

# Syllabus

## Design & Optimization of Energy Systems

Course Name	Course type (credit/hours)	전선(3/3)		Course code		
	Target students Division/major/grade	/		Opening semester	2017년 2학기	
	Class time and classroom	목1(전109) 목2(전109) 목3(전109)(전109)				
Reference to this course	Related basic courses					
	Recommended concurrent courses					
	Related advanced courses					
Instructor	Name (title/division)					
	Office Room Number		Office phone Number	2695	e-mail	jjung@ajou.ac.kr
	Office hours		Homepage address			
Teaching Assistant	Name (title/division)					
	Office Room Number		Office phone Number		e-mail	

### 1. Introduction

This course describes fundamental concepts related with the development of Microgrids, as novel distribution network structures that unlock the full potential of Distributed Energy Resources (DER) and thus form building blocks of future Smartgrids. This course focus on the power system issues associated with the development of Microgrids and Smartgrids, including its operation, control, protection, and etc.

### 2. Course Objectives

### 3. Class types and activities

#### 4. Teaching Method

Lecture (ppt) and discussion

#### 5. Knowledge and ability required for taking this course

#### 6. Method of Evaluation

Evaluation Item	The Number of Times	Evaluation Proportion	Remarks
Attendance		20	
midterm exam			
final exam		50	
quiz			
presentation			
discussion			
homework		30	
etc			

Term Project (30%)  
Homework and Attendance (20%)  
Final exam (50%)

## 7. Textbooks

Main/Sub	Title	Writer	Publisher	Publication year
주교재	Microgrids: Architectures and Control	Nikos Hatziargyriou	Wiley-IEEE Press	2014
주교재	Advanced Smartgrids for Distribution System Operators	Marc Boillot	Wiley-ISTE	2014

## 8. Lecture Schedule

Week	Lecture contents	Lesson type	Remark
1	Introduction of Microgrids and Smartgrids	Lecture	
2	The Existing Distribution Networks: Design and Operation	Lecture	
3	Main Drivers and Functions of Advanced Smartgrids	Lecture	
4	Main Drivers and Functions of Advanced Smartgrids	Lecture	
5	The Microgrids Concept	Lecture	
6	Microgrids Control Issues	Lecture	
7	Microgrids Control Issues	Lecture	
8	Term Project	Exam or Seminar	
9	Intelligent Local Controllers	Lecture	
10	Intelligent Local Controllers	Lecture	
11	Microgrid Protection	Lecture	
12	Microgrid Protection	Lecture	
13	Operation of Multi-Microgrids	Lecture	
14	Operation of Multi-Microgrids	Lecture	
15	Quantification of Technical, Economic, Environmental and Social Benefit of Microgrid Operation	Lecture	
16	Final Exam	Exam	

## 9. Others

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