Biology is the study of living things, from the smallest sub-cellular level to the largest level of all, the Biosphere.

GENERAL INFORMATION
School year: 2014-15
E-mail: kurt-gatejen@scusd.edu

COURSE OVERVIEW
This course provides students an overview of cellular processes, genetics, ecology, evolution, and physiology. Through laboratory experimentation, students are introduced to this multifaceted science. Students will study the unifying themes that pervade all of biology as well as current research in specialty areas of biology. Biology prepares students to take additional years of science like chemistry and anatomy.

COURSE OBJECTIVES – Biology Standards

A. Knowledge of the scientific method as a critical approach to problem solving.
B. Develop laboratory skills through hands-on participation in laboratory experimentation.
C. Develop proficiency in completing lab write-ups, reports, research papers, and verbal communication.
D. Knowledge of the cell theory, and an understanding of the cell as the structural and functional unit of life.
E. Knowledge of the complementarity of structure and function.
F. An understanding of the genetic continuity of life and its basis in DNA.
G. An understanding of mechanisms by which DNA controls the characteristics and life activities of organisms.
H. A knowledge of the history of living things including the changes that have taken place in organisms through time and the mechanisms by which these changes have occurred.
I. An awareness of the both the unity and diversity of organisms and the basis of these phenomena in the process of natural selection.
J. An understanding of the living world as an integrated system which relies on a delicate balance among its living and non-living components for its existence.
K. Knowledge at the biochemical level of the dependence of all life on autotrophs.
L. An understanding of how humans influence and are influenced by the living world around them.
M. Knowledge of the biology of their own bodies, which empowers them to make informed decisions regarding their personal health and well-being throughout life.
N. The knowledge and skills necessary to make enlightened decisions on questions relating to the living world.
O. The ability to recognize and appreciate the rapidly expanding technology and advances being made in biological research, and their implications for the living world in the future.
COURSE OBJECTIVES, continued – Science Literacy Standards (Common Core State Standards)

1. Cite specific textual evidence to support analysis of science texts, attending to the precise details of explanations or descriptions.
2. Determine the central ideas or conclusions of a text; trace the text’s explanation or depiction of a complex process, phenomenon, or concept; provide an accurate summary of the text.
3. Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks, attending to special cases or exceptions defined in the text.
4. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific context.
5. Analyze the structure of the relationships among concepts in a text, including relationships among key terms.
6. Analyze the author’s purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, defining the question the author seeks to address.
7. Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically into words.
8. Assess the extent to which the reasoning and evidence in a text support the author’s claim or a recommendation for solving a scientific problem.
9. Compare and contrast findings presented in a text to those from other sources (including their own experiments), noting when the findings support or contradict previous explanations or accounts.

COURSE REQUIREMENTS, ATTENDANCE AND GRADING POLICY

You are expected to complete assignments to the best of your ability. You are required to complete assignments by the due date. Late work will not be accepted unless it is submitted during class on the day the student returns from an excused absence with a note written and signed by your parent or guardian confirming that the absence was excused stapled to the assignment. Missed labs cannot be made up. Tests will follow the completion of the unit objectives. Quizzes will be given without advance notice. Extra credit will be infrequent and at my discretion. Please do NOT ask for extra credit; I will occasionally offer it spontaneously.

I will follow school and district policies pertaining to attendance and cheating/plagiarism. You are expected to be familiar with and follow these and all other JFK/SCUSD policies. Please review the JFK Student Handbook online at: http://tinyurl.com/JFK-SCUSD-Student-Handbook

Grading Policy:  A 90 – 100   B 80 – 89   C 70– 79   D 60 – 69   F 0 – 59

SEQUENCE of INSTRUCTION

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### Ecology (Chapters 3-6)
- Biodiversity and Connectedness
- Communities, ecosystems, biomes
- Populations
- Feeding, energy, biomass levels
- Food webs and energy loss at heat
- Nutrient cycles
- Changes in habitat result from other changes
- Adaptation vs. Accommodation
- Global issues

#### Cells (Chapter 7)
- Cell theory
- Prokaryotes, Eukaryotes Structure
- Structure and function
  - Organelles
  - ER and Golgi
  - Cell wall, cytoskeleton
- Membranes and transport
- Intracellular Organization

#### Cell Energy (Chapters 8-9)
- ATP
- Photosynthesis
- Cellular Respiration
- Chemiosmotic Gradients

#### Cell Cycle (Chapter 10)
- Mitosis
- Cancer

#### Inheritance (Chapter 11)
- Mendelian Principles
  - Genotype, Phenotype
  - Law of Segregation
  - Law of Independent Assortment
- Meiosis, Gametes
- Mutation, Sexual Reproduction -> Genetic Variation
- Punnett Squares and Probability
- Non-Mendelian Principles
  - Incomplete dominance
  - Sex Linked inheritance
  - Co-dominance
    - Blood Types
  - Multiple Alleles
    - Blood Types
  - Polygenic inheritance
- Human Heredity
  - Sex Chromosomes
  - Pedigrees
  - Genetic disorders

#### Molecular Genetics (Chapter 12)
- DNA, RNA structure and function
- DNA replication and base pair rules
- Protein function and formation
- Transcription, Translation
- Protein differences
- Genetic Code
- Mutations
- Gene expression and specialization

#### Biotechnology (Chapters 13-14)
- Recombinant DNA and restriction enzymes
- Transformation
- Gel Electrophoresis
- Production of novel products

#### EVOLUTION (8) (Chapters 15-18)
- Evolution Video or Video

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Who is Mr. Gatejen?
I am very old (born in the last millennium). I am generally a nice guy. I’ve been married since 1982, and my wife and I have two adult sons. Both of our sons have autism. I have been working in this school district (SCUSD) since 1986. I’ve worked at JFK since 2000; before that, I was at Rosa Parks (it was called Goethe then). I ride motorcycles, take pictures, and go fishing when I get the chance. I read a lot.

Some Things You Need to Know About Me:
• My personality is different. I am almost certain you’ll get used it.
• My voice is occasionally loud. You’ll get used to it.
• I sometimes make noises with objects outside of my room. There is no reason for this.
• My personality takes a while for some people to get used to. I will not offend you or hurt your feelings on purpose, because that is wrong and goes against what I believe, but if I ever do so by accident I expect you to let me know so I can make things right.
• My hearing was damaged a little bit, back in the 70s, either by an explosion or by loud music. I may ask you to repeat yourself sometimes, especially if you have a quiet voice.
• I strongly believe that people who pick on others or put them down do so because they are trying to build themselves up at the expense of someone else. I believe that such behavior is a sign of weakness on the part of the person doing it, and I do not tolerate it.

Go to the next page.
Mr. Gatejen’s Biology Class

RULES / GUIDING PRINCIPLES

- Behave respectfully and responsibly
- Be honest. Demonstrate integrity.
- Use your mind. Seek understanding.

Procedures

1. **Be in class, on the way to your seat and ready to work** when the tardy bell rings.
2. **Sit down** and begin working quietly on the “Do Now” assignment immediately.
3. **Wait** for me to dismiss you when class ends.
4. **Participate** in class activities and follow directions.
5. **Assist** in teacher-parent communication.
6. **Try hard. Expend effort.**
7. **Gum, food, drinks?** Plain bottled water only.
8. **Bathroom:** No, unless it’s a very urgent need that can’t wait. Do not ask if it’s not an urgent situation.
9. **What about phones, iPods, and other electronic devices?** These are distractions, especially in a class of 20-35 students. Turn them off and keep them in your pocket or backpack or purse or whatever you use to carry things around (except your hands). Warnings and confiscations will be according to my assessment of the situation. If I take it, I’ll give it to the VP for safe-keeping. You can talk to the VP about getting it back. It’s recommended that parents who need to contact their students do so by calling the school’s attendance office.
10. **Okay, how about hats, hoodies, beanies, etc.?** Not in class. It’s polite to remove them in class. Beanies are allowed outside during cold weather months. Campus monitors and administrators enforce banned head stuff outside (outside means anywhere not inside my room). **Take off whatever is on your head—this includes what’s in or on your ears—as you come in the door.** Don’t choose to make this into an issue. If I have to use my time and energy to deal with it, you will be inconvenienced. Avoid issues—that’s my advice. Everyone wins.

What to Bring to Class Every Day:

- **Required:** Pencil and/or black or dark blue pen/s. **Optional & recommended:** Color pencils, markers, ruler, hole-punch, stapler, a small fishing kit in case the river floods, etc.
- **Required:** A binder with plenty of paper. **Optional & recommended:** Dividers to make a separate Biology section, or a separate notebook that allows papers to be removed and reinserted without tearing. Spiral-bound notebooks are NOT recommended.
- **Required:** Your textbook. Yes. Every day, whether we use it officially or not. You’ll need it more often than not. You’re young and energetic, and carrying that semi-heavy thing is not going to damage you in any way. When I was a kid, we had to—wait, you’ve heard that before. Plus, I was a kid so long ago that I’ve forgotten most of it.

> **What about when you forget to bring the required items?** Well, that’s annoying. It annoys you because you may not be able to do what you need to do. It annoys your peers because you’ll try to ask them to give you some paper or a pencil. It annoys me because it’s just one more little distraction in a world full of distractions, and those little distractions add up. If they add up too much, I might someday become one of those old guys who yell, “Get off my lawn, you kids!” I don’t want to be that guy. **BRING YOUR MATERIALS.**
You are required to have all of this stuff IN CLASS beginning no later than Monday, September 9th.
(Note: You need to start bringing your book as soon as they are issued. The library will let us know the day and time.)

What to Do in Specific Situations

1—Teacher-led Lecture, Class Discussion

Stay in your seat and pay attention quietly. Raise your hand to ask questions or make comments pertaining to the topic being discussed. Do not sharpen pencils, throw away garbage, etc.

2—Quiet Individual Seat Work: Stay in your seat and work quietly. Raise your hand. Get up to sharpen your pencil or throw away garbage without asking, but remain quiet and return to your seat right away.

3—Group Work: Stay at your station. Communicate quietly with your lab partners, not other groups. Work efficiently.

Consequences

The vast majority of students behave well, but hey, we’re all human, and humans make mistakes sometimes. Consequences include:

• Warning and/or discipline writing assignment
• Parent letter, email, and/or phone call.
• Detention after school.
• Referral out of class to the VP
• Suspension from class for 1 to 2 days.

See the JFK Student Handbook for full details:


Cheating is defined as giving or receiving information during a test or quiz or collaborating with other students on any class assignment when I did not authorize collaboration.

Plagiarism is defined as taking material submitted or published by someone else and dishonestly representing such work as your own. This includes work published in traditional written publications such as books, periodicals, encyclopedias, etc. as well as electronic media (Encarta, etc.) and materials published on the Internet (web pages, Usenet newsgroup postings, etc.). Any use of materials created by others must be given proper credit.

You are responsible for sharing this information with your parent/guardian. Read and review all pages of this handout with your parent/guardian. Sign the signature sheet below. Your signature represents the fact that you understand and will follow all rules, guidelines, procedures. Have your parent/guardian sign it too. His or her signature represents the fact that they understand as well. Cut it off along the solid line above and turn it in to me on Wednesday, 9/3/14.

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Student's full name (print)                   Student's full name (signature)   Date
----------------------------------------  ------------------------------------  -----------------
Parent's full name (print)                     Parent's full name (signature)     Date