COURSE SYLLABUS

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

2. **Course Code** ICCH 471
   Course Title Bioorganic Chemistry

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

4. **Prerequisites** ICCH 222

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

6. **Semester / Academic Year**:
   First trimester 2006-2007

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

8. **Course Description**:
   Mechanisms and the reactions of selected enzymes from the perspective of mechanistic organic chemistry and physical organic chemistry; three-dimensional structure of enzymes; chemical catalysis; enzyme kinetics; stereochemistry of enzyme reactions.

9. **Course Objectives**:
   After successful completion of this course, students should be able to
   9.1 understand mechanisms of selected enzymes from organic chemistry perspective;
   9.2 understand three-dimensional structures of enzymes and the mechanisms of enzymes;
   9.3 apply physical organic chemistry to understanding enzyme actions.

10. **Course Outline**

Week	Topics	Hours			Instructor
		Lecture	Lab	Self-study	
1	Three-dimensional structure of enzymes	2	-	4	Dr. Pitak Chuawong
2	Structure of enzyme-substrate complexes	4	-	8	Dr. Pitak Chuawong
3	Transition state theory Principles of catalysis	4	-	8	Dr. Pitak Chuawong
4	Covalent catalysis Structure reactivity	4	-	8	Dr. Pitak Chuawong

	relationships				
5	Enzyme kinetics	4	-	8	Dr. Pitak Chuawong
6	Enzyme kinetics pH dependence of catalysis	4	-	8	Dr. Pitak Chuawong
7	Stereochemistry of enzymatic reactions	4	-	8	Dr. Pitak Chuawong
8	Stereochemistry of enzymatic reactions	4	-	8	Dr. Pitak Chuawong
9	Stereochemistry of enzymatic reactions	4	-	8	Dr. Pitak Chuawong
10	Cooperative ligand binding, allosteric interactions, regulation	4	-	8	Dr. Pitak Chuawong
11	Structure Mechanisms of selected enzymes	4	-	8	Dr. Pitak Chuawong
12	Structure Mechanisms of selected enzymes	2	-	4	Dr. Pitak Chuawong
	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 mechanisms of selected enzymes from organic chemistry perspective;

13.2 the ability in understanding three-dimensional structures of enzymes and the mechanisms of enzymes;

13.3 the ability to apply physical organic chemistry to understanding enzyme actions.

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.

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:

Fersht, A. **Structure and Mechanism in Protein Science** 2nd Edition, USA.: W.H. Freeman and Company;1999.

Dugas, H. **Bioorganic Chemistry**; **a chemical approach to enzyme action** 3rd Edition, USA: Springer; 1996.

16. Instructors:

Dr. Pitak Chuawong

17. Course Coordinator:

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