

Tamkang University Academic Year 112, 1st Semester Course Syllabus

Course Title	ADVANCED CHEMICAL ENGINEERING THERMODYNAMICS	Instructor	YANG, YAN-LING
Course Class	TEDXM1A MASTER'S PROGRAM, DEPARTMENT OF CHEMICAL AND MATERIALS ENGINEERING, 1A	Details	<ul style="list-style-type: none"> ◆ General Course ◆ Selective ◆ One Semester
Relevance to SDGs	SDG8 Decent work and economic growth		
Departmental Aim of Education			
Education Objectives: Cultivation of chemical/materials engineering experts with professional knowledge and high research-and-development capability.			
Subject Departmental core competences			
<ul style="list-style-type: none"> A. Possess the advanced knowledge of chemical/material engineering and to be able to use it. (ratio:40.00) B. Capable to plan and execute the chemical/material engineering projects.(ratio:5.00) C. Capable of writing professional papers.(ratio:5.00) D. Capable of creative thinking and solving problem independently.(ratio:30.00) E. Capable to coordinate and integrate interdisciplinary cooperation.(ratio:5.00) F. Possess global vision.(ratio:5.00) G. Qualified capability for leadership, management and planning.(ratio:5.00) H. Capable of self-learning and self-growth.(ratio:5.00) 			
Subject Schoolwide essential virtues			
<ul style="list-style-type: none"> 1. A global perspective. (ratio:10.00) 2. Information literacy. (ratio:10.00) 3. A vision for the future. (ratio:10.00) 4. Moral integrity. (ratio:10.00) 5. Independent thinking. (ratio:30.00) 6. A cheerful attitude and healthy lifestyle. (ratio:10.00) 7. A spirit of teamwork and dedication. (ratio:10.00) 8. A sense of aesthetic appreciation. (ratio:10.00) 			

Course Introduction	This course aims at graduate students. The purposes of this course are to review basic first and second laws of thermodynamics and introduce the concept of phase equilibrium and theory and application of solutions. That will help students understand thoroughly about the chemical thermodynamics and learn how to apply knowledge of that to the research theories.
------------------------	---

The correspondences between the course's instructional objectives and the cognitive, affective, and psychomotor objectives.

Differentiate the various objective methods among the cognitive, affective and psychomotor domains of the course's instructional objectives.

- I. Cognitive : Emphasis upon the study of various kinds of knowledge in the cognition of the course's veracity, conception, procedures, outcomes, etc.
- II. Affective : Emphasis upon the study of various kinds of knowledge in the course's appeal, morals, attitude, conviction, values, etc.
- III. Psychomotor: Emphasis upon the study of the course's physical activity and technical manipulation.

No.	Teaching Objectives	objective methods
1	Review laws of thermodynamics	Cognitive
2	Cultivate students with professional knowledge of chemical thermodynamics	Cognitive

The correspondences of teaching objectives : core competences, essential virtues, teaching methods, and assessment

No.	Core Competences	Essential Virtues	Teaching Methods	Assessment
1	ABCD	1234	Lecture, Discussion	Testing, Report(including oral and written)
2	EFGH	5678	Lecture, Discussion	Testing, Report(including oral and written)

Course Schedule

Week	Date	Course Contents	Note
1	112/09/11 ~ 112/09/17	Introduction	
2	112/09/18 ~ 112/09/24	Conservation of Energy (I)	
3	112/09/25 ~ 112/10/01	Conservation of Energy (II)	
4	112/10/02 ~ 112/10/08	Conservation of Energy (III)	

5	112/10/09 ~ 112/10/15	Entropy (I)	
6	112/10/16 ~ 112/10/22	Entropy (II)	
7	112/10/23 ~ 112/10/29	Entropy (III)	
8	112/10/30 ~ 112/11/05	Industrial Applications (I)	
9	112/11/06 ~ 112/11/12	Industrial Applications (II)	
10	112/11/13 ~ 112/11/19	Midterm	
11	112/11/20 ~ 112/11/26	Calculation of the Properties of Pure Fluids (I)	
12	112/11/27 ~ 112/12/03	Calculation of the Properties of Pure Fluids (II)	
13	112/12/04 ~ 112/12/10	Phase Behavior of Pure Fluids (I)	
14	112/12/11 ~ 112/12/17	Phase Behavior of Pure Fluids (II)	
15	112/12/18 ~ 112/12/24	Thermodynamic Properties of Mixtures (I)	
16	112/12/25 ~ 112/12/31	Thermodynamic Properties of Mixtures (II)	
17	113/01/01 ~ 113/01/07	Thermodynamic Properties of Mixtures (III)	
18	113/01/08 ~ 113/01/14	Final	
Key capabilities	Problem solving		
Interdisciplinary	STEAM course (S:Science, T:Technology, E:Engineering, M:Math, A field:Integration of Art and Humanist)		
Distinctive teaching	Project implementation course		
Course Content	Logical Thinking		
Requirement			

Textbooks and Teaching Materials	Self-made teaching materials:Handouts Using teaching materials from other writers:Handouts
References	
Grading Policy	<p>◆ Attendance : % ◆ Mark of Usual : % ◆ Midterm Exam : 50.0 %</p> <p>◆ Final Exam : 50.0 %</p> <p>◆ Other () : %</p>
Note	<p>This syllabus may be uploaded at the website of Course Syllabus Management System at http://info.ais.tku.edu.tw/csp or through the link of Course Syllabus Upload posted on the home page of TKU Office of Academic Affairs at http://www.acad.tku.edu.tw/CS/main.php .</p> <p>※ Unauthorized photocopying is illegal. Using original textbooks is advised. It is a crime to improperly photocopy others' publications.</p>