

BIOCHEMISTRY 401

Spring 2023

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M, Tu, Th, F; 9:10-10:00 am
Natural Resources 158

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Recitation: Wed; 9:10-10:00 am
BPS 1420

Text: Biochemistry, Garrett & Grisham, 5th or 6th eds.

Exams (in person): February 9, March 2, April 14, May 2 (Final, 12:45 pm-2:45 pm)

Schedule:

Date		Chapter/Topic	G&G 5 th ed. pages	6 th ed. pages	
PROTEIN STRUCTURE AND ENZYMES					
1/9/23	Mo	MF	1. Introduction	7-17	4-17
1/10	Tu	MF	2. Water, pH, and ion equilibria	30-50	31-49
1/11	We	TA	Recitation		
1/12	Th	MF	3. Thermodynamics	51-74	53-76
1/13	Fr	MF	3. Thermodynamics		
1/16			Martin Luther King Jr. Day	NO CLASS	
1/17	Tu	MF	4. Amino acids	77-98	79-101
1/18	We	TA	Recitation		
1/19	Th	MF	4. Amino acids		
1/20	Fr	MF	5. Protein primary structure	101-105, 122-135	105-109; 126-143
1/23	Mo	MF	6. Protein 3D structure	141-188	147-197
1/24	Tu	MF	6. Protein 3D structure		
1/25	We	TA	Recitation		
1/26	Th	MF	13/14. Enzyme introduction	407-411, 435-436, 447-455	437-441; 465-466; 477-485
1/27	Fr	MF	13. Enzyme kinetics	134-135, 411-423	138-139; 441-453
1/30	Mo	MF	13. Enzyme kinetics		
1/31	Tu	MF	13/14. Enzyme inhibition	472, 423-429	504; 453-460
2/1	We	TA	Recitation		
2/2	Th	MF	15. Enzyme regulation	481-503	513-536
CARBOHYDRATES AND LIPIDS					
2/3	Fr	MF	7. Carbohydrates	193-232	203-242
2/6	Mo	MF	7. Carbohydrates		
2/7	Tu	MF	8. Lipids	233-255	245-269
2/8	We	TA	Recitation		
2/9	Th	MF	EXAM 1 (covers: <u>Jan. 9 - Feb. 2</u> lectures, or as per instructor)		
2/10	Fr	MF	8. Lipids		
2/13	Mo	MF	9. Membranes	260-308	273-319

DNA STRUCTURE AND DNA TOPOLOGY					
2/14	Tu	JMK	10. Composition of DNA and RNA	309-328 <i>(but not insets on 312/325)</i>	325-345 <i>but not insets on 328,331,342</i>
2/15	We	TA	Recitation		
2/16	Th	JMK	11. DNA and chromosomes	341-363;961-962 <i>(but not 352-3 on DNA quadruplexes)</i>	360-383; 999-1000 <i>(but not 373-4 on DNA quadruplexes)</i>
2/17	Fr	JMK	11. tRNA and rRNA	365-374	386-394
DNA REPLICATION, RECOMBINATION, AND REPAIR					
2/20	Mo	JMK	28. DNA replication and DNA polymerases	947-962	985-1000
2/21	Tu	JMK	28. Replication fork and RNA replication	950-962; 963-964	988-1000; 1001-1002
2/22	We	TA	Recitation		
2/23	Th	JMK	28. DNA recombination; RecA, RecBCD, transposons	964-973 <i>(but not 971-2 on knockout mice, fork restart, euk recomb)</i>	1001-1012 <i>(but not 1009-1010 on knockout mice, fork restart, euk recomb)</i>
2/24	Fr	JMK	28. DNA repair	973-978 <i>(but not transgenic mice)</i>	1012-1017 <i>(but not transgenic mice)</i>
2/27	Mo	JMK	28. DNA repair	973-978	1012-1017
2/28	Tu	JMK	28. Mutations; mutagenesis	978-981	1017-1020
3/1	We	TA	Recitation		
3/2	Th	MF/JMK	EXAM 2 (covers: <u>February 3 – February 27</u> lectures, or as per instructor)		
TRANSCRIPTION					
3/3	Fr	JMK	29. Bacterial transcription: initiation, elongation, and termination	993-1000	1035-1042
3/6 - 3/12 SPRING BREAK					
3/13	Mo	JMK	29. Transcriptional regulation: <i>lac</i> , <i>ara</i> , and <i>trp</i> operons	1000-1011	1042-1053
3/14	Tu	JMK	29. Eukaryotic promoters, enhancers, and response elements	1011-1024	1053-1066
3/15	We	TA	Recitation		
3/16	Th	JMK	29. RNA processing in eukaryotes; RNA structural motifs	1024-1035	1066-1078
TRANSLATION					
3/17	Fr	JMK	30. Genetic code; tRNA and tRNA synthetases	1047-1057	1091-1101
3/20	Mo	JMK	30. Protein synthesis, ribosome structure	1057-1061	1101-1105
3/21	Tu	JMK	30. Mechanism of protein synthesis	1061-1080	1105-1124
3/22	We	TA	Recitation		
3/23	Th	JMK	31. Protein folding and translocation	1087-1099	1131-1144
3/24	Fr	JMK	31. Protein degradation	1099-1107	1144-1154
METABOLISM					
3/27	Mo	TRZ	17. Overview of metabolism	551-562	583-597, 601-605
3/28	Tu	TRZ	17. Metabolic energy	562-573	583-597, 601-605
3/29	We	TA	Recitation		
3/30	Th	TRZ	17. Nutrition/vitamins	577-595	583-597, 601-605
3/31	Fr	TRZ	18. Glycolysis	595-603	611-636

4/3	Mo	TRZ	19. TCA cycle	609-625	643-670
4/4	Tu	TRZ	19. TCA cycle	628-638	643-670
4/5	We	TA	Recitation		
4/7	Th	TRZ	20. Electron transport/oxidative metabolism	70-74; 643-660	679-710
4/8	Fr	TRZ	20. Electron transport/oxidative metabolism	660-674	679-710
4/10	Mo	TRZ	22. Gluconeogenesis	719-731	755-766
4/11	Th	TRZ	22. Gluconeogenesis and glycogen	719-731	767-779
4/12	We	TA	Recitation		
4/13	Th	TRZ	22. Glycogen metabolism	731-744	767-779
4/14	Fr	JMK/TRZ	EXAM 3 (covers: <u>February 28 - April 8</u> lectures, or as per instructor)		
4/17	Mo	TRZ	22. Pentose phosphate shunt	744-755	780-787
4/18	Tu	TRZ	23. Fatty acid catabolism	761-786	795-816, 818-819
4/19	We	TA	Recitation		
4/20	Th	TRZ	24. Lipid metabolism	791-808	825-841
4/21	Fr	TRZ	24. Lipid metabolism	808-820	841-851
4/24	Mo	TRZ	24. Cholesterol & hormones	820-832	851-865
4/25	Tu	TRZ	24. Bile, steroids, and nuclear receptors	833-837	869-872
4/26	We	TA	Recitation		
4/27	Th	TRZ	25. Nitrogen assimilation & metabolism	841-886	877-887
4/28	Fr	TRZ	25. Amino acid metabolism	841-886	889-921
5/2	Tu	TRZ	FINAL EXAM (covers: April 10 - April 28 lectures, or as per instructor) 12:45 pm		