

**CHEM 3130-1: Chemical Systems III**  
**(Macromolecular Structure and Dynamics)**

**Instructor:** Dr. Martin Margittai

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**Class hours:** MWF 10:00 am — 10:50 am in Olin Hall 103

**Extra hours:** **Note that on April 6 and May 4 class will be from 9:00 am — 10:50 am!**

**Also, on May 6 there will be an extra session from 12:00 pm — 12:50 pm!**

**Office hours:** Tuesdays and Thursdays, 10:00 am — 11:00 am.

**Objectives:** 1) To develop an understanding of the physical properties of biological macromolecules.  
2) To comprehend modern methods for analyzing macromolecular structure.

**Grading:** Exams 1-2 (25% each), final exam (30%), presentation (20%).

**Text:** *Principles of Physical Biochemistry* (2<sup>nd</sup> ed)  
by Van Holde, Johnson, & Ho (2006)

Original papers will be posted on blackboard.

**Additional useful books (not required):**

*Physical Chemistry, Principles and Applications in Biological Sciences*  
by Tinoco, Sauer, Wang & Puglisi (2002)

*Physical Biochemistry: Principles and Applications*  
by David Sheehan (2009)

*Crystallography Made Crystal Clear*  
by Gale Rhodes (2006)

*Intermolecular and Surface Forces*  
by Jacob N. Israelachvili (2009)

## CHEM 3130-1 Syllabus – Spring 2011

Dates	Topics Covered	Reading Chapters
	<b>Conformation and Behavior of Biological Macromolecules</b>	
03/28/11	Proteins	1
03/30/11	Nucleic Acids	1
04/01/11	Calorimetry DSC and ITC	2
04/04/11	"	2
04/06/11	Molecular Interactions & Conformational Transitions 9:00 am -10:50 am	3
04/08/11	<b>Special Event</b> Molecular and Cellular Biophysics Symposium at DU	
04/11/11	Molecular Interactions & Conformational Transitions	4, papers
	<b>Techniques for the Study of Biological Structure and Function</b>	
04/13/11	Separation and Characterization of Macromolecules	5
04/15/11	"	5
<b>04/18/11</b>	<b>EXAM 1: 03/28/11 - 04/15/11, 10:00 am – 10:50 am</b>	
04/20/11	Absorption Spectroscopy	9
04/22/11	CD Spectroscopy	10
04/25/11	Fluorescence Spectroscopy	11
04/27/11	"	11
04/29/11	"	11
05/02/11	NMR Spectroscopy	12
05/04/11	" 9:00 am -10:50 am	12
05/06/11	X-ray Crystallography 10:00 am -10:50 am, 12:00 am – 12:50 am	6
05/09/11	"	6
05/11/11	Other Scattering and Diffraction Techniques	7
<b>05/13/11</b>	<b>EXAM 2: 04/20/11 – 05/11/11, 10:00 am – 10:50 am</b>	
05/16/11	Mass Spectrometry	15
05/18/11	"	15
05/20/11	Single Molecule Methods	16
05/23/11	Presentations	
05/25/11	Presentations	
05/27/11	Presentations	
<b>05/31/11</b>	<b>EXAM 3: comprehensive, 10:00 am – 11:50 am</b>	