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Iowa Lakes Community College is committed to ensuring that all programs and services, including electronic and our website (www.iowalakes.edu), are accessible to people with disabilities. In accordance with the provisions of Sections 504 and 508 of the Rehabilitation Act and the Americans with Disabilities Act (ADA), Iowa Lakes provides students, faculty, staff, and visitors with reasonable accommodations to ensure equal access to the programs and activities of the college. For more information visit: <https://www.iowalakes.edu/educational-counseling-services/accommodations-disability-resources>.

Doug Zemler is Electrical Technology Program Coordinator at Iowa Lakes Community College.

Updated in 2017, this course covers an introduction to residential electrical wiring and is offered in credit programs in a face-to-face format.

Course Syllabus

Electrical Wiring Commercial

Wednesday 10 am-12 pm Lecture

Thursday 10 am-12 pm Lab

Spring Semester/2018

Iowa Lakes Community College
3200 College Drive
Emmetsburg, IA 50536

Instructor Name: Doug Zemler

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Office Hours: As posted on office door

Catalog Description: This course introduces students to commercial wiring. It begins with the planning of the commercial installation by using blueprints, layout, and calculations. They will be required to calculate load for branch circuits, feeders and the electrical service. Wiring methods, luminaires, motors

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and overcurrent protection will also be covered. The National Electrical Code requirements will be used and explained to understand how they are applied to commercial installations. The labs will consist of bending conduit and use hand tools for wiring methods and practices.

Prerequisites: Electrical Wiring Residential

Credits: 3

Text & Additional Materials: Electrical Wiring Commercial, Delmar Thompson Learning. Electrical Grounding and Bonding, Phil Simmons, Delmar Cengage Learning

Course Objectives/Competencies:

Determine, discuss and describe safety in the workplace

Discuss commercial building specifications

Describe working drawings

Discuss codes and organizations

Describe and use the NEC

Describe and discuss electrical symbols

Discuss and calculate electrical load

Discuss lighting loads

Discuss motors and appliance loads

Describe conductor selection

Determining conductor components

Defining branch circuits

Discuss switches and receptacles

Discuss and install RMC conduit

Discuss and install IMC conduit

Discuss and install EMT conduit

Discuss Flexible connections

Discuss and install AC and MC cable

Discuss and install PVC conduit

Discuss and install ENT conduit

Describe types of benders

Use a hand bender

Use a hydraulic bender

Use formulas to determine bends

Demonstrate using a hacksaw

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Demonstrate using a pipe cutter
Demonstrate threading pipe
Demonstrate reaming pipe
Make a box offset
Bend a 90° stub-up
Bend a standard offset
Bend a three bend saddle
Bend a four bend saddle
Bend a back to back
Bending surface metal raceway
Bend PVC conduit
Determine raceway sizing
Discuss boxes
Explain raceway support
Discuss motors and appliances
Discuss feeder requirements
Determine voltage drop
Discuss surface metal raceways
Discuss multi-outlet assemblies
Explain communication systems
Discuss floor outlets
Discuss special circuits
Discuss panelboards
Describe the working space around electrical equipment
Discuss transformers
Describe transformer overcurrent protection
Discuss transformer connections
Discuss what a service entrance is
Discuss metering
Discuss service entrance equipment
Describe grounding and bonding
Discuss lighting terminology
Discuss incandescent luminaires
Discuss florescent luminaries
Discuss HID luminaries
Discuss LED luminaries
Discuss luminaries
Explain emergency generators

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Discuss disconnect switches
Explain fuses and circuit breakers
Determine short circuit calculations
Describe coordination of overcurrent protective devices
Describe conductor withstand rating
Discuss conductor heating
Discuss tap conductors
Explain refrigeration
Explain what an evaporator is
Explain what a compressor does
Explain what a condenser is
Explain what an expansion valve does
Explain what a hermetic compressor does
Describe cooling system controls
Describe electrical requirements for air conditioning and refrigeration equipment

Course Schedule/Outline (Units of Instruction):

Commercial Building Plans
Reading Electrical Working Drawings
Calculating Electrical Load
Branch Circuits
Devices
Wiring Methods
Motors and Appliances
Special Systems
Working Drawings
Panelboard Selection
Electric Service
Luminaries
Emergency and Standby Systems
Overcurrent Protection
Short Circuit Calculations
Low Voltage Remote Control
Cooling System

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Methods of Instruction: Course will consist of two hours of lecture period, once each week, which may include covering text book assignments, discussion, demonstrations and other methods to be determined by the instructor.

Grading Policies:

Scale: A = 90% to 100%
B = 80% to 89%
C = 70% to 79%
D = 60% to 69%
F = Less than 60%

Grading Policy: The instructor will determine the weight of each assessment towards overall points. Graded components are as follows:

Attendance
Assignments
Labs
Tests & Quizzes
Final Exam
Final Lab
Participation

Other Expectations: I believe that for learning to take place students must be actively involved. For this reason, I place emphasis on class attendance. Students are expected to attend all classes and labs. Attendance will be taken at the beginning of class. If you are late, you will not be given attendance credit for that day (remember, 10 percent of your grade is attendance). If you are late, enter the classroom quietly and do not disturb your fellow students. I give a ten-minute break during lectures. Use the restrooms at that time or get your drink. If you leave the classroom during lecture, you will be docked 10 points (other than emergency situations). If students are unable to attend classes, labs, or tests, the instructor is to be notified, by email or voice mail, before absence occurs. Three consecutive class absences require me to notify the main campus and they will get in touch with you. Habitual absences of three or more will go against your participation grade for the class (20 percent of your grade).

Students who are excused by the instructor will be allowed to make up work and tests. If you miss a class, it is your responsibility to get copies of notes or assignments from a fellow student. If you miss an assignment, you have one week to complete assignment. After that one week, if the work has not been

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turned in, you will receive zero points for the assignment. Students who are absent and have not notified the instructor will receive a 20 percent deduction on tests and assignments. Extra credit will not be given in this class. Incompletes are only issued when a student can establish a completion date. If you need to leave class early, let the instructor know ahead of time and leave quietly. Students who wish to leave the room while the test is in progress must submit their exam as completed. Deadlines for turning in labs, lab books, assignments and tests is strictly enforced (no exceptions). You need to listen to your instructor when that deadline is and write it down (no excuses).

Cell phone use (including texting) is prohibited in lecture and labs. If you are caught using your phone (except for an emergency situation) you will be docked 10 points for the day. If you are expecting an emergency call, please let me know prior to class (birth, family illness, etc.).

Students may use a laptop computer to take notes during lecture, provided it does not cause a distraction. The instructor will not notify students individually if assignments or deadlines are missed.

Students should utilize instructor office hours to determine missed assignments and grades.

Students are responsible for learning the course material covered during their absence.

Students are expected to conduct themselves in a professional manner.

Any behavior which is disruptive or unsafe may be grounds for removal from class.

Foul, profane, or vulgar language will not be tolerated in the classroom or in the field and a student or students will be told to leave the class. No smoking or chewing tobacco is allowed on campus grounds.

Students must abide by all policies as stated in the Iowa Lakes Community College Student Handbook.

Students should be aware that classes might be audio or video recorded by one or more students. The college's policies governing the audio or video recording of class are included in the Student Handbook. Students who have any questions or concerns about class recordings should address their questions or concerns with the instructor at the *beginning of the semester*.

STUDENT ACADEMIC HONESTY POLICY

Iowa Lakes Community College believes that personal integrity and academic honesty are fundamental to scholarship. Iowa Lakes strives to create an environment where the dignity of each person is recognized and an atmosphere of mutual trust exists between instructors and students. The faculty has confidence in the integrity of the students and encourages students to exercise good judgment in fulfilling this responsibility.

Actions contrary to academic integrity will not be tolerated. Activities that have the effect or intention of interfering with learning or fair evaluation of a student's work or performance are considered a breach of academic integrity. Examples of such unacceptable activities include, but are not limited to:

- **Cheating** (intentionally using or attempting to use unauthorized material, assistance or study aids in my academic work). For example, using a cheat sheet for a test, looking at another student's paper during an exam, stealing or buying all or parts of an exam or paper, altering and resubmitting work for a better grade without prior approval to do so, etc.

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- **Plagiarism** (representing another's ideas, words, expressions or data in writing or presentation without giving proper credit, failing to cite a reference or failing to use proper documentation, using works of another gained over the Internet and submitted as one's own work).
- **Falsification and/or misrepresentation of data** (submitting contrived or made-up information in any academic exercise). For example, making up data, citing non-existent sources, etc.
- **Facilitating Academic Dishonesty** (knowingly helping or attempting to help another violate any provision of the academic honesty policy). For example, working together on a take-home exam or other assignment when the option has not been made available, giving a paper/assignment to another student for his/her use, etc.
- **Multiple Submissions** (submitting, without prior approval from the instructor involved, any work submitted to fulfill academic requirements in another class). For example, submitting the same paper for two different classes, etc.
- **Unfair Advantage** (trying to gain unauthorized advantage over fellow students). For example, gaining or facilitating unauthorized access to exam materials (past or present); interfering with another student's efforts in an academic exercise; lying about the need for an extension on a paper or assignment; destroying, hiding, removing or keeping library materials, etc.

Disciplinary Action

Any violation of this policy will be treated as a serious matter. The instructor has primary responsibility over classroom behavior and maintaining academic integrity. Students who earn an "F" based on any violation of the Student Academic Honesty Policy may not withdraw from the class (and receive a grade of W). Depending on the nature and severity of the offense, Iowa Lakes Community College reserves the right to exercise disciplinary action as outlined in the Disciplinary Action Section of the Student Handbook.

Americans with Disabilities Act – Policy of Nondiscrimination

It is Iowa Lakes Community College policy to not discriminate against qualified individuals with disabilities and to provide reasonable accommodation(s), as required by law, to otherwise qualified applicants for admission or to students with disabilities in all education programs, activities, services and practices, including application procedures, admissions, course selection, the awarding of degrees, discipline and dismissal. Educational opportunities will not be denied to an otherwise qualified application or student because of the need to make reasonable accommodation(s) or modification(s) for the physical and mental impairment(s) of any such individual.

Iowa Lakes Community College students needing reasonable accommodation(s) and/or modification(s) should contact Jody Condon by phone at (712) 852-5219 or via email at jcondon@iowalakes.edu. To assure that accommodation(s) and/or modification(s) will be ready when classes start, students must make the request as soon as possible, before a semester begins.

It is the policy of Iowa Lakes Community College not to discriminate on the basis of sex, race, national origin, creed, age, marital status or disability in its education programs, activities, or employment policies, as required by Titles VI and VII of the 1964 Civil Rights Act, Title IX of the 1972 Educational Amendments, Section 504 of the Federal Rehabilitation Act of 1973 and Title II of the Americans with Disabilities Act (ADA) of 1990.

Inquiries regarding compliance with Title IX, Title VI, Title VII, or Section 504 may be directed to Kathy Muller, Human Resources, Iowa Lakes Community College, 19 S. Seventh Street, Estherville, IA 51334, telephone (712) 362-0433; to the Director of the Iowa Civil Rights Commission, Des Moines; or to the Director of the Region VII Office of Civil Rights, Department of Education, Kansas City, Missouri.

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