



COURSE DESCRIPTION: Biotechnology consists of two classes (Essentials of Biotechnology during the fall semester & Applications of Biotechnology during the spring semester). The courses introduce students to the fundamentals of biotechnology. Included in this course are additional applications and techniques in biotechnology that deepen the student's understanding of how biotechnology uses living systems to create products and enhance lives. In addition, laboratory applications learned in this course are the pivotal component distinguishing scientific theory from its application in bioscience, as in engineering and mathematics. Bioscience and the application of laboratory techniques to manipulate living systems are cornerstones of pharmaceutical, medical device, forensic science, environmental science, agriculture, alternative fuels, and green chemistry.

GA Department of Education Standards

1. [Essentials of Biotechnology](#) Textbook chapters 1 – 3, and 9
2. [Applications of Biotechnology](#) Textbook chapters 4- 7

Materials

- **Lab Notebook**
 - (Preferred w/ Carbon Copy paper) →

Grading Scale

❖ Semester Average = 80% of final Grade

❖ Final Exam = 20% of Final Grade

- Students earn 1 credit per semester.
- 2 Final Exams (@ end of each semester)
- Must pass Essentials of Biotech (fall) to move on to Applications of Biotech (spring)

❖ **Grading Categories. (i.e. semester grades/tasks)**

- Daily Grades - 10%
- Formative - 40%
- Summative - 50%

Class Rules:

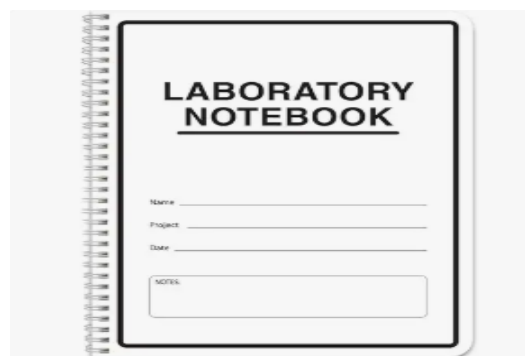
- @ No Cell Phones or Student-Owned Electronic Devices.
- @ Students must make a 100% on the safety test before being allowed to participate in labs.
- @ No Passes out 1st or last 10 minutes of class.

Make Up Work/ Missing assignments.

- Unexcused Absences - Complete & submit missing assignments in time equal to the amount of time absent.
 - Example: 2 days absent = 2 days to submit work after returning to school.
- Excused Absences = 5 Days to complete and submit assignments.

Honors Credit: Students will be enrolled in the online "Introduction to Healthcare" class. Completing this class and the two biotechnology courses will complete the Health Science pathway. Students will then take the EOPA in the spring to become a pathway completer. **To get Honors Credit, students must do the following.**

- 👍 Pass both Essentials and Applications of Biotechnology.
- 👍 Complete Online Course "Introduction to Health Care by Spring Break
- 👍 Take the Biotechnology End of Pathway Assessment (EOPA).
- 👍 Students must be at 60% by Winter Break (December 20), or they will be dropped from the online course.



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Carbonless Lab Notebook, 50 Sets, 100 Sheets Total | Scientific Grid Format, Carbon Copies, Duplicator Wire-O...

4.5 ★★★★★ (1.1K)

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Week	Dates	Topic of Study	Unit Topics & Assessments	Standards
1	8/5– 8/7 (3 days)	Launch	Expectations, Procedures, Protocols, Introductions, Scientific Habits of Mind, & Communication.	NA
2 - 5	8/10 – 9/3 (19 days)	<u>Introduction to Biotech</u> Chapter 1	Lab Equipment, Lab Protocols/Safety, Density Inquiry, Serological Pipetting, BSLs, Labs.	HS-EB 1, 2, 3, 4, 5 HS-AB 2.8, 5.6, 6.7, 6.9, 6.10
6 - 10	9/8 – 10/9 (24 days)	<u>Laboratory Skills</u> Chapter 2	HOSA, Micropipetting, NFPA, Scientific Notation, MSDS, Titrations, Acid, Base, Buffer, M ₁ V ₁ , Chromatography,	HS-EB 1, 5 HS-AB 4.8
11 - 15	10/19– 11/20 (25 days)	<u>Microbiology & Cells</u> Chapter 3	Moles, Molar Mass, Prokaryotes, DNA pt1 & Extraction, Mole Day (10/23) , Staining Cells, Mole Conversions, Molar Solutions vs Concentrations, ID Bacteria	HS-EB 1,6,7
16 - 18	11/30 – 12/18 (15 days)	<u>Antibiotics</u> **Chapter 3	Culturing Bacteria, Antibiotics and Resistance, Kirby-Bauer (Antibiotic Sensitivity, Vocab Roots 4	HS-EB 1,5, 6, 7
18	12/17 -12/18	FINAL EXAM 20% of Final Grade	✓ Chapters 1 – 3. ✓ Labs: DNA Extraction, Gram Staining, Titrations, Chromatography, Kirby-Bauer	HS AB 1.4.5.7 HS-EB 1,2,3,4,5,6,7

Christmas Break 12/21 – 1/1



Week	Dates	Topic of Study	Unit Topics & Assessments	Standards
1 - 6	1/19 –2/12 (19 days)	<u>DNA & Genetics</u> Chapter 4	Genome Project, Karyotyping, DNA pt2, Pouring Gels, Skittles Lab, Electrophoresis, Base Level Crime Scene.	HS-AB 1,2,3,4,5,6
7 - 11	2/22-3/26 (30 day)	<u>PCR & EOPA Review</u>	PCR** Chapter 5, Macromolecules, Recombinant Techniques, NEBcutter, Semi-log Sessions, Advanced DNA Fingerprinting and Crime Scene.	HS-EB 1-7 HS-AB 1-7

SPRING BREAK April 5–9

12 - 14	4/12-4/23 (15 days)	<u>EOPAs – for CTAE</u>	Students will prepare for EOPAs, and Take EOPAs. Specific Date for Biotech TBD	HS-EB 1-7 HS-AB 1-7
15 - 18	4/26-5/21	<u>Bacterial Transformation and Plasmid Purification</u> Chapter 5 & 6	Plasmid Mapping, pGLO, Protein Purification, GFP	HS-AB 6-7
19	5/12-5/23	Final Exam 20% of Final Grade	Final Exam Has 2 Sections 50% Lab Practical – Prior to Exam Week 50% Multiple Choice – ON EXAM DAY	HS-EB 1-7 HS-AB 1-7 All Standards