Minnesota State University Moorhead

CM 254: Mechanical/Electrical Systems

A. COURSE DESCRIPTION

Credits: 3

Lecture Hours/Week: 3

Lab Hours/Week: 0

OJT Hours/Week: *.*

Prerequisites: None

Corequisites: None

MnTC Goals: None

A study of mechanical and electrical construction, emphasizing principles of heating, cooling, ventilation, water supply, waste disposal, electrical distribution and code requirements.

B. COURSE EFFECTIVE DATES: 08/22/2011 - Present

C. OUTLINE OF MAJOR CONTENT AREAS

1. Students will examine the fundamental principles of building energy, the requirements for human occupied space comfort, and the effects of climate on structures.
2. Students will understand and have the ability to calculate heating and cooling requirements for a simple building structures.
3. Students will be able to analyze and calculate code requirements for the use of water and the removal of waste water in a simple structure.
4. Students will recognize the use of electrical energy, lighting and communication systems within a building. Understand electrical transmission to and distribution within a building.
5. Students will be able to conceptually design the complete HVAC, plumbing and electrical building environmental system for a simple structure. This will include the determination of all equipment requirements and sizing of major M/E system components.

D. LEARNING OUTCOMES (General)

1. Students will be able to analyze and calculate code requirements for the use of water and the removal of waste water in a simple structure.
2. Students will be able to conceptually design the complete HVAC, plumbing and electrical building environmental system for a simple structure. This will include the determination of all equipment requirements and sizing of major M/E system components.
3. Students will be able to identify and understand fundamental terminology used by construction professionals in describing mechanical and electrical environmental systems.
4. Students will be able to identify common HVAC, plumbing and electrical equipment and their applications.
5. Students will be able to interpret construction specifications requirements and construction documents related to the installation of a complex building environmental control system.
6. Students will complete a quantity survey for a simple building's mechanical and electrical environmental control system.
7. Students will examine the fundamental principles of building energy, the requirements for human occupied space comfort, and the effects of climate on structures. Students will examine and have the ability to calculate the properties of moist air using available software.
8. Students will recognize the use of electrical energy, lighting and communication systems within a building. Understand electrical transmission to and distribution within a building.
9. Students will understand and analyze electrical terminology/electrical systems specifically electrical service, devices, lighting, low voltage, fire alarm and related drawings, schedules, and specifications.
10. Students will understand and analyze mechanical terminology/mechanical systems, specifically plumbing, fire protection, ventilation, heating, cooling and related drawings, schedules, and specifications.
11. Students will understand and have the ability to calculate heating and cooling requirements for a simple building structures using available software.

E. Minnesota Transfer Curriculum Goal Area(s) and Competencies

None

F. LEARNER OUTCOMES ASSESSMENT

As noted on course syllabus

G. SPECIAL INFORMATION

None noted