

Chemistry 341, (01:160:341), Fall 2014
Physical Chemistry of Biochemical Systems

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Fall 2014, Mondays and Wednesdays, 1:40 to 3pm, Room 203 SERC

This is a the first semester or a two-semester physical chemistry course with an emphasis on applications to biochemical systems and to life sciences. It will cover three main areas: thermodynamics (including statistical thermodynamics), physical equilibria, and reaction rates.

The course text is *Physical Chemistry: Principles and Applications in Biological Sciences*, by Tinoco, Sauer, Wang, Puglisi, Harbison and Rovnyak, 5th edition (Pearson, 2014). We will cover Chapters 1 to 9 this semester; the same text will be used in the Spring (Chemistry 342), covering the remaining chapters. The table below gives an approximate time schedule; detailed reading assignments will be made as the class proceeds

Class meetings	Subject	Chapter
Sep 3, 8, 10	First Law: Conservation of energy	1, 2
Sep 15, 17, 22	Second Law: Entropy	3
Sep 24, Oct 1, 6, 8	Free energy and chemical equilibria	4
Oct 13, 15, 20	Statistical foundations of biochemistry	5
Oct 22, 27, 29	Physical equilibria	6
Nov 5, 10, 12	Electrochemistry	7
Nov 17, 19, 24	Motions of biological molecules	8
Dec 1, 3, 8, 10	Rates of chemical reactions	9

The course website is <http://casegroup.rutgers.edu/lnotes.html>. Reading and homework assignments and additional course materials will be posted there. There will be three exams: Sep. 29 and Nov. 3 (in-class), and the final exam (Wed., Dec, 17, 8-11am). The course grade will be determined by homework and projects (10%), the mid-term exams (each 25%), and the final examination (40%).