**Biotechnology**

**Course Description**

Biotechnology is a laboratory course requiring solid reasoning skills used to problem solve and critically analyze problems and data This course encompasses a detailed examination of biotechnology topics including microbiology, recombinant DNA technology, immunology, and synthetic biology. Laboratory work includes microscopy, microbiological plating and sterile techniques, transformation, DNA extraction, PCR, gel electrophoresis, and studies in synthetic biology.. Students read and discuss current bioethical issues which include reproduction issues in biotechnology genetic modification of foods, stem cell research, and childhood vaccinations. Students should be sufficiently motivated to complete outside reading and writing requirements independently, and to participate cooperatively in groups.

**Academic Expectations**

Welcome to Biotechnology! Your goal in this course is to become literate in the multifaceted sciences of biotechnology and synthetic biology. To reach your goal, you will participate in a variety of learning experiences designed to help you develop skills in problem solving, critical analysis of information, decision making, and effective use of technology. Working both independently and cooperatively, you will be responsible for assigned reading, researching and writing papers and lab reports, actively listening to lectures, discussing and questioning information, performing laboratories, making presentations which incorporate computer technology, and completing assigned projects.

Most importantly, it is my hope that you will ask a lot of questions. Not only is questioning an essential attribute of a good scientist but it will ensure you understand what is being taught.

**Classroom Conduct**

Establishing a maintaining a classroom atmosphere in which ideas and knowledge can be exchanged is important to your involvement and learning. Our conduct in class is based on simple courtesy, common sense, and school-wide civic and social expectations.

* Demonstrate respectful behavior
* Value the physical and emotional well being of yourself and others
* Value diversity
* Demonstrate honest and moral character.

**Classroom Procedures**

* ***Be ready to learn*.**

1. Arrive on time for class.
2. Be seated when the bell rings.
3. Bring your notebook, assigned reading, and all writing utensils.

* ***Attention and Participation***

1. When I ask for your attention, please listen because I am offering instructional information that you need.
2. Ask or respond to a question but please raise your hand.
3. Stay on topic. Making off topic comments, whispering to your friends, or speaking out of turn can be disruptive to the class.
4. When you leave the classroom during a lesson, please use the sign out book. I permit one student at a time to leave during a lesson for 5 minutes.
5. When you leave the classroom during eagle block, present your pass to me and use the sign out book. Those remaining in the class may use the lavatory but you may not be out of the classroom for more than 5 minutes. Use the sign out book.
6. Remember that class ends when I conclude the lesson.

* ***Safety***

1. No food or drink of any kind is permitted in the classroom.
2. Listen and follow all my safety instructions during a lab.
3. Use lab equipment only as instructed.
4. Horsing around is never OK in the lab!

* ***Attendance and Makeup Work***

1. Homework – If you are absent, it is your responsibility to get assignments and turn in work when you return. Check with a classmate or email me, or check my website to get assignments. Late homework will not be accepted for credit.
2. Labs - If you miss a lab, you will be expected to make it up after school within a week. You are responsible for finding a classmate to accompany you and guide you through the lab. Lab materials are often perishable, so timely make up is important.
3. Tests- If you miss a test, you are responsible for making it up when you return to school. You will need to make arrangements with me for test make up. If you anticipate an absence, arrange a make- up time prior to your absence*.*

* ***SHS Rules and Regulations***

We abide by all SHS rules and regulations outlined in the SHS Handbook.

**Suggested Course Materials**

* ***Three Ring Binder (1.5”) with dividers-*** The binder should be used only for Biotechnology and sections should be labeled for each unit. Keep everything in chronological order because it will be easier to find things later. Units are listed on the Course Schedule which should be the first page in your notebook
* ***Loose Leaf Paper***
* ***Writing Utensils-*** Pens and pencils
* ***Ruler, Calculator, Colored Pencils***

**Assessment and Grading**

***Assessments***

I use a variety of assessments in our classroom to measure whether learning has occurred. Assessments include quizzes, tests, exams, lab reports, projects, research papers, and essays. Assignments such as lab reports, projects, and papers are accompanied by a grading rubric. In addition, I use a school wide rubric to measure student progress towards school wide academic expectations.

***Grading***

The grading for the class is based on a point system. Your grade for any assignment will be the number of points earned divided by the total number of points. At the end of a quarter, your points will be totaled and a percentage determined.

***Homework and Class Participation:***

Homework will be on an assigned basis and will be checked for completion. Class participation is an important part of this course. Many classroom lessons will be completed cooperatively in groups. Your participation is expected and essential.

***Approximately 5%-10% of term grade***

***Tests and Quizzes:*** At the end of each unit there will be a major unit test. Smaller quizzes are given during the unit. Quizzes may be of a surprise nature. Test and quiz format include multiple choice, matching, true/false, and short essays.

***Approximately 45%-50% of term grade***

***Larger Assignments:*** Lab reports, research papers, essays, and projects will be assigned throughout the course. These larger assignments can greatly impact your grade.

***Approximately 45%-50%% of the term grade***

**Office Hours and Extra Help**

There may be times when you require extra help and feel stress or pressure to succeed. Please feel free to stop by my room 302 before / after school or during Eagle block with questions, confusions, rough drafts, or simply stop by to say hello. I am almost always available for extra help and I am here to help you succeed.

**I have read and I understand the class expectations.**

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Student Date**

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Parent Date**

**Biotechnology Syllabus**

|  |  |  |
| --- | --- | --- |
| **Unit** | **Unit Name** | **No. of Cycles** |
| 1 | Microbiology and Microbial Biotechnology | 4 |
| 2 | Review of Molecular Biology  Recombinant DNA Technology 1 | 2.5 |
| 3 | Recombinant DNA Technology 2 | 3 |
| 4 | Medical Biotechnology 1 | 2.5 |
| 5 | Medical Biotechnology2 and Immunology | 4 |
| 6 | Synthetic Biology | 2.5 |