

**CHEM 3130-1: Chemical Systems III  
(Physical Biochemistry)**

**Instructor:** Dr. Martin Margittai

**Office:** SGM 253

**Phone:** 871-4135

**E-mail:** martin.margittai@du.edu

**Class hours:** MWF 11:00 am – 11:50 am in Olin103  
T 9:00 am – 9:50 am in Olin103

Note that Tuesday lectures will begin in WEEK 7.

**Office hours:** Thursdays, 11:00 am – 12:00 am, or by appointment.

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

**Grading:** Exams 1-3 (25% each), presentation (25%).

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

Original papers will be posted on Canvas.

**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)

*Principles of Fluorescence Spectroscopy* by Joseph R. Lakowicz (2006)

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

*Biomolecular Crystallography* by Bernhard Rupp (2010)

*NMR Spectroscopy Explained* by Neil E. Jacobsen (2007)

*NMR of Proteins and Nucleic Acids* by Kurt Wüthrich (1986)

WEEKS	DATES	TOPICS COVERED	CHAPTER
WEEK 1			
Mo	03/21/16	<b>No class</b>	
We	03/23/16	Proteins/Nucleic Acids	1
Fri	03/25/16	Calorimetry DSC	2
WEEK 2			
Mo	03/28/16	Calorimetry ITC	2
We	03/30/16	Diffusion/Sedimentation	5
Fri	04/01/16	Sedimentation/Electrophoresis	5
WEEK 3			
Mo	04/04/16	X-ray Crystallography	6
We	04/06/16	"	6
Fri	04/08/16	"	6
WEEK 4			
Mo	04/11/16	"	6
We	04/13/16	Other Scattering and Diffraction Techniques	7
Fri	<b>04/15/16</b>	<b>EXAM 1: 03/23/16 - 04/13/16, 11:00 am – 11:50 am</b>	
WEEK 5			
Mo	04/18/16	<b>No class</b>	
We	04/20/16	<b>No class</b>	
Fri	04/22/16	<b>No class</b>	
WEEK 6			
Mo	04/25/16	Absorption Spectroscopy	9
We	04/27/16	CD Spectroscopy	10
Fri	04/29/16	Fluorescence Spectroscopy	11
WEEK 7			
Mo	05/02/16	"	11
Tue	05/03/16	"	11
We	05/04/16	NMR Spectroscopy	12
Fri	05/06/16	"	12
WEEK 8			
Mo	05/09/16	"	12
Tue	05/10/16	"	12
We	05/11/16	Electron Paramagnetic Resonance Spectroscopy	
Fri	05/13/16	"	
WEEK 9			
Mo	<b>05/16/16</b>	<b>EXAM 2: 04/25/16 – 05/13/16, 11:00 am – 11:50 am</b>	
Tue	05/17/16	Mass Spectrometry	15
We	05/18/16	"	15
Fri	05/20/16	Single Molecule Methods	16
WEEK 10			
Mo	05/23/16	Presentations	
Tue	05/24/16	Presentations	
We	05/25/16	Presentations	
Fri	05/27/16	Presentations	
WEEK 11			
Thu	<b>06/02/16</b>	<b>EXAM 3: Comprehensive, 10:00 am-11:50 am Olin103</b>	