CME 101 Introduction to Chemical & Molecular Engineering

Credits and Contact Hours: Fall Semester, 2 credits; 3 hours; Tuesday

Course Instructor: Taejin Kim, Ph.D.


Specific course information
a. Brief description of the Content of the course (catalog description) This first required course for the Chemical & Molecular Engineering (CME) Program major is designed to integrate the student into the University community, College of Engineering, and the CME Program with a focus on personal and institutional expectations. Emphasis is on modern day interdisciplinary chemical engineering profession requiring teamwork and the role of chemical engineers in balancing professional growth with issues of societal impact.

b. Required course in the Program

Specific goals for the course:
a. Upon completion of this course the student shall have been: (1) introduced to the role of math, engineering, and science in chemical engineering field, (2) introduced to modern-day industries that employ chemical engineers and industry expectations, (3) introduced to interdisciplinary environment, teamwork, good communication skills, and a need for lifelong learning, (4) introduced to leading scientists engaged in chemical engineering research and, (5) emphasized on the importance of balancing professional growth with ethical and societal issues.

b. Outcomes addressed are a, b2, d, f, g, h, i and j.

b. Criterion 3 a-k: Outcomes

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<thead>
<tr>
<th>Outcome</th>
<th>% Contribution</th>
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<tbody>
<tr>
<td>a. Ability to apply knowledge of math, engineering, and science</td>
<td>5%</td>
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<td>b2. Ability to analyze and interpret data</td>
<td>5%</td>
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<td>d. Ability to function on multi-disciplinary teams</td>
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<td>f. Understanding of professional and ethical responsibility</td>
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<td>g. Ability to communicate effectively</td>
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<td>h. Broad education</td>
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<td>i. Recognition of need and ability to engage in life-long learning</td>
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<td>j. Knowledge of contemporary issues</td>
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<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
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Brief list of topics to be covered (including exams/quizzes)*:

Week 1: Introduction and Overview
Week 2: What is Chemical Engineering? The Chemical Engineering discipline
Week 3: Chemical Processing; Process Flow Diagrams
Week 4: Solving Engineering Problems; Ethics in Chemical Engineering
Week 5: Engineering Teams and Teamwork
Week 6: Describing Physical Quantities/Units; Process Variables
Week 7: Material Balances
Week 8: Midterm Exam
Week 9: Spreadsheets
Week 10: Fluid Mechanics
Week 11: Mass Transfer
Week 12: Reaction Engineering
Week 13: Process Control
Week 14: Economics
Week 15: Final Exam

*Numerous guest speakers (almost one per week) also incorporated in the syllabus*