COURSE SYLLABUS

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

2. **Course Code** ICCH 381
   Course Title Mathematics for Chemists

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

4. **Prerequisite** None

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

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

7. **Condition** Number of students between 20-30

8. **Course Description**:
   Mathematics essential for chemists for the study of advanced physical chemistry topics such as quantum mechanics and statistical thermodynamics; partial differential equations; special functions; complex variables; the theory of analytic functions.

9. **Course Objectives**:
   After successful completion of this course, students should be able to
   9.1 understand advanced mathematical methods;
   9.2 apply the mathathematical methods to physical chemistry concepts and problems;
   9.3 apply the mathematical methods to computational chemistry and quantum mechanical calculations.

10. Course Outline

Week	Topics	Hours			Instructor
		Lecture	Lab	Self-study	
1	Algebraic methods	2	-	4	Dr. Aram Tangboon douangjit
2	Geometrical methods	2	-	4	
3	Differential calculus	4	-	8	
4	Partial differentiation	4	-	8	
5	Partial differentiation	4	-	8	
6	Integration	4	-	8	
7	Integration	4	-	8	
8	Applications of integration	4	-	8	
9	Differential equations	4	-	8	

10	Differential equations	4	-	8	
11	Experimental error	4	-	8	
12	Method of least squares	4	-	8	
	Total	44	-	88	

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 advanced mathematical methods;
    13.2 the ability to apply the mathathematical methods to physical chemistry concepts and problems;
    13.3 the ability to apply the mathematical methods to computational chemistry and quantum mechanical calculations.

    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%
Class participation	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**:

    Turrell, G. **Mathematics for Chemistry & Physics** 1st Edition, USA: Academic Press; 2001.

    Gormally, J. **Essential Mathematics for Chemists**, USA: Prentice Hall; 2000.

16. Instructors:
Dr. Aram Tangboondouangjit

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