

**Common Course Outline**  
**GEOA 100**  
**Seeing the World: Geospatial Science and Spatial Reasoning**  
**3 Credits**

**Community College of Baltimore County**

**Description**

**GEOA 100 - 3 credits - Seeing the World: Geospatial Science and Spatial Reasoning** introduces students to the fundamental concepts of Geographic Information Science and Technology (GIS&T) including Geographic Information Systems (GIS), Global Positioning Systems (GPS), cartography, remote sensing, and spatial analysis. This course explores how geospatial technologies are used in mapping, visualizing and analyzing human and environmental issues such as real estate, business and marketing, criminal justice, environmental and earth science, engineering, geography, history, health and nutrition and computer science.

**3 credits**

**Prerequisites: ACLT 052 or ACLT 053, MATH 082**

**Overall Course Objectives**

Upon completion of this course students will be able to:

1. describe the fundamental concepts and applications of Geographic Information Science and Technology (GIS&T), including the problems and challenges of representing change over space and time;
2. demonstrate the use of web mapping tools to study and develop possible solutions to real world problems;
3. describe and explain the historical development of GIS&T and how GIS&T helps to solve problems of a spatial context;
4. demonstrate basic proficiency in map reading, interpretation, and design principles, including map projections and the geographic grid;
5. describe the fundamental concepts and applications of remote sensing and Global Positioning Systems;
6. describe and demonstrate how to access different sources of data, describe the process of creating data, and discuss the fundamental concepts of data quality;
7. individually, and in small groups, identify, explain, and interpret spatial patterns and relationships;
8. identify spatial patterns and explain how people and places are linked culturally and physically;
9. identify current remote sensing platforms and their uses;
10. locate and download satellite imagery and explain what the resolution of the imagery is (spatial, spectral, temporal) and, individually and in small groups, explain how it relates to a given scenario;
11. identify the components of a Global Positioning System (GPS) and explain how the components function as a system, and,

12. identify the types and functions of software and hardware commonly used to format, access, and manipulate geospatial information.

### **Major Topics**

- I. Introduction to Geospatial and Information Technology: Hardware and Software
- II. What is Spatial Reasoning?
- III. Projections and Coordinate Systems
- IV. Cartography
- V. Geospatial Data
- VI. Data Quality
- VII. Methods of Spatial Analysis
- VIII. Satellite Positioning and Other Measurement Systems
- IX. Remote Sensing and Photogrammetry
- X. Trends in Geospatial Technology

### **Course Requirements**

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

#### Grading/exams:

- a minimum of 2 exams (mid-term and final)
- a minimum of 5 quizzes
- a web based project and/or presentation showing proficiency in web based geospatial software and integration to problem solving

Written Assignments: Students will, at a minimum, produce a 2-page summary detailing their web-based project including proper documentation of the sources used and how the data supports their conclusions.

Individual faculty members may require additional written assignments.

### **Other Course Information**

This course will be offered as a General-Education course within the Information Technology group under Interdisciplinary and Emerging Issues.