Course Description

Course Description: Included in this course is an introduction to thermodynamics, fluid mechanics and heat transfer. Emphasis is on gaining an understanding of the physical concepts through the solving of numerical problems associated with simple thermal fluid processes and cycles. Both ideal gases and multiphase fluids will be considered as the working fluids.

Prerequisites: Undergraduate engineering, physics or chemistry degree. Restriction: Permission of ENGR-Office of Advanced Engineering Education. Credit only granted for: ENPM672 or ENPM808J. Formerly: ENPM808J.

Grading Procedures: Your final grade will consist of the following components:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual Homework</td>
<td>40%</td>
</tr>
<tr>
<td>3 Exams (20% each)</td>
<td>60%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

Homework will be assigned every week and due by midnight on Monday before the next week.

A pre-submission of homework for instructor feedback will be built into schedule.

Three online exams will be given after each main topic. Thermodynamics, Fluid Mechanics and Heat Transfer. They may consist of open book and closed book sections and may be timed.

Software

Canvas will be used extensively, almost exclusively for: Communication, Course Material and Lectures, Inputting of grades, Homework Assignment and Submission, and Exams. It is your responsibility to make sure you have access. Please check frequently. Email or messaging though canvas is the best way to contact the instructor. To schedule a meeting or teleconference, please use email to arrange.

Code of Academic Integrity

"The University of Maryland, College Park has a nationally recognized Code of Academic Integrity, administered by the Student Honor Council. This Code sets standards for academic integrity at Maryland for all undergraduate and graduate students. As a student you are responsible for upholding these standards for this course. It is very important for you to be aware of the consequences of cheating, fabrication, facilitation, and plagiarism. For more information on the Code of Academic Integrity or the Student Honor Council, please visit: http://www.studenthonor council.umd.edu/whatis.html."
Copyright

My lectures and course materials, including power point presentations, tests, outlines, and similar materials, are protected by copyright. I am the exclusive owner of copyright in those materials I create. You may take notes and make copies of course materials for your own use. You may not and may not allow others to reproduce or distribute lecture notes and course materials publicly whether or not a fee is charged without my express written consent. Similarly, you own copyright in your original papers and exam essays. If I am interested in posting your answers or papers on the course web site, I will ask for your written permission.

Required/Recommended Textbooks


The publisher’s website contains many useful resources as well as the CD included with the text.


Reference Textbooks: Much of the material in the textbook has been adapted from the following textbooks that may have been used in your undergraduate courses. Any of the editions or versions may be helpful.


## Course Outline

<table>
<thead>
<tr>
<th>Week</th>
<th>Week Beginning</th>
<th>Lecture Topics</th>
<th>Chapter Reading</th>
<th>Assignment</th>
<th>Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Monday, January 30, 2017</td>
<td>Introduction to Thermodynamics</td>
<td>1, 2, &amp; 3</td>
<td>HW1</td>
<td>Monday, February 06, 2017</td>
</tr>
<tr>
<td>2</td>
<td>Monday, February 06, 2017</td>
<td>Thermophysical Properties</td>
<td>4</td>
<td>HW2</td>
<td>Monday, February 13, 2017</td>
</tr>
<tr>
<td>3</td>
<td>Monday, February 13, 2017</td>
<td>Control Volume Analysis, Carnot Cycle</td>
<td>5</td>
<td>HW3</td>
<td>Monday, February 20, 2017</td>
</tr>
<tr>
<td>4</td>
<td>Monday, February 20, 2017</td>
<td>2nd Law, Entropy</td>
<td>6 &amp; 7</td>
<td>HW4</td>
<td>Monday, February 27, 2017</td>
</tr>
<tr>
<td>5</td>
<td>Monday, February 27, 2017</td>
<td>Vapor Cycles: Rankine and Refrigeration</td>
<td>8</td>
<td>HW5</td>
<td>Monday, March 06, 2017</td>
</tr>
<tr>
<td>Exam Available</td>
<td>Tuesday, March 21, 2017</td>
<td>Thermodynamics</td>
<td>Due</td>
<td>Wednesday, March 29, 2017</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Monday, March 20, 2017</td>
<td>Fluid Basics &amp; Statics</td>
<td>11</td>
<td>HW7</td>
<td>Monday, March 27, 2017</td>
</tr>
<tr>
<td>8</td>
<td>Monday, March 27, 2017</td>
<td>Mechanical Energy and Dynamics</td>
<td>12</td>
<td>HW8</td>
<td>Monday, April 03, 2017</td>
</tr>
<tr>
<td>9</td>
<td>Monday, April 03, 2017</td>
<td>Similitude Analysis</td>
<td>13</td>
<td>HW9</td>
<td>Monday, April 10, 2017</td>
</tr>
<tr>
<td>10</td>
<td>Monday, April 10, 2017</td>
<td>Internal and External Flow</td>
<td>14</td>
<td>HW10</td>
<td>Monday, April 24, 2017</td>
</tr>
<tr>
<td>Exam Available</td>
<td>Tuesday, April 25, 2017</td>
<td>Fluid Mechanics</td>
<td>Due</td>
<td>Wednesday, May 03, 2017</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Monday, April 24, 2017</td>
<td>Steady State and 1st Law</td>
<td>15</td>
<td>HW11</td>
<td>Monday, May 01, 2017</td>
</tr>
<tr>
<td>12</td>
<td>Monday, May 01, 2017</td>
<td>Conduction and Analysis</td>
<td>16</td>
<td>HW12</td>
<td>Monday, May 08, 2017</td>
</tr>
<tr>
<td>13</td>
<td>Monday, May 08, 2017</td>
<td>Convection/Radiation</td>
<td>17/18</td>
<td>HW13</td>
<td>Monday, May 15, 2017</td>
</tr>
</tbody>
</table>