# ME 335 COURSE PROFILE

**DEGREE PROGRAM:** Mechanical Engineering

<table>
<thead>
<tr>
<th>COURSE NUMBER:</th>
<th>ME 335</th>
<th>COURSE TITLE:</th>
<th>Heat Transfer</th>
</tr>
</thead>
<tbody>
<tr>
<td>REQUIRED COURSE OR ELECTIVE COURSE:</td>
<td>Required</td>
<td>TERMS OFFERED:</td>
<td>Fall, Winter, Spring</td>
</tr>
<tr>
<td>COGNIZANT FACULTY:</td>
<td>J. Fu</td>
<td>COURSE TOPICS:</td>
<td></td>
</tr>
<tr>
<td>COURSE STRUCTURE/SCHEDULE:</td>
<td>Lecture: 2 days per week at 1.5 hours</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### COURSE OBJECTIVES:
for each course objective, links to the Program Outcomes are identified in brackets.

1. To make students familiar with fundamental heat transfer concepts: conservation of energy, mechanisms of energy conversion, and mechanisms of heat transfer (conduction, convection, and radiation) [1, 2, 4, 6, 7]
2. To teach students how to apply energy balance analysis for integral and differential control volumes. [1, 2, 6]
3. To make students familiar with thermal circuit analysis for engineering systems and calculations for conduction, convection, and radiation thermal resistances. [1, 2, 6]
4. To make students familiar with the lumped capacitance method for transient conduction problems in engineering systems [1, 2, 6]
5. To teach students how to use heat transfer correlations for convection problems involved in engineering systems. [1, 2, 6]
6. To teach the physics of thermal radiation, view factor, and radiation exchange between surfaces. [1, 2, 6]
7. To enable students to perform thermal analysis of practical engineering problems using heat transfer concepts [1, 2, 4, 6, 7]
8. To teach students the relation of thermal systems analysis to environmental concerns [4, 7]

### COURSE OUTCOMES:
for each course outcome, links to the Course Objectives are identified in brackets.

1. An ability to apply conservation of energy principles for engineering systems [1-8]
2. An ability to relate the rate of heat transfer to the potential for heat flow (difference in temperature) and thermal resistances [1, 3, 5, 7]
3. An ability to determine thermal resistance for conduction, convection, and radiation heat transfer, using fundamental relationships and correlations. [1, 3, 5, 6, 7] 4. An ability to perform thermal circuit analysis for engineering systems. [1, 3, 5, 6, 7]
4. An ability to perform thermal circuit analysis for engineering systems. [1, 3, 5, 6, 7]
5. An ability to design thermal systems for various thermal engineering applications [1-8]
6. A knowledge of modern thermal science and its impact on environmental concerns. [1-8]

### ASSESSMENT TOOLS:
for each assessment tool, links to the course outcomes are identified

1. Regular homework problems.
2. Midterm and final exams.

PREPARED BY: J. Fu
LAST UPDATED: 10/2017