Fall 2015 - 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	Kristof Toth - 222 Mason Lab, kristof.toth@yale.edu. Office hours - TBA
Prerequisite	MATH 120a or 120b or ENAS 151a (Multivariable Calculus) or instructor's permission
Class	Mondays and Wednesdays, 1:00p-2:15p, 104 Mason Lab
Office Hours	Tuesdays and Thursdays, 11:30a-12:30p
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 104 Mason with dates as noted on the schedule. The final is currently scheduled for 09:00 on Th 12/17/2015.
Homework	There will be periodic assignments throughout the semester (≈7-9) which should be submitted at the start of class on their due date. 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 Assignments	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 Sep 2	Definitions, 1^{st} Law	1
2	F Sep 4	State Functions	2
	M Sep 7	*No class - Labor Day*	
3	W Sep 9	Equilibrium, Reversibility	2
4	M Sep 14	PVT Behavior	3
5	W Sep 16	Ideal Gases	3
6	M Sep 21	Non-ideal Gases I	3
7	W Sep 23	Non-ideal Gases II	3
8	M Sep 28	Heat I	4
9	W Sep 30	Heat II	4
10	M Oct 5	2^{nd} Law, Entropy I	5
	W Oct 7	**Exam I**	
11	M Oct 12	Entropy II	5
12	W Oct 14	Thermodynamic Properties	6
13	M Oct 19	Phase Behavior	6
	W Oct 21	*No class - October Recess*	
14	M Oct 26	Vapor-Liquid Equilibria I	10
15	W Oct 28	Vapor-Liquid Equilibria II	10
16	M Nov 2	Solutions: General	11
17	W Nov 4	Fugacity	11
	M Nov 9	**Exam II**	
	W Nov 11	*No class*	
18	M Nov 16	Solutions: Ideal and Non-ideal	11
19	W Nov 18	Activity Coefficients I	12
	M Nov 23	*November Recess*	
	W Nov 25	*November Recess*	
20	M Nov 30	Activity Coefficients II	12
21	W Dec 2	Chemical Reactions I	13
22	M Dec 7	Chemical Reactions II	13
	W Dec 9	*No class*	
23	M Dec 14	Additional lecture I	-
24	W Dec 16	Additional lecture II	-
	Th Dec 15	**Final Exam**	