ME 522
Building Energy Dynamics and Technology

Instructor: Prof. Kibria Roman, PE, EMIT, LEED GA
Cell: (217) 819-1775, Email: kibria47@gmail.com
Office Hours: Before Class (Place and time will be announcing later)

By: F. C. McQuiston, J.D. Parker and J.D. Spitler

Supplemental Reading:
  by: T.H. Kuehn, J.W. Ramsey and J.L. Threlkeld
- ASHRAE Handbook of Fundamentals 2013

Grading: Homework/Class Performance 10%
Extend Homework 20%
Project 20%
Midterm 25%
Final 25%
Total 100%

Introduction
Topic 1 – Introduction to HVAC (Chapter 1)
Topic 2 – Air Conditioning Systems (Chapter 2)
Topic 3 – Thermodynamic Properties of Moist Air
  and Psychrometric Processes and Principles (Chapter 3)
Topic 4 – Solar Radiation (Chapter 7)
Topic 5 – Winter Design Heat Loss
  Heat Transmission in Building Structures (Chapter 5)
  Space Heating Load (Chapter 6)
Topic 6 – Instantaneous Heat Gain and Cooling Load (Chapter 8)
Topic 7 – Flow Pumps and Piping Design (Chapter 10)
Topic 8 – Fans and Building Air Distribution (Chapter 12)
Topic 9 – Extended Surface Heat Exchangers (Chapter 14)
Topic 10 – Mechanical Vapor Compression Refrigeration Components and Cycles (Chapter 15)
Topic 11 – Class Project
Grading Policy:
Course letter grades are on a 100-point scale and the details of breakdown are below.

<table>
<thead>
<tr>
<th>Letter grade</th>
<th>Point</th>
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<tbody>
<tr>
<td>A</td>
<td>93-100</td>
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<tr>
<td>A-</td>
<td>90-92</td>
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<tr>
<td>B+</td>
<td>87-89</td>
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<tr>
<td>B</td>
<td>83-86</td>
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<tr>
<td>B-</td>
<td>80-82</td>
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<tr>
<td>C+</td>
<td>77-79</td>
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<td>C</td>
<td>73-76</td>
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<tr>
<td>C-</td>
<td>70-72</td>
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<tr>
<td>F</td>
<td>69 or lower</td>
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Important dates and deadline

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Date</th>
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<tbody>
<tr>
<td>Midterm 1</td>
<td>2/24/16</td>
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<tr>
<td>Midterm 2</td>
<td>3/23/16</td>
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<tr>
<td>Project Proposal submission</td>
<td>2/10/16</td>
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<tr>
<td>Project report submission</td>
<td>4/27/16</td>
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<tr>
<td>Final Exam</td>
<td>5/4/16</td>
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Learning Objectives:
1. Describe how HVAC systems work and their importance to energy efficiency in buildings.
2. Analyze energy efficient HVAC systems and their return on investment.
3. Use a psychometric chart to determine the dew point temperature, moisture content, and enthalpy of air at given conditions.
4. Able to calculate unsteady cooling and heating load, effects of solar radiation, latent heat gains, natural and mechanical ventilation, user profiles and operation schedules, occupant comfort and health.
5. Learn about various design strategies of flow pumps, piping, fans and building air distribution.
6. Learn the fundamentals of extended surface heat exchangers and their application in HVAC systems.
7. Understand the selection of refrigeration equipment for HVAC systems and allow them to fit this equipment to overall system.
DISABILITY SUPPORT SERVICES (DSS) STATEMENT (must be the following language)
If you have a physical, psychological, medical or learning disability that may impact your course work, please contact Disability Support Services, ECC (Educational Communications Center) Building, room128. (631) 632-6748. They will determine with you what accommodations, if any, are necessary and appropriate. All information and documentation is confidential.

[In addition, this statement on emergency evacuation is often included, but not required: Students who require assistance during emergency evacuation are encouraged to discuss their needs with their professors and Disability Support Services. For procedures and information go to the following website: http://www.stonybrook.edu/ehs/fire/disabilities ]

ACADEMIC INTEGRITY STATEMENT (must be the following language as approved by the undergrad council):
Each student must pursue his or her academic goals honestly and be personally accountable for all submitted work. Representing another person's work as your own is always wrong. Faculty are required to report any suspected instances of academic dishonesty to the Academic Judiciary. Faculty in the Health Sciences Center (School of Health Technology & Management, Nursing, Social Welfare, Dental Medicine) and School of Medicine are required to follow their school-specific procedures. For more comprehensive information on academic integrity, including categories of academic dishonesty, please refer to the academic judiciary website at http://www.stonybrook.edu/uaa/academicjudiciary/

CRITICAL INCIDENT MANAGEMENT (must be the following language as approved by the undergrad council):
Stony Brook University expects students to respect the rights, privileges, and property of other people. Faculty are required to report to the Office of Judicial Affairs any disruptive behavior that interrupts their ability to teach, compromises the safety of the learning environment, or inhibits students' ability to learn. Faculty in the HSC Schools and the School of Medicine are required to follow their school-specific procedures.