

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

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* (2nd ed)
by Van Holde, Johnson, & Ho (2006)
This book will be lent to you. You will not have to purchase it!

References to 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)

CHEM 3130-1 Syllabus – Spring 2017

WEEKS	DATES	TOPICS COVERED	CHAPTER
WEEK 1			
Mo	03/27/17	Proteins/Nucleic Acids	1
We	03/29/17	Calorimetry DSC	2
Fri	03/31/17	Calorimetry ITC	2
WEEK 2			
Mo	04/03/17	Separation and Characterization of Macromolecules	5
We	04/05/17	“	5
Fri	04/07/17	“	5
WEEK 3			
Mo	04/10/17	X-ray Crystallography	6
We	04/12/17	“	6
Fri	04/14/17	“	6
WEEK 4			
Mo	04/17/17	“	6
We	04/19/17	EXAM 1: 03/27/17 - 04/17/17, 11:00 am – 11:50 am	
Fri	04/21/17	Absorption Spectroscopy	9
WEEK 5			
Mo	04/24/17	CD Spectroscopy	10
We	04/26/17	Fluorescence Spectroscopy	11
Fri	04/28/17	“	11
WEEK 6			
Mo	05/01/17	“	11
We	05/03/17	NMR Spectroscopy	12
Fri	05/05/17	“	12
WEEK 7			
Mo	05/08/17	“	12
We	05/10/17	“	12
Fri	05/12/17	Electron Paramagnetic Resonance Spectroscopy	
WEEK 8			
Mo	05/15/17	“	
We	05/17/17	EXAM 2: 04/21/17– 05/15/17, 11:00 am – 11:50 am	
Fri	05/19/17	Mass Spectrometry	15
WEEK 9			
Mo	05/22/17	“	15
We	05/24/17	Single Molecule Methods	16
Fri	05/26/17	Presentations	
WEEK 10			
Mo	05/29/17	Memorial Day/ No Class	
We	05/31/17	Presentations	
Fri	06/02/17	Presentations	
WEEK 11			
We	06/07/17	EXAM 3: Comprehensive, 10:00 am – 11:50 am Olin103	