EMCH 497 - Design of Thermal Systems

Credit hours – 3  Contact hours – 50 minutes twice a week and one problem session per week

Instructor – Not taught since 2005 ABET visit


Specific Course information:
   a. EMCH 200 - Design of Thermal Systems. (3) Methodology of design, mathematical modeling of thermal equipment, system simulation, system optimization using digital computer, and investment economics.
   b. Prerequisites: EMCH 354, 394
   c. Mechanical Engineering Elective

Course Goals:
   a. Outcomes
      1. To enable students to synthesize the knowledge and skills acquired in their undergraduate curriculum, in the context of realistic design project.
      2. To develop in students the ability to address a broad range of requirements including most of the following: performance, economic, marketing, environmental, manufacturing, safety, ethical and social.
      3. To prepare for professional design environment to perform in team environment, and enhance student communication abilities.

Relationship of Course to Program Objectives:
The importance of each course objective to meeting the program outcomes is indicated with the following scale: 3 = major importance; 2 = moderate importance; 1 = minimal importance. Blank if not related.

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<thead>
<tr>
<th>Program Outcomes (see list for complete description)</th>
<th>Course Outcomes</th>
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<tr>
<td></td>
<td>CO 1</td>
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<tr>
<td>1.1. analyze, design and realize</td>
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<td>1.2. computation techniques</td>
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<td>1.3. design and interpret experiments</td>
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<td>1.4. apply linear algebra, calculus</td>
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<td>1.5. apply statistical methods</td>
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<td>1.6. understand chemistry and physics</td>
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<td>2.1. engineering economic analyses</td>
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<td>2.2. plan and execute projects</td>
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<td>2.3. oral and written communications</td>
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<td>2.4. professional responsibility</td>
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<td>2.5. multi-disciplinary teams</td>
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<td>2.6. life-long learning</td>
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<td>3.1. engineering in modern society</td>
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<td>3.2. literature, arts, humanities</td>
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<td>3.3. foreign language</td>
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Topics Covered:
1. Problem formulation methods, knowledge of the product realization process, design creativity, selection, and evaluation.
2. Workable design solutions
3. Mathematical modeling and system simulation.
4. Optimization using computer search techniques
5. Lagrange multipliers method of optimization.
6. Dynamic, geometric and linear programming interactions.

Person Who Prepared This Description and Date of Preparation:
Jamil A. Khan (02/01/2005)
Steve McNeill formatted for ABET 2011 – 2/28/11