Fleming College

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Course Outline

Course Title:	Installation Practices		
Course Number:	ELCT107	**Approval Date:**	2018/9/9
Course Hours:	75 hours	**Academic Year:**	2018
Academic School:	School of Trades & Technology		

Faculty:	Ainsley Geddes - Ainsley.Geddes@flemingcollege.ca
Program Co-ordinator or Equivalent:	Warren Cottrell - Warren.Cottrell@flemingcollege.ca
Dean (or Chair):	Jason Jackson - jason.jackson@flemingcollege.ca

Course Description

Upon successful completion of this course, the student will be able to demonstrate the safe operation of common hand and power tools AND to use those tools to install common switching devices, outlets and enclosures while correctly terminating conductors in a residential construction setting. The learner will further be able to demonstrate the installation procedures for non-metallic sheathed cable, armoured cable, LVT, CAT5, RG6, rigid and flexible raceway installation methods. Furthermore, the learner will be introduced to the basic across-the-line motor starter, low-voltage release and low-voltage protection. This course also serves to introduce network cabling concepts, trade safety, codes/standards and installation methods. In this course, the student will gain the knowledge and skills to safely and effectively install, operate and maintain building electronic systems. These systems include structured cabling, AV, telecommunications, network and security wiring in residential buildings.

Prerequisites: None.

Corequisites: None.

Learning Outcomes

Upon successful completion of this course, students will be able to:

1. Become familiar with basic extra low voltage electrical circuits and be able to demonstrate the proper installation procedures and wiring connections for them.

2. Demonstrate the correct installation procedures and wiring connections for common residential switching devices and outlets, ensuring adherence to the Canadian Electrical Code (CEC) and National Building Code (NBC) regulations.
3. Demonstrate the correct wiring connections for simple relay circuits.
4. Become familiar with proper installation procedures required for non-metallic sheathed cable (NMSC), armoured cable, electrical metallic tubing (EMT) and flexible conduit.
5. Prepare and use wiring diagrams, layout diagrams and schematics as part of the wiring labs.
6. Install, prepare and test basic coaxial and Ethernet cables and connections
7. Select and use hand tools effectively. Be knowledgeable of tools and equipment specific to the electrical trade.
8. Select, use and interpret basic test instruments, including voltage testers, communication cable testers and multimeters.
9. Select and use basic fasteners common to the electrical industry.
10. Demonstrate basic electrical and construction safety practices.

Learning Resources

- Electrical Code Simplified (Based on the 24th Edition of the Canadian Electrical Code), P.S.Knight, 2018
- Safety Boots, CSA approved Hard Hat and Safety glasses with non-tinted lenses (to be worn at all times in labs)
- Coloured pens or pencils

Assessment Summary

Assessment Task	Percentage
Labs	75%
Tests	25%

Student Success: Policies and Procedures

Mutually, faculty and learners will support and adhere to college Academic Regulations, and Student Rights and Responsibilities. The following policies and guidelines have been developed to support the learning process.

Please click on the link for information about:

- Academic Integrity (2-201A) (https://department.flemingcollege.ca/hr/attachment/7750/download)

- Accessibility for Persons with Disabilities (3-341) (https://department.flemingcollege.ca/hr/attachment/5619/download)
- Grading and Academic Standing (2-201C) (https://department.flemingcollege.ca/hr/attachment/7752/download)
- Guidelines for Professional Practice: Students and Faculty (https://flemingcollege.ca/PDF/guidelines-for-professional-practice-students-faculty.pdf)
- Student Rights and Responsibilities (5-506) (https://department.flemingcollege.ca/hr/attachment/269/download)

Alternate accessible formats of learning resources and materials will be provided, on request.

Program Standards

The Ministry of Training, Colleges and Universities oversees the development and the review of standards for programs of instruction. Each college is required to ensure that its programs and program delivery are consistent with these standards, and must assist students to achieve these essential outcomes.

This course contributes to Program Standards as defined by the Ministry of Training, Colleges and Universities (MTCU). Program standards apply to all similar programs of instruction offered by colleges across the province. Each program standard for a postsecondary program includes the following elements:

- **Vocational standards** (the vocationally specific learning outcomes which apply to the program of instruction in question);
- **Essential employability skills** (the essential employability skills learning outcomes which apply to all programs of instruction); and
- **General education requirement** (the requirement for general education in postsecondary programs of instruction that contribute to the development of citizens who are conscious of the diversity, complexity and richness of the human experience; and, the society in which they live and work).

Collectively, these elements outline the essential skills and knowledge that a student must reliably demonstrate in order to graduate from the program. For further information on the standards for your program, follow the MTCU link (www.tcu.gov.on.ca/pepg/audiences/colleges/progstan/)

Detail Plan

Term:	2018 Fall	**Session Code:**	1

Faculty:

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Program Co-ordinator or Equivalent:	Warren Cottrell - Warren.Cottrell@flemingcollege.ca
Dean (or Chair):	Jason Jackson - jason.jackson@flemingcollege.ca

Learning Plan

Wks/Hrs Units	Topics, Resources, Learning, Activities	Learning Outcomes	Assessment
Module 1	Introduction, lab rules, general lab safety. Extra-low voltage circuits.	1,10	
Module 2	Simple circuits. Extra-low voltage circuits. Introduction to transformers.	1,2,5,7,8,10	ELV Buzzer Lab 1 ELV Buzzer Lab 2 ELV Buzzer Lab QUIZ #1
Module 3	Simple circuits. Extra-low voltage circuits. Basic meter use. Basic hand tools	1,2,5,7,8,10	ELV Buzzer Lab 3 ELV Buzzer Lab 4 ELV Buzzer Lab QUIZ #2
Module 4	Basic electrical knowledge and components. NMSC lighting branch circuit. Basic meter use. Basic fasteners	1,2,5,7,8, 9,10	ELV Buzzer Lab 5 ELV Buzzer Lab 6 ELV Buzzer Lab QUIZ #3
Module 5	Residential wiring.	2,5,7,8, 9,10	NMSC Lab 1 NMSC Lab 2 NMSC Lab QUIZ #1
Module 6	NMSC 3-way switching & 4-way switching. Flexible conduit. Review.	2,4,5,7,8,10	NMSC Lab 3 NMSC Lab 4 NMSC Lab QUIZ #2
Module 7	Mid-Term Test	1,2,4,5,7,8,9,10	Lab Make Up Mid-Term Test
Module 8	Independent study week		

Wks/Hrs Units	Topics, Resources, Learning, Activities	Learning Outcomes	Assessment
Module 9	NMSC combination circuits. NMSC 3-way switching & 4-way switching. Introduction to relays.	3,5,7, 8, 9, 10	NMSC Lab 5 NMSC Lab 6 NMSC Lab QUIZ #3
Module 10	NMSC 3-way switching & 4-way switching. Introduction to relay circuits, NO, NC contacts. 2-wire and 3-wire control. Fail-safe circuits	1,3,5,7, 8, 9, 10	NMSC Lab 7 NMSC Lab 8 NMSC Lab QUIZ #4
Module 11	Relay wiring. 2-wire and 3-wire control.	1,3,5,7, 8, 9, 10	Relay Lab 1 Relay Lab 2 Relay Lab QUIZ #1
Module 12	Parallel and series circuits. Fail-safe circuits. Metal tapping and drilling.	1,3,5,7,8,9,10	Relay Lab 3 Relay Lab 4 Relay Lab QUIZ #2
Module 13	Parallel and series circuits. Fail-safe circuits. Network cabling.	1,3,5,6,7,8,9,10	Relay Lab 5 Relay Lab 6 Relay Lab QUIZ #3
Module 14	Network cabling Review	1,2,3,4,5,6,7,8,9,10	Networking Lab 1 Networking Lab 2 Networking Lab QUIZ
Module 15	Final Test	1,2,3,4,5,6,7,8,9,10	Lab Make Up Final Test

Assessment Requirements

Assessment Task	Date/Weeks	Course Learning Outcome	Percentage
22 Labs and 11 online lab quizzes	Weekly		75%
Mid-term Test	Week 7		10%
Final Test	Week 15		15%

Exemption Contact

Program Coordinator: Warren Cottrell warren.cottrell@flemingcollege.ca.

Prior Learning and Assessment and Recognition (PLAR)

PLAR uses tools to help learners reflect on, identify, articulate, and demonstrate past learning which has been acquired through study, work and other life experiences and which is not recognized through formal transfer of credit mechanisms. PLAR options include authentic assessment activities designed by faculty that may include challenge exams, portfolio presentations, interviews, and written assignments. Learners may also be encouraged and supported to design an individual documentation package that would meet the learning requirements of the course. Any student who wishes to have any prior learning acquired through life and work experience assessed, so as to translate it into a college credit, may initiate the process by applying through the Registrar's office. For more information please click on the following link: http://flemingcollege.ca/admissions/prior-learning-assessment-and-recognition

Course Specific Policies and Procedures

It is the responsibility of the student to retain this course outline for future reference. Course outlines may be required to support applications for advanced standing and credit transfer to other educational institutions, portfolio development, PLAR and accreditation with professional associations.

Course Specific Policies and Procedures

Safety in the Labs:

SAFETY CONTRACT: Safety Contracts will be handed out to students during your first lab time or you it is also available to you on D2L. This contract must be read, understood and you must sign a copy and hand in to your lab instructor to be allowed participation in the lab area.

PPE (Personal Protective Equipment): PPE is MANDATORY for entry into the lab area and is to be worn at all times while in the lab area. PPE requirements are posted at all entry points into the lab area and a list of mandatory PPE is also available to you on D2L. Students that do not have the required PPE or who perform any unsafe actions will be removed from the lab and will receive a zero grade for that lab. Repeat offences may lead to further penalties in accordance with college policies. Refer to the college website for more details.

Students will conduct themselves, at all times, in a responsible manner, with due regard to the safety of themselves and other users of the facilities. Horseplay, etc. will not be tolerated. Care needs to be exercised in the use of tools and equipment especially in the vicinity of others. Anyone showing signs of having consumed alcohol or displaying signs of any kind of intoxication, etc. will not be permitted in the workshops.

Absences/Missed Labs:

Students are expected to have **all required course resources (i.e., PPE, coloured writing utensils, textbook), attend all classes, attend all labs, and to attend ON TIME.**

If a student is absent or has missed a lab or lecture, it is the responsibility of the student to obtain any missed work from a classmate who was present and to be prepared to reschedule the missed labs during ‘Make-Up' Lab time (Week 7 for the first half of the semester labs and Week 15 for the second half of the semester). Despite missing the scheduled labs, the student is still responsible for completing the online quiz related to the missed labs in the period the quiz is available online. As noted below, failure to complete the lab quizzes will result in grade reductions for the relevant installation lab mark.

NO TOLERANCE Late Policy: Students who arrive at their scheduled lab time more than 10 minutes late will not be allowed to participate in that lab period. This will be considered a “missed lab” and student responsibilities noted above for missed labs applies. Students are expected to be on time for their scheduled lab time as there is a 30 to 60 minute introductory discussion and safety briefing at the start of every lab.

At least 80% of the labs (17 of 22) must be completed; failure to meet this requirement will result in an INCOMPLETE grade in the course which will become a fail grade F on the student transcript.

NOTE: Special circumstances and illness will be dealt with on a case by case basis. For example, the instructor reserves the right to extend deadlines or assign alternate work for illness accompanied by a doctor note if appropriate to do so.

Grading:

Each lab installation has an assigned rubric clarifying the grading system and installation expectations. Projects will be marked on an "as seen" basis, as and when, the student calls for a project to be assessed. Marks will be assessed on several components, including but not limited to, correctness, compliance with code, neatness, time taken to complete the installation, assistance required and housekeeping. The project must meet the standards of the Professor, and/or code requirements, if not, the project will be deemed incomplete until it is brought up to that standard. Diagrams completed in lab should be neat, using templates or a straightedge and appropriately colour coded with the course required coloured pens or pencils.

Students must individually complete all online quizzes in the allotted time slots.

NOTE: Missed tests and assignments will not be rescheduled and will count as zero unless prior arrangements have been made with the Professor. IMPORTANT: Good time management and advanced planning will play a key role in enabling the student to satisfactorily complete all the required elements of this course.

Online Quizzes:

For every lab period, there is a corresponding online quiz that is to be completed within an allotted time. A detailed schedule of the required lab times, related quizzes and time allotted for these quizzes is available on D2L. NOTE: After the scheduled allotted times, the quizzes will be closed and no longer available.

Any quizzes not completed will result in a 25% deduction for each related lab installation. For example, if the student completed and scored consecutively 9/12 and 7/12 on NMSC Labs #3 and #4, however, the student did not complete the related quiz (NMSC Lab Quiz #2) in the allotted time, the student's scores for NMSC Labs #3 and #4 would be reduced to 6/12 and 4/12 respectively. The assigned quizzes are a reflection of the students understanding of the lab work and are consequently an important part of the learning process.

In-class Testing Policy:

1. The following items are NOT allowed: Cellphones, iPads, or any electronic devices.
2. Professors, Instructors and Invigilators are authorized to inspect all equipment and materials used inside a testing facility.
3. No conversation is allowed once students are seated in the test room. When the test is in progress no communication of any sort between students will be allowed in the test room. Violation is a breach of academic integrity.
4. Any breach of academic integrity during a test will result in expulsion from the test, a mark of zero for that test, and may lead to further disciplinary action in accordance with college policies.
5. If a test is missed, the student will receive a mark of zero (0) for that test. A student who misses a test/exam due to a legitimate emergency must submit details with evidence in writing to the professor/coordinator of the course ***within*** *3 business days of the test date.* Independent documentation will be required and submitted to the Dean/Delegate for approval. Only truly extenuating circumstances will be considered. The student will receive a reply from the Coordinator.

Other:

1. The instructor reserves the right to modify the course content and sequence based on interest and time constraints after consultation with the students in the class.

2. Fleming College opposes any form of academic dishonesty, such as plagiarism, submission of work for which credit has already been received; cheating, impersonation; falsification or fabrication of data; the acquisition of confidential material, e.g., examination papers; misrepresentation of facts; altering transcripts or other official documents. Please see Academic Regulations Policy for more information on Academic Integrity.

3. To gain the most possible benefit from this skill developing course, students need to attend classes. Learning takes place when you become engaged in the learning process. Your instructor may be recording attendance data and will report absences, late arrivals and early departures to your program co-ordinator. Students that have significant absences may be assigned an INCOMPLETE status in the course and a fail F grade.

4. Results of evaluations will only be distributed to the relevant learner. Those learners who are not available to receive the evaluation in class are required to retrieve their results from the instructor. Learners should maintain a cumulative record of their evaluations.

5. All tests must be written in class on the scheduled dates. If a test is missed a grade of zero will be assessed.

6. Announcements to the class, including confirmation of deadlines for assignments, exercises and test dates, will be made in class or by email. Only the student college email account will be used. Learners who are absent should obtain such announced information from a classmate who was present. The deadlines for the assignments will be indicated on the assignment handouts and/or announced when the assignment is given.

7. Final grades in this course are assigned based on the level of achievement that corresponds to the assessment components as cited in the course outline. It is important to note that faculty member(s) will not offer additional evaluation activities (**NO CREDIT RECOVERY**) beyond those cited in the course outline.