

## COURSE SYLLABUS

1. **Program of Study** Bachelor of Science (Chemistry)  
**Faculty** International College, Mahidol University
2. **Course Code** ICCH 451  
**Course Title** Industrial Chemistry
3. **Number of Credits** 4 (3-2-7) (**Lecture/Lab/Self-study**)
4. **Prerequisite** none
5. **Type of Course** Elective major course
6. **Semester / Academic Year** First trimester 2006-2007
7. **Course Conditions** Number of students between 20-30

8. **Course Description:**

Introduction to industrial chemistry; automatic process control; construction materials; calculation of pressure and temperature stresses; management in industrial organization; feasibility studies; material and energy balances; industrial water treatment; finally the control of air and water pollution; field trips included.

9. **Course Objectives:**

After successful completion of this course, students should be able to

9.1 understand the engineering aspect of industrial chemistry;

9.2 apply chemical knowledge to the engineering aspect of the industry;

9.3 have a better understanding of the applied side of chemistry in industry.

**10. Course Outline**

Week	Topics	Hours			Instructor
		Lecture	Lab	Self-study	
1	Introduction and overview of industry	2	-	4	Asst.Prof.Dr.Bovornlak Oonkhanond
2	Automatic process control	2	2	5	
3	Automatic process control	4	-	8	
4	Construction materials	2	2	5	
5	Pressure stresses	2	2	5	
6	Temperature stresses	4	-	8	
7	Industrial organisation	2	2	5	
8	Management systems	2	2	5	

9	Feasibility studies	4	-	8	
10	Material energy balance	4	-	8	
11	Water treatment	2	2	5	
12	Air/water pollution control	2	-	4	
	<b>Total</b>	32	12	78	

#### 11. Teaching Methods:

- 11.1 Lecturing
- 11.2 Self-study
- 11.3 Field trips, 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 engineering aspect of industrial chemistry;
- 13.2 the ability to apply chemical knowledge to the engineering aspect of the industry;
- 13.3 the ability to have a good understanding of the applied side of chemistry in industry.

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 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:

Green, M.M. and Wittcoff, H.A. **Organic Chemistry Principles and Industrial Practice** USA: Wiley-VCH; 2003.

Weissermel, K. and Arpe, H.-J. **Industrial Organic Chemistry**, 4<sup>th</sup> Edition, USA: Wiley-VCH; 2003.

Austin, G.T. **Shreve's Chemical Process Industries**, 5<sup>th</sup> Edition, USA: McGraw-Hill; 1984.

Heaton, C.A. **An Introduction to Industrial Chemistry**, 2<sup>nd</sup> Edition, UK: Blackie Academic & Professional; 1991.

**16. Instructors:**

Assistant Professor Dr. Bovornlak Oonkhanond

**17. Course Coordinator:**

Dr. Pakorn Bovonsombat

Mahidol University International College, Mahidol University

Telephone: 02-4410595 ext. 1529

E-mail: icpakorn@mahidol.ac.th