



DEPARTMENT OF APPLIED COMPUTING AND ENGINEERING
TECHNOLOGY ENERGY TECHNOLOGY PROGRAM

COURSE INFORMATION

Instructor	William Hillman
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Credits	6

RELATIONSHIP TO PROGRAM(S)

This course gives Facility Management students the basic knowledge to maintain building electrical systems and to supervise electrical professionals that are doing contract work on the building.

DESCRIPTION

The electrical laws and principles pertaining to DC and AC circuits. Includes current, voltage, resistance, power, load, panels, feeders, lamps, motors, and fuses. Introduction to wiring methods and materials in conformance with the National Electric Code (NEC). Includes installation and replacement of raceways, light fixtures, heaters, GFCI's, switches, receptacles, and electrical thermostats.

COURSE OBJECTIVES

At the completion of this course students should be able to:

- 1) Understand the basic concepts of electricity, including building wiring circuits
- 2) Test electrical systems with an electrical meter
- 3) Do basic calculations to determine amperage and power use
- 4) Understand the applications of various electrical equipment used in building systems
- 5) Install raceways

PRODUCTION AND TESTING

The Student is expected to practice chapter/unit activities independently until student feels proficient. Participation in discussion forums may be a component of this course. It is the expectation that in-class production or homework assigned outside of class will be turned in when due. It is the student's responsibility to check due dates and turn in assignments when due. Tests will be written or produced using a computer. Makeup for a missed test is not offered unless faculty is notified and guidelines are identified for the individual situation before each test. Students may be able to make up a missed test for emergency situations such as sickness or required work activities, but must submit documented excused absences such as a doctor note identifying excused dates or mandatory work related travel dates in a timely manner.





REQUIRED TEXTS/MATERIALS

ISBN 9781580114875 Creative Homeowner Ultimate Guide to Wiring 7th Edition

ISBN 0131190857 Electricity, Electronics and Wiring Diagrams for HVAC/R Edward Mahoney

ISBN 013382959-6 NCCER Electrical 8th Edition Level 1

REQUIRED LABORATORY SUPPLIES

USB jump drive is required for backing up student data and for file management

ASSESSMENT/GRADING POLICIES

90 - 100 = A

80 - 89 = B

70 - 79 = C

60 - 69 = D

GRADING SUMMARY

45% Projects

45% Exams

10% Attendance/Participation

LATE WORK

Late assignments and missed Quizzes or Exams will receive a score of zero. If you have an extenuating circumstance that will prohibit you from meeting a deadline, please contact me well in advance of the deadline and I will make reasonable accommodations.

DISABILITY ACCOMMODATIONS POLICY

Students with disabilities may request reasonable modifications by contacting me. The University of Montana assures equal access to instruction through collaboration between students with disabilities, instructors, and Disability Services for Students. "Reasonable" means the University permits no fundamental alterations of academic standards or retroactive modifications.





TOPICAL OUTLINE

- I. Reading Building and Electrical Plans
 - A. Specifications
 - B. Electrical codes
 - C. Plans
- II. Branch Circuits and Feeders
 - A. Lighting loads
 - B. Motor loads
 - C. Determining wire size
 - D. Feeders
 - E. Overcurrent protectors
 - F. Voltage drop
 - G. Energy savings
- III. Switches and Receptacles
 - A. Switches
 - 1. Snap
 - 2. Single pole
 - 3. Double pole
 - 4. Three way
 - 5. Four way
 - B. Receptacles
 - 1. Hospital grade
 - 2. Electronic equipment
 - 3. GFCI's
- IV. Branch Circuit Installation
 - A. Conduit
 - 1. Rigid metal
 - 2. Electrical metallic
 - 3. Intermediate Metal
 - 4. Non-rigid Metallic
 - 5. Sizing
 - B. Installation
 - 1. Flexible connections
 - 2. Box styles
 - 3. Raceway support
- V. Luminaries
 - A. Incandescent lamps
 - 1. Installation
 - 2. Loading
 - 3. Location
 - B. Fluorescent lamps
 - 1. Installation
 - 2. Loading
 - 3. Location

