SYLLABUS

CH3510  PHYSICAL CHEMISTRY I  Spring, 2008

Classes:  MWF 1:05pm-1:55pm, ChemSci 101

Instructor:  Dr. Marta Wloch
Office:  ChemSci 701A
Phone:  487-1602
Email:  wloch@mtu.edu
Office hours:  Thursday 3pm-4pm, or by appointment

Text:  Peter Atkins, Julio de Paula
Physical Chemistry, 8th ed., Freeman 2006

Grading:  Problem Sets  30%
Mid-Term Exams  40%
Final Exam  30%
100%

The course will be graded on the basis of four homework assignments, two mid-term examinations and a final examination. Homework will be collected in lecture on a due date once per three weeks. Absolutely no late homework will be accepted. A student absent from an exam without a satisfactory explanation will receive a grade of 0.0. Additional information about this course, syllabus, homework assignments, solutions, etc. can be accessed from the website http://www.chemistry.mtu.edu/pages/courses/. There is also a mailing list pchem1-l@mtu.edu created for this course. It contains emails addresses of all students registered for CH3510. Academic integrity is expected. For more information about Michigan Tech Academic Integrity Policy please go to http://www.sa.mtu.edu/dean/judicial/. In accordance with University policy and the Americans with Disabilities Act (ADA) academic accommodations may be made for any student who needs a reasonable accommodation for equal access to education or services at MTU. For any concerns about discrimination please contact your academic advisor, department chair, or Affirmative Action Office.
Tentative Schedule

Week

1  mathematical techniques, unites of measurement, ideal gasses
2  equation of state, energy, work, heat
3  1st law of thermodynamics, enthalpy, heat capacities, C_v and C_p
4  Hess’s law, Kirchhoff’s law, Joule-Thompson experiment
5  spontaneous changes, entropy, mid-term exam
6  Carnot cycle, 2nd law of thermodynamics, 3rd law of thermodynamics
7  Gibbs and Helmholtz free energies, Maxwell relations, pressure and temperature dependence of G,
8  phase diagrams, phase stability, chemical potential (μ)
9  Clapeyron equation, partial molar quantities, mid-term exam
10 thermodynamics of mixing, Raoult’s and Henry’s laws, colligative properties
11 activities, Debye-Hückel law, multicomponents phase diagrams, interpretation of phase diagrams
12 reaction Gibbs energies, equilibrium constants, cell reaction and half reaction
13 Nernst equation, standard electrode potentials, reaction rates and rate law
14 integrated rate law, Arrhenius equation, chain reaction

The final exam is scheduled on Wendesday, April 30, 2008, from 12:45pm to 2:45pm, in room 101 in the ChemSci building.