CLO3, CLO4 Essential Em	ning Outcom 4, CLO5 pployability S EES4, EES EES9	nes Skills 65, EES		Practiced:		
	Course Learr CLO3, CLO4 Essential Em Taught: Intended Lea	ning Outcom 4, CLO5 ployability S EES4, EES EES9	skills Skills S5, EES tives	6, EES7,	Practiced: aundry room, bathro	EES9	
	Course Learr CLO3, CLO4 Essential Em Taught: Intended Lea	ning Outcom 4, CLO5 ployability S EES4, EES EES9 rrning Object of special elect	<b>Skills</b> S5, EES <b>tives</b> ctrical e	6, EES7,		EES9	
	Course Learr CLO3, CLO4 Essential Em Taught: Intended Lea Installation of	ning Outcom 4, CLO5 ployability S EES9 prning Object of special elect	nes Skills S5, EES tives ctrical e	6, EES7, quipment in la	aundry room, bathro	EES9	
	Course Learr CLO3, CLO4 Essential Em Taught: Intended Lea Installation of	ning Outcom 4, CLO5 ployability S EES4, EES erning Object of special elect of special elect	bes Skills S5, EES tives ctrical e ties ectrical o	6, EES7, quipment in la	aundry room, bathro	EES9	
	Course Learr CLO3, CLO4 Essential Em Taught: Intended Lea Installation of Intended Lea Installations Resources an	ning Outcom 4, CLO5 ployability S EES4, EES erning Object of special elect of special elect	Skills Skills 55, EES tives ctrical e ties ectrical o es	6, EES7, quipment in la	aundry room, bathro	EES9	

	Hours: 2 [	Delivery:	Lab					
10	Course Learning Outco	omes						
	CLO1, CLO3, CLO4							
	Essential Employability	y Skills						
	Taught: EES1, EI EES7	ES4, EES	5, EES6,	Practiced:	EES1, EES4, EES5, EES6, EES7			
	Intended Learning Obje	ectives						
	Installation of 4 way sw	vitch contro	ols of lighting w	ith written question	1S.			
	Intended Learning Acti	ivities						
	Installation of 4 way sw	vitch contro	ols of lighting.					
	Resources and Referen	nces						
	4 way switch controls o	of lighting						
	Evaluation Project: Project#9 Con written questions.	trol of a lig	ht from 3 locati	ons or more, with	<b>Weighting</b> 5			
Wk.	Hours: 1 E	Delivery:	In Class					
11	Course Learning Outcomes							
	CLO3, CLO4, CLO5							
	CLO3, CLO4, CLO5 Essential Employability	y Skills						
	CLO3, CLO4, CLO5 Essential Employability	<b>y Skills</b> ES2, EES{	5, EES6,	Practiced:	EES1, EES2, EES5, EES6, EES7, EES9			
	CLO3, CLO4, CLO5 Essential Employability Taught: EES1, E	<b>y Skills</b> ES2, EES{ ES9	5, EES6,	Practiced:				
	CLO3, CLO4, CLO5 Essential Employability Taught: EES1, E EES7, E	<b>y Skills</b> ES2, EES ES9 ectives						
	CLO3, CLO4, CLO5 Essential Employability Taught: EES1, EI EES7, EI Intended Learning Obje	<b>y Skills</b> ES2, EES ES9 <b>ectives</b> tial service						
	CLO3, CLO4, CLO5 Essential Employability Taught: EES1, El EES7, El Intended Learning Obje Introduction to resident	y Skills ES2, EES ES9 ectives tial service ivities tial service	s and wiring me	ethods used.				
	CLO3, CLO4, CLO5 Essential Employability Taught: EES1, El EES7, El Intended Learning Obje Introduction to resident Intended Learning Actions Introduction to resident	y Skills ES2, EES8 ectives tial service ivities tial service rms and fe	s and wiring me	ethods used.				
	CLO3, CLO4, CLO5 Essential Employability Taught: EES1, El EES7, El Intended Learning Obje Introduction to resident Introduction to resident Electrical Inspection fo	y Skills ES2, EES8 ectives tial service ivities tial service rms and fe	s and wiring me	ethods used.				

Wk.	Hours: 2	Delivery:	Lab					
11	Course Learning O							
	CLO1, CLO3, CLO4, CLO5							
	Essential Employa	bility Skills						
	Taught: EES	4, EES5, EES	6, EES10	Practiced:	EES4, EES5, EES6, EES10			
	Intended Learning	Objectives						
	GFCI Receptacle in	nstallation wire	ed on the project	t board with writte	en questions.			
	Intended Learning	Activities						
	GFCI Receptacle in receptacle. With wi	nstallation wire ritten question	ed on the project s.	t board, feed thro	ough connected to a second duplex			
	Resources and Ref	ferences						
	N/A							
	Evaluation Project: Project#10 receptacle, with wr			circuit interrupter	<b>Weighting</b> 5			
Wk.	Hours: 1	Delivery:	In Class					
<b>Wk.</b> 12	Hours: 1 Course Learning O CLO3, CLO4, CLO	outcomes	In Class					
	Course Learning O CLO3, CLO4, CLO	putcomes	In Class					
	Course Learning O CLO3, CLO4, CLO Essential Employa	putcomes		Practiced:	EES3, EES4, EES5			
	Course Learning O CLO3, CLO4, CLO Essential Employa	outcomes 05 bility Skills 3, EES4, EES		Practiced:	EES3, EES4, EES5			
	Course Learning O CLO3, CLO4, CLO Essential Employa Taught: EES	bility Skills 3, EES4, EES		Practiced:	EES3, EES4, EES5			
	Course Learning O CLO3, CLO4, CLO Essential Employal Taught: EES Intended Learning	outcomes 05 bility Skills 3, EES4, EES Objectives e Calculation.		Practiced:	EES3, EES4, EES5			
	Course Learning O CLO3, CLO4, CLO Essential Employa Taught: EES Intended Learning Residential Service Intended Learning	putcomes 5 bility Skills 3, EES4, EES Objectives e Calculation. Activities	5		EES3, EES4, EES5			
	Course Learning O CLO3, CLO4, CLO Essential Employal Taught: EES Intended Learning Residential Service Intended Learning Demonstration of a	putcomes 5 bility Skills 3, EES4, EES Objectives e Calculation. Activities a residential se	5					
	Course Learning O CLO3, CLO4, CLO Essential Employa Taught: EES Intended Learning Residential Service Intended Learning Demonstration of a Connect.	putcomes 5 bility Skills 3, EES4, EES Objectives e Calculation. Activities a residential se	5					

Wk.	Hours: 2 Delivery: Lab	
12	Course Learning Outcomes	
12	CLO1, CLO3, CLO4, CLO5	
	Essential Employability Skills	
	Taught:EES3, EES4, EES5Practiced:EES3, EES4, EES5	
	Intended Learning Objectives	
	Installation of 2, 20 amp duplex receptacles on the student project boards with written questions.	
	Intended Learning Activities	
	Installation of 2, 20 amp duplex receptacles on the student project boards. with written questions.	
	Resources and References	
	N/A	
	EvaluationWeightingProject: Project#11 Installation of 20 amp 120volt receptacles and5circuits with written questions.5	
Wk.	Hours: 1 Delivery: In Class	
	•	
<b>Wk.</b> 13	Hours: 1 Delivery: In Class	
	Hours:     1     Delivery:     In Class       Course Learning Outcomes	
	Hours:     1     Delivery:     In Class       Course Learning Outcomes     CL03, CL04, CL05	
	Hours:       1       Delivery:       In Class         Course Learning Outcomes       CLO3, CLO4, CLO5       Essential Employability Skills	
	Hours: 1 Delivery: In Class Course Learning Outcomes CLO3, CLO4, CLO5 Essential Employability Skills Taught: EES4, EES5, EES7 Practiced: EES4, EES5, EES7	
	Hours: 1 Delivery: In Class Course Learning Outcomes CLO3, CLO4, CLO5 Essential Employability Skills Taught: EES4, EES5, EES7 Practiced: EES4, EES5, EES7 Intended Learning Objectives	
	Hours: 1 Delivery: In Class    Course Learning Outcomes CLO3, CLO4, CLO5  Essential Employability Skills Taught: EES4, EES5, EES7 Practiced: EES4, EES5, EES7 Intended Learning Objectives Service Grounding and Bonding.	
	Hours: 1 Delivery: In Class   Course Learning Outcomes CLO3, CLO4, CLO5 Essential Employability Skills Taught: EES4, EES5, EES7 Practiced: EES4, EES5, EES7 Intended Learning Objectives Service Grounding and Bonding. Intended Learning Activities	
	Hours:       1       Delivery:       In Class         Course Learning Outcomes       CLO3, CLO4, CLO5         Essential Employability Skills       Taught:       EES4, EES5, EES7         Taught:       EES4, EES5, EES7       Practiced:       EES4, EES5, EES7         Intended Learning Objectives       Service Grounding and Bonding.       Eese Grounding and Bonding.	

Wk.	Hours: 2	Delivery:	Lab					
13	Course Learning Outcomes							
	CLO1, CLO3, (	CLO4, CLO5						
	Essential Employability Skills							
	Taught: E	EES1, EES3, EES	4, EES5	Practiced:	EES1, EES3, EES4, EES5			
	Intended Learning Objectives							
	Control of a sp	lit switched recept	acle With writt	en questions.				
	Intended Learn	ing Activities						
	Control of a sp receptacle. Wit	lit switched recept th written question	acle with powe s.	er supplied at the s	witch and power supplied at the			
	Resources and	References						
	N/A							
	Evaluation Project: Projec with written que	ct#12 Installation c estions.	of split switche	d duplex receptacle	Weighting es 5			
Wk.	Hours: 2	Delivery:	In Class					
<b>Wk.</b>	Course Learnin	g Outcomes	In Class					
		g Outcomes	In Class					
	Course Learnin	n <b>g Outcomes</b> CLO5	In Class					
	Course Learnin CLO3, CLO4, ( Essential Emple	n <b>g Outcomes</b> CLO5	In Class	Practiced:	EES4, EES7			
	Course Learnin CLO3, CLO4, ( Essential Emple	og Outcomes CLO5 Oyability Skills EES4, EES7	In Class	Practiced:	EES4, EES7			
	Course Learnin CLO3, CLO4, C Essential Emplo Taught: E Intended Learn	og Outcomes CLO5 Oyability Skills EES4, EES7		Practiced:	EES4, EES7			
	Course Learnin CLO3, CLO4, C Essential Emplo Taught: E Intended Learn	ig Outcomes CLO5 oyability Skills EES4, EES7 ing Objectives idential Cottage La		Practiced:	EES4, EES7			
	Course Learnin CLO3, CLO4, C Essential Emplo Taught: E Intended Learn Review of Resi Intended Learn	ig Outcomes CLO5 oyability Skills EES4, EES7 ing Objectives idential Cottage La	ayout.		EES4, EES7			
	Course Learnin CLO3, CLO4, C Essential Emplo Taught: E Intended Learn Review of Resi Intended Learn	ig Outcomes CLO5 Oyability Skills EES4, EES7 ing Objectives idential Cottage La ing Activities project Residentia	ayout.		EES4, EES7			
	Course Learnin CLO3, CLO4, C Essential Emplo Taught: E Intended Learn Review of Resi Intended Learn Review of final	ig Outcomes CLO5 Oyability Skills EES4, EES7 ing Objectives idential Cottage La ing Activities project Residentia	ayout.		EES4, EES7			

Wk.	Hours: 1 Delivery: In Class	
14	Course Learning Outcomes	
	CLO2, CLO3, CLO4, CLO5	
	Essential Employability Skills	
	Taught:EES1, EES2, EES4Practiced:EES1, EES2, EES4	
	Intended Learning Objectives	
	Short Video promotions and links	
	Intended Learning Activities	
	Introduce Apprenticeship Resources for the Electrical Trade and DC Connect links to assist the student in seeking further studies.	ts
	Resources and References	
	ECAO resources.	
	Evaluation	
	Project: Residential Cottage wiring layout with material list to be calculated to meet the Canadian Electrical code written project.	