



Full Syllabus



Course Title	
Structure and function prediction in proteins	
Lecturer	
Nir Ben-Tal	
Semester	
B	
Course requirements	
Biochemistry, introduction to bioinformatics	
Final grade components	
Submitting 70% of exercises (without grades) is mandatory. Grade is based on project (70%) and exam (30%)	
Course schedule	
Class no. / Date	Subject and Requirements (assignments, reading materials, tasks, etc.)
March 15	Introduction to protein structure; Forces and interactions.
March 22	Introduction to protein structure (continue); Overview of structure prediction
March 29	Biological sequence alignment, Dynamic programming, FASTA; BLAST, PSI-BLAST, CS-BLAST
April 19	Multiple sequence alignment, CLUSTALW, T-COFFEE, Muscle, MAFFT; Protein structural alignment, RMSD, GDT-TS, etc
May 3	Threading; ITASSER; Prediction of secondary structure and unstructured regions, Homology modeling.
May 10	Prediction of secondary structure and unstructured regions (continue); Homology modeling; ConSurf
May 17	
May 24	
May 31	Rosetta and RoseTTAFold ; Contact prediction and coevolution; AlphaFold
June 7	Safra bioinformatics retreat?
June 14	Deep learning techniques in protein folding methods, Lectures (via YouTube) of John Jumper (AlphaFold), Jinbo Xu (RaptorX), Mohammed AlQuraishi.
June 21	Function prediction
June 28	Modeling of membrane proteins: Membrane topology prediction, and CPA.
Required course reading	
Will be included in presentations	
Optional course reading	



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Comments