

New York City College of Technology
Department of Chemistry

Course Code: ESCI 1110

Title: Environmental Science I

Number of hours, credits: (3 credits, 3 hours lecture: lab hours are included in class hours)

Course Description:

An introductory environmental science course. Topics include fundamentals of environmental science; land and soil pollution; water quality and hydrology; air quality; wetlands. Maps, GIS, and the visualization of scientific information are emphasized.

Pre/Co-requisite: ENG 1101 or ENG 1101CO/ML or higher, MAT 1190 or MAT1190CO & higher

Recommended Text (any of the following):

- Environment: The Science behind the Stories, 6th Edition, Withgott/Laposata, Pearson 2018, ISBN 978-0134204888
- Environmental Science: Inquiry and Application, 8th Edition, Cunningham & Cunningham, McGraw-Hill 2017 ISBN 978-0078036071
- Environmental Science, A Global Concern 13th edition, Cunningham, Cunningham & Saigo, McGraw-Hill, 2017 ISBN 978-1308162980

CUNY Pathways (Life and Physical Sciences) and Discipline Specific Learning Outcomes

LEARNING OUTCOMES	ASSESSMENT
For successful completion of the course, students should be able to:	Instructional Activity, Evaluation Methods and Criteria
Identify and apply the fundamental concepts and methods of a life or physical science.	Homework and in class exams.
Apply the scientific method to explore natural phenomena, including hypothesis development, observation, experimentation, measurement, data analysis, and data presentation.	Homework, lab assignments, and projects
Use the tools of a scientific discipline to carry out collaborative laboratory investigations.	Projects, in class workshops
Gather, analyze, and interpret data and present it in an effective written laboratory or fieldwork report.	Lab assignments, projects, and in class discussions and exams.
Identify and apply research ethics and unbiased assessment in gathering and reporting scientific data.	Lab assignments and projects.

General Education Learning Outcomes

LEARNING OUTCOMES	ASSESSMENT
For successful completion of the course, students should be able to:	Instructional Activity, Evaluation Methods and Criteria
Identify and apply the basic principles of mathematics, physics, biology, chemistry, and engineering as they relate to the environment at an introductory level	Homework and in class exams.
Apply the scientific method to explore environmental issues.	Homework, in class discussions, lab assignments, and projects
Gather, analyze, visualize, and interpret data.	Lab assignments, projects, and in class discussions and exams.
Participate effectively in a multi-disciplinary team environment.	Lab assignments, projects and presentations

Course Outline

Week	Lecture	Lab
1	Course Syllabus and Blackboard Content Orientation Intro to Environmental Science, The Scientific Method	Discussion Board –Introductions
2	Environmental Systems: Matter, Chemistry, Energy and Life	Lab1- Scientific Experimentation
3	Biogeochemical Cycles: Water Cycle, Carbon and Nitrogen cycle	Lab2– GHE: Albedo and Reflectivity
4	The Atmosphere and its Layers, The Air We Breathe	Lab 3 – GHE-Albedo and IR
5	Air Pollution and Air Pollution Control; Acid Deposition	Discussion - Air Pollution
6	Wetlands: Function and Benefits	Report on Photo/News
7	Ground Water, Surface Water and watersheds	Discussion - Water Pollution Lab 4- Ocean Acidification
8	Mid-Term Exam	Lab 5- Eutrophication
9	Water Pollution, Eutrophication and Sewage Treatment	Lab 6-Anaerobic Decomposition
10	Soil: Types and Characteristics, CEC- Cation Exchange Capacity, Soil Organic Matter and Soil Degradation	Discussion - How do we use and abuse soil?
11	Solid and Hazardous Wastes Methods of Solid Waste Disposal	Lab 7- Density of Precious Metals
12	Plastics: Where from and Where to? Disposing of Plastics, The Big Six Classes of Polymers	Lab 8 – Energy Content of Fuels (optional)
13	Presentations I	Discussion – Plastics Due
14	Presentations II and Review for Final Exam	
15	Final Exam	

Evaluation Methods and Criteria

Course grade is based on a combination of the following: exams, laboratory exercises, discussion/participation, research report and presentation. Final grades will be determined as indicated in the table below.

93–100%	A	77–79%	C+
90–92%	A-	70–76%	C
87–89%	B+	60–69%	D
83–86%	B	0–59%	F
80–82%	B-		

Midterm Exam	15%
Final Exam	20%
Discussions Forums/Participation	15 %
Laboratory/Simulations/Photos	20%
Research Project and Presentation	30 %

College academic integrity policy states:

“Students and all others who work with information, ideas, texts, images, music, inventions, and other intellectual property owe their audience and sources accuracy and honesty in using, crediting, and citing sources. As a community of intellectual and professional workers, the College recognizes its responsibility for providing instruction in information literacy and academic integrity, offering models of good practice, and responding vigilantly and appropriately to infractions of academic integrity. Accordingly, academic dishonesty is prohibited in The City University of New York and at New York City College of Technology and is punishable by penalties, including failing grades, suspension, and expulsion.” The complete text of the College policy on Academic Integrity may be found in the catalog.

Technology statement: Before entering the course, students must be familiar with MS Word, MS Excel (simple graphing), and MS PowerPoint, accessing and using various features of Blackboard.

Dates of revision of this document: 10/2015 (PSpellane), 8/2016; 4/2017 (DSamaroo), 3/2021 (DSamaroo, FDura)