

## HONORS BIOLOGY SYLLABUS

Mrs. Miller

Welcome to my class and welcome to the wonderful and exciting world of biology. As a person who has a great passion for science and research, it is my hope and my goal to help you learn the basic biological concepts and encourage you to develop a better appreciation for science through hands-on, collaborative and fun experiences. Biology is that science that studies life and living things. You should come to realize that possessing just a basic understanding of the living world around us will help you recognize that this “thing” we call life is a complex web of interdependence. There is not a single species that could survive without depending on other species. In this class, we will depend on each other to develop a working knowledge base of scientific concepts that we can apply to our everyday lives.

### **BIOLOGY CURRICULUM (in no particular order):**

#### **First Semester:**

Bio Basics/Scientific Method (Chapter 1)  
Cells (Chapter 7)  
Cellular Transport (Chapter 7)  
Photosynthesis (Chapter 8)  
Cellular Respiration (Chapter 8)  
Cell Reproduction (Chapters 9, 10)  
DNA, RNA and Protein Synthesis (Chapter 12)  
Mendelian Genetics (Chapters 10, 11)

#### **Second Semester:**

Mutations (Chapters 11, 12)  
Viruses and Bacteria (Chapters 17, 18)  
Evolution (Chapters 14, 15, 16)  
Invertebrates (Chapter 25)  
Vertebrates (Chapters 28, 29, 30)  
Ecology (Chapters 2, 3, 4)

### **BIOLOGY BENCHMARKS:**

*Upon completion of the Biology course, students will know that:*

1. Fundamental life processes of plants and animals depend on a variety of chemical reactions that are carried out in specialized areas of the organism's cells.
2. Mutation and sexual reproductions lead to genetic variation in a population.
3. Multicellular organism develops from a single zygote, and its phenotype depends on its genotype, which is established at fertilization.
4. Genes are a set of instructions, encoded in the DNA sequence of each organism that specify the sequence of amino acids in proteins characteristic of that organism.
5. Genetic composition of cells can be altered by incorporation of exogenous DNA into the cells.
6. Stability in an ecosystem is a balance between competing effects.
7. The frequency of an allele in a gene pool of a population depends on many factors, and may be stable or unstable over time.
8. Evolution is the result of genetic changes that occur in constantly changing environments.
9. As a result of the coordinated structures and functions of organ systems, the internal environment of the human body remains relatively stable (homeostatic), despite changes in the outside environment.
10. Organisms have a variety of mechanisms to combat disease.

### **REQUIRED MATERIALS:**

1. Textbook: Biology (Glencoe Science)
2. Scientific Novel: Next by Michael Crichton
3. Assignment book (provided by IH)
4. Appropriate writing utensils
5. College ruled notebook paper

### **CLASS REQUIREMENTS:**

#### **Class time:**

For one semester you will be responsible for the care of a fish tank. On Mondays, Wednesdays, and Fridays of that semester, you are expected to be in class by 7:15 a.m. At this time, you will have thirty minutes to work with your fish tanks. No exceptions! Do not be late!

**Homework:**

Homework will generally be assigned everyday and will be due the following day at the beginning of the period. Homework will consist of reading sections of the chapter and answering questions from the book. Coloring diagrams may also be assigned periodically. Everyday that homework is due, I will walk around the class and check your homework. If your homework is complete, it will be stamped. This stamp acknowledges that your homework is complete and on time. If you are absent on the day that homework is stamped, it is **your** responsibility to see me for a stamp. Please note that if you do not have completed homework on the day it is stamped, you cannot receive a stamp for it later.

On the day of an exam, you will turn in all of your homework for that unit. It is at this time that you will receive a grade for your work. If for any reason, you did not complete your homework when it was due and therefore did not receive a stamp, you may still do the homework and turn it in on the day of the test for partial credit. Please be aware that **I do not accept late homework**. If you do not turn in your homework at the **beginning** of the test period, you will not receive credit, even if all of your assignments have stamps.

**Labs and Lab Safety:**

I will attempt to have several labs for you to engage in every month. The labs will relate to the topics covered in any given unit. You will work in pairs or groups depending on the lab protocol. Labs will include a worksheet that you will be required to complete and hand in for credit. They will usually be due at the end of a lab. They may also be due the next day if more time is needed to complete them.

For your protection, obey all lab safety rules. You will each receive a copy of lab rules. A copy will also be posted in the classroom. Some safety precautions include wearing protective goggles, latex gloves and lab coats, walking slowly, disposing of broken glass and sharp objects in the appropriate manner and paying attention to all instructions. **ABSOLUTELY NO FOOD OR DRINK IS ALLOWED IN THE CLASS ON LAB DAYS.**

A lab contract will be available online. Please read through the contract with your parents. At the end of the contract is a written agreement for you and your parents to sign acknowledging that you have gone through the lab safety contract. Please sign the contract and turn it in by the date I specify on the first day of classes.

**Exams:**

Exams will be given at the end of every unit. The exams will consist of true/false, definitions, fill in the blank, multiple choice, matching, short answer and essay. It is important for you to be present the day of the test. If you know you are going to be absent for a test, it is your responsibility to schedule a make up exam with me before the test. At the end of each term you will have a departmental final exam that will be comprehensive.

**Literature Reviews:**

Each quarter you will be required to read a journal article that I provide online. They will be science related articles and may highlight experiments that are being conducted or discuss current issues related to science. You will be required to write a one-two page review of the article and answer post article questions. One portion of one class period will be devoted to a class discussion of the article. You will be expected to participate in the discussion and contribute your thoughts and ideas.

**Zoo Project:**

Second semester, you will complete a technology based project that will supplement your experience on our zoo trip. I will provide a detailed description of this project at a later date.

**Student Portfolios:**

All assignments that earn a grade must be filed away in your student portfolio after you have looked them over and recorded your grade. This eliminates any possibility of graded work to turn up missing and it gives you an opportunity to maintain a collection of all your best work. Portfolios will be periodically reviewed by me and they may be periodically reviewed by other teachers and/or administrators. At the end of each semester you will write

a reflection of your portfolio that discusses your best work and where you may need improvement. At the end of the semester I will also do file checks. All assignments must be in your file to earn points.

### **Book Review**

At some point during the year, you will be expected to read the novel Next by Michael Crichton. Once you have been asked to begin reading, we, as a class, will hold brief weekly discussions about some of the scientific topics described in the novel. Upon completion of the novel, you will produce a creative video project highlighting the content presented to you in the novel.

### **Fish Tanks:**

One of the advantages to being in Honors Biology is that you will have the opportunity to take care of a fish tank for one semester. You will experience what it is like to be a scientist in charge of her own experiment. Once your tank is set up, you will feed your fish and record data everyday in a journal. Journals will be checked every week to receive credit. Near the end of your care, you will write a report on your findings. At that time, you will receive a handout with report guidelines.

### **Landscapes:**

For the semester that you are not caring for a fish tank, you will work on an independent research and model project focusing on landscapes/ecosystems. You will receive a handout with guidelines at the appropriate time.

### **Extra Credit:**

Every week I will write an interesting bio fact on the board. It is your responsibility to write down that information in your notebook. I may ask questions on the exams relating to the bio facts and you may earn extra credit points.

### **Participation:**

You will be expected to participate in all activities. Your input is a valuable component to the success of this class as a whole.

### **GRADING:**

Should you have any questions about current grades you can consult with me. No curves will be utilized. Your final semester grade will be based on accumulation of the following points

#### **Points:**

Homework: 10-20 points per unit  
Labs: 20-40 points per lab  
Literature Review: 20 points each  
Exams: 100 points per exam  
Zoo Project: 180 points total  
Student Portfolio: 50 points per semester  
Book Review: 75 points total  
Fish Journal: 50 points total (for 1 semester)  
Fish Report: 100 points total (for 1 semester)  
Landscape: 150 points total (for 1 semester)  
Final: 300 points per semester  
Participation: 50 points per semester

#### **Scale:**

Grades will be calculated based on the scale that is set forth in the Student handbook.

### **STUDENT EXPECTATIONS:**

#### **Attendance:**

Everyday is important! Your success in Honors Biology is directly related to how often you are present. This class is challenging and moves at a steady pace. Students who miss material often have difficulties on the next exam, so

please do not miss school unless it is absolutely necessary. Absences will cause you to fall behind and you will have to work even harder to catch up. In the event that you are absent, it is your responsibility to get that work that you missed. If you know you are going to be absent let me know ahead of time and we can make arrangements for you.

**Make-ups:**

It is important that you are present on exam days. If you miss class the day before a test and return the day of the test, you will be expected to take the test as scheduled. If you have missed two or more days before a test and return the day of the test, I will arrange for you to take the test at a later date.

**Tardies:**

Arriving to class late is unacceptable. It is your responsibility to get to class on time and be prepared to work! Being late to class is distracting for both your classmates and me. You are tardy if you are not in your seat when roll is taken. .

**Restroom/Locker visits:**

Any time that you need to visit the restroom or your locker, you must sign out on the clipboard next to the door. You will be allowed three "visits" each quarter at no penalty. If you make no visits, you may earn 5 points of extra credit. If you make one visit, you will earn 3 points of extra credit. If you make two visits, you will earn 2 points of extra credit. If you make three visits, you will earn 1 point of extra credit. If you make more than three visits, you will receive no extra credit.

**Demeanor:**

I expect you to be responsible, hardworking, excited and inquisitive. My job is to teach and your job is to learn. However, I do not want to be the only one doing my job. Your learning is achieved by your positive and inquisitive attitude. I expect you to engage yourself in thought provoking discussion, ask questions and participate in all activities. I want you to have a good learning experience. Feel free to consult with me about any concerns.

I do not tolerate lying, plagiarism or cheating. There is no excuse for that kind of behavior! Please refer to your student handbook and the academic integrity handout to review the policy regarding this issue.

**Office Hours:**

By appointment

**Contact information:**

smiller@immaculateheart.org

**NOTE: I reserve the right to make any changes to this syllabus at any time**

**PARENT/STUDENT ACKNOWLEDGEMENT:**

We, \_\_\_\_\_ (print **student** name) and \_\_\_\_\_ (print **parent/guardian** name) have read and acknowledge the rules and guidelines set forth in the Biology syllabus.

Student signature: \_\_\_\_\_ Date: \_\_\_\_\_

Parent/Guardian signature: \_\_\_\_\_ Date: \_\_\_\_\_

Please read, sign and turn in by the date I specify on the first day of classes.

