Syllabus for ChE 620 - Advanced Chemical Engineering Thermodynamics - Fall 2013
Department of Chemical Engineering, West Virginia University

Instructor: Professor Charter D. Stinespring, 501 ESB, 293-9363, charter.stinespring@mail.wvu.edu

Prerequisites: Graduate Standing in Chemical Engineering or by permission

Class Schedule & Location: TR 1100-1215, 501 ESB

Office Hours: Monday 1300 - 1400 or by appointment

Textbook: Tester and Modell, Thermodynamics and Its Applications, Prentice-Hall

Objectives: The objectives of this course are to develop a rigorous theoretical and conceptual understanding of principles of classical thermodynamics.

Outcomes: Students will develop
a) Competence in problem solving for a variety of complex applications,
b) The methodology for determining the minimum data required to achieve a solution in a given application,
c) The basis for manipulating the available data to forms more appropriate to a specific application,
d) A general approach for establishing the conditions for equilibrium and stability for complex systems, and
e) The capability of working with multi-phase pure materials and mixtures.

Evaluation: Homework 30%, mid-term exam 35%, and final exam 35%. Collaboration is strongly discouraged on the homework. The standard grading scale will be used [100 – 90 = A, 89 – 80 = B, 79 – 70 = C, 69 – 60 = D, 59 – 0 = F]. No make-up exams except by prior arrangement with instructor. Late assignment = no assignment, exam grading appeals in writing on the day the exam is returned.

> **Homework** assignments will be relatively short-term problems. Due dates will be given for each assignment. Assignments submitted after the due date will not be accepted.
> **Mid-term** exam will be given in on or near the midterm date.
> **Final (Comprehensive)** exam will be given at the time scheduled by WVU.

Attendance: Attendance of the class sessions is strongly recommended. Students not in class for any reason are responsible for all material covered as well as homework and other assignments given in that class. Consistent with WVU guidelines, students absent from regularly scheduled examinations because of authorized University activities will have the opportunity to take them at an alternate time. Make-up exams for absences due to any other reason will be at the discretion of the instructor.

Social Justice Statement: West Virginia University is committed to social justice. I concur with that commitment and expect to maintain a positive learning environment based upon open communication, mutual respect, and non-discrimination. Our University does not discriminate on the basis of race, sex, age, disability, veterans status, religion, sexual orientation, color or national origin. Any suggestions as to how to further such a positive and open environment in this class will be appreciated and given serious consideration. If you are a person with a disability and anticipate needing any type of accommodation in order to participate in this class, please advise me and make appropriate arrangements with the Office of Disability Services (293-6700).

Approximate Schedule / Topics Covered:

Week	Topic	Text Reading
1 - 2	Definitions, Postulates, and First Law	Chapter 1,2,3
3 - 4	Reversibility and Second Law	Chapter 4
5 - 6	Calculus of Thermodynamics	Chapter 5
7 - 8	Equilibrium and Stability Criteria	Chapter 6
9 - 12	Properties of Pure Materials	Chapter 8
13 - 14	Properties of Mixtures	Chapter 9
15	Thanksgiving Break	Chapter 9
16	Properties of Mixtures	Chapter 9