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**Biology**

**Fall Semester 2017**

**Mr. Rhein**

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*Chattahoochee High - “A community dedicated to learning and committed to excellence”*

**Textbook:** Desalle, Rob and Michael Heithaus. Holt Biology. Holt, Reinhart and Winston, 2008 ($71.60)

ISBN #9780030964015

The textbook is also available online at <http://my.hrw.com> Usernames and passwords will be distributed

in class.

**Course Description:** The Biology curriculum continues students’ investigations of the life sciences that began in Grades K-8. The course is designed to provide students with the necessary knowledge and skills to become literate, knowledgeable, and proficient in biology. Biology extends the life sciences to more abstract concepts including: interdependence of organisms; the relationship between matter, energy, and organisms; the behavior of organisms; and evolution. These concepts are investigated through laboratory experiences and fieldwork designed for students to develop appropriate knowledge and skills in science as inquiry.

This course will include the Georgia Milestones End of Course Test (GMEOC) for Biology. The GMEOC will serve as the Spring Final Exam, which is 20% of the 2nd semester grade. The GMEOC is a cumulative exam that covers the entire Biology curriculum and is administered in the spring as required by the State Board of Education. All students are required to take the GMEOC in order to receive credit for the course. The GMEOC will be administered in the window of late April - May.

**Outcome:**

At the end of this course students should be able to:

1. Use appropriate scientific tools to observe, record, organize, analyze, interpret, write, and present the results of scientific investigations clearly and accurately.
2. Relate the importance of the chemistry life to cellular structures and functions in both prokaryotic and eukaryotic cells.
3. Describe and explain the role of DNA and RNA in transfer of traits to successive generations under both asexual and sexual situations.
4. Explain the evolutionary basis of modern classification.
5. Trace the history of the theory of evolution and evaluate the role of natural selection in the development of the theory.
6. Relate the complexity of organisms to how they obtain, transform, transport, release, and eliminate matter and energy.
7. Investigate and assess the interdependence between organisms and on the flow of matter within their ecosystems.

**Units and Objectives**

The following is a projected outline of this semester's units of study. Slight changes may be made at the discretion of the teacher. *Objectives are taken from the newly adopted Georgia Performance Standards (GPS) for Science.*

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| **Unit** | **Topic** | **Duration** |
| **0** | **Introduction to Biology, Lab Safety and Science Skills (Chapters 1-2)**   | *~ 1.5 weeks* |
| **1** | **Ecology (Chapters 4-6)** **SB5. Obtain, evaluate, and communicate information to assess the interdependence of all organisms on one another and their environment.** a. Plan and carry out investigations and analyze data to support explanations about factors affecting biodiversity and populations in ecosystems. (*Clarification statement*: Factors include population size, carrying capacity, response to limiting factors, and keystone species.) b. Develop and use models to analyze the cycling of matter and flow of energy within ecosystems through the processes of photosynthesis and respiration. * Arranging components of a food web according to energy flow.
* Comparing the quantity of energy in the steps of an energy pyramid.
* Explaining the need for cycling of major biochemical elements (C, O, N, P, and H).

c. Construct an argument to predict the impact of environmental change on the stability of an ecosystem. d. Design a solution to reduce the impact of a human activity on the environment. (*Clarification statement*: Human activities may include chemical use, natural resources consumption, introduction of non-native species, greenhouse gas production.) * e. Construct explanations that predict an organism’s ability to survive within changing environmental limits (e.g., temperature, pH, drought, fire).
 | *6- weeks* |
| **2** | **Biochemistry (Chapter 3)**  **SB1. Obtain, evaluate, and communicate information to analyze the nature of the relationships between structures and functions in living cells.**c. Construct arguments supported by evidence to relate the structure of macromolecules (carbohydrates, proteins, lipids, and nucleic acids) to their interactions in carrying out cellular processes. (*Clarification statement*: The function of proteins as enzymes is limited to a conceptual understanding.)**Cellular Structure & Cellular Energy (Chapters 7-9)** **SB1. Obtain, evaluate, and communicate information to analyze the nature of the relationships between structures and functions in living cells.** a. Construct an explanation of how cell structures and organelles (including nucleus, cytoplasm, cell membrane, cell wall, chloroplasts, lysosome, Golgi, endoplasmic reticulum, vacuoles, ribosomes, and mitochondria) interact as a system to maintain homeostasis. b. Develop and use models to explain the role of cellular reproduction (including binary fission, mitosis, and meiosis) in maintaining genetic continuity. * d. Plan and carry out investigations to determine the role of cellular transport (e.g., active, passive, and osmosis) in maintaining homeostasis.e. Ask questions to investigate and provide explanations about the roles of photosynthesis and respiration in the cycling of matter and flow of energy within the cell (e.g., single-celled alga). (*Clarification statement*: Instruction should focus on understanding the inputs, outputs, and functions of photosynthesis and respiration and the functions of the major sub-processes of each including glycolysis, Krebs cycle, electron transport chain, light reactions, and Calvin cycle.)
 | *~2.5 weeks**~ 5 weeks* |
| **3** | **Mendelian Genetics, Molecular Genetics & Biotechnology (Chapters 10-12)****SB1. Obtain, evaluate, and communicate information to analyze the nature of the relationships between structures and functions in living cells.** a. Construct an explanation of how cell structures and organelles (including nucleus, cytoplasm, cell membrane, cell wall, chloroplasts, lysosome, Golgi, endoplasmic reticulum, vacuoles, ribosomes, and mitochondria) interact as a system to maintain homeostasis. b. Develop and use models to explain the role of cellular reproduction (including binary fission, mitosis, and meiosis) in maintaining genetic continuity. d. Plan and carry out investigations to determine the role of cellular transport (e.g., active, passive, and osmosis) in maintaining homeostasis.e. Ask questions to investigate and provide explanations about the roles of photosynthesis and respiration in the cycling of matter and flow of energy within the cell (e.g., single-celled alga). (*Clarification statement*: Instruction should focus on understanding the inputs, outputs, and functions of photosynthesis and respiration and the functions of the major sub-processes of each including glycolysis, Krebs cycle, electron transport chain, light reactions, and Calvin cycle.) | *~ 2.5 weeks* |

**Grade Determination\*\*: Grade Scale for Fulton Co.:**

Unit Tests 40 % A= 100-90

Quizzes 10 % B= 89-80

Labs & Performance Assessments 20 % C= 79-70

Homework\* 10 % F= below 70

Cumulative Final Exam 20 %

*\*This also includes any class work collected or work started during class but finished at home.*

*\*\*These are the percentages associated with grades given in class; however, their task name in the grade printout may appear differently due to a new grading program.*

**Explanation of Grade Components:**

**Tests***:* A written test is given at the completion of a major unit. Tests include information from the textbook, class notes, lab activities, handouts, and demonstrations from the unit. Test make-up will be according to Fulton County Policy. Test make-ups should be scheduled individually with the teacher.

* A **comprehensive final** will be given at the end of this semester and will comprise 20% of the final average.
* **Cumulative Final Exam and GMEOC:** There will be a cumulative final exam given at the end of the first semester and a Georgia Milestones End of Course Test (GMEOC) during the end of April-May.

**Laboratory Activities**: Lab activities will be done approximately once a week. Labs will be graded. You will be responsible for prelab activities, performing the lab in class, and completing a lab report. See me for scheduling a lab make-up time.

* ***Lab safety is of utmost importance***. Therefore, students are expected to follow laboratory safety rules as outlined in the Safety Contract provided. Failure to adhere to lab safety rules can will result in a warning, private detention, dismissal from lab &/or referral to the appropriate administrator. Students dismissed from lab will be given a make-up assignment for a maximum credit of 70.

**Homework:** Homework will be assigned and graded regularly throughout the semester. Each student is expected to keep up with all of his or her homework assignments. Lesson plans and homework assignments will be posted on google classroom.

**Policies, Procedures & Additional Information**

**Textbook Policy**: Each student will be issued a textbook and they are responsible for its care and replacement, if needed. Textbooks may not be left in classrooms and teachers are not responsible for the whereabouts of students' books. The copy which was issued must be turned in at the end of the course. Students will not receive credit for turning in another student’s book and may not turn in replacement books. The cost of replacement will be assessed to any student who fails to turn in the book they were issued or who turns in a damaged book. The cost of replacement for a lost or damaged textbook is $70.75. Additionally, any textbook turned in without the Fulton County bar code sticker on the inside cover of the book will result in a fine.

**Make-up Policy:** Make-up tests, quizzes, and labs are to be scheduled individually with the instructor outside of classroom hours (i.e. before or after class/school) upon a student's return to school. Students will have one week to make up tests, quizzes, or labs upon return. Students will have one day for each day absent to make up work. Assignments made prior to a full day of absence and due on the day the absence occurs will be due upon the student's return to school.

**Extra Help:** Extra help is available by appointment. There will be no extra credit projects and the lowest test grade will NOT be dropped, so students should not hesitate to ask for additional help if needed.

**School Board Policy IHA Grading and Reporting System**

Provision for Improving Grades

1. Opportunities designed to allow students to recover from a low or failing cumulative grade will be allowed when all work required to date has been completed and the student has demonstrated a legitimate effort to meet all course requirements including attendance. Students should contact the teacher concerning recovery opportunities.  Teachers are expected to establish a reasonable time period for recovery work to be completed during the semester. All recovery work must be directly related to course objectives and must be completed ten school days prior to the end of the semester.
2. Teachers will determine when and how students with extenuating circumstances may improve their grades.

**Chattahoochee High School Provision for Improving Grades - Recovery Policy**

1. Students who complete a major assessment but fail to demonstrate mastery as evidenced by a grade below 75% on the major assessment may pursue an improvement opportunity to show proficiency. In the case of an honor code violation on a major assessment, the grade will stand as a zero with no eligibility for recovery on that assignment. What is classified as a major assessment is determined within the content area; consult your course syllabus for details.
2. Students should contact the teacher concerning recovery opportunities within 5 school days of being informed of the grade on the assessment in class. Students are allowed one attempt at recovery per major assessment category listed in the course syllabus. All recovery work must be completed 10 days before the end of the semester.
3. The grade on the recovery assignment will replace the original grade if the recovery grade is equal to or below 75%. If the recovery grade is above 75%, the original grade will be replaced with a 75%.

**Tardies**: Students are expected to be in their assigned seat and working when the tardy bell rings. Students will not be allowed into class after the tardy bell rings without a tardy pass from the attendance office.

**Honor Code Violations**: *Plagiarism and cheating are NOT tolerated under any circumstances and will result in an honor code violation and zero credit for the assignment*. I will complete an honor code violation form which "may be used by the faculty in making future recommendations, specifically memberships in honor clubs." Cheating is defined as: Any sharing of information in a *non-collaborative* situation (i.e. tests, quizzes, labs, homework, etc.) regarding a graded assignment. Plagiarism includes copying of another student's work, using excessive editing suggestions from another person, or using words or ideas from a published source without proper documentation.

**Writing Requirement:**

Expectations for Written Work Across the Curriculum

All written work should:

• be in complete sentences using formal language

• follow conventions of grammar, usage and mechanics

• accurately cite sources used with discipline-specific requirements (i.e. MLA, APA, etc.).

**Technology Code of Ethics**: According to the Fulton County Schools policy "students shall not alter or attempt to alter school or private property including technology hardware and software." This includes: a) changing desktop settings or control panels b) removing or damaging mouse tracking balls, keys, cables, connectors, network jacks, or any other hardware c) modifying computer software d) damaging computer disks, CD-ROMS, or other media.

**Classroom Rules**

Everyone has the right to learn in a safe and productive environment. No one has the right to disrupt another person's learning. In order to have a safe and productive learning environment, students are expected to adhere to the following at all times, in addition to the school rules.

* **Be Prepared**: This means you should bring ALL required materials (textbook, notebooks, paper, homework & pen/pencil) and have required materials out on your desk when the bell rings. All other items need to be put under your desk (including food and drink items!).
* **Be respectful**: This means do not talk while the teacher, a guest speaker, or another student is addressing the class. Respect the teacher's and other student's property. *Vulgar or offensive* *language will not be tolerated.*
* **Electronic devices (cell phones, iPods, etc.) are strictly prohibited inside the classroom.** Electronic devices should be turned off & out of sight. These items will be confiscated if found during class.
* **Raise your hand before speaking or getting out of your seat**.

**BIOLOGY**

**Signature Sheet**

**Fall Semester 2017**

**Mr. Rhein**

**Print Student Name: ­­­­­­­­­­­­­­­­­­­\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Please access copies of class syllabus and safety contract through if lost through Matthew Rhein’s Website I have read the class syllabus and the safety contract for Fall Semester of BIOLOGY 2017. I understand what is expected of me both academically and socially. I have read and fully understand the safety procedures and guidelines for a laboratory setting. I understand the need to be safe and follow teacher instructions at all times while performing lab activities.

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**Student Signature Date**

I have read the class syllabus and the safety contract for Fall Semester 2017 BIOLOGY. I understand the specific academic requirements and workload that this class demands of my student. I have read the grading policies of this course as well as Chattahoochee’s grade recovery policy. I understand this is in addition to Fulton County’s attendance and discipline policies and procedures including but not limited to honor code and technology violations.

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**Please PRINT parent(s) name Parent Signature Date**

**Phone # (to be reached during the day): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Email\*: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

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**Home Access Center:** Every parent is encouraged to access HAC. This web based program allows parents to obtain student grades, their cumulative average, attendance, tardiness, and conduct. I recommend using this program to help you stay informed about your student’s progress.