BME 122T.01: Electricity

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MISSOULA COLLEGE of the
UNIVERSITY OF MONTANA
INDUSTRIAL TECHNOLOGY DEPARTMENT

COURSE SYLLABUS

COURSE NUMBER AND TITLE: BME 122T Electricity

DATE REVISED: January 2015

SEMESTER CREDITS: 5

PREREQUISITES: None

FACULTY: Bill Hillman
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OFFICE LOCATION: T&T II, West Campus
OFFICE HOURS: By appointment OR as posted on Faculty Office Door

RELATIONSHIP TO PROGRAM(S):
This course gives the Building Maintenance students the basic knowledge to maintain building electrical systems and to supervise electrical professionals that are doing contract work on the building.

COURSE 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 light fixtures, heaters, GFCI's, switches, receptacles, and electrical thermostats.

STUDENT PERFORMANCE OUTCOMES:
Occupational Performance Objectives
Upon completion of this course, the student will 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. Explain the operation and application of switches, lamps, motors, and receptacles.
STUDENT PERFORMANCE ASSESSMENT METHODS AND GRADING PROCEDURES:

Grading Scale:
   90% - 100%  =  A  
   80% -  89%   =  B  
   70% -  79%   =  C  
   60% -  69%   =  D  
   less than 60%  =  F  

NOTE: Courses must be passed with a ‘C minus (C-)’ or greater to count toward degree/certificate requirements.

Grade Breakdown:

Tests               75%  
Lab Project         15%  (Based on participation, and quality of work)  
Attendance          10%  (Attendance will be taken at the beginning of class. If the student is not present at that time they will be marked absent for the class that day.)  

Note:
1. Tests will be as required.
2. Safety glasses are required when in the lab.

HOW VARIOUS ASSESSMENT METHODS WILL BE USED TO IMPROVE THE COURSE:
1. Student course evaluations  
2. Peer feedback  
3. Advisory committee feedback  

ATTENDANCE POLICY: Attendance will be taken at the beginning of class. If the student is not present at that time they will be marked absent for the class that day.

REQUIRED TEXT:  Ultimate Guide to Wiring, Publisher: Creative Homeowner  

ACADEMIC INTEGRITY: All students must practice academic honesty. Academic misconduct is subject to an academic penalty by the course instructor and/or a disciplinary sanction by the University. All students need to be familiar with the Student Conduct Code. The Code is available for review online at http://www.umontana.edu/SA/VPSA/index.cfm/page/1321.

DISABILITY ACCOMMODATION: Eligible students with disabilities will receive appropriate accommodations in this course when requested in a timely way. Please contact me after class or in my office. Please be prepared to provide a letter from your DSS Coordinator. For more information, visit the Disability Services website at http://www.umontana.edu/dss/ or call 406.243.2243 (Voice/Text).  

NOTE: Faculty reserves the right to modify syllabi and assignments as needed based on faculty, student, and/or environmental circumstances.
COURSE 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