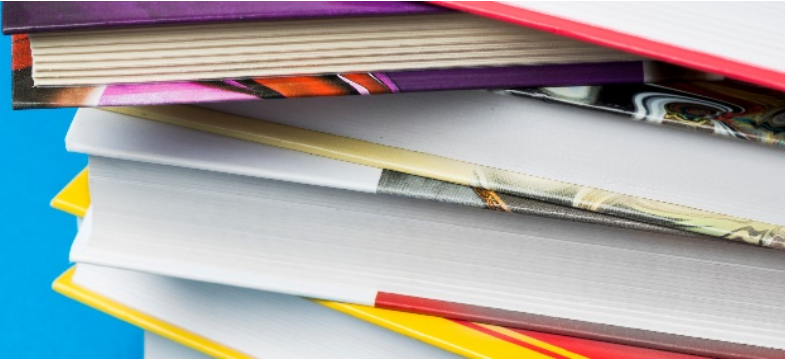
TEL AVIV UNIVERSITY אוניברסיטת תל אביב

Full Syllabus



Course Title

Introduction to Structural Biology

Lecturer

Prof. Joel Hirsch, Prof. Nir Ben-Tal

Semester

A

Course requirements

none

Final grade components

Home exam (70%), homework (30%)

Course schedule

Class no. / Date	Subject and Requirements (assignments, reading materials, tasks, etc.)
October 18, 1	Introduction (1): protein roles, physicochemical principles ; Kessel & Ben-Tal, Ch.1
October 18, 2	Protein Structure (1): introduction, primary structure; Kessel & Ben-Tal, Ch.2
October 21, 1	Protein Structure (2): primary structure
October 21, 2	Protein Structure (3): secondary structure
October 25, 1	Protein Structure (4): tertiary structure
October 25, 1	Protein Structure (5): quaternary structure, PTM
October 28, 1	Protein Structure (6)
October 28, 2	Fibrous proteins ; Kessel & Ben-Tal, Ch.6
November 1, 1	Structure prediction methods; Kessel & Ben-Tal, Ch.3
November 1, 2	Molecular visualization tutorial I – Pymol
November 4, 1	Experimental methods
November 4, 2	Experimental methods
November 8, 1	Experimental methods
November 8, 2	Molecular visualization tutorial II – Pymol
November 11, 1	Energetics and stability; Kessel & Ben-Tal, Ch.4
November 11, 2	Dynamics; Kessel & Ben-Tal, Ch.5
November 15, 1	Dynamics
November 15, 2	Experimental methods
November 18, 1	Membrane Proteins (1): introduction, primary structure; Kessel & Ben-Tal, Ch.7
November 18, 2	Membrane Proteins (2): secondary & tertiary structure
November 22, 1	Membrane Proteins (3): tertiary structure, membrane-protein interactions
November 22, 2	Working with sequences

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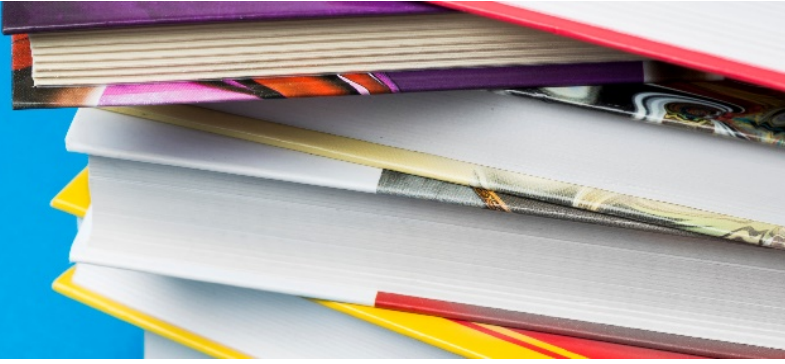

	Homology modeling
November 25, 1	Membrane proteins: CPA transporters
November 25, 2	Membrane proteins: CPA transporters
November 29, 1	Channels
November 29, 2	RTKs and the ErbB family Ligand-induced dimerization of EGFR and ErbB2
December 2, 1	Channels
December 2, 2	Channels
December 6, 1	Channels
December 6, 2	Surface area and superposition
December 9, 1	Channels
December 9, 2	Protein-Ligand Interactions (1): models and energetics; Kessel & Ben-Tal, Ch.8
December 16, 1	Protein-Ligand Interactions (2): AChE inhibitors, drug design
December 16, 2	Protein-Ligand Interactions
December 20, 1	Protein archaeology
December 20, 2	Water channels Structure of AQP1 The pathway through the channel Selectivity mechanisms Structure prediction in TM proteins
December 23, 1	Nucleic Acids
December 23, 2	Nucleic Acids
December 27, 1	Nucleic Acids
December 27, 2	Fiber diffraction
December 30, 1	Nucleic Acids
December 30, 2	Nucleic Acids
January 3, 1	Nucleic Acids
January 3, 2	Nucleic Acids
January 6, 1	Protein/ Nucleic Acid Recognition
January 6, 2	TA?
January 10, 1	Protein/ Nucleic Acid Recognition
January 10, 2	Protein/ Nucleic Acid Recognition
January 13, 1	Protein/ Nucleic Acid Recognition
January 13, 2	DNA binding Proteins + limited diffusion

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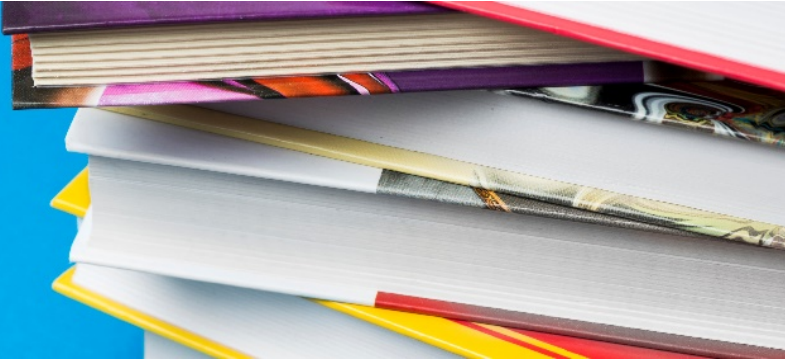

January 17, 1	Current studies
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Required course reading

Optional course reading

1. Kessel and Ben-Tal, Introduction to Proteins: Structure, Function and Motion, 2nd Edition
2. Branden and Tooze, Introduction to Protein Structure, 2nd edition
3. Berg, Biochemistry, 8th edition
4. Lesk, Introduction to Protein Architecture
5. Creighton, Proteins: Structures and Molecular Properties

Comments