

Fall 2011 - CENG300: Chemical Engineering Thermodynamics

Professor	Chinedum Osuji 302 Mason Lab, 432-4357, chinedum.osuji@yale.edu	
Description	An introduction to thermodynamics with emphasis on energy transfer, solution thermodynamics, chemical equilibria and phase equilibria. Applications of interest to chemical engineering, environmental engineering and materials science are highlighted.	
TA	Candice Pelligra - 222 Mason Lab, candice.pelligra@yale.edu. Office hours - TBA	
Prerequisite	MATH 120a or 120b or ENAS 151a (Multivariable Calculus) or instructor's permission	
Class	Mondays and Wednesdays, 11:35a-12:50p, 107 Mason Lab	
Office Hours	Tuesdays and Thursdays, 12:00p-1:00p	
Textbook	"Introduction to Chemical Engineering Thermodynamics" 7 th ed. by J. M. Smith, H. C. Van Ness and M. M. Abbott	
Exams	There will be two preliminary exams during the semester and a final exam at the end. Prelims will be in the lecture room at 107 Mason with dates as noted on the schedule. The final is currently scheduled for 09:00 on Th 12/15/2011.	
Homework	There will be periodic homework assignments throughout the semester ($\approx 7-9$) which should be submitted at the start of class on their due date. Some or all of the problems will be graded. Students are permitted to work cooperatively on assignments, but each person must submit his or her own individually prepared results.	
Grading	Quizzes and in-class discussions	50 points
	Exam I	200 points
	Exam II	200 points
	Final Exam	250 points
	Graded Homework	300 points
	Total	1000 points
	Letter grades will be assigned according to the scale below	
	850 points	A- or better
	700 points	B- or better
	450 points	C- or better

Lecture #	Date	Lecture Topic	Chapter(s)
1	W Aug 31	Definitions, 1 st Law	1
2	M Sep 5	State Functions	2
3	W Sep 7	Equilibrium, Reversibility	2
4	M Sep 12	PVT Behavior	3
5	W Sep 14	Ideal Gases	3
6	M Sep 19	Non-ideal Gases I	3
7	W Sep 21	Non-ideal Gases II	3
8	M Sep 26	Heat I	4
9	W Sep 28	Heat II	4
10	M Oct 3	2 nd Law, Entropy I	5
11	W Oct 5	Entropy II	5
	M Oct 10	<i>No class</i>	
	W Oct 12	Exam I	
	M Oct 17	<i>No class</i>	
	W Oct 19	<i>No class</i>	
12	M Oct 24	Thermodynamic Properties	6
13	W Oct 26	Phase Behavior	6
14	M Oct 31	Vapor-Liquid Equilibria I	10
15	W Nov 2	Vapor-Liquid Equilibria II	10
16	M Nov 7	Solutions: General	11
17	W Nov 9	Fugacity	11
18	M Nov 14	Solutions: Ideal and Non-ideal	11
	W Nov 16	Exam II	
	M Nov 21	<i>Fall recess</i>	
	W Nov 23	<i>Fall recess</i>	
19	M Nov 28	Activity Coefficients I	12
20	W Nov 30	Activity Coefficients II	12
21	M Dec 5	Chemical Reactions I	13
22	W Dec 7	Chemical Reactions II	13
	Th Dec 15	Final Exam	