Lecture 1 – introduction to the course  {bring copy of homework rubric, 3x5 cards – make sure series are in textbook (first two math review problems)}

- Yes this is PChem and I have to say I am more excited about this course this semester than ever before. I like the new textbook, and now that we are in the second year things should run smoothly.
- Homework! After class, on this free 3x5 card please give me your name, major, hometown, something interesting to help me remember, what you hope/plan to learn, concerns about the course. Bring to my office in person sometime this week.
- When you go home for T-giving and aunt asks for your favorite class, you say? just checking
- First day = syllabus & course mechanics, we’ll get to this at end
- Complex course – easy to loose big picture – paint this today
- PChem – what is it to you?
  - For me (show sizeline ranging from atom to bulk) it is how atomic properties and interactions yield molecular properties and how, in turn, how molecular properties and interactions yield bulk physical properties. Prompt for intermediate line labels (molecule and polymer/nanocrystal)
  - Maybe a good time for superball/LN2 demo. The energy flow is completely different as ball changes temp because of? different ratio of intermolecular interactions to thermal energy.
- Second semester – QM, first semester – thermodynamics and kinetics
- Thermo? is the study of energy flow and how simple rules about energy allow us to understand the physical properties of matter – independent of atomic model (in book). Read Einstein quote.
- While thermo deals with systems at equilibrium, kinetics deals with processes of change. Kinetics uses simple models for molecules and interactions to calculate the rate of a process, yielding information about mechanisms
- We will utilize many mathematical tools to help us connect physical properties with molecular properties, interactions, and energy flow. As much as the math might dominate what we are doing sometimes, it is not chemistry & chemistry is the focus.
- When aunt asks what good is PChem… I dug up some recent Natures – show articles. ask
- Also mention SH3 domains. Anyone heard of SH3 domains, kinases?
  - Important signaling/regulatory proteins
  - What chemical industry might care?
  - Pharma (like Pharmacia) cares a lot, spends lots of $$
  - Show Wendell’s work – all thermodynamically controlled!
- Show DNA/RNA polymerase movies – more thermodynamics at work
- So, thermo is at the heart of most current bio and lots of other stuff
- I’ll try to bring in lots of examples like this throughout the term. Help you connect the PChem foundation we will build with current research. If anyone finds something they think is interesting (NYTimes or whatever) bring it in to me and maybe we'll use a few minutes of lecture time here to discuss it. This is also the primary reason for our textbook change. The current book deals a lot with bio – primary author is one of the main protein structure/folding guys.
- On to the syllabus – hand out and go over.
• First, public service announcements: chem picnic and seminar schedules
• Onto syllabus:
  o Office hours – anytime, but preferably not Thursdays (research – advertise)
  o Summary and objectives have touched on already
  o ChemBoard – see for keys and discussions and posting homework solutions
  o Homework/quiz relationship – students responsible, work hard
  o Discussion sections for quizzes – all you have to do is do the homework
  o Exams/overall grading scheme (1 cheat sheet allowed, exams out of class)
  o Work together is encouraged, except quizzes and exams
  o Don’t flounder, come see me or classmates or other faculty quickly

• Homework:
  o come to discussion today at 3:00
  o bring 3x5 card in to me
  o login to chemboard and leave a message
  o go to chem club picnic on Friday (4:30).