CHEMISTRY 378 / BIOCHEM 770
PHYSICAL BIOCHEMISTRY
SPRING 2020 –SYLLABUS – Updated for Online Teaching

T and Th, 9:00 am - 10:50 am, Rem 017

INSTRUCTOR INFORMATION

Instructor: Dr. Uri Samuni
Office: Remsen 26A
Office Hours: Tuesday and Thursday 11:30-2:00 pm and by appointment
Telephone: 718-9974223
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COURSE

Goals/
Objectives: Mastery of selected modern Physical Biochemistry concepts and methods with emphasis on the properties, function and characterization of biochemicals, proteins and macromolecules.

Text: There is no one text that covers this course. The course will consist of the lectures and specific reading assignments that will be posted on Blackboard.

Some recommended texts are:
1. Principles of Physical Biochemistry, Second Edition, K.E. van Holde, W.C. Johnson and P.S. Ho Pearson Prentice Hall 2006)
2. Peter Atkins's Physical Chemistry
3. Biophysical Chemistry, Parts I, II, and III, by C. R. Cantor and P. R. Schimmel, W. H. Freeman: San Francisco, 1980

Blackboard Material, assignments and announcements will be posted to Blackboard. Announcements will also be sent via blackboard to your email address. Students must make sure to login to blackboard and check for announcements and check their Queens College e-mail. Online lessons conducted via blackboard collaborate. Link are emailed to students via blackboard.

Grading:
Chem378: Paper analysis (35%); Final Exam (cumulative) (60%); Class Attendance and participation and in class assignments (attendance is required, you may miss up to 4 lectures)
(5%). Bonus points: Short Quizzes given during class.
Bioch770: Paper analysis (20%); Paper Analysis/Additional topics (20%) Final Exam (cumulative) (55%); Class Attendance and participation and in class assignments (attendance is required, you may miss up to 4 lectures)
(5%). Bonus points: Short Quizzes given during class.

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TENTATIVE COURSE SCHEDULE

Tue 1/28 Course overview and Introduction to Spectroscopy

Th 1/30 Absorption Spectroscopy

Tue 2/4 Absorption Spectroscopy Instrumentation and methods

Th 2/6 Absorption Spectroscopy applications

Tue 2/11 Fluorescence Spectroscopy applications

Th 2/13 Fluorescence Spectroscopy applications

Tue 2/18 FRET applications

Th 2/20 Infrared Spectroscopy, FTIR and applications

Tue 2/25 Infrared Spectroscopy, FTIR and applications

Th 2/27 Raman Spectroscopy and applications

Tue 3/3 Resonance Raman Spectroscopy, SERS and applications

Th 3/5 Raman Microscopy, Confocal microscopy, Lasers

Tue 3/10 Protein Structure and Conformation, Protein Folding

Th 3/12 Peptides; Buffers; Protein Structure and Conformation

Tue 3/17 Hemoglobin: Cooperativity, Allosteric model; Hill Plots, Spectroscopic applications

Th 3/19 Hemoglobin: Cooperativity, Allosteric model; Hill Plots, Spectroscopic applications

Tue 3/24 Hemoglobin: Cooperativity, Allosteric model; Hill Plots, Spectroscopic applications

Th 3/26 Discussion of papers (Protein folding/unfolding)

Tue 3/31 No Class

Th 4/2 Protein-Protein interactions, protein folding, aggregation and MD simulations

Tue 4/7 No Classes (Wednesday schedule)

Th 4/9 Spring recess

Tue 4/14 Protein-Protein interactions, protein folding, aggregation and MD simulations

Th 4/16 Electron Microscopy TEM SEM CryoTEM

Tue 4/21 Electron Microscopy TEM SEM CryoTEM

Th 4/23 EPR Spectroscopy applications

Tue 4/28 EPR Spectroscopy applications

Th 4/30 EPR Spectroscopy applications

Tue 5/5 Circular Dichroism and applications

Th 5/7 Circular Dichroism and applications

Tue 5/12 Online Quiz and Dynamic Light Scattering (DLS)

Th 5/14 Review for exam

Tu 5/19 Final exam

Schedule is tentative

* Class visit to CUNY ASRC labs / BNL (cancelled)