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**Fall 2023**

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| **Course Name** | Gifted/Accelerated Biology | **Course Code** | 26.0120000A-1 Biology I - Accel26.2120000G-1 Biology I - GFT |
| **School Name** | Dunwoody High School | **Teacher Name** | Mr. Tristan Drusky |
| **School Phone Number** | 678-874-8594 | **Teacher Email** | Tristan\_B\_Drusky@dekalbschoolsga.org |
| **School Website** | http://www.dunwoodyhs.dekalb.k12.ga.us/ | **Teacher Website** | Canvas |

**Department Philosophy:**The science department will promote high academic standards using best teaching practices to provide a comprehensive curriculum to help students understand the process of scientific inquiry.

**Course Description**

Students will be introduced to biology as a process and identify methods for its study. The course will include an overview of the ecosystems and the role of humans in the biosphere. They will identify properties of life, study cells, relate energy acquisition to use, identify the role DNA plays in daily cellular activities and reproduction and study heredity. Students will identify evolution as a solidifying theme in the study of life on Earth. During the course, students will look at ways of grouping organisms for their study. Fungi and plants will be explored with an overview of the major groupings and structures. An overview of invertebrates of the animal kingdom continues the study of organisms. Students will complete their look at animals by studying vertebrates and comparative human anatomy and physiology.

**Curriculum Overview**

The following academic concepts will be covered. **THIS IS ONLY A GUIDE AND IS SUBJECT TO CHANGE.**

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| **CURRICULUM OVERVIEW** |
| Unit 1 – From Molecules to Organisms: Structure and ProcessesStudents who demonstrate an understanding can: SB1a. 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. SB1b. Develop and use models to explain the role of cellular reproduction (including binary fission, mitosis, and meiosis) in maintaining genetic continuity.SB1c. 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.)SB1d. Plan and carry out investigations to determine the role of cellular transport (e.g., active, passive, and osmosis) in maintaining homeostasis.SB1e. 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. |
| Unit 2 – Heredity: Interactions and Variations of TraitsStudents who demonstrate an understanding can:SB2a. Construct an explanation of how the structures of DNA and RNA lead to the expression of information within the cell via the processes of replication, transcription, and translation. SB2b. Construct an argument based on evidence to support the claim that inheritable genetic variations may result from: · new genetic combinations through meiosis (crossing over, nondisjunction); · non-lethal errors occurring during replication (insertions, deletions, substitutions); and/or · heritable mutations caused by environmental factors (radiation, chemicals, and viruses). SB2c. Ask questions to gather and communicate information about the use and ethical considerations of biotechnology in forensics, medicine, and agriculture. (Clarification statement: The element is intended to include advancements in technology relating to economics and society such as advancements may include Genetically Modified Organisms.). SB3a. Use Mendel’s laws (segregation and independent assortment) to ask questions and define problems that explain the role of meiosis in reproductive variability. SB3b. Use mathematical models to predict and explain patterns of inheritance. (Clarification statement: Students should be able to use Punnett squares (monohybrid and dihybrid crosses) and/or rules of probability, to analyze the following inheritance patterns: dominance, codominance, incomplete dominance.) SB3c. Construct an argument to support a claim about the relative advantages and disadvantages of sexual and asexual reproduction. SB1b. Develop and use models to explain the role of cellular reproduction (including binary fission, mitosis, and meiosis) in maintaining genetic continuity. |
| Unit 3 – Biological Evolution: Unity and DiversityStudents who demonstrate an understanding can:SB6a. Construct an explanation of how new understandings of Earth’s history, the emergence of new species from pre-existing species, and our understanding of genetics have influenced our understanding of biology. SB6b. Analyze and interpret data to explain patterns in biodiversity that result from speciation. SB6c. Construct an argument using valid and reliable sources to support the claim that evidence from comparative morphology (analogous vs. homologous structures), embryology, biochemistry (protein sequence) and genetics support the theory that all living organisms are related by way of common descent. SB6d. Develop and use mathematical models to support explanations of how undirected genetic changes in natural selection and genetic drift have led to changes in populations of organisms. (Clarification statement: Element is intended to focus on basic statistical and graphic analysis. Hardy Weinberg would be an optional application to address this element.) Sb6e. Develop a model to explain the role natural selection plays in causing biological resistance (e.g., pesticides, antibiotic resistance, and influenza vaccines). SB2b. Construct an argument based on evidence to support the claim that inheritable genetic variations may result from: · new genetic combinations through meiosis (crossing over, nondisjunction); · non-lethal errors occurring during replication (insertions, deletions, substitutions); and/or · heritable mutations caused by environmental factors (radiation, chemicals, and viruses). SB4a. Construct an argument supported by scientific information to explain patterns in structures and function among clades of organisms, including the origin of eukaryotes by endosymbiosis. Clades should include: · archaea · bacteria · eukaryotes · fungi · plants · animals (Clarification statement: This is reflective of 21st century classification schemes and nested hierarchy of clades and is intended to develop a foundation for comparing major groups of organisms. The term 'protist' is useful in describing those eukaryotes that are not within the animal, fungal or plant clades but the term does not describe a well-defined clade or a natural taxonomic group.) SB4b. Analyze and interpret data to develop models (i.e., cladograms and phylogenetic trees) based on patterns of common ancestry and the theory of evolution to determine relationships among major groups of organisms. SB4c. Construct an argument supported by empirical evidence to compare and contrast the characteristics of viruses and organisms |
| Unit 4 – Ecosystems: Interactions, Energy, and DynamicsStudents who demonstrate an understanding can:SB5a. 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.) SB5b. 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). SB5c. Construct an argument to predict the impact of environmental change on the stability of an ecosystem. SB5d. 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.) SB5e. Construct explanations that predict an organism’s ability to survive within changing environmental limits (e.g., temperature, pH, drought, fire). SB1e. 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.) |

**THE TEACHER RESERVES THE RIGHT TO CHANGE OR ADJUST SECTIONS OF THIS SYLLABUS AT ANY TIME DURING THE SEMESTER TO MORE ADEQUATELY MEET THE NEEDS, ABILITIES & INTERESTS OF THE STUDENTS.**

**BOARD-APPROVED INSTRUCTIONAL MATERIALS**

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| Title | Biology: Miller and Levine |
| ISBN | 978-0-328-92512-4 |
| Online book and/or resources | See Instructional Access Form for resources (posted on Canvas) |
| Online student access code (school specific) | Please see teacher for online access code(s) |

**GRADING SYSTEM:**

The DeKalb County School District believes that the most important assessment of student learning shall be conducted by the teachers as they observe and evaluate students in the context of ongoing classroom instruction. A variety of approaches, methodologies, and resources shall be used to deliver educational services and to maximize each student’s opportunity to succeed. Teachers shall evaluate student progress, report grades that represent the student’s academic achievement, and communicate official academic progress to students and parents in a timely manner through the electronic grading portal. **See Board Policy IHA**.

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| **GRADING CATEGORIES** | **\*GRADE PROTOCOL** |
| * **Formative & Diagnostic Assessments - 0%**
* **Assessments Tasks (Vocab & Homework) – 25% *- Vocab Quizzes are included in this topic.***
* **Classwork: Guided, Independent, or Group Practice – 45% *- Lab write ups are included in this topic***
* **Quizzes, Tests, & Projects– 30%**
 | A: 90 – 100 B: 80 – 89 C: 71 – 79 D: 70 F: Below 70 |

**Notes:**

This course requires an End-of Course/Georgia Milestones Assessment. The Georgia Milestones Assessment will weigh 20% of the student’s final grade. The remaining 80% of the student’s grade is determined by the final average in the course.

**\***English Learners (ELs) must not receive numerical or letter grades for the core content areas in elementary and middle school during their first year of language development. A grade of CS or CU must be assigned. This rule may be extended beyond the first year with approval from the EL Studies Program. English Learners must receive a grade for ESOL courses.

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| **DISTRICT EXPECTATIONS FOR SUCCESS** |
| **STUDENT PROGRESS** | Semester progress reports shall be issued four and a half, nine and thirteen and a half weeks into each semester. The progress of students shall be evaluated frequently and plans shall be generated to remediate deficiencies as they are discovered. Plans shall include appropriate interventions designed to meet the needs of the students. **See Board Policy IH.** |
| **ACADEMIC INTEGRITY** | Students will not engage in an act of academic dishonesty including, but not limited to, cheating, providing false information, falsifying school records, forging signatures, or using an unauthorized computer user ID or password. **See the Code of Student Conduct - Student Rights and Responsibilities and Character Development Handbook.** |
| **HOMEWORK** | Homework assignments should be meaningful and should be an application or adaptation of a classroom experience. Homework is always an extension of the teaching/learning experience. It should be considered the possession of the student and should be collected, evaluated and returned to the students. **See Board Policy IHB.** |
| **MAKE-UP WORK** **DUE TO ABSENCES** | When a student is absent because of a legal reason as defined by Georgia law or when the absence is apparently beyond the control of the student, the student shall be given an opportunity to earn grade(s) for those days absent. Make-up work must be completed within the designated time allotted. **See Board Policy IHEA.** |
| **SCHOOL EXPECTATIONS FOR SUCCESS** |
| **CLASSROOM EXPECTATIONS** | Phone should be put away in a backpack **at all times** during class, unless the instructor has a specific activity assigned on the phone. First infraction will result in a parent teacher conference. Please refer to the schoolwide cell phone policy for more details. |
| **LATE WORK** | In the event of an excused absence, student will have one week to complete missing work without penalty. Work that is turned in later than one week will receive a 10% deduction for each week it is late. Up to three late passes can be used in the semester to receive full credit for late assignments, however, the work must still be turned in before other students get graded work back in order to prevent copying/plagiarism. Late passes can be printed by students from Canvas. Students who do not use any late passes in the semester will earn 10 points of extra credit in the laboratory category.  |
| **MATERIALS AND SUPPLIES** | **Required Materials:** * DeKalb Issued Chromebook/Computer Access
* 2 composition notebooks -– for Labs & Class Interactive Notebook
* ONE Folder with Pockets (OR a section for BIOLOGY within a larger 3-ring binder) – for keeping important handouts
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| **EXTRA HELP** | Each week, students will have one ROAR 30 time period per class. This time can be used to get extra help or complete make up work or missing tests or quizzes. Students may also request help before or after school. Office hours will generally be offered on **Tuesday afternoons from 3:20-4:20.**  |

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| **WAYS TO STUDY FOR THIS CLASS** |
| 1. Look over the notes/PowerPoint slides, labs, activities, etc (find on Canvas!). What did we learn today?2. Do assigned reading and take notes on Miller & Levine Biology Textbook (Pearson Easy Bridge) – see instructional form for how to get virtual textbook or check out a hard copy. 3. Look at resources online. Options on Youtube: Amoeba Sisters, Bozeman Biology, Khan Academy, Crash course, Teacher's pet, TEDTalk, etc.4. If you miss any of the USA Test Prep questions, look over your notes, books, and resources related to those questions. 5. Study the answers to questions and consider why other answer choices are incorrect.6. Lastly, student should not be using phones during instructional or studying time. Staying focused in school (taking notes and having discussion with classmates and class) and out of school (reading textbook, reviewing notes, labs, activities, etc.) are crucial for success in academic career. |

Parents/Guardian’s – Please sign the syllabus acknowledgement form using the QR code to the right or [**https://forms.office.com/r/VQ1UKrzRn3**](https://forms.office.com/r/VQ1UKrzRn3)

 