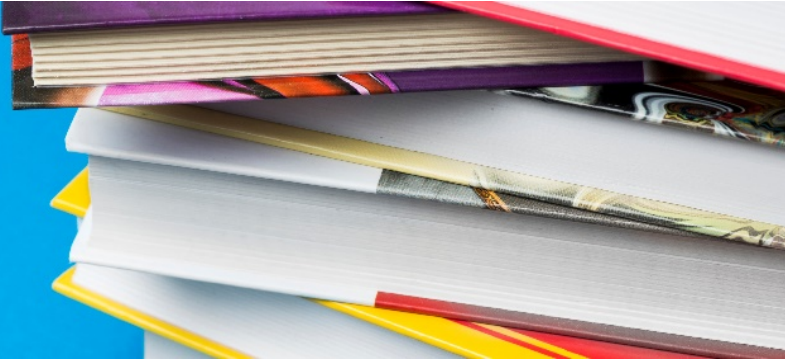
TEL AVIV UNIVERSITY אוניברסיטת תל אביב

Full Syllabus



Course Title

Mechanisms of Enzymatic Catalysis

Lecturer

Dr. Tsaffrir Zor

Semester

B

Course requirements

Exam

Final grade components

80% Exam, 10% Quiz, 10% Attendance

Course schedule

Class no. _ Date	Subject and Requirements (assignments, reading materials, tasks, etc.)
1 _ 24/2/2022	Introduction – enzymology; Introduction – Amino Acids and Proteins
2 _ 3/3/2022	Introduction – Michaelis-Menten
3 _ 10/3/2022	Introduction – Michaelis-Menten; Transition State
X _ 17/3/2022	No class (Purim vacation)
4 _ 24/3/2022	Catalysis Mechanisms
5 _ 31/3/2022	Catalysis Mechanisms; Nucleophile & Leaving Group
6 _ 7/4/2022	Chymotrypsin
7 _ 11/4/2022 (Monday – supp)	Chymotrypsin; Subtilisin; Acidic Proteases
X _ 14/4/2022 X _ 21/4/2022	No class (Passover vacation)
8 _ 28/4/2022	Workshop using Pymol: Chymotrypsin, Carboxypeptidase
X _ 5/5/2022	No class (Independence day vacation)
9 _ 12/5/2022	Carboxypeptidase
10 _ 19/5/2022	Aminoacyl tRNA Synthetase
11 _ 26/5/2022	G Proteins
12 _ 2/6/2022 (until 12:00)	G Proteins
13 _ 9/6/2022	G Proteins

Required course reading

Optional course reading

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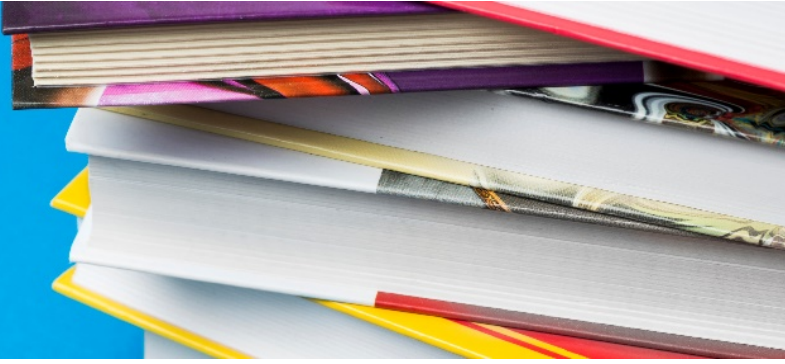


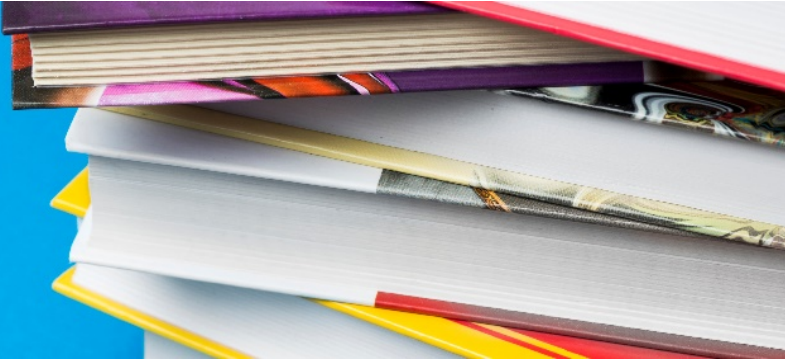
1) Structure and mechanism in protein science, Fersht, A. (1999), Freeman & Co.

2) Enzymatic reaction mechanisms, Walsh, C. (1979), Freeman & Co.

#	Subject\Chapter	Fersht	Walsh
1	Introduction to enzymology Lehninger	3	
2	Catalysis	2 & 12	2
3A	Chymotrypsin (Serine proteases) Lehninger, Ref. [1]	3, 4, 7, 9, 16	3.B
3B	Subtilisin Ref. [2, 3]	15.2	-
5	Nucleophile & Leaving group	2.D	-
5B	Aminoacyl-tRNA Synthetase	2.2c, 7, 15	8.A.1
7	G proteins (GTPase) Ref. [4-6]	-	-
8A	Carboxypeptidase A (Zn proteases) Ref. [7-11]	16.3	3.C.3
8B	Pepsin (Acidic proteases) Ref. [12-13]	16.4	3.C.2

References

1. Fersht, A.R., D.M. Blow, and J. Fastrez, Biochemistry, 1973. **12**: 2035-41.
2. Carter, P. and J.A. Wells, Science, 1987. **237**: 394-9.
3. Carter, P. and J.A. Wells, Nature, 1988. **332**: 564-8.
4. Zor, T., et al., FEBS Lett, 1998. **433**: 326-30.
5. Zor, T., et al., Eur J Biochem, 1997. **249**: 330-6.
6. Ahmadian, M.R., et al., Proc Natl Acad Sci U S A, 1999. **96**: 7065-70.
7. Breslow, R. and D.L. Wernick, Proc Natl Acad Sci U S A, 1977. **74**: 1303-7.
8. Kilshtain-Vardi, A., et al., Acta Crystallogr D Biol Crystallogr, 2003. **59**: 323-33.
9. Lee, K.J. and D.H. Kim, Bioorg Med Chem, 1998. **6**: 1613-22.
10. Lee, M. and D.H. Kim, Bioorg Med Chem, 2000. **8**: 815-23.
11. Shoham, G., D.W. Christianson, and D.A. Oren, Proc Natl Acad Sci U S A, 1988. **85**: 684-8.



12. Cornish-Bowden, A.J. and J.R. Knowles, Biochem J, 1969. **113**: 353-62.

13. Whittle, P.J. and T.L. Blundell, Annu Rev Biophys Biomol Struct, 1994. **23**: 349-75.

Comments