

**Common Course Outline**  
**ARSC 103**  
**Natural Science**  
**3 Credits**  
**Community College of Baltimore County**

**Description**

**ARSC 103 – 3 credits – Natural Science** surveys the fundamental principles in physics, chemistry, astronomy, earth sciences and biology; includes origin of the universe, formation of the earth, origin of life, evolution, advances in technology and problems confronting ecosystems.

**3 Credits**

**Prerequisites:** ACLT 052 or ACLT 053; and MATH 082

**Overall Course Objectives**

Upon completion of this course students will be able to:

1. use scientific terminology to describe basic physical, chemical and biological processes;
2. analyze and present data both numerically and graphically;
3. incorporate scientific information into effective written and oral communications;
4. find, evaluate, use and cite appropriate resources within the field of natural sciences;
5. apply mathematical methods to the interpretation of scientific data;
6. use scientific data and methods individually and collaboratively, to solve problems involving scientific topics;
7. explain how scientists have used results from technologies to develop theoretical models;
8. use the Internet and/or other informational resources to research scientific topics;
9. discuss how physical, chemical and biological processes affect the conditions for biological and social organization on Earth;
10. compare and contrast the backgrounds and historical contexts of scientists from a variety of cultures;
11. examine relationships among various scientific disciplines and technologies;
12. evaluate ethical issues relating to scientific and technological developments, and
13. demonstrate an appreciation of the role, importance and history of science in different cultures.

**Major Topics**

- I. Overview of science
  - A. Scientific Method
  - B. History of Science
  - C. Role of science in the world and in diverse cultures
- II. Energy
  - A. Thermodynamics
  - B. Electricity and Magnetism
  - C. Electromagnetic Radiation

- III. Matter
  - A. Atom
  - B. Chemical Bonds
  - C. Material Properties
  - D. Elementary Particles
- IV. Planetary Processes
  - A. Geological Changes
  - B. Material Cycles
- V. Cosmic Processes
  - A. Relativity
  - B. Stellar Evolution
  - C. Cosmology
- VI. Ecosystems
  - A. Survival Strategies
  - B. Ecological Disruption
- VII. Organic Processes
  - A. Organic Molecules
  - B. Cell
  - C. Genetics
  - D. Evolution

### **Course Requirements**

#### **Grading/Exams:**

Grading procedures will be determined by individual faculty members but will include the following:

- a minimum of 4 exams including written short responses
- a minimum of 1 activity requiring student collaboration
- a minimum of 2 written assignments totaling at least 3-5 pages, using MLA format

#### **Writing:**

Multiple assignments will infuse CCBC General Education Program objectives. At least one assignment worth a minimum of 5% of the total course grade will allow students to demonstrate at least five of the seven General Education Program outcomes. Students are required to use appropriate academic resources.

#### **Other Course Information**

This course is an approved 3-credit General Education course in the Biological and Physical Sciences category that **does not fulfill** the laboratory requirement. Please refer to the current CCBC Catalog for General Education course criteria and outcomes.

