James Clemens High School
11306 County Line Road
Madison, AL 35756

Phone: 256-216-5313
Teacher: Laura Phillips
Email: lphillips@madisoncity.k12.al.us

Course Syllabus
Biotechnology I

Course Description:
Biotechnology I is designed to provide an overview of the scope, concepts, and procedures of the biotechnology field. This course introduces students to a variety of topics in the biotechnology setting. Course topics include career exploration, laboratory procedures and technical skills fundamental to biotechnical research biochemistry, genetics and cell biology concepts, and genetic innovations.

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Course Objectives:

Students will:

- Trace the history of biotechnology and identify career opportunities and related scientific fields.
- Utilize microscopes effectively, including slide preparation and specimen analysis.
- Perform laboratory calculations using scientific notation, significant figures, and decimals.
- Perform advanced laboratory techniques such as PCR, DNA extraction, recombinant DNA methods, and bacterial culture maintenance.
- Construct models demonstrating the process of meiosis and the cell cycle, explaining the hereditary significance of each.
- Differentiate between normal and abnormal karyotypes, and describe eukaryotic chromosome structure.
- Describe and illustrate inheritance patterns based on gene interactions.

Classroom Rules and Expectations:

General: Students are expected to come to class fully prepared to participate in and contribute to the scheduled activities and to adhere to the following:

1. **Be ready** for class each day.
2. **Be respectful** of yourself, others, the teacher, and the classroom.
3. **Be responsible** for your own attitude, actions, and assignments

Accommodations: Requests for accommodations for this course or any school event are welcomed from students and parents.

Classroom Management Plan

- Verbal reprimand
- Conference with student with parent contact
- Withdrawal of privilege(s) with parent contact
- Other consequences determined to be reasonable and appropriate by the school administration

Technology Use in the Classroom:

If technology is needed in the classroom, then ***school issued Chromebooks must be used***.

Concerning Laptop Utilization: Student laptops should not be hard-wired to the network or have print capabilities. Use of discs, flash drives, jump drives, or other USB devices will not be allowed on Madison City computers. Neither the teacher, nor the school is responsible for broken, stolen, or lost laptops. **Laptops and other electronic devices will be used at the discretion of the teacher.**

Under the FOCUS Act, effective July 1, 2025, the use, operation or possession of Wireless Communications Devices (including but not limited to cellular telephones, tablet computers, laptop computers, pagers, gaming devices, smart watches, and earphones or headphones) in school buildings or on school grounds during the Instructional Day is prohibited. Please refer to the Code of Conduct for more information.

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Grading Policy:

Test grades will account for 70% of the 9-weeks grade, with the remaining 30% being determined by quiz/daily grades. The grading scale is as follows: A (90-100%), B (80-89), C (70-79), D (65-69), and F (below 65). Grades will be a reflection of mastery of the standards. Make sure all absences are excused as class work can be made up and graded for excused absences only. The final exam counts for 20% of the final grade.

Missed Assignments: If you are present in class but do not turn in an assignment by the due date, I will put a 0 in the gradebook. You are allowed to turn in assignments late; however, 20% of the grade will be deducted for being late. You must complete the late work google form found on Schoology for any late work turned in. **Excused** absences will be granted 3 days to complete and turn in any missed assignments. After 3 days, the assignment will be counted as late unless extenuating circumstances are discussed with me. Assignments missed due to an **unexcused** absence will be given a 0 in accordance to Madison City Schools policy. Please make sure to turn in an excuse for every absence within 3 days!

Make-Up Work Policy:

Make-up tests are only allowed for excused absences. Students with excused absences should make arrangements with Mrs. Phillips to take any missed assessments. Makeup tests should be complete within one week upon the student returning to school, unless extenuating circumstances are discussed with me. All makeup work can be found on Schoology.

Artificial Intelligence:

The use of Artificial Intelligence (AI) tools to complete assignments without prior disclosure and approval is strictly prohibited. Any undisclosed use of AI tools will be considered academic dishonesty and will result in an automatic grade of zero for the assignment in question. All assignments are subject to verbal review.

Mandatory Jet-Lag

Mandatory tutoring will be required for any student whose average drops below a 70. Students will be required to see Mrs. Phillips for 30 minutes during refuel each week.

Course Materials:

Each student will need the following individual supplies:

1. 1 or 1 ½ inch binder
2. Writing utensil (Pencils are preferred but pens are allowed)
3. Scientific calculator
4. Madison City Laptop.

If you are interested in **donating supplies** to the classroom, we are always in need of hand soap, dish soap, dry erase markers, copy paper and facial tissue. Any supplies brought in can earn tickets for classroom rewards.

Texts/Required Readings:

Human Genetics: Concepts and Applications. 11th Edition. Lewis. 2015.

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18 – WEEK PLAN*	
Week 1	Introduction to Genetics
Week 2	Molecules, Cells, and Mitosis
Week 3	Meiosis, Development, and Aging
Week 4	DNA Replication and Chromosome structure
Week 5	DNA Extraction
Week 6	Evaluating Karyotypes
Week 7	Protein Synthesis and Gene Mutations
Week 8	Protein Synthesis and Gene Mutations
Week 9	DNA Profiling and DNA Phenotyping
Week 10	Bacterial Transformation
Week 11	Transmission Genetics and Heredity
Week 12	Transmission Genetics and Heredity
Week 13	Multifactorial Traits and Population Genetics
Week 14	Gene Expression
Week 15	Biotechnology Applications and Human Genome Project
Week 16	Biotechnology Applications and Human Genome Project
Week 17	RNA and DNA Viruses
Week 18	Review