ADVANCED CHEMICAL ENGINEERING THERMODYNAMICS

Instructor: Sanat Kumar
Electronic mail: sk2794@columbia.edu

Assigned Textbook: Aydil & Arora *Lectures in Thermodynamics*

Recommended Texts: Koretsky
Panagiotopoulos *Essential Thermodynamics*
Smith, Van Ness, Abott *Introduction to Chemical Engineering Thermodynamics* 7th edition, McGraw-Hill, 2005

Classroom Etiquette: Class notes will be posted on line. Please come to class on time – no more than 10 min late if you have to. You do not need to be in class if you don't want.

Teaching Philosophy: You will be expected to do a lot of "self-learning". This means that material assigned to you will not be covered completely in class. Also, I will not cover details of calculation procedures. Expect the class to be very interactive. I will set up break outs so that you can solve problems. The whole focus of the lectures will be problem solving

Quizzes/Homework: Homeworks will be assigned but no homework will be collected.

Exams: There will be **one midterm test** and **a final exam**. The midterm and final exams will be **open book and notes**.

Grades: The final course grade will be based on the following percentages. Test 50%; Final: 50%. ***I will not grade on a curve***. Past experience teaches that there is a rough correspondence between unscaled scores and grades. Over the last few years this is the pattern that has emerged: A (>70%), A- (65-70%), B+(60-65), B(55-60), B-(50-55), C(40-50), C-(38-40), D(<38). Even with the addition of the project you can assume that this will continue to apply.

Personal Pronouns: I would like to use the personal pronouns of your choice. Please let me know – and please remind me as necessary.

HONOR CODE: Each of you is expected to follow an honor code. You will not copy from each other or the literature without proper attribution. You will not talk to other groups about specific solutions – general discussions are fine. In each case, if you have any doubt at all, ASK me or the TAs - don't presume.

CHEN4130: ADVANCED CHEMICAL ENGINEERING THERMODYNAMICS
Fall 2020
TENTATIVE SCHEDULE

Date(s)	Comment	Section*	Pages*	Subject
Oct 26		Ch 1,2	1-18	Definitions, First law
Oct 28		Ch 2	18-24	Energy
Nov 2		Ch 2	24-39	Open systems
Nov 4		Ch 2	39-58	Differential balances
Nov 9		Ch 3	59-64	Entropy, Second law
Nov 11		Ch 3	64-70	Second law open systems
Nov 16		Ch 4	71-82	Legendre tranforms
Nov 18		Ch 4	82-99	Maxwell relationships, calculus of thermodynamics
Nov 23	**Midterm**			
Nov 25		No class		
Nov 30		Ch 5	99-107	Thermodynamics of pure materials
Dec 2		Ch 7	129-139	Equilibrium
Dec 7		Ch 7	139-155	One component materials, nucleation
Dec 9		Ch 8	155-163	Phase equilibria in one component systems
Dec 14		Ch 9	163-	Thermodynamics of m ixtures