QUEENSBOROUGH COMMUNITY COLLEGE

CHEMISTRY DEPARTMENT

CH-110 CHEMISTRY AND THE ENVIRONMENT

PREREQUISITES: None

LECTURE: 3 Hours **CREDITS:** 3

TEXTBOOK: **Chemistry in Context: Applying Chemistry to Society**
A Project of the American Chemical Society
McGraw Hill Publishers, 5th Edition;
ISBN: 007-3101591

COURSE DESCRIPTION:

This is a Writing Intensive course where the role of chemistry in current environmental topics of interest to all citizens is examined. Topics covered include: Green Chemistry; Acid rain; Destruction of ozone layer; Greenhouse effect and global warming; Traditional and alternative energy sources: Air, water and land pollution - sources, effects, detection and control / prevention.

CURRICULA FOR WHICH THE COURSE IS REQUIRED/RECOMMENDED:

A.A. in Liberal Arts and Sciences (non-science concentration)
and other non-science majors as a laboratory science elective.

GENERAL EDUCATIONAL OBJECTIVES:

- To develop critical thinking and an understanding of scientific laws and concepts.
- To develop an appreciation of the scientific method approach to scientific inquiry.
- To develop writing and reading skills.

SPECIFIC COURSE OBJECTIVES / EXPECTED STUDENT LEARNING OUTCOMES:

The environmental aspects of chemistry are introduced to non-science Majors. The approach in non-mathematical and strives to make chemistry stimulating and to portray its relevance to everyday experiences. The ultimate goal is to enhance students' awareness of the environment we live in and to place emphasis on the need for a sustainable environment.

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WRITING INTENSIVE OBJECTIVE:

The writing intensive approach will facilitate and help enhance students' thinking abilities, encourage critical thinking and activity with both the subject of chemistry and in general. A byproduct of the writing intensive approach is to improve the students reading and writing skills.

METHODS BY WHICH STUDENT LEARNING WILL BE EVALUATED:

The overall course grade will be computed using the following general distribution:

- Attendance and class participation
- In class examinations/ quizzes
  NOTE: there will be no make-up examinations.
- Writing assignments
  - Low stake assignments (graded based on participation not for content or English). Assignments must be submitted on time during the semester for credit. In class writing of about one paragraph may also be required
  - High stake assignments (may include mandatory revisions and mandatory assistance from the writing center in L 118. Each draft must be submitted on time for credit
- Cumulative final examination

Students need to achieve a passing grade in each of the above categories in order to pass the course. This grade distribution may be changed at the discretion of the individual instructor.

The following may result in failure of the course:

Excessive absences or lateness; Missing in-class examinations; Missing low stake assignments as a result of missing classes; Delay in the submission of the drafts of high stake assignments; Missing the final examination (If there is a valid excuse the student can inform their instructor and arrange to take the final immediately).

ATTENDANCE/ABSENCE POLICY:

Attendance will be taken at every class. The Student Handbook states that a student will be considered excessively absent from a course and will receive a WU grade if the student has been absent for 15% or more of the total number of contact hours for the course. A WU is computed as an F in the student's GPA. Students who have valid excuses for missed classes should speak with their instructor and present documentation explaining the reason for the absence. Absences that have been excused by the instructor will not be counted toward a WU grade. If a class meets twice per week: students will receive a grade of WU if they have 7 or more excused/unexcused absences. For any lecture that meets only once per week, students will receive a grade of WU if they have 4 or more excused/unexcused absences.

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ACADEMIC INTEGRITY:

Academic honesty is taken extremely seriously and is expected of all students. All assignments must be the original work of the student (and partners or group, if applicable). All questions or concerns regarding ethical conduct should be brought to the course instructor. “It is the official policy of the College that all acts or attempted acts that are violations of academic integrity be reported to the Office of Student Affairs (OSA). At the faculty member’s discretion and with the concurrence of the student or students involved, some cases, though reported to the OSA, may be resolved within the confines of the course and department. The instructor has the authority to adjust the offender’s grades as deemed appropriate, including assigning an F to the assignment or exercise or, in more serious cases, an F to the student for the entire course” (Adopted from the QCC Academic Integrity Policy, 2/14/2005).

ACCOMMODATIONS FOR STUDENTS WITH DISABILITIES:

As stated in the current college catalog, any student who needs specific accommodations based upon the impact of a disability should register with the office of Services for Students with Disabilities (SSD) to be eligible for accommodations which are determined on an individual basis. The SSD office is located in the Science Building, room S132 (718-631-6257). Students should also contact their instructor privately to discuss their specific needs.

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CHAPTER	TOPIC	HOURS
Intro:	Basic physical sciences, applied physical sciences, chemistry, Green Chemistry and the role of chemistry in developing a sustainable environment	3
1	The Air We Breathe (Elements and compounds, Atoms and molecules, Chemical formulas and names, Chemical reactions, Composition of atmosphere, Air pollutants, Prevention and protection)	6
2	Protecting the Ozone Layer (Electromagnetic radiation and matter, Oxygen and ozone, Stratospheric and ground level ozone, Ozone destructors, Solutions to the problem)	3
3	The Chemistry of Global Warming (The Green house effect and green house gases: natural and man-made, weather and climate, What can be done)	3
4	Energy, Chemistry, and Society (Fuel: coal, petroleum, gasoline, substitutes)	3
5	Take A Drink: The Wonder of Safe Drinking Water (Composition, Structure, and Properties of Water, Water pollutants, Purification of drinking water)	3
6	Neutralizing the Threat of Acid Rain (Acid, bases, and salts, pH - measure of acidity / basicity, Damage by acid rain / acid deposition, Prevention and protection)	6
7	The Fires of Nuclear Fission (Radioactive isotopes and nuclear radiation, Nuclear energy sources, nuclear weapons, Radiation danger, Radioactive wastes, Risks and benefits)	3
8	New Energy Sources for the New Century (Conventional and alternative energy sources)	3
	Conclusions: Solutions – Green Chemistry	3