

Structure and Function of Proteins and Nucleic Acids (Chem 747)

Course Description: This is an introductory course on current advances in structural biology. Topics covered in this course include principles of protein and nucleic acid structures, physical principles of protein folding, sequence analysis of proteins, important protein families, macromolecular assemblies, and an introduction to structural bioinformatics. Lectures will focus on critical examination of literatures. Significant emphasis will be placed on the current understanding of the structure/function relationships of proteins and nucleic acids. Issues such as protein-DNA recognition, specific protein-protein associations, virus structures, and special properties of membrane proteins, and action of molecular motors will be discussed in-depth.

Textbook: Introduction to Protein Structure (Second Edition, 1999) by Carl Branden & John Tooze (Garland Publishing, Inc.), and original papers and review articles.

Recommended Reference Book: Molecular Biology of The Cell (Fourth Edition, 2002) by Bruce Albert et al. (Garland Publishing)

Requirements: There will be two examinations (30% each, October 19th and December 7th) during class hour, and problem sets (15%). Exams will be based on material discussed in the class. A term-paper project will be assigned to each student attending the class, with both written submission (10%) and a brief oral presentation in class (15%).

Schedules: Wednsdays, 4:10 pm to 7:00 pm.

Location: Beury Hall Rm119

Office Hours: Wednesday 10:00am - 12:00pm

Prerequisites: Consult with Instructor

Exams and Assignments: two in class examinations; homework assignments; one assigned project with both written submission and oral presentation.

Syllabus for Fall 2005

Lecture Notes: Lecture 1; Lecture 2; Lecture 3; Lecture 4; Lecture 5; Lecture 6; Lecture 7; Lecture 8; Modeling;

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Chem 747

A Syllabus for Fall 2005

Jan Feng, Ph.D.

- August 31 Introduction; basic structural components of proteins; α -helices, β -strands and β sheets, and loops.
- September 7 Motifs and domains; classification of folded domains.
- September 14 Protein families and sequence alignments; the protein folding problem.
- September 21 How Structure/function of protein kinases
- September 28 Membrane proteins
- October 5 DNA structures/RNA Structures
- October 12 Protein-nucleic acid interactions
- October 19 First Exam
- October 26 Structure/function of the Ribosome
- November 2 DNA Repair Proteins and Mechanisms
- November 9 Virus Structures
- November 16 How protein structures are studied
- November 23 Thanksgiving Holiday
- November 30 Structure Bioinformatics
- December 7 Second Exam

Drop/Add: During the first week of classes students may rearrange their schedules without special approval from the instructor as long as the desired section(s) are open.

Students should check the Diamond Line (215-204-2525) phone registration system frequently or [Temple's On-line Course Schedule](#) . Both systems will allow students to determine which sections are currently open. Note that a section that was closed in the early morning may have opened up by the afternoon, so check frequently.

Withdrawal: Please note that a withdrawal (W) is an institutional procedure which is not complete until the withdrawal form has been signed and submitted to the Registrar's office. This course is governed by the Temple University Policy (#03.12.12) on Withdrawal. Please click [here](#) to view the policy.

Incomplete: Please note that an Incomplete (I) is only to be given in accord with institutional procedures and which is not complete until the specific requirements and forms have been met, signed and submitted. This course is governed by the Temple University Policy (#03.12.13) on Incompletes. Please click [here](#) to view the policy.
