

# Principles of Structural Biology G16.2004

The goal of this course is to teach students what can be learned about biological processes from studying the structures of proteins and nucleic acids and the modes of interaction that underlie protein-protein and protein-nucleic acid recognition.

*4 credit hours*

*Two 1.5 hr lectures and one 1.5 hr discussion session per week.*

*Classes will be held in the Skirball 2nd floor conference room.*

*Recommended text: "Introduction to Protein Structure" by Branden and Tooze. The book will be available at the NYU Medical Bookstore (~Sept. 15th) and in the library.*

*Course director: Steve Hubbard – Skirball 3rd floor, Lab 4; 263-8938; hubbard@saturn.med.nyu.edu*

## Week 1

Principles of protein structure and folding  
2 lectures + discussion (Wed. start)

Steve Hubbard

## Week 2

Basic techniques in x-ray crystallography  
2 lectures + discussion

Steve Hubbard/Xiangpeng Kong

## Week 3

Basic techniques in electron microscopy  
2 lectures + discussion

Stokes/Wang

## Week 4

Enzyme structure and mechanism  
2 lectures + discussion

Xiangpeng Kong

## Week 5

Molecular machines - myosin, kinesin, ion pumps  
2 lectures + discussion

David Stokes

## Week 6

Membrane proteins  
2 lectures + discussion

Da-Neng Wang

## Week 7

Protein-nucleic acid recognition  
2 lectures + discussion

Joel Belasco

## Week 8

Ligand-receptor recognition  
2 lectures + discussion

Moosa Mohammadi

## Week 9

Protein-protein interactions in signal transduction  
2 lectures + discussion

Steve Hubbard

## Week 10

Computational approaches to molecular modeling  
Protein structure determination by NMR spectroscopy  
X-ray crystallography lab

Tamar Schlick (NYU Chemistry)  
Alexej Jerschow (NYU Chemistry)  
Steve Hubbard/Xiangpeng Kong

Week 11

Analysis of proteins by mass spectrometry  
Mass spectrometry lab  
Electron Microscopy lab

Tom Neubert  
Tom Neubert  
David Stokes/Da-Neng Wang