

New & Renewable Energy

Course Name	Course type (credit/hours)		Elective course(3/3)		Course code	E006
	Target students Division/major/grade		Environmental and safety Engineering/Junior		Opening semester	2020 1ST SEMESTER
	Class time and classroom		Tue D(WEB239)Thu C(WEB239)		English Grade	A(100%English)
Reference to this course	Prerequisite courses		화학(General Chemistry), 물리(General Physics), 환경열역학(Environmental Thermodynamics)			
	Related basic courses					
	Recommended concurrent courses					
	Related advanced courses					
Instructor	Name (title/division)		Jechan Lee(Assistant Professor, Environmental and safety Engineering)			
	Office Room Number	산학협력원 823	Office phone Number	2402	e-mail	
	Office hours	이메일로 면담 요청		Homepage address		
Teaching Assistant	Name (title/division)					
	Office Room Number		Office phone Number		e-mail	

1. Introduction

- To learn various new & renewable energy technologies to mitigate global environmental issues like climate change.

2. Course Objectives

- 우리의 건강과 환경에 부정적인 영향을 미치고 있는 현재 에너지 체계의 문제점을 인식하고 가능한 잠재적인 해결책에 대한 이해를 향상시키기 위하여 다양한 신재생에너지에 대해 학습함.
- 이를 위해 에너지란 무엇인가에 대해 먼저 학습하고 이를 토대로 신재생에너지의 기초개념, 원리, 적용 및 응용에 대해 학습함.
- 신재생에너지: 태양에너지, 바이오에너지, 폐기물에너지화, 수력, 조력, 파력, 풍력, 지열에너지 등

3. Class types and activities

- Theoretical class (note-taking)
- Final exam

4. Teaching Method

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|---|---|
| <input checked="" type="checkbox"/> lecture | <input checked="" type="checkbox"/> discussion and debate |
| <input checked="" type="checkbox"/> team project(presentation and case studies) | <input type="checkbox"/> experiments(role-playing,etc) |
| <input type="checkbox"/> designing and production | <input type="checkbox"/> on-site learning(on-site training) |
| <input type="checkbox"/> others | |

5. Support Systems in Use

- | | | |
|--|---|---|
| <input checked="" type="checkbox"/> AjouBb | <input type="checkbox"/> automatic recording system | <input type="checkbox"/> web-based assignment |
| <input type="checkbox"/> cyber lecture | <input type="checkbox"/> online content | |
| <input type="checkbox"/> class behavior analyzing system | <input type="checkbox"/> others | |

6. Teaching Tools

- | | | |
|---|--|--|
| <input checked="" type="checkbox"/> PBL(Problem Based Learning) | <input checked="" type="checkbox"/> CBL(Case Based Learning) | <input checked="" type="checkbox"/> TBL(Team Based Learning) |
| <input type="checkbox"/> UR(Undergraduate Research) | <input type="checkbox"/> FL(Flipped Learning) | <input type="checkbox"/> DSAL(Data Science Active Learning) |
| <input type="checkbox"/> others | | |

7. Knowledge and ability required for taking this course

- 수학, 화학, 물리, 열역학에 관한 지식 (Mathmatics, chemistry, physics, and thermodynamics)

8. Method of Evaluation

Evaluation Item	The Number of Times	Evaluation Proportion	Remarks
Attendance		10%	1/4 결석 = F; 지각 2회 = 결석 1회; 결석 1회는 감점 없음; 결석 2회부터 1회 당 1점 감점
midterm exam	1	30	
final exam	1	30	
quiz			
presentation			
discussion			
homework			
etc	1	30	Term project (Term paper, presentation)
study hours			

9. Textbook and supplementary material

Main/Sub	Title (Web-site)	Writer	Publisher	Publication year
Main	신재생에너지 (2판)	Richard A. Dunlap (역자: 윤영수 외)	동화기술	2020
Main	아주Bb에 업로드되는 강의자료			

10. Class system and Class shedule

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< Class Schedule >

* language : K-korean, E-English

Weeks	Topics	language	Instructor	Teaching Method	Evaluation Method	Matter to be prepared
1	Introduction	E	Jechan Lee	강의		
2	Energy fundamentals	E	Jechan Lee	강의		
3	Basic thermodynamics; What is new & renewable energy?	E	Jechan Lee	강의		
4	Solar Energy	E	Jechan Lee	강의		

< Class Schedule >

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Week s	Topics	lang uage	Instructor	Teaching Method	Evaluation Method	Matter to be prepared
5	Solar Energy	E	Jechan Lee	강의		
6	Solar Energy; Bioenergy	E	Jechan Lee	강의		
7	Bioenergy	E	Jechan Lee	강의		
8	Midterm exam	E	Jechan Lee	시험		
9	Bioenergy	E	Jechan Lee	강의		
10	Waste-to-energy	E	Jechan Lee	강의		
11	Hydroelectric power, tidal power & Wave energy	E	Jechan Lee	강의		
12	Hydroelectric power, tidal power & Wave energy	E	Jechan Lee	강의		
13	Wind energy; Hydrogen energy	E	Jechan Lee	강의		
14	Hydrogen energy; Battery	E	Jechan Lee	강의		
15	Presentation by students	E	Jechan Lee	강의		
16	Final exam	E	Jechan Lee	시험		

11. Other items of notification