

MECHANICAL ENGINEERING PROGRAM
ABET COURSE SYLLABUS

ME 456: HVAC Air and Water Distribution System Design (4) Required for HVAC&R Concentration, Elective for all others

Course Description: (2019-20 Catalog) Air and water distribution components and systems and the design of these systems with applications to the heating, ventilating and air-conditioning (HVAC) industry. 3 lectures, 1 laboratory.

Prerequisite Courses: ME 302 and ME 347.

Prerequisites by Topic: Coverage of all topics presumes completion of basic engineering science courses in thermodynamics and fluid mechanics.

Textbook: (and/or other required material) ASHRAE Handbook: Fundamentals, ASHRAE, 2017
Principles of heating Ventilating and Air Conditioning, 8th Edition, ASHRAE, 2017

References:

Course Coordinator/Instructor: Jennifer Mott Peuker, Assistant Professor of ME

Course Learning Outcomes: The students will be able to:

1. Describe HVAC components and systems.
2. Discuss professional practice in the HVAC industry.
3. Interpret design specifications for an HVAC system.
4. Design a basic HVAC system, including select appropriate equipment, size air distribution and exhaust components, and plan air and water distribution.
5. Propose/document an HVAC design in a professional format

Relationship of Course to Mechanical Engineering Student Outcomes:

SO 1: Mastered (M)
SO 2: Mastered (M)
SO 3: Mastered (M)
SO 4:
SO 5: Developing (D)
SO 6: Mastered (M)
SO 7: Mastered (M)

Topics Covered:

1. Introduction, design process
2. HVAC system types and selection

3. Duct design
4. Grilles and registers
5. System design topics
6. Hydronic system design
8. HVAC controls
9. Design project

Laboratory Projects:

1. HVAC system design
2. Mechanical equipment tour(s)
3. Physical experiments

Class/Lab Schedule:

150-minutes of lectures per week. One 170-minute lab per week.

Contribution of Course to Meeting the Professional Component:

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| (a) College-level mathematics and basic sciences: | 0 credits |
| (b) Engineering Topics: | 3 credits |
| Design: | 1 credit |
| (c) General Education: | 0 credits |
| (d) Other: | 0 credits |

Prepared by:

Jennifer Mott Peuker

Date:

11/6/19
