Syllabus

Advanced Chemical Engineering Mathematics

Course Name	Course type (credit/hours)	전선(3/3)		Course code	
	Target students Division/major/grade	화학공학과/6학년		Opening semester	2017년 2학기
	Class time and classroom	월11(서302) 월12(서302) 월13(서302)(서302)			
Reference to this course	Related basic courses				
	Recommended concurrent courses				
	Related advanced courses				
Instructor	Name (title/division)	신치범 (교수/ 대학원에너지시스템학부)			
	Office Room Number		Office phone Number	2388	e-mail	cbshin@ajou.ac.kr
	Office hours		Homepage address		
Teaching Assistant	Name (title/division)				
	Office Room Number		Office phone Number		e-mail	

1. Introduction

The mathematical methods to analyse the processes and equipments related to chemical engineering systems will be covered.

2. Course Objectives

화학공학이 대상으로 하는 각종 System의 해석에 필요한 수학적 기법을 강의한다.
- The purpose of this course is to present the mathematical methods to analyse the processes and equipments related to chemical engineering systems.

3. Class types and activities

4. Teaching Method

강의를 위주로 수업을 진행하며, 시험, 과제 및 term project를 통하여 학생들의 학업성취도를 측정한다.
- Mathematical methods to analyse chemical engineering systems will be covered in lectures and the homeworks will be assigned to illustrate how to apply the methodologies in the analysis and design of energy systems.
- Examinations will be given to evaluate the understanding of students on the main concepts of the course.
- Term project will be performed to develop the skills to apply the mathematical methods to practical problems.

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	1	30	
final exam	1	30	
quiz			
presentation			
discussion			
homework	6	20	
etc	1	20	Term Project

시험 60%, 과제 20%, term project 20%
Examinations 60%, Homeworks 20%, Term Project 20%

7. Textbooks

Main/Sub	Title	Writer	Publisher	Publication year
주교재	The Finite Element Method	T.J.R. Hughes	Prentice-Hall	1987

8. Lecture Schedule

Week	Lecture contents	Lesson type	Remark
1	One-Dimensional Problems	강의	
2	Strong Form	강의	
3	Weak Form	강의	
4	Galerkin Form	강의	
5	Matrix Form	강의	
6	Piecewise Linear Finite Element Functions	강의	
7	Element Concept	강의	
8	중 간 고 사	지필시험평가	
9	Two or Thre-Dimensional Problems	강의	
10	Data Processing Arrays	강의	
11	Bilinear Quadrilateral Element	강의	
12	Trilinear Hexahedral Element	강의	
13	Higher-Order Elements	강의	
14	Numerical Integration	강의	
15	Derivatives of the Shape Functions	강의	
16	기 말 고 사	지필시험평가	

9. Others