

WPE 332 – Mechanical and Electrical Equipment
3 Credits (3 Lecture Hours)

Lecture – Meets in 146 Baker Hall, Monday, Wednesday, and Fridays 8:25-9:20AM

Instructor – Paul Crovella
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Office hours – M,T,W 10-12

Text – Mechanical and Electrical systems in Construction and Architecture, 4th ed., Dagostino, Frank and Joseph Wujek. Prentice Hall, 2005.

Optional Reference Text – Mechanical and Electrical Equipment for Buildings, 10th ed. Stein, Benjamin, John Reynolds, Walter Grondzik, and Alison Kwok. John Wiley and Sons, 2006.

Description - This course shall introduce the basic concepts of mechanical systems design and construction for residential and commercial buildings. Systems design and equipment selection are performed for heating, cooling, plumbing, sanitation, electrical, lighting, and acoustics. Emphasis is placed on the use of the New York State Building Code, the New York State Energy Conservation Code, the National Electrical Code and the American Society of Heating, Refrigeration and Air Conditioning Engineering Handbook.

Student outcomes:

1. Understand the function of individual mechanical systems, and how the construction manager ensures their effective integration in residential and commercial buildings.
2. Be able to write a clear technical report on the function and operation of a mechanical system.
3. Be familiar with standard architectural symbols and line diagrams for mechanical systems used in construction management.
4. Understand the role of Commissioning and Building Performance Measures in construction management.
5. Appreciate the importance of energy efficiency and renewable energy technologies in modern construction management.
6. Be able to use code requirements for design, perform sample take-offs, and determine project costs for an individual mechanical system.

Attendance - Students are expected to attend all scheduled classes and laboratories. If special circumstances such as illness, religious holidays, travel difficulties, family emergencies or active participation in college-sponsored events make absence unavoidable you must see me to make up the work. No student will be allowed to complete graded work after that work has been returned to others in the class.

While in class, please keep cell phones turned off, this includes during tests (no cell phone calculators).

To maintain the proper classroom environment, computers may not be used during lecture without permission of the instructor. They should be used during class strictly for class-related activity.

Academic Honesty – Honesty and integrity are major elements in professional behavior and are expected of each student. Any assignment (including those in electronic media) submitted by a student must be of the student's original authorship. Representation of another's work as the student's own shall constitute plagiarism. Cheating, in any form, is an unacceptable behavior within all college courses, and the college policy on academic integrity (as outlined in the handbook "Academic Integrity ESF" at <http://www.esf.edu/students/handbook/>) will be strictly adhered to.

Grading – The course grading will be a combination of grades earned on homework, quizzes, tests, group project work, class presentation, and the final exam.

The final grade will be based on these percentages

Homework	20%
Quizzes	30%
System report	20%
Class participation	10%
Final Exam	20%

Homework - Each week's homework will be returned the following class. Any homework not turned in on-time needs to be discussed with me to determine if credit will be given. No late homework will be accepted after the assignment has been graded and returned to the rest of the class.

Course Outline:

Week 1	Chapter 1 - Plumbing Fundamentals Day 1 assignment - Introduction to Blackboard, NYS building code on-line Homework Questions 1-14, 16,17,22,24 (just one fixture),
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Week 2	Chapter 2 – Building Water Supply System Design – Homework questions 2-1 to 2-9, 2-11 to 2-15
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Week 3	Chapter 2 – Building Water Supply System Design 2-16 to 2-31, and 2-32, 2-33, 2-35, 2-36, 2-38,2-51
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Week 4	Chapter 3 – Sanitary Drainage System Design 3-1to 3-6, 3-9
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Week 5	Chapter 4,5 Wastewater Treatment and Disposal, Building Storm Water Drainage 4-1 to 4-8 and 4-11, 5-1 to 5-6 Take-off and Estimate for Baker Lab due
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Week 6	Chapter 15 Electrical Theory, Materials, and Systems – 15-1 to 15-17
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Week 7	Chapter 15 Electrical Theory, Materials, and Systems 15-19, 15-22 to 15-29, 15-31to 15-36, 15-39 to 15-45, 15-54, and 15-56
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Week 8	Chapter 15 Electrical Theory, Materials, and Systems
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Week 9	Chapter 16 Building Electrical Design Principles 16-1 to 16-16, 16-17. Take off and Estimate due for Baker lab
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Week 10	- Chapter 6 – Thermal and Environmental Concepts – 6-1 to 6-28, 6-33 to 6-48
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Week 11	Chapter 7 – Heating Load Computations for Buildings – 7-1 to 7-24, 7-25, 7-27, 7-42a,b, Rescheck
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Week 12	Chapter 8 HVAC Equipment and Systems 8-1 to 8-28
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Week 13	Chapter 9 Hydronic Heating System Design 9-1 to 9-7, Chapter 10 Forced Air Heating System Design 10-1 to 10-8
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Week 14	Chapter 14 Building Solar Energy Systems – 14-1 to 14-13 Use of Trnsys modeling software for solar domestic hot water
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