

Course Schedule of MST Program ,TIGP

Semester: Spring, 2013(101 學年度下學期)

Course(科目): 高等物化二- Advanced Physical Chemistry (II)

Time(時間): 9:1 0~12:00 am, Tuesday(T2T3T4)

Room(教室): 311 IAMS 中研院原分所 R311(台大校園)

NTHU coordinator(清大教師): 倪其焜

Course speakers(授課老師): Wen-Bih Tzeng 曾文碧、Shang-Bin Liu 劉尚斌、
Chia-Lung Hsieh 謝佳龍、Chau-Chung Han 韓肇中

Core course(必選課), credit(學分): 3

Course No.(科號): TIGP727200

Date	lecturer	Date	lecturer
2/19 Tuesday 9:1 0~12:00	Prof. Wen-Bih Tzeng	4/23Tuesday 9:1 0~12:00	Prof. Chia-Lung Hsieh
2/26 Tuesday 9:1 0~12:00	Prof. Wen-Bih Tzeng	4/30 Tuesday 9:1 0~12:00	Prof. Chia-Lung Hsieh
3/5 Tuesday 9:1 0~12:00	Prof. Wen-Bih Tzeng	5/7 Tuesday 9:1 0~12:00	Prof. Chia-Lung Hsieh
3/12 Tuesday 9:1 0~12:00	Prof. Shang-Bin Liu	5/14 Tuesday 9:1 0~12:00	Prof. Chia-Lung Hsieh
3/19 Tuesday 9:1 0~12:00	Prof. Shang-Bin Liu	5/21 Tuesday 9:1 0~12:00	Prof. Chia-Lung Hsieh
3/26 Tuesday 9:1 0~12:00	Prof. Shang-Bin Liu	5/28 Tuesday 9:1 0~12:00	Prof. Chau-Chung Han
4/2Tuesday 9:1 0~12:00	Prof. Shang-Bin Liu	6/4 Tuesday 9:1 0~12:00	Prof. Chau-Chung Han
4/9 Tuesday 9:1 0~12:00	Prof. Shang-Bin Liu	6/11 Tuesday 9:1 0~12:00	Prof. Chau-Chung Han
4/16 Tuesday 9:1 0~12:00	Prof. Chia-Lung Hsieh	6/18 Tuesday 9:1 0~12:00	Prof. Chau-Chung Han

Speaker	Part 1 (Week 1-week3) Prof. Wen-Bih Tzeng 曾文碧教授
Class Outline	1. The characteristics of electronic transitions 2. The fates of electronically excited states 3. Lasers 4. Electronic spectroscopy 5. Vibronic spectroscopy 6. Photoionization spectrscopy 7. Photoelectron spectroscopy
Introduction	In this section, we will cover some topics related to electronic, vibronic, photoionization, and photoelectron spectroscopies as well as lasers.
Grading	(1) class attendance, (2) quiz
Textbook	Physical chemistry (P.W. Atkins) + class notes

Speaker	Part 2 (Week 4-week7) Prof. Shang-Bin Liu 劉尚斌教授
Class Outline	Introduction to NMR Spectroscopy
Introduction	<ol style="list-style-type: none"> 1. Background and History of NMR Spectroscopy 2. Fundamental NMR: Theories and Introduction 3. High-resolution and Solid-State NMR: Techniques and Applications
Grading	Two take home exams
Textbook	Lecture notes

Speaker	Part 3 (Week 8-week13) Prof. Chia-Lung Hsieh 謝佳龍教授
Class Outline	<p>Statistical thermodynamics: concepts and applications</p> <ol style="list-style-type: none"> 1. Distribution of molecular states 2. Internal energy and entropy 3. Canonical partition function 4. Thermodynamics of diffusion 5. Thermodynamics of biological membrane dynamics 6. Optical microscopy in studying membrane diffusion I 7. Optical microscopy in studying membrane diffusion II
Introduction	I will cover the concepts and applications of statistical thermodynamics which is the important link between the microscopic properties of individual atoms and molecules to the macroscopic bulk properties of materials.
Grading	Homework and exams
Textbook	Ch. 16 and Ch. 17, Atkins, Physical Chemistry

Speaker	Part 4 (Week 14-week17) Prof. Chau-Chung Han 韓肇中教授
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Class Outline	<p>1. Molecular interactions—Molecular properties that underlie intermolecular interactions and the effects of these interactions will be introduced.</p> <p>2. Macromolecules and aggregates— Techniques used in the study of molecular size and shape will first be introduced; and will then explore dynamic structures and properties of macromolecules and their aggregates.</p>
Introduction	The outline of Chapters 18-19 will be followed with related materials added.
Grading	Homework assignment.
Textbook	Atkin's Physical Chemistry, 8 th edition(Oxford Univ., 2006)