

Syllabus for Thermodynamics and Phase Equilibria
Fall Term 2009
Professor Bruce Fegley, Jr.

My office is Earth and Planetary Science Building Rm 144. My office hours for this class will be 2-4 PM on MWF, except on Wednesdays when faculty meetings are scheduled (2-3 PM in those infrequent cases). In addition to talking to me after class and/or during office hours, you can also contact me by telephone: 935-4852, FAX: 935-7361, or e-mail: bfegley@levee.wustl.edu. You can also get assistance from Laura Schaefer (Tel: 935-6310, e-mail: laura_s@levee.wustl.edu). The draft manuscript of the book *Practical Chemical Thermodynamics for Geoscientists* by myself and Rose Osborne will be the text for the course. After we know the class enrollment, pdf copies will be distributed in advance. Generally, the next week's chapter will be distributed on Monday. The text is copyrighted 2001-2009 by Academic Press/Elsevier and cannot be reproduced by you.

The course emphasizes practical applications and problem solving using chemical thermodynamics. Some recommended reading is on reserve in the library and is listed on the reserve reading list, which is attached to this syllabus. However, everything you need to know is covered in our book.

Grading will be based on eleven problem sets (5% each, 55% total), two exams (20% each, 40% total), and class participation (5%). All exams are open book exams. All exams are cumulative in the sense that you are expected to know how to apply previously covered material. That is, you may have to use material covered in the mid-term for the final. There will be no make up exams or extra credit work. Ninety % and above of the total points = A⁻, A, A⁺; 80-90% = B⁻, B, B⁺, 70-80% = C grades; etc. All grades on all problem sets and exams will be counted. Problem sets will be assigned on Fridays and due the following Friday. Some exceptions will occur during fall break and Thanksgiving.

This syllabus may be viewed on the Planetary Chemistry Web site at
<http://solarsystem.wustl.edu/syllabi.htm#thermo09>.

Week	Date	Topics Covered in the Lectures
1	8/26 ¹	Ch. 1. Definition, Development, and Applications of Thermodynamics
2	8/31	Ch. 2. Important Concepts and Mathematical Methods. HW#1 handed out on 9/4, due 9/11
3	9/9 ²	Ch. 3. The First Law of Thermodynamics. HW#2 handed out on 9/11, due 9/18.
4	9/14	Ch. 4. Thermal Properties of Pure Substances and Some Applications. HW#3 handed out on 9/18, due 9/25.
5	9/21	Ch. 5. Thermochemistry. HW#4 handed out 9/25, due 10/2.
6	9/28	Ch. 6. The Second Law of Thermodynamics and Entropy. HW#5 handed out 10/2, due on 10/9.
7	10/5	Ch. 7. Phase Equilibria of Single Component Systems. HW#6 handed out 10/9, due 10/19.
8	10/12 ³	Ch. 8. Equations of State and Related Applications of the Second Law.
9	10/19	Review on 10/19. Mid-term exam on 10/21, covering Chapters 1-7 inclusive.

10	10/26	Finish Ch. 8. Begin Ch. 9. The Third Law of Thermodynamics. HW#7 handed out on 10/30, due 11/6.
11	11/2	Ch. 9. The Third Law of Thermodynamics. HW #8 handed out on 11/6, due 11/13.
12	11/9	Ch. 10. Chemical Equilibria. HW#9 handed out on 11/13, due 11/20.
13	11/16	Ch. 11. Solutions. HW#10 handed out on 11/20, due on 12/4.
14	11/23 ⁴	Finish Ch. 11. Solutions.
15	11/30	Ch. 12. Phase Equilibria of Binary and Ternary Systems. HW#11 handed out on 12/4, due on 12/11.
16	12/7	Finish Ch. 12. Review.
17	TBD ⁵	Final Exam, covering Chapters 1 – 12 inclusive.

¹ Wednesday, August 26th is the first day of class and there will be only two classes this week.

² Monday, September 7th is a holiday and there will be only two classes this week.

³ Friday, October 16th is the fall break and there will be only two classes this week.

⁴ There will be only one class this week because Wednesday, November 25th and Friday, November 27th are the Thanksgiving break.

⁵ Final will be held during finals week (12/11 – 12/17), date to be determined in class.

I have read and understood the grading policy.

Name (print): _____

Signature: _____ Date: _____