Course Schedule of MST Program ,TIGP

Semester: Spring, 2011 (99 學年度下學期)

Course(科目): 高等物化 三-Advanced Physical Chemistry (III)
Time(時間): 9:1 0~12:00 am, Thursday(R2R3R4)
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): Chi-Kung Ni 倪其焜、Kopin Liu 劉國平、
Huan-Cheng Chang 張煥正、Ta-Chau Chang 張大釗
Required(必修課), credit(學分): 3
Course No.(科號): TIGP727300

Date	lecturer	Date	lecturer
2/24 Thursday 9:1 0~12:00	Prof. Chi-Kung Ni	4/28 Thursday 9:1 0~12:00	Prof. Huan-Cheng Chang
3/3 Thursday 9:1 0~12:00	Prof. Chi-Kung Ni	5/5 Thursday 9:1 0~12:00	Prof. Huan-Cheng Chang
3/10 Thursday 9:1 0~12:00	Prof. Chi-Kung Ni	5/12 Thursday 9:1 0~12:00	Prof. Huan-Cheng Chang
3/17 Thursday 9:1 0~12:00	Prof. Chi-Kung Ni	5/19 Thursday 9:1 0~12:00	Prof. Huan-Cheng Chang
3/24 Thursday 9:1 0~12:00	Prof. Chi-Kung Ni	5/26 Thursday 9:1 0~12:00	Prof. Huan-Cheng Chang
3/31 Thursday 9:1 0~12:00	Prof. Kopin Liu	6/2 Thursday 9:1 0~12:00	Prof. Ta-Chau Chang
4/7 Thursday 9:1 0~12:00	Prof. Kopin Liu	6/9 Thursday 9:1 0~12:00	Prof. Ta-Chau Chang
4/14 Thursday 9:1 0~12:00	Prof. Kopin Liu	6/16 Thursday 9:1 0~12:00	Prof. Ta-Chau Chang
4/21 Thursday 9:1 0~12:00	Prof. Kopin Liu	6/23 Thursday 9:1 0~12:00	Prof. Ta-Chau Chang

Speaker	Part 1 (Week 1-week5) Prof. Chi-Kung Ni 倪其焜教授
Class Outline	1. Molecular Motion in gases 2. Molecular Motion in liquids 3. Rates of Chemical Reactions 4. Elementary Chemical Reactions 5. Unimolecular Reactions
Introduction	Focus on the estimation of reaction rate constants both in gas phase and liquid phase for various reactions.
Grading	exam
Textbook	1.Chemical Kinetics and Reaction Dynamics by P. Houston 2001 2.Physical Chemistry, by P. Atkins, J. De Paula

Speaker	Part 2 (Week 6-week9) Prof. Kopin Liu 劉國平教授

Class Outline	1. The kinetics of complex reactions, including chain reactions, polymerization kinetics, and homogeneous catalysis. 2. Photochemistry- basics and applications. 3. Molecular reaction dynamics, including simple collision theory, transition state theory, concept of potential energy surface, and a few examples.
Introduction	I will follow the textbook chapters 23 and 24, with some extra materials added. The emphasis will be on basic concepts and simple physical pictures.
Grading	Homework (60 %) and quiz/exam. (40%).
Textbook	Atkin's Physical Chemistry, 8th edition(Oxford Univ., 2006)

Speaker	Part 3 (Week 10-week14) Prof. Huan-Cheng Chang 張煥正教授
Class Outline	1. The solid state 2. Processes at solid surfaces
Introduction	The course will cover topics presented in Chapters 20 and 25 of the textbook of Atkins & de Paula, including 1. Crystal lattices 2. Crystal structure 3. The properties of solids 4. The growth and structure of solid surfaces 5. The extent of adsorption 6. Heterogeneous catalysis 7. Processes at electrodes New materials such as "surface spectroscopy" will also be added in the course for advanced studies of the subject.
Grading	Exam: 70% Homework: 30%
Textbook	Peter Atkins and Julio de Paula, Physical Chemistry, 8th Ed. (2006)

Speaker	Part 4 (Week 15-week18) Prof. Ta-Chau Chang 張大釗教授
Class Outline	Group theory and Spectroscopy

Introduction	
Grading	
Textbook	