

# Fall 2008 - CENG300: Chemical Engineering Thermodynamics

<b>Professor</b>	Chinedum Osuji 302 Mason Lab, 432-4357, chinedum.osuji@yale.edu
<b>Description</b>	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.
<b>TA</b>	Meagan Mauter (meagan.mauter@yale.edu) Office hours - TBA
<b>Prerequisite</b>	MATH 120a or 120b or ENAS 151a (Multivariable Calculus) or instructor's permission
<b>Class</b>	Mondays and Wednesdays, 11:35a-12:50p, 107 Mason Lab
<b>Office Hours</b>	Mondays and Wednesdays, 10:00a-11:00a
<b>Textbook</b>	"Introduction to Chemical Engineering Thermodynamics" 7 <sup>th</sup> ed. by J. M. Smith, H. C. Van Ness and M. M. Abbott
<b>Exams</b>	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 date and location of the final exam will be announced during the semester.
<b>Homework</b>	There will be periodic homework assignments throughout the semester which should be submitted at the start of class on their due date. Some 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.
<b>Grading</b>	Exam I                    100 points Exam II                    100 points Graded Homework       150 points Final Exam                150 points Total                        500 points Letter grades will be assigned according to the scale below  425 points                A- or better 350 points                B- or better 225 points                C- or better

Lecture #	Date	Lecture Topic	Chapter(s)
1	W Sep 3	Definitions	1
2	M Sep 8	1 <sup>st</sup> Law, State Functions	2
3	W Sep 10	Equilibrium, Reversibility	2
4	M Sep 15	PVT Behavior	3
5	W Sep 17	Ideal Gas	3
6	M Sep 22	Non-ideal Gases I	3
7	W Sep 24	Non-ideal Gases II	3
8	M Sep 29	Heat I	4
9	W Oct 1	Heat II	4
10	M Oct 6	2 <sup>nd</sup> Law	5
	W Oct 8	<b>Exam I</b>	
11	M Oct 13	Entropy	5
12	W Oct 15	Thermodynamic Properties	6
13	M Oct 20	Phase Behavior	6
14	W Oct 22	Vapor-Liquid Equilibria I	10
15	M Oct 27	Vapor-Liquid Equilibria II	10
16	W Oct 29	Solutions: General	11
17	M Nov 3	Fugacity	11
18	W Nov 5	Solutions: Ideal and Non-ideal	11
19	M Nov 10	Activity Coefficients	12
	W Nov 12	<b>Exam II</b>	
20	M Nov 17	Chemical Reactions I	13
21	W Nov 19	Chemical Reactions II	13
	M Nov 24	Fall recess	
	W Nov 26	Fall recess	
22	M Dec 1	Chemical Reactions III	13
23	W Dec 3	Flow Systems	2, 7
24	M Dec 8	Statistical Thermodynamics I	15
25	W Dec 10	Statistical Thermodynamics II	15
	<b>TBA</b>	<b>Exam III</b>	