

Course Announcement

Chemistry 882/Chemistry 890 (section 2)

Thermodynamics and Kinetics with Applications to Biomolecules

Spring 2010, MWF 1:50 – 2:40 p.m., Room 281, Chemistry

3 credits

If you have questions, please contact Dr. David Weliky (weliky@chemistry.msu.edu)

The main course texts will be *Principles of Physical Biochemistry* by K. E. van Holde, W. C. Johnson, and P. S. Ho, 2nd edition, 2006, *Molecular Driving Forces: Statistical Thermodynamics in Chemistry and Biology* by K. A. Dill and S. Bromberg, 2003, and *Biochemistry* by D. Voet and J. G. Voet, 3rd edition, 2004.

Week	Topic	Reading
January 11 – 15	Review of Protein and Nucleic Acid Structure	VV, Chapter 4, 5.1-5.3, 8.1, 8.3-8.5 VJH, 1.5
January 20 – 22	Probability and Entropy	DB, Chapters 1-3 VJH, Chapter 2.1,2.2
January 25 – 29	Boltzmann Law and Partition Function	DB, Chapters 6,7,10
February 1 – 5	Thermodynamic Functions and Laws	DB, Chapters 8,10 VJH Chapters 2.3,2.4
February 8 – 12	Calorimetry	VJH Chapter 2.5
February 15 – 19	Ideal Gas and Chemical Equilibrium	DB Chapter 11,13
February 22 – 26	Solutions and Chemical Potential	DB Chapters 9,15,16
March 1 – 5	Intermolecular Interactions and Electrostatics	DB Chapters 22,24
March 15 – 19	Water and the Hydrophobic Effect	DB Chapters 29,30
March 22 – 26	Understanding Protein Structure in Water	DB Chapter 32 VJH Chapters 1.1-1.3,1.5,3.3.1-3.3.4 <i>Biochemistry</i> , 29 , 7133-7155 (1990)
March 29 – April 9	Rate Laws and Transition State Theory	DB, Chapter 19 VV, Chapter 14
April 12 – 16	Enzyme Kinetics	VV, Chapters 13-15
April 19 – 30	Nucleic Acid Structure and Function	VJH Chapters 1.6, 3.3.5-3.3.8 VV, Chapter 29