

Syllabus

Energy Engineering

Course Name	Course type (credit/hours)		전필(3/3)		Course code	
	Target students Division/major/grade		/		Opening semester	2017년 1학기
	Class time and classroom		화7(전101) 화8(전101) 화9(전101)(전101)			
Reference to this course	Related basic courses					
	Recommended concurrent courses					
	Related advanced courses					
Instructor	Name (title/division)		김형택 (교수/ 대 학원에너지시스템 학부)			
	Office Room Number		Office phone Number	2321	e-mail	htkim@ajou.ac.kr
	Office hours		Homepage address			
Teaching Assistant	Name (title/division)					
	Office Room Number		Office phone Number		e-mail	

1. Introduction

- 1) The basic theories of thermodynamics and heat transfer phenomena is studied with the system configuration concepts of energy technologies and the limitation of the energy conversion and energy utilization system is discussed with the example.
- 2) The thermodynamic cycles and heat engine of energy utilization system is analyzed and and efficiency improvement method for the each cycle are explained. With the cyclic analysis, various fossil-fuel fired power plant are analyzed with technological, economical and environmental performances.
- 3) Engineering principles in nuclear energy and radiation are also studied with technological terms, models, and basic theories which can be applied energy areas as well as engineering fields.

2. Course Objectives

3. Class types and activities

4. Teaching Method

- 1) Basic principles & application principles on each chapter are introduced by Lecturer and encourage the student's participation on the discussion
- 2) Through the knowledge acquired during the class, students are expected to do homework in the application area

5. Knowledge and ability required for taking this course

6. Method of Evaluation

Evaluation Item	The Number of Times	Evaluation Proportion	Remarks
Attendance			
midterm exam			
final exam			
quiz			
presentation			
discussion			
homework			
etc			

가. 중간고사 : 40 나. 기말고사 : 40 다. 출석 : 10% 라. 보고서 : 10% 마. Quiz: 0 바. 세미나 : 0 사. 기타(프로젝트 등): 0

Mid-term : 40%
Final : 40%
Report : 10%
Attendance : 10 %

7. Textbooks

Main/Sub	Title	Writer	Publisher	Publication year
주교재	Energy Conversion and Utilization	J. Krenz	Allyn and	

8. Lecture Schedule

Week	Lecture contents	Lesson type	Remark
1	에너지 안보 (Energy Security)	강의 및 토론 (Lecture)	김형택(H. T. Kim)
2	에너지 기술의 현황 및 전망 (Perspective & Status of Energy Technology)	강의 및 토론 (Lecture)	김형택(H. T. Kim)
3	에너지자원 및 한정성 (Types of Energy Resources & Their Limitation)	강의 및 토론 (Lecture)	김형택(H. T. Kim)
4	열역학, 열전달 이론(Principles of Thermodynamics & Heat Transfer)	강의 및 토론 (Lecture)	김형택(H. T. Kim)
5	열역학 법칙에 따른 에너지 사용의 한정성 (Limitation of Energy Utilization by Thermodynamics Laws)	강의 및 토론 (Lecture)	김형택(H. T. Kim)
6	Cycle 해석 (Carnot Cycle, Otto Cycle) (Cycle Analysis (Carnot Cycle, Otto Cycle))	강의 및 토론 (Lecture)	김형택(H. T. Kim)
7	Cycle 해석 (Brayton Cycle, 냉동 Cycle) (Cycle Analysis (Brayton Cycle, Refrigeration Cycle))	강의 및 토론 (Lecture)	김형택(H. T. Kim)
8	중간고사 (Mid-term Exam.)	시험(Exam)	김형택(H. T. Kim)
9	증기의 열역학 (Thermodynamics of Steam)	강의 및 토론 (Lecture)	김형택(H. T. Kim)
10	Basic Principle of Power Plant	강의 및 토론 (Lecture)	김형택(H. T. Kim)
11	Rankine Cycle 해석 (Analysis of Rankine Cycle)	강의 및 토론 (Lecture)	김형택(H. T. Kim)
12	Gas Turbine, Pollutants Control	강의 및 토론 (Lecture)	김형택(H. T. Kim)
13	신재생에너지 전망과 연료전지 (Renewable Energy Perspective, Fuel Cell)	강의 및 토론 (Lecture)	김형택(H. T. Kim)
14	태양에너지 (Solar Energy)	강의 및 토론 (Lecture)	김형택(H. T. Kim)
15	수력, 풍력, 지열에너지 (Water, Wind, Geothermal Energy)	강의 및 토론 (Lecture)	김형택(H. T. Kim)
16	기말고사 (Final Exam)	시험(Exam)	김형택(H. T. Kim)

9. Others

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