Chemical Engineering Fundamentals and Design

Lecture Information

Lecture information

Course information

1. Course title: Chemical Engineering Fundamentals and Design (course number: 34565)
2. Time and location

   Class I: Tuesday 5,6 (310-419) / Thursday 5 (310-419)
3. Medium of instruction: English A
4. Reference: “Creative Engineering Design” (Brian S. Thompson)
5. Lecture materials: downloading PDF files from website (http://nemlcau.wix.com/neml)

Instructor information

1. Name: Sang Hyun Ahn
2. Contact information: 310-328 (location), 02-820-5287 (phone), shahn@cau.ac.kr (e-mail)
3. Available office hour for student meeting: right after class, or anytime by appointment
4. Teaching assistants: Junhyeong Kim (207-528, blueholl3205@naver.com)

   Hyunki Kim (207-528, gusrl7811@naver.com)

Lecture information

Course description

The course will teach students to develop the creative problem-solving ability in practical aspects. The students will be instructed to define given problems and find methodologies for the solutions based on fundamental scientific knowledges. Team projects will be carried out on a team and individual basis. The results will be presented and evaluated.

Assessment

1. Attendance (10 %): students must attend the class over 75 % of class dates (if not, he/she will get “F” grade).
2. Quiz (10 %), Mid-term exam (20 %)
3. Presentation*: individual (15 %) + team (15 %)
4. Reports: proposal (10 %) + final (10 %)
5. Attitude (10 %): debating in presentation

*Individual: 8 ~ 10 min (presentation) + 2 ~ 4 min (Q & A)
*Team: 18 ~ 20 min (presentation) + 5 ~ 7 min (Q & A)

Grading

A grade (< 50 %) + B grade (< 90 %) + C, D grade (> 10 %)

Lecture information

Lecture schedule

Week	Contents	Week	Contents
1	Lecture Information	9	Individual Presentation II
2	Creative Idea of Chemical Engineering I	10	Individual Presentation III
3	Creative Idea of Chemical Engineering II	11	Individual Presentation IV
4	Creative Idea of Chemical Engineering III (Quiz)	12	Individual Presentation V
5	Design Proposal I	13	Individual Presentation VI
6	Design Proposal II	14	Team Presentation I
7	Individual Presentation I	15	Team Presentation II
8	Mid-Term Exam	16	Final Exam Period

Lecture information

Canceled class schedule

Week	Thursday	Tuesday	Week	Thursday	Tuesday
1	03/02	03/07	9	04/27	05/02
2	03/09	03/14	10	05/04	05/09
3	03/16	03/21	11	05/11 (KSIEC 2017)	05/16
4	03/23	03/28 (Patent Attorney)	12	05/18 (MRSK 2017)	05/23
5	03/30 (Patent Attorney)	04/04 (ICNME 2017)	13	05/25	05/30
6	04/06 (KECS 2017)	04/11	14	06/01	06/06 (Memorial Day)
7	04/13	04/18	15	06/08	06/13
8	04/20 (Mid-term Exam)	04/25 (Mid-term Exam)	16	06/15 (Final Exam)	06/20 (Final Exam)

Lecture information

Evaluations

1. Individual Project Presentation Evaluation

<table>
<tr><th>Date</th><th>Name
(Presenter)</th><th colspan="5">Topic & Comments</th></tr>
<tr><td rowspan="3">2017
/</td><td rowspan="3"></td><td colspan="5">Title:

Comments:</td></tr>
<tr><td>Creativity
(30)</td><td>Logic
(30)</td><td>Clarity
(20)</td><td>Preparedness
(20)</td><td>Total
(100)</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
</table>

Lecture information

Evaluations

2. Team Project Presentation Evaluation

<table>
<tr><th>Date</th><th>Name</th><th colspan="5">Topic & Comments</th></tr>
<tr><td rowspan="3">2017
/</td><td rowspan="3"></td><td colspan="5">Title:

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<tr><td></td><td></td><td></td><td></td><td></td></tr>
</table>

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Evaluations

3. Team Project Presentation Self-Evaluation

Member Name	Evaluation items	Grade				
		Poor (5)	Moderate (10)	Average (15)	Good (20)	Excellent (25)
	Participation					
	Contribution					
	Cooperation					
	Communication					
	Total					

Lecture information

Subjects

1. Individual presentation: free topic
2. Team presentation: grand challenges for engineering (http://www.engineeringchallenges.org/cms/8996.aspx)
   - 2.1. Make Solar Energy Economical
   - 2.2. Provide Energy from Fusion
   - 2.3. Develop Carbon Sequestration Methods
   - 2.4. Manage the Nitrogen Cycle
   - 2.5. Provide Access to Clean Water
   - 2.6. Restore and Improve Urban Infrastructure
   - 2.7. Advance Health Informatics
   - 2.8. Engineer Better Medicines
   - 2.9. Reverse-Engineer the Brain
   - 2.10. Prevent Nuclear Terror
   - 2.11. Secure Cyberspace
   - 2.12. Enhance Virtual Reality
   - 2.13. Advance Personalized Learning
   - 2.14. Engineer the Tools of Scientific Discovery

Lecture information

Your reports and presentation should include…

Proposal report (team)

1. Necessity of project
2. Motivation and purpose of project
3. Conventional research and technology
4. Problem solving plan and process
5. Concept and detail design
   - 5.1. Goal setting method of design
   - 5.2. Limited factors
   - 5.3. Synthesis
   - 5.4. Analysis
   - 5.5. Evaluation
6. Expected effect
7. Improvement direction

Changeable

Final report (team)
Individual presentation
Team presentation

All reports and presentation materials should be prepared by English.