

<b>COURSE NUMBER:</b> ME 5105, 4 credits	<b>COURSE TITLE:</b> HVAC System Design
<b>TERMS OFFERED:</b> Alternate years Spring semester.	<b>PREREQUISITES:</b> ME 3333, Thermal Sciences III, IT upper division or Grad student.
<b>TEXTBOOKS/REQUIRED MATERIAL:</b> Text: "Thermal Environmental Engineering" <sup>3<sup>rd</sup></sup> Edition, By T. H. Kuehn, J. W. Ramsey and J. L. Threlkeld, Prentice Hall 1998  References: ASHRAE Handbook Series	<b>PREPARED BY:</b> Thomas Kuehn  <b>DATE OF PREPARATION:</b> 3/14/2007
<b>COURSE LEADER(S):</b> T. H. Kuehn	<b>CLASS/LABORATORY SCHEDULE:</b> Four 50 minute sessions per week.  <b>CONTRIBUTION OF COURSE TO MEETING PROFESSIONAL OBJECTIVES:</b> 100 % Engineering Topics
<b>CATALOG DESCRIPTION:</b> Design procedures used for heat exchangers, cooling towers, hydronic systems and air handling systems. HVAC system design for a commercial building.	<b>COURSE TOPICS:</b> 1. Review building heating and cooling loads 2. Dry heat exchanger design 3. Design of cooling towers. 4. Air handling system design. 5. Hydronic system design. 6. Complete HVAC system design

<b>COURSE OBJECTIVES</b>	<ol style="list-style-type: none"> <li>1. Function effectively in design teams.</li> <li>2. Apply the principles used in building heating and cooling load calculations.</li> <li>3. Teach the procedures used in designing heating and cooling coils, air-washers, and cooling towers.</li> <li>4. Teach the principles of room air motion and diffuser selection.</li> <li>5. Teach the design procedures for laying out and sizing ventilation duct work.</li> <li>6. Understand the performance of fans and pumps.</li> <li>7. Teach the design procedures for laying out and sizing hydronic systems.</li> <li>8. Participate in a team to design the mechanical system of an actual building.</li> <li>9. Generate the specifications and drawings required for a mechanical system.</li> </ol>
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<b>COURSE OUTCOMES</b>	<p><b>(Letters shown in brackets are linked to program outcomes a-k)</b></p> <ol style="list-style-type: none"> <li>1. Determine the winter design heating load of a building. [a, e, k]</li> <li>2. Determine the summer design cooling load of a building. [a, e, k]</li> <li>3. Design the air-handling system for a building. [c, d, e, g, j, k]</li> <li>4. Design a hydronic system for a building. [c, d, e, g, j, k]</li> <li>5. Select major equipment items from vendor catalogs and web sites. [c, e, j, k]</li> <li>6. Complete a major design project that includes specifications and drawings of a mechanical system for a commercial building. [c, d, e, g, j, k]</li> <li>7. Perform as an effective team member on the major design project. [d]</li> </ol>
<b>ASSESSMENT TOOLS:</b>	<ol style="list-style-type: none"> <li>1. Homework and/or weekly quizzes.</li> <li>2. Two exams during the semester.</li> <li>3. Final design project.</li> </ol>

## ME 5105

### *Nature of Changes:*

1. *“Apply the principles used in building heating and cooling load calculations” was inserted as course objective #2.*
2. *Determining the winter and summer design loads have been inserted as Course outcomes 1 and 2 respectively, the remaining 5 outcomes are unchanged.*