Introduction to energy chemistry

Course Name	Course section (credit/hours)	Elective course(3/3)		course code	G014
	course item			course component	
	Target students Division/major/grade			opening semester	2021 1ST SEMESTER
	Class time and classroom	Tue D(WH507)Thu C(WH507)		English Grade	A(100%English)
Reference to this course	Credit compositon	Theory(0) + Design(0) + Practice(0)			
	Prerequisite courses	일반화학			
	Related basic courses	물리화학, 무기화학			
	Recommanded concurrent courses				
	Related advanced course				

Instructor	Name (title/division)	Yoo, Youngdong(Assistant Professor, Chemistry)				
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Teaching Assistant	Name (title/division)					
	Office Room Number		Office phone Number		e-mail	

1. Course Introduction

2. Course Objectives & course outcome

에너지 변환과 관련된 다양한 현상에 대해 고찰하며 이에 내재된 기본 원리를 체계적으로 이해한다. 또한 최근 급격한 발전이 이루어지고 있는 수소에너지기술, 연료전지, 태양전지 등 다양한 에너지 분야에 대한 전반적인 이해를 증진시킨다. 이러한 과정을 통해 미래 에너지 시스템 개발에 자연과학적 기본원리를 적용할 수 있는 소양을 갖추도록 한다.

3. Class types and activities

4. Teaching Method

- [V] lecture
- [ ] discussion and debate
- [ ] team project(presentation and case studies)
- [ ] experiments(role-playing,etc)
- [ ] designing and production
- [ ] on-site learning(on-site training)
- [ ] others

5. Support Systems in Use

- [V] AjouBb
- [ ] automatic recording system
- [ ] web-based assignment
- [ ] cyber lecture
- [ ] online content
- [ ] class behavior analyazing system
- [ ] others

6. Teaching Tools

- [ ] PBL(Problem Based Learning)
- [V] CBL(Case Based Learning)
- [ ] TBL(Team Based Learning)
- [ ] UR(Undergraduate Research)
- [ ] FL(Flipped Learning)
- [ ] DSAL(Data Sciencd Active Learning)
- [ ] others

7. Evaluation method of course outcome

Evaluation Item	The Number of Times	Evaluation Proportion	Remarks
Attendance		10%	3회 결석까지는 감점하지 않음
midterm exam	1	30%	
final exam	1	30%	
quiz			

7. Evaluation method of course outcome

Evaluation Item	The Number of Times	Evaluation Proportion	Remarks
presentation			
discussion			
homework		30%	
etc			
study hours			

8. Textbook and Reference material

Main/Sub	Title	Writer	Publisher	Publication year
Ref.	Chemistry of Sustainable Energy	Nancy E. Carpenter		2014
Ref.	Chemistry in Context : Applying Chemistry to Society (8th Ed.)	American Chemical Society		2015

9. Class system and Class shedule

아래 내용에 대해 차례대로 다룰 예정이다.
1. 에너지 기초
2. 열역학
3. 수소에너지기술
4. 연료전지
5. 태양전지

< Schedule >

* language : K-korean, E-English

Weeks	Title of lecture	language	time distribution(minutes)			Teaching Method	evaluation method
			theory	design	experiment practice		
1	Energy Basics		3				
2	Thermodynamics		3				
3	Hydrogen energy technology		3				
4	Hydrogen energy technology		3				
5	Hydrogen energy technology		3				
6	Hydrogen energy technology		3				
7	Discussion		3				

< Schedule >

* language : K-korean, E-English

Weeks	Title of lecture	language	time distribution(minutes)			Teaching Method	evaluation method
			theory	design	experiment practice		
8	Midterm exam		3				
9	Fuel Cells		3				
10	Fuel Cells		3				
11	Fuel Cells		3				
12	Solar Photovoltaics		3				
13	Solar Photovoltaics		3				
14	Solar Photovoltaics		3				
15	Discussion		3				
16	Final exam		3				

10. Contribution index of the course for attaining ABEEK program outcomes

course outcome	contribution scale
No Data	

11. Analysis of improved matters for the previous semester

13. Reference items