HOSTOS COMMUNITY COLLEGE
Natural Sciences Department
Physical Sciences Unit

ENV 110/34311 Course Title: Environmental Science I Session:

Meets: Lecture: Room:
Lab: Room:

Lecture Instructor:
Email:
Telephone number: 718- 518-
Office hours: Room:

Lab Instructor:
Email:
Telephone number: 718- 518-
Office hours: Room:

Course Description:

The student will analyze data and explain concepts related to the classification of matter, basic principles of atomic structure and bonding, energy sources and the health-related environmental effects and the social implications and control of major air and water pollutants.

Student Learning Outcomes:

The students will:

- Understand the concept of matter, its classification, state, properties, and changes. The student will know basic concepts of the atomic structure of matter, perform electron configuration, and will understand and use the periodic table.
- Know basic concepts of chemical bonding, ionic compounds, and covalent compounds.
- Understand and apply concepts of balancing chemical reactions.
- Know basic concepts of organic compounds: structure and properties for saturated and unsaturated hydrocarbons, aromatic hydrocarbons, chlorinated hydrocarbons, alcohols, and polymers. Know and understand the uses and hazards of chlorinated hydrocarbons and alcohol.
- Know basic concepts of nuclear chemistry, including natural radiation, nuclear equations, half-life, artificial transmutation, nuclear energy, nuclear power plant.
- Understand and know energy and energy sources: fossil fuels, nuclear fission, nuclear fusion, and renewable sources. The students will discuss, evaluate, and compare the economical and environmental advantages and disadvantages of each of these sources of energy.
- Know and understand the composition of air and the atmosphere, the conditions and sources affecting them. The students will analyze and know alternatives to minimize or prevent these conditions. Students will know about thermal inversion, natural pollution, Industrial Smog, Photochemical Smog, Acid Rain, the Ozone layer, and Global Warming among others.
- Know about surface and ground water and about the natural and chemical contamination affecting these. The students will also know about water treatment plants and the alternatives to minimize and prevent water contamination.

Required textbooks:

Textbook: **<u>Chemistry for Changing Times,</u> 12TH edition (2010) by John W. Hill and Doris K. Kolb Pearson Prentice Hall, ISBN: 0-13-605449-8**

Lab Manual: **Laboratory Manual for Environmental Science I**
(Hostos Bookstore)

Safety Goggles: Type approved for the chemistry laboratory: Indirect ventilated, ANSI Z87.1: required for all laboratory sessions

Recommended: Student Study Guide by R. Jones and J.W. Hill
Pearson Prentice Hall,
Lab coat, or apron, or other protective clothing

I. LECTURE

WEEK	CHAPTER	SECTION	QUESTIONS & PROBLEMS (ODD NUMBERS)
1	1. Solving Society's	1.7-1.9	19, 21, 33 – 47, 57-82.
		QUIZ # 1	
2	3. Atomic Structure	3.4-3.6, 3.8	5 – 11, 15, 29-37,
3	4. Nuclear Chemistry	4.1-4.2	5, 7, 11, 13, 17-21, 31-43, 51-56.
	******EXAM I (Sections Covered in Chapters 1, 3 & 4) ******		
4	5. Chemical Bonds	5.1-5.6	1-7, 19, 21-27, 35a,b,d,f, 39a,c, 41, 43, 45a,b, 47, 49, 53, 58, 60.
5	5. Chemical Bonds	5.7-5.11	9, 55-63, 67, 69.
		QUIZ #2	
6	6. Chemical Accounting	6.1-6.5	12, 13, 15, 19, 21, 27, 36, 43.
	****** EXAM # II (Section covered in Chapters 5 &6) ******		
7	9. Organic Chemistry	9.1-9.5	1-6, 9, 19, 23, 25, 55, 59
8	9. Organic Chemistry	9.6-9.9	7, 11, 31, 33

WEEK	CHAPTER	SECTION	QUESTIONS & PROBLEMS

			(ODD NUMBERS)
		QUIZ # 3	
9	10. Polymers	10.1-10.5, 10.7	3, 4, 5, 9, 11, 21, 25, 32, 34.
	****** EXAM III (Section Covered in Chapters 9 & 10) ******		
10	4. Nuclear Chemistry	4.3, 4.5, 4.8-4.13	35a,b, 37, 41, 45, 47.
11	14. Energy	14.1-14.10	7, 11, 13, 17, 19, 27, 29, 31, 43
		QUIZ # 4	
12	14. Energy	14.11-14.16	45, 59, 63
	****** EXAM IV (Sections Covered in Chapters 10 & 14) ******		
13	12. Air: The Breath of Life	12-1-12.10	1, 3, 15, 19-27, 33-41, 49
14	12. Air: The Breath of Life	12.11-12.16	9, 51-61
		QUIZ # 5	
14	13. Water: Rivers of Life	13.1-13-12	1-9, 13, 19-45
15	****** FINAL EXAM (Section covered in Chapters 12 & 13) ******		

II. LABORATORY

WEEK	EXPERIMENT	EXP. #	PAGE
1	Drawer Assignment Discussion of Safety Rules for Laboratory Sessions		

	Attendance and Grading Policies Introduction to Laboratory Techniques			
	Measurement of Volume of Liquids and Solids	1	1	
2	Measurement of Mass (Weight) of Solid and Liquid Substances	2		6
3	Physical and Chemical Changes	4	25	
	Elements in the Periodic Table -Atomic Structure (This experiment is a homework assignment)	5		30
4	Determination of the Density of Solid and Liquid Substances	3	12	
5	Methods of Separation of the Components of a Mixture: *Paper Chromatography*	6		35
	Chemical Compounds and their Formulas (This experiment is a homework assignment)	7	45	
6	Extraction of Caffeine from Tea	6	39	
7	Cosmetology: Preparation of Creams	8	48	
8	Organic Compounds: *Formulas and Properties*	10		70
	Preparation of Nylon: A DEMONSTRATION			
9	Hydrocarbons: Alkanes, Alkenes and Alkynes	11		73
10	Study of the Properties of Acids and Bases (Objective A only)	9		55
11	Study of the Properties of Acids and Bases (Objectives B, C and D)	9		61
12	Soap Preparation a: Preparation of Soap from Vegetable Oil b: Preparation of Transparent Soap	12	80	
13	Water Analysis a. Biological Oxygen Demand (BOD)* (The instructor will be informed prior to date)		HANDOUT	
	or			
	b. Cl^-, NO_3^-, PO_4^{3-} Analysis		HANDOUT	

14	Water Analysis (Distillation technique) or Cl^-, NO_3^-, PO_4^{3-} Analysis (For those who did BOD the previous week)	15	99 HANDOUT
15	Laboratory Final Exam		

Each student will submit a report about the lab activities. All reports must include the results and calculations, if any, Data Sheet(s), and the answers to the questions at the end of each experiment. The report will be due at the beginning of the next laboratory period. Ten points will be deducted for every week the report is late. The report grade will include the student's performance of the experiment in the laboratory, timeliness, and compliance with the safety rules. For each laboratory session the student is absent, he/she will receive a grade of zero and no report will be accepted for the experiment corresponding to the laboratory session that the student was absent from.

The laboratory grade will be based on the student's attendance, the average of the lab report grades and the final exam for the lab. The lab grade will be 25% of the course grade.

NO ONE will be allowed in the laboratory without safety glasses. Glasses *MUST BE WORN AT ALL TIMES* while working in the lab.

Graded assignments: The Final grade will be determined by the grades on lecture and lab combined as follows:

Lecture	**75%**
4 Partial Exams	40% (lowest grade will be dropped)
5 Quizzes	5% (lowest grade will be dropped)
Writing assignments	10%
Final Exams	20%
Laboratory	**25%**
Lab Reports	15% (lowest grade will be dropped)
Lab Final Exam	10%
Total Grade Course	**100%**

No student under any circumstances will be given a passing grade in this Environmental course without taking and passing the laboratory. Four (4) absences without proper excuse to the lab are equivalent to an I

Policy Grade:

The college uses the following grades: A, A^- for excellent work B^+, B, for good work B^-, C, for fair work I for poor work F, for failure I, for incomplete WU, for unfinished incomplete, equivalent to F W, for withdrawn

The grade of Incomplete (I) is given in regular courses upon request of the student for personal emergenci that are verifiable. The faculty member has the responsibility to provide Inc grade only to those students

who are passing the course. The student has the responsibility to take the initiative in completing the work and is expected to make up the incomplete during the first semester in residence after receiving the grade o Incomplete. If the student does not make up the incomplete during the following semester after receiving i an F grade may be given by the faculty member without further consultation with the student.

If after the end of the first semester the Inc remains on the record it will be designated as an F and will be computed in the student's GPA.

A	93-100
A^-	90-92
B^+	87-89
B	83-86
B^-	80-82
C^+	77-79
C	70-76
D	60-69
F	Failure

There is no R grade in this course.

Lecture and Lab
Participation:

Your participation in class is an important part of the final grade. This grade is based primarily on your participation in class discussions, in team projects and your attendance. For each class you miss, you will lose participation points. If you miss 25% or more of the term, you will be failed.

Academic policies:
Hostos Community College has an evaluation system based o the honesty and integrity of the academic work an identified student or students. Faculty, students and staff have the responsibility to uphold the standards of the community and to take action when others violate them. Faculty members have an obligation to educate students to the standards of academic integrity, and to report violations of these standards to the appropriate authorities of the college. If a community member is proved with academic dishonesty, the college will impose sanctions. The three most common forms of academic dishonesty are cheating, plagiarism, and bribery. It must be understood that any student who knowingly aids in plagiarism or other cheating, e.g., allowing another student to copy a paper or examination question, is as guilty as the cheating student
Cheating:

In the collegiate setting, cheating is defined as the purposeful misrepresentation of another's work as one's own. Faculty and students alike are responsible for upholding the integrity of this institution by not participating either directly or indirectly in act of cheating and by discouraging others from doing so.

Plagiarism:

Plagiarism is a form of cheating which occurs when persons, even if unintentionally, fail to acknowledge appropriately the sources for the ideas, language, concepts, inventions,

etc. referred to in their own work. Thus, any attempt to claim another's intellectual or artistic work as one's own constitutes an act of plagiarism.

Bribery:

In the collegiate setting, bribery involves the offering, promising, or giving of items of value, such as money or gifts, to a person in a position of authority, such as a teacher, administrator, or staff member, so as to influence his/her judgment or conduct in favor of the student. The offering of sexual favors in exchange for a grade, test score, or other academic favor, shall be considered attempted bribery. The matter of sexual favors, either requested or offered, in exchange for a grade, test score or other academic favor shall also be handled as per the Sexual Harassment procedures of the College.