

Syllabus

Quantum Mechanics in Energy Science

Course Name	Course type (credit/hours)		전필(3/3)		Course code	
	Target students Division/major/grade		에너지시스템 학과/6학년		Opening semester 2018년 1학기	
	Class time and classroom		화6(원242) 화7(원242) 화8(원242)(원242)			
Reference to this course	Related basic courses					
	Recommended concurrent courses					
	Related advanced courses					
Instructor	Name (title/division)		안광준 (교수/에너지시스템 학과)			
	Office Room Number	에너지센터 213호	Office phone Number	031-219-2740	e-mail	kjahn@ajou.ac.kr
	Office hours	화 17:00-18:00		Homepage address		
Teaching Assistant	Name (title/division)					
	Office Room Number		Office phone Number		e-mail	

1. Introduction

This one semester course is aimed to offer graduated students studying in nature science and engineering departments principal understanding as well as general overview of quantum mechanics. Students have opportunity to solve independently various quantum mechanical problems, such as eigenstates and eigenvalues of an electron in Hydrogen atom and spontaneous emission of photon radiated from excited electrons. In eventual, students should develop themselves to understand fundamental physical phenomena only explained by quantum mechanics.

2. Course Objectives

3. Class types and activities

In this course, three-hour lecture is mainly given every week. Lecture materials are opened to students one day earlier. Active attendance of students is strongly recommended. All students must submit homeworks before the dead line and take part in the midterm and final examinations.

4. Teaching Method

Three-hour (10 min break) lecture is mainly given every week.
Students can download the lecture materials in the homepage.

5. Knowledge and ability required for taking this course

6. Method of Evaluation

Evaluation Item	The Number of Times	Evaluation Proportion	Remarks
Attendance		10	
midterm exam		40	
final exam		40	
quiz			
presentation			
discussion			
homework			
etc		10	수업 참여도

Midterm exam 40% + Final exam 40% + Attendance and enthusiasm 20%

7. Textbooks

Main/Sub	Title	Writer	Publisher	Publication year
주교재	Quantum Mechanics: An Introduction	W. Greiner	Springer	1994
주교재	Introduction to Quantum Mechanics	D. J. Griffiths	Prentice Hall	1995
주교재	Quantum Mechanics	J. J. Sakurai	Addison-Wesley Publishing	1994

8. Lecture Schedule

Week	Lecture contents	Lesson type	Remark
1	Introduction to the course and Quantum Mechanics	Lecture	
2	Wave-particle dualism of physical quantities and the radiation law	Lecture	
3	Wave aspects of matter	Lecture	
4	Mathematical foundations for QM	Lecture	
5	Schroedinger equation	Lecture	
6	Time-dependent Schroedinger equation 1	Lecture	
7	Time-dependent Schroedinger equation 2	Lecture	
8	Midterm Exam		
9	Quantum Mechancis in 3 dimension 1	Lecture	
10	Quantum Mechancis in 3 dimension 2	Lecture	
11	Identical particles 1	Lecture	
12	Identical particles 2	Lecture	
13	Time-independent perturbation theory	Lecture	
14	Time-dependent perturbation theory	Lecture	
15	Final Exam		

9. Others

The course plane can be changed, depending on situation.
 Cheating in the exams and simply copying a homework of other students
 are strongly prohibited (it is noted to 0).