

## Tamkang University Academic Year 109, 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"> <li>◆ General Course</li> <li>◆ Selective</li> <li>◆ One Semester</li> </ul>
D e p a r t m e n t a l   A i m   o f   E d u c a t i o n			
Education Objectives: Cultivation of chemical/materials engineering experts with professional knowledge and high research-and-development capability.			
S u b j e c t   D e p a r t m e n t a l   c o r e   c o m p e t e n c e s			
<p>A. Possess the advanced knowledge of chemical/material engineering and to be able to use it. (ratio:70.00)</p> <p>D. Capable of creative thinking and solving problem independently.(ratio:30.00)</p>			
S u b j e c t   S c h o o l w i d e   e s s e n t i a l   v i r t u e s			
<p>3. A vision for the future. (ratio:10.00)</p> <p>5. Independent thinking. (ratio:90.00)</p>			
Course Introduction	<p>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.</p>		

**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	AD	35	Lecture, Discussion	Testing, Report(including oral and written)
2	AD	35	Lecture, Discussion	Testing, Report(including oral and written)

**Course Schedule**

Week	Date	Course Contents	Note
1	109/09/14 ~ 109/09/20	Introduction	
2	109/09/21 ~ 109/09/27	Conservation of Energy (I)	
3	109/09/28 ~ 109/10/04	Conservation of Energy (II)	
4	109/10/05 ~ 109/10/11	Conservation of Energy (III)	
5	109/10/12 ~ 109/10/18	Entropy (I)	
6	109/10/19 ~ 109/10/25	Entropy (II)	
7	109/10/26 ~ 109/11/01	Entropy (III)	
8	109/11/02 ~ 109/11/08	Industrial Applications (I)	
9	109/11/09 ~ 109/11/15	Industrial Applications (II)	
10	109/11/16 ~ 109/11/22	Midterm	

11	109/11/23 ~ 109/11/29	Calculation of the Properties of Pure Fluids (I)	
12	109/11/30 ~ 109/12/06	Calculation of the Properties of Pure Fluids (II)	
13	109/12/07 ~ 109/12/13	Phase Behavior of Pure Fluids (I)	
14	109/12/14 ~ 109/12/20	Phase Behavior of Pure Fluids (II)	
15	109/12/21 ~ 109/12/27	Thermodynamic Properties of Mixtures (I)	
16	109/12/28 ~ 110/01/03	Thermodynamic Properties of Mixtures (II)	
17	110/01/04 ~ 110/01/10	Thermodynamic Properties of Mixtures (III)	
18	110/01/11 ~ 110/01/17	Final	
Requirement			
Teaching Facility	Computer, Projector, Other (板書)		
Textbooks and Teaching Materials	Sandler, S. I.; "Chemical, Biochemical, and Engineering Thermodynamics" , 4th Edition, John Wiley & Sons, 2006.		
References			
Number of Assignment(s)	(Filled in by assignment instructor only)		
Grading Policy	◆ Attendance :            %    ◆ Mark of Usual :            %    ◆ Midterm Exam : 50.0 % ◆ Final Exam :    50.0 % ◆ Other < > :            %		
Note	This syllabus may be uploaded at the website of Course Syllabus Management System at <a href="http://info.ais.tku.edu.tw/csp">http://info.ais.tku.edu.tw/csp</a> or through the link of Course Syllabus Upload posted on the home page of TKU Office of Academic Affairs at <a href="http://www.acad.tku.edu.tw/CS/main.php">http://www.acad.tku.edu.tw/CS/main.php</a> . <b>※ Unauthorized photocopying is illegal. Using original textbooks is advised. It is a crime to improperly photocopy others' publications.</b>		