Course Syllabus

Department: Science and Technology

Date: 12/12/12

I. Course Prefix and Number: TECH 249

Course Name: Building Mechanical Systems

Credit Hours and Contact Hours: 3 credit hours / 3 contact hours

Catalog Description including pre- and co-requisites:

This course will present an overview of the principles and practices used in the design of mechanical systems for buildings. The fundamentals of HVAC, plumbing, and electrical systems will be examined. Topics that will be explored include: equipment selection, design of delivery systems, energy conservation strategies, application of building codes, and the integration with/impact on architectural design. Prerequisites: MAT 145 (or placement into Math Level 3 or higher) and TECH 130 or permission of the instructor.

Relationship to Academic Programs and Curriculum including SUNY Gen Ed designation if applicable:

The course is required for A.A.S. Architectural Technology & Building Sciences. The course may be taken as a technology elective for A.A.S. Mechanical Technology. Students in other programs may take the course if they have the appropriate background.

II. Course Student Learning Outcomes:

Students will:
1. Implement the terminology, materials, and problem solving approaches related to mechanical systems in buildings.
2. Identify and apply code-related mechanical and electrical requirements.
3. Assess the impact of mechanical systems on architectural design and building operating cost.
4. Estimate the impact of mechanical systems on architectural design.
5. Calculate heating and cooling requirements.
6. Complete basic design of heating-cooling transport systems (ductwork, piping, etc.).
7. Select optimum system equipment.
8. Determine plumbing system requirements for specific occupancies.
10. Select components of fire protection sprinkler and standpipe systems.
11. Work with electrical power and distribution systems.
12. Determine lighting needs and systems.
13. Apply energy conservation standards.
15. Estimate the impact of mechanical systems on operating cost.
College Learning Outcomes Addressed by the Course:

☐ writing  ☑ computer literacy
☐ oral communications  ☑ ethics/values
☐ reading  ☑ citizenship
☐ mathematics  ☑ global concerns
☐ critical thinking  ☑ information resources

III. Assessment Measures:

<table>
<thead>
<tr>
<th>Identified College Learning Outcomes</th>
<th>Specific Assessment Measures</th>
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<tbody>
<tr>
<td>Global Concerns</td>
<td>A homework assignment that analyzes an existing structure to determine feasibility and methods to increase energy efficiency will be evaluated.</td>
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<tr>
<td>Information Resources</td>
<td>Selected problems on an exam will be evaluated.</td>
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IV. Instructional Materials and Methods

Types of Course Materials:

Textbook

Methods of Instruction:

Lecture, homework assignments, design problems

V. General Outline of Topics Covered:

1. Introduction
2. HVAC
3. Piping & Plumbing
4. Fire Protection
5. Electricity
6. Communications & Security Systems
7. Lighting Equipment
8. Sustainable Design