

University of Montana

ScholarWorks at University of Montana

Syllabi

Course Syllabi

1-2015

BME 130T.01: Heating and Air Conditioning

William J. Hillman

University of Montana - Missoula

Follow this and additional works at: <https://scholarworks.umt.edu/syllabi>

Let us know how access to this document benefits you.

Recommended Citation

Hillman, William J., "BME 130T.01: Heating and Air Conditioning" (2015). *Syllabi*. 3065.

<https://scholarworks.umt.edu/syllabi/3065>

This Syllabus is brought to you for free and open access by the Course Syllabi at ScholarWorks at University of Montana. It has been accepted for inclusion in Syllabi by an authorized administrator of ScholarWorks at University of Montana. For more information, please contact scholarworks@mso.umt.edu.

**MISSOULA COLLEGE of the
UNIVERSITY OF MONTANA
INDUSTRIAL TECHNOLOGY DEPARTMENT**

COURSE SYLLABUS

COURSE NUMBER AND TITLE: BME 130T Heating and Air Conditioning

DATE REVISED: January 2015

SEMESTER CREDITS: 6

PREREQUISITES: None

INSTRUCTOR: Bill Hillman
E-MAIL: william.hillman@umontana.edu
PHONE: (406) 243-7645
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 heating, ventilating, and air conditioning systems and to supervise professionals that are doing this type of contract work on the building.

COURSE DESCRIPTION:

The fundamentals of heating, ventilating, and air conditioning. Covers heating and refrigeration cycles, gas furnaces, refrigerants, system evacuation and charging, and components used in associated systems. Introduces the basic mechanical service procedures used in the industry.

STUDENT PERFORMANCE OUTCOMES:

Occupational Performance Objectives

Upon completion of this course, the student will be able to:

1. Understand the basic concepts of heating, ventilating, and air conditioning.
2. Understand the basic refrigeration cycle.
3. Know how to use the tools and equipment of the trade.
4. Describe the fundamentals of system evacuation and charging.

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. Late tests will be reduced one letter grade.
3. Late tests will not be accepted after one week.
4. 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: **Modern Refrigeration and Air Conditioning** by Althouse, Turnquist, Bracciano

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.umt.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.umt.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. Gas Heating Systems
 - A. Gas Combustion
 - B. Controls
 - C. Safety Devices
 - D. Ignition
 - E. High Efficiency Furnaces
- II. Controls
 - A. Temperature
 - B. Pressure

III. Motors

- A. Types
- B. Application
- C. Controls

IV. Cooling Towers

- A. Types
- B. Freeze Protection
- C. Blowdown

V. Theory of Heat

- A. Conduction, Convection, Radiation
- B. Sensible and Latent Heat
- C. Pressure and Temperature Relationship
- D. Refrigerants
- E. Refrigeration Cycle

IV. Trade Practices

- A. Tools and Equipment
- B. Recovery
- C. Evacuation
- D. Charging