COURSE SYLLABUS

1. **Program of Study** of Science (Chemistry)
   Faculty/Institute/College International College, Mahidol University

2. **Course Code** ICCH 334
   Course Title Physical Chemistry II

3. **Number of Credits** 4 (4-0-8) (Lecture/Lab/Self-study)

4. **Prerequisite** ICCH 333

5. **Type of Course** Required major courses

6. **Semester / Academic Year** Second trimester 2005-2006

7. **Course Conditions** Number of students between 20-30

8. **Course Description**:
   Concepts of classical and non-classical physical chemistry; electrochemical cells; kinetics; composite reaction mechanisms; quantum mechanics; atom structure and chemical bond.

9. **Course Objectives**:
   After successful completion of this course, students should be able to
   9.1 understand the detailed concepts of kinetics and quantum chemistry and the related molecular spectroscopy;
   9.2 apply the knowledge to further enhance the understanding of other areas of chemistry such as organic and inorganic chemistry;
   9.3 apply the concepts to better understanding molecular spectroscopy and the applications of quantum mechnaics to theories of modern absorption and emission spectroscopy.

10. Course Outlines

Week	Topics	Hour			Instructor
	Lecture/Seminar	Lecture	Lab	Self-study	
1	Electrochemical cells	2	-	4	Dr. Supachai Supaluknari
2	Electrochemical cells Kinetics	4	-	8	
3	Kinetics	4	-	8	
4	Kinetics Reaction mechanisms	4	-	8	
5	Kinetics of elementary reactions	4	-	8	
6	Quantum mechanics	4	-	8	
7	Quantum mechanics	4	-	8	
8	Quantum mechanics	4	-	8	
9	Atom structure	4	-	8	
10	Atom structure	4	-	8	
11	Chemical bond	4	-	8	
12	Chemical bond	2	-	8	
	Total	44	-	92	

11. **Teaching Methods**
    11.1 Lecturing
    11.2 Self-study
    11.3 Group discussion and presentation

12. **Teaching Media**
    Transparencies, handouts and lecturing from boards.

13. **Measurement and evaluation of student achievement**
    Student achievement is measured and evaluated by
    13.1 the ability in understanding the detailed concepts of kinetics and quantum chemistry and the related molecular spectroscopy;
    13.2 the ability to apply the knowledge to further enhance the undernstanding of other areas of chemistry such as organic and inorganic chemistry;
    13.3 the ability to apply the concepts to better understanding molecular spectroscopy and the applications of quantum mechnaics to theories of modern absorption and emission spectroscopy.
    Student's achievement will be graded according to the college and university standard using the symbols: A, B+, B, C+, C, D+, D and F. Students must attend at least 80% of the total class hours of this course.
    Assessment made from the set-forward criteria: student who gets 85% and above will have Grade A.

- There will be homework assignments. The assignments will not have to be handed in or graded, but will be discussed periodically in class. Failure to do the homework or to discuss the assignments in class may affect the deliberation of the final Grade.
- A suggestive minimum of;

Midterm examination	40%
Final examination	50%
Quizzes	10%

14. **Course Evaluation**
    14.1 Students' achievement as indicated in number 13 above.
    14.2 Students' satisfaction towards teaching and learning of the course using questionnaires.

15. **References**

Levine, I.N. **Physical Chemistry** 5th Edition, USA: McGraw-Hill; 2003.

Atkins, P. and de Paula, J. **Atkins' Physical Chemistry** 7th Edition, UK: Oxford University Press; 2002.

Levine, I.N. **Quantum Chemistry** 5th Edition, USA: McGraw-Hill; 2000.

Atkins, P. and Friedman, R. **Molecular Quantum Mechanics** 4th Edition, UK: Oxford University Press; 2005.

16. Instructors

Dr. Supachai Supaluknari

17. Course Coordinator

Dr. Pakorn Bovonsombat
Mahidol University International College, Mahidol University
Telephone: 02-4410595 ext. 1529
E-mail: icpakorn@mahidol.ac.th