

**Boston Collegiate Charter School**  
Science 8 – Life Science Course Description

**Teacher:** Rachel Ryland

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Best Time to Call: after school

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**Textbooks:** *Science Explorer: Cells and Heredity, Prentice Hall, 2000*  
*Science Explorer: Human Biology and Health, Prentice Hall, 2000*

**Course Overview:** This course covers fundamental concepts in the life sciences. The essential ideas throughout the course will focus on the process of inquiry, parts and interactions of systems of organisms, classification as it relates to organisms, organisms' interdependency, energy transfers in and among living things, and the idea that things change over time. Additionally, we will look at major concepts within transportation, communication, and construction technologies. The course will ask provocative questions: How are organisms similar or different? Why do I look like my parents? How has life on Earth changed over time? You will explore answers to these and many other questions as you learn about the life sciences. The course is divided into nine major units:

**Scientific Technology and Engineering**

- Introduction and Lab Safety
- Review of Scientific Method
- Distance vs. Time
- Transportation Technology

**Characteristics of Living Things and Classification**

- Characteristics of Living Things
- Evolution of Classification Systems
- Linnaean Classification
- Phylogenetics

**Cells**

- Cell Theory
- Types of Cells
- Cell Organelles
- Passive and Active Transport

**Cellular Division**

- The Cell Cycle
- Mitosis and Meiosis

**Human Body Systems and Health**

- Organizational Hierarchy
- Keeping the Body Healthy
- Bones, Muscles, and Skin
- Food and Digestion
- Circulation
- Respiration and Excretion
- Fighting Disease (The Immune System)
- Nervous System
- Human Body System Interactions
- Human Body System Diseases
- Reproductive System

## **Heredity and Genetics**

- Mendel's Work
- Probability and Genetics
- The Cell and Inheritance
- The DNA Connection
- Human Inheritance

## **Evolution**

- Darwin's Voyage
- The Fossil Record
- Other Evidence of Evolution
- Survival of the Fittest and Adaptation

## **Ecology**

- Types of Energy
- Organism Interactions
- Food Webs and Energy Transfers
- Photosynthesis and Cellular Respiration
- Changes in Ecosystems Over Time

## **MCAS Review**

- Prep for the Science MCAS

**Class Structure:** The class will be set up so that each Monday students will receive their vocabulary list for the week. Monday will focus on acquisition of this vocabulary. Each Tuesday we will start with a quiz on Monday's vocabulary while also focusing on introduction of new material. Wednesday will start with a vocabulary quiz retake (for students not mastering the vocabulary on Tuesday's quiz). Wednesday, Thursday, and Friday will include such activities as lectures, readings, group work, and projects as well as hands on activities of the week's material.

**Assessments:** Students will be assessed in four ways. First, class work and homework are assessed on a daily basis. Second, quizzes will take place between one and two week. Third, students will take a major test at the end of each unit. Finally, students will complete a series of labs and projects throughout the year.

### **Grading Policy:**

- \* 20% Homework
- \* 20% Class work
- \* 30% Minor Assessments
- \* 30% Major Assessments

**Tutoring:** Tutoring days will be established at the beginning of each tutoring session dependent on English and Math tutoring needs. Science tutoring will be targeted tutoring with the first sessions focusing on student struggling with the 8<sup>th</sup> grade curriculum and as the year progresses moving into tutoring for the 8<sup>th</sup> grade Science MCAS.

**Special Materials/Supplies:** Students should have 1 3-ring binder, 1 2-pocket folder with fasteners, a red pen, and note cards dedicated to science class (students will need 10 note cards for each week). Although not required, a set of dividers (for the binder) will be helpful in organization for the class. Students should bring their binder, a pen or pencil for note, a red pen for correcting, and their SSR book to each science class.

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Please return this sheet to school.

Student name: \_\_\_\_\_.

I have read the above course description and reviewed it with my student.

Parent/Guardian signature \_\_\_\_\_

Student signature \_\_\_\_\_