

- * Due dates for DQ Sets are not listed here, but in general, they are due weekly. Please refer to the syllabus for DQ submission format.
- * I reserve the right to modify the schedule as needed. Thank you for your understanding, adaptability and cooperation.

BIOLOGY 103- Lecture Topics, Lab Activities and Assignments				
Week	Day/ Date	Topic/ Activity	Reading/Videos	What's Due?
1	T 01/15	Welcome, Intro to Course, Student Panel	Chapter 1, Print/Bring Syllabus	Lab Notebooks, printed syllabus
	R 01/17	Lecture 1: Universal Features of the Cell, Model organisms	Chapter 1	Bio103 – Google Survey (4 points) Canvas Bio (+3) Notes: Intro Cells, Models (+4)
	LAB	Lab I, II, III: Intro and Cell/Mol. Bio Bootcamp	Lab I, II, III- Manual	Attend (or get dropped)
<i>NO In-person DISCUSSION this week- Canvas Submission Only (DQ#1 due 01/20)</i>				
2	T 01/22	Lecture 2: Chemical Bonds, Properties of H ₂ O	Ch 2 p. 43-50 and 90-95	Notes: chemical bond comparison
	R 01/24	Lecture 3: Overview of Macromolecules & Functional groups	Ch 2 p.59-60, Ch 3 p.125-129	Notes: functional groups definitions
	LAB	Lab #2: Identifying amino acid composition of unknown substance via TLC	Lab #2: Reading, videos and manual	Attend (or get dropped) Lab notebook- complete entries for Lab I, II and III (separate entries) Lab Notebook- TLC pre-lab complete
3	T 01/29	Lecture 4: Amino acids & polypeptides- structure, function and interactions; Antibodies and biotechnological applications	Ch 3 p.109-128, 134-140; Ch 8 p. 452-455; Ch 9 p. 539-40	
	R 01/31	Lecture 5: Enzymes (Part 1)- structure, function	Ch 2 p.57-62; Ch 3 p. 140-141, 144-154	

	LAB	Workshop: Intro and Methods (for formal Lab Report)	(Read and Bring) General Report Expectations and TLC specific expectations	Lab Notebook complete THRU TLC lab TLC Lab Report ROUGH Draft
4	T 02/05	Lecture 6: Enzymes (Part 2)- Regulation	Ch 2 p.57-62; Ch 3 p. 140-141, 144-154	Notes: compare/contrast regulation mechanisms
	R 02/07	Lecture 7: Lipids, fats & the phospholipid bilayer	Ch 2 p. 98-99; Ch10 p. 565-575	
	LAB	Lab #3: Analyzing the effects of light conditions on RubisCO production Part 1: Protein extraction and Bradford Assay	Lab #4: Reading, videos and manual (print/bring relevant worksheets) Ch 8 p. 452-455	TLC Lab Report (50 points) Lab Notebook up to date Calculations for Bradford standard conc. <i>and</i> dilution factors of plant samples
5	T 02/12	Lecture 8: Membrane proteins and their role in molecular transport and support	Ch 2 p. 124-145; Ch 10 p. 576 - 582	
	R 02/14	Lecture 9: Cell communication and adhesion	Ch 15 p. 813-821, 832-841; Ch 16 p. 889-894;	Notes: compare contrast communication
	LAB	NO experiments this week, No Lab Friday. Instead: LAB Open Office Hours 9:30-11:00 (TUES and THURS ONLY), Anyone from any section can come. Stop by and get help with calculations (or anything else, WB related)		
6	NO in-person DISCUSSIONS this week. Check Canvas for DQ assignment			
	T 02/19	Lecture 10: Sugars & Carbohydrates; Overview of Glucose Metabolism	Ch 2 p. 54 – 57, 63-70, 74-82, 104-105,	
	R 02/21	MIDTERM #1- Covers Lecture 1-9, with major emphasis on Lec 4-9 (100 points)		

	LAB	Lab #3: Analyzing the effects of light conditions on RubisCO production Part 2: Make/run SDS-PAGE & O/N transfer	Lab #4: Readin, videos and manual (print/bring relevant worksheets)	Lab Notebook up to date Figure- Bradford assay Standard Curve Calculation for sample (show work) Calculation for gel final solution
7	T 02/26	Lecture 11: Glycolysis; <i>Aerobic</i> Glucose Metabolism- Pyruvate Oxidation	Ch 2 p. 82-84, 106-107	Notes: 10 steps of glycolysis, described
	R 02/28	Lecture 12: <i>Aerobic</i> Glucose Metabolism- Citric Acid Cycle <i>(start Lecture 13: Oxidative phosphorylation)</i>	Ch 2 p. 82-84, 106-107 Ch 2 p. 75-76, 85-86; Ch 14 p. 761-777 (& Fig.14-10), 780-81	
	LAB	Lab #3: Analyzing the effects of light conditions on RubisCO production Part 3: Ponceau Stain and Immunodetection	Lab #4: Reading, videos and manual (print/bring relevant worksheets)	Lab Notebook up to date Figure- Mock ponceau and immunodetection results
8	T 03/05	Lecture 13: Oxidative Phosphorylation and Recap of Glucose Metabolism	Ch 2 p. 75-76, 85-86; Ch 14 p. 761-777 (& Fig.14-10), 780-81	Notes: Summary of net products.
	R 03/07	Lecture 14: Nucleotides to nucleic acids	Ch 1 p.1-7; Ch 2 p. 47-48, 70-73, 100-101	
	LAB	Workshop: WB Methods, Data Analysis and Interpretation	Bring General Report Expectations and WB specific expectations	Western Blot Report ROUGH Draft Lab Notebook up to date
9	T 03/12	Lecture 15: Molecular basis of DNA replication	Ch 4 p. 179-193, (& Fig 4.61 on p.215); Ch 5 p. 237-266 (skip: Mismatch Repair) Ch 8 p. 473-477	Notes: Table of replication machinery/f(x)
	R 03/14	<i>(Finish Lecture 15)</i> Lecture 16: DNA Mutations and Repair	Ch 5 p. 250-(top) 251, 266-276	
	LAB	Lab #4: Generation of antibiotic resistant bacterial strain Part 1: Digest and Ligation, competent cells	Lab #4: Reading, videos and manual (print/bring relevant worksheets) Group discussion/predictions	Western Blot Report Lab Notebook up to date Start worksheet, material/methods

10	T 03/19	(Finish Lec 16: Mutation and Repair) Lecture 17: Biotechnology- The Polymerase Chain Reaction (PCR) and Molecular Cloning	Ch 5 p. 250-(top) 251, 266-276 Ch 8 p. 463-478, 483-485 Research and watch videos.	Notes: 3 steps in a cycle- describe
	R 03/21	MIDTERM #2- cumulative with emphasis on Lecture 10-16 (125 points)		
	LAB	Lab #4: Generation of antibiotic resistant bacterial strain Part 2: Transformation, Plating (Staff: Selection/Overnight liquid cultures)	Lab #4: Reading, videos and manual (print/bring relevant worksheets)	Lab Notebook up to date Digest/Ligation worksheet due, Table of predicted ligation combos
SPRING BREAK 03/25-03/29: work on Lab (see what's due) and Lit Review				
11	T 04/02	Lecture 17: Biotechnology- The Polymerase Chain Reaction (PCR) and Molecular Cloning	Ch 8 p. 463-478, 483-485 Research and watch videos.	Notes: 3 steps in a cycle- describe
	R 04/04	Lecture 18: Gene Expression- Transcription and mRNA processing	Ch 6 p. 299-311, 316-321, 325-329 (Ch 6 p. 331-348, 353-357, 361-369)	
	LAB	Lab #4: Generation of antibiotic resistant bacterial strain Part 3: Isolation of plasmid DNA, Digest to verify insert	Lab #4: Reading, videos and manual (print/bring relevant worksheets)	Lab Notebook up to date Flow Chart: what you did, purpose Introduction Rough draft, Material and Methods for all parts until Plating,
12	T 04/09	Lecture 19: Gene Expression: Translation and protein folding; Effects of mutations on proteins	Ch 6 p. 325-348, 353-357, 361-369	Literature Review- ROUGH Draft (Canvas Sun 04/07 11pm; and Hard copy 04/09 7:50am)
	R 04/11	Lecture 20: Application of Central Dogma; Predicting effects of mutations on proteins (Start Lecture 21: Regulation of Prokaryotic gene expression)	Openstax Biology CNX (Ch 14.6, 15.1) <i>Free text online.</i> Ch 7 p. 369-375, 377-379 (top), 380-383.	

	LAB	Lab #4: Generation of antibiotic resistant bacterial strain Part 4: Gel electrophoresis and Data Analysis	Lab #4: Reading, videos and manual (print/bring relevant worksheets)	Lab Notebook up to date Figure and Table- Predictions of Gel
13	T 04/16	Lecture 21: Regulation of Prokaryotic gene expression	Ch 7 p. 369-375, 377-379 (top), 380-383.	Literature Review – FINAL (Canvas 11pm)
	R 04/18	Lecture 22: Regulation of Eukaryotic gene expression	Ch 7 p. 379-380, 384-402; Ch 8 p. 486;	Literature Review – FINAL (Hard Copy 7:50am)
	LAB	Workshop: Results and Discussion	(Read and Bring) General Report Expectations and Cloning specific expectations	'Lab Notebook up to date Cloning Report ROUGH Draft
14	T 04/23	Lecture 23: The Cell Cycle and Regulation of; Emphasis on mitosis	Ch 17 p. 963-988, 992-994(top), 996-997(mid)	Bring colored pencils
	R 04/25	Lecture 24: Meiosis and Sexual Reproduction	Ch 17 p. 1004-1008, 1010	Notes: drawings of cell in mitosis. Bring colored pencils
	LAB	Lab #5: Bioethics	Complete assigned reading, videos, etc	Final Lab Notebooks (30 points)
15	T 04/30	Lecture 25: Cell Death	Ch 18: 1021-1032	Notes: compare/contrast necrosis and apoptosis
	R 05/02	Lecture 26: Viruses (if time permits)	Openstax Microbiology CNX (Ch 6.1-6.2) Free text online. (Alberts) Ch 7 p. 433-434; Ch 20 p. 1131; Ch 23 p. 1273-1275, 1279-1281	
	LAB	Literature Review- Oral Presentation (15 points) Potluck party		Molecular Cloning Report (100 points) Presentation- flashdrive (20 points)
16	R 05/09	FINAL EXAM: EBS 309; 8:00-10:00am (emphasis on lecture 11-end of semester)		