

BIOCHEMISTRY 401**Spring 2025**

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STEM 2201

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Recitation: Wed; 9:10-10:00 am
CEM 183

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

Exams (in person): February 17
 March 13
 April 10
 April 29 (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			
1/13/24 <i>Mo</i> MF	1. Introduction	7-17	4-17
1/14 <i>Tu</i> MF	2. Water, pH, and ion equilibria	30-50	31-49
1/15 <i>We</i> TA	Recitation		
1/16 <i>Th</i> MF	3. Thermodynamics	51-74	53-76
1/17 <i>Fr</i> MF	3. Thermodynamics		
1/20	<i>Martin Luther King Jr. Day</i>	NO CLASS	
1/21 <i>Tu</i> MF	4. Amino acids	77-98	79-101
1/22 <i>We</i> TA	Recitation		
1/23 <i>Th</i> MF	4. Amino acids		
1/24 <i>Fr</i> MF	5. Protein primary structure	101-105, 122-135	105-109; 126-143
1/27 <i>Mo</i> MF	6. Protein 3D structure	141-188	147-197
1/28 <i>Tu</i> MF	6. Protein 3D structure		
1/29 <i>We</i> TA	Recitation		
1/30 <i>Th</i> MF	13/14. Enzyme introduction	407-411, 435-436, 447-455	437-441; 465-466; 477-485
1/31 <i>Fr</i> MF	13. Enzyme kinetics	134-135, 411-423	138-139; 441-453
2/3 <i>Mo</i> MF	13. Enzyme kinetics		
2/4 <i>Tu</i> MF	13/14. Enzyme inhibition	472, 423-429	504; 453-460
2/5 <i>We</i> TA	Recitation		
2/6 <i>Th</i> MF	15. Enzyme regulation	481-503	513-536
CARBOHYDRATES AND LIPIDS			
2/7 <i>Fr</i> MF	7. Carbohydrates	193-232	203-242
2/10 <i>Mo</i> MF	8. Lipids	233-255	245-269
2/11 <i>Tu</i> MF	9. Membranes	260-308	273-319
2/12 <i>We</i> TA	Review		
2/13	NO CLASS		

DNA STRUCTURE AND DNA TOPOLOGY

2/14	Fr	JMK	10. Composition of DNA and RNA	309-328 (but not insets on 312/325)	325-345 but not insets on 328,331,342
2/17	Mo	MF	EXAM 1 (covers: <u>Jan. 13 - Feb. 6</u> lectures, or as per instructor)		
2/18	Tue	JMK	11. DNA and chromosomes	341-363;961-962 (but not 352-3 on DNA quadruplexes)	360-383; 999-1000 (but not 373-4 on DNA quadruplexes)
2/19	We	TA	Recitation		
2/20	Th	JMK	11. tRNA and rRNA	365-374	386-394
DNA REPLICATION, RECOMBINATION, AND REPAIR					
2/21	Fr	JMK	28. DNA replication and DNA polymerases	947-962	985-1000
2/24	Mo	JMK	28. Replication fork and RNA replication	950-962; 963-964	988-1000; 1001-1002
2/25	Tu	JMK	28. DNA recombination; RecA, RecBCD, transposons	964-973 (but not 971-2 on knockout mice, fork restart, euk recomb)	1001-1012 (but not 1009-1010 on knockout mice, fork restart, euk recomb)
2/26	We	TA	Recitation		
2/27	Th	JMK	28. DNA repair	973-978 (but not transgenic mice)	1012-1017 (but not transgenic mice)
2/28	Fr	JMK	28. DNA repair	973-978	1012-1017
3/2 - 3/9	SPRING BREAK				
3/10	Mo	JMK	28. Mutations; mutagenesis	978-981	1017-1020
3/11	Tu	JMK	29. Bacterial transcription: initiation, elongation, and termination	993-1000	1035-1042
3/12	We	TA	Review		
3/13	Th	MF/JMK	EXAM 2 (covers: <u>Feb. 7 – Feb. 28</u> lectures, or as per instructor)		
TRANSCRIPTION					
3/14	Fr	JMK	29. Transcriptional regulation: <i>lac</i> , <i>ara</i> , and <i>trp</i> operons	1000-1011	1042-1053
3/17	Mo	JMK	29. Eukaryotic promoters, enhancers, and response elements	1011-1024	1053-1066
3/18	Tu	JMK	29. RNA processing in eukaryotes; RNA structural motifs	1024-1035	1066-1078
3/19	We	TA	Recitation		
3/20	Th	JMK	30. Genetic code; tRNA and tRNA synthetases	1047-1057	1091-1101
TRANSLATION					
3/21	Fr	JMK	30. Protein synthesis, ribosome structure	1057-1061	1101-1105
3/24	Mo	JMK	30. Mechanism of protein synthesis	1061-1080	1105-1124
3/25	Tu	JMK	30. Mechanism of protein synthesis	1061-1080	1105-1124
3/26	We	TA	Recitation		
METABOLISM					
3/27	Th	TRZ	17. Overview of metabolism	551-562	583-597, 601-605
3/28	Fr	TRZ	17. Nutrition/vitamins	567-595	583-597, 601-605
3/31	Mo	TRZ	18. Glycolysis	595-603	611-636
4/1	Tu	TRZ	19. TCA cycle	609-638	643-670
4/2	We	TA	Recitation		

4/3	Th	TRZ	20. Electron transport/oxidative metabolism	70-74; 643-660	679-710
4/4	Fr	TRZ	20. Electron transport/oxidative metabolism	660-674	679-710
4/7	Mo	TRZ	22. Gluconeogenesis	719-731	755-766
4/8	Tu	TRZ	22. Glycogen metabolism	731-744	767-779
4/9	We	TA	Review		
4/10	Th	TRZ/JMK	EXAM 3 (covers: <u>Mar. 10 – Apr. 4</u> lectures, or as per instructor)		
4/11	Fr	TRZ	22. Pentose phosphate shunt	744-755	780-787
4/14	Mo	TRZ	22. Pentose phosphate shunt	744-755	780-787
4/15	Tu	TRZ	23. Fatty acid catabolism	761-786	795-816, 818-819
4/16	We	TA	Recitation		
4/17	Th	TRZ	24. Lipid metabolism	791-808	825-841
4/18	Fr	TRZ	24. Lipid metabolism	808-820	841-851
4/21	Mo	TRZ	24. Cholesterol metabolism	820-832	851-865
4/22	Tu	TRZ	24. Bile, steroids, and nuclear receptors	833-837	869-872
4/23	We	TA	Recitation		
4/24	Th	TRZ	25. Nitrogen assimilation & metabolism	841-886	877-887
4/25	Fr	TRZ	25. Amino acid metabolism	841-886	889-921
4/29	Tu	TRZ	FINAL EXAM (covers: Apr. 7 – Apr. 25 lectures, or as per instructor) 12:45 pm – 2:45 pm		