

Syllabus for MMBB482/582 Protein Structure and Function
Instructor: Jill Johnson

Course Outline

Week of	Petsko and Ringe	Tuesday	Thursday
Aug 26	Chapter 1 1-27	Overview Protein Structure p. 1-15	Protein Folding p. 16-27
Sept 2	Extra	Intro protein folding diseases: p. 160-161 Assign paper/ provide protein folding review	Paper about a protein folding disease (amyloid type)
Sept 9	Chapter 1 28-45	Tertiary, Quaternary Structure p. 28-37	Protein Flexibility p. 38-47
Sept 16	Chapter 2	Binding sites within proteins p. 50-61	Catalysis, active site geometry p. 62-69
Sept 23	Chapter 2	Redox reactions, active site chemistry p. 70-82	Guest Lecture- Jason Gestwicki
Sept 30	Chapters 1-2	Exam 1	No Class
Oct 7	Chapter 3	Regulation of protein function p. 86-93 (plus influenza virus example of pH change)	Regulations by nucleotide hydrolysis p. 94-107
Oct 14	Chapter 3	Regulation by degradation, covalent modification p. 108-115;122-127	ERAD and human diseases paper
Oct 21	Chapter 3/4	Cdk activation, two component signaling systems, activation by proteolysis p. 114-119	Genomics. p. 129-137
Oct 28	Chapter 4 and Extra	Experimental tools for purifying proteins and probing protein function. p.138-139	Divergent and convergent evolution and homology modeling. 140-147
Nov 4	Extra	Identifying catalytic residues and binding sites, including using mutational analysis. P. 148-151	Exam 2
Nov 11	Chapter 5	Protein Structure determination 168-173.	Paper to demonstrate structure-function analysis. Liu and Hendrickson 2007.
Nov 18		Computer lab- Rhodes bioinformatics tutorial	Computer lab- Rhodes Deep View tutorial
Nov 25		BREAK	BREAK
Dec 2		Computer lab- Deep View Tutorial	Computer lab – Rhodes Homology Modeling
Dec 9		Student Presentations or finish tutorials	Student Presentations
Dec 16		Finals	Finals

Course Description: MMBB 482/582 Protein Structure and Function will offer a comprehensive assessment of protein structure, protein folding and selected functional characteristics with an emphasis on protein/DNA interactions and signal transduction.

Other topics covered include and introduction to and use of protein structure databases and methods for determination of protein structure.

Required Text: Protein Structure and Function. Petsko and Ringe

Prerequisites: Undergraduate/MMBB380; Graduate/MMBB541

Time and Place: TR 3:30-4:45 in LSS 163

Grading: Three exams (including final)(100 points each), one assignment based on Rhodes tutorial (100 points). Graduate students also required to give a 30-40 min oral presentation (50 points).