Course Submission Form

Instructions: All courses submitted for the Common Core must be liberal arts courses. Courses submitted to the Course Review Committee may be submitted for only one area of the Common Core and must be 3 credits/3 contact hours. Colleges may submit courses to the Course Review Committee before or after they receive college approval. STEM waiver courses do not need to be approved by the Course Review Committee. This form should not be used for STEM waiver courses.

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<tr>
<th>Form ID</th>
<th>Version No.</th>
<th>Created by</th>
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<td>Morgado, Ann</td>
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Current Status: Approved

Course Selected: Subject ENSCI (Environmental Science)
Catalog Nbr 99

Course Revision & College

Form Submission: Initial Submission
College: Queens College

Course Data

Course ID 123077
Subject ENSCI (Environmental Science)
Catalog Status: Approved
Catalog Nbr 99
Contact Hours 3
No. of Credits 3

Course Title: A Practical Guide to Environmental Choices

Course Description: A guide for evaluating the consequences of every-day choices about interactions with our environment, and environmental issues, on local to global scales including air and water quality, food safety and energy resources.

Department: School of Earth and Environmental Sciences
Pre-Requisites/Co-Requisites

Course Syllabus [Attachment Filename(s)]
ENSCI-99_2013-11-04.pdf

Location (Required or Flexible) and Learning Outcomes

<table>
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<tr>
<th>REQUIRED</th>
<th>FLEXIBLE</th>
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<tr>
<td>English Composition</td>
<td>World Cultures &amp; Global Issues</td>
</tr>
<tr>
<td>Math &amp; Quantitative Reasoning</td>
<td>US Experience in its Diversity</td>
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<tr>
<td>Life and Physical Sciences</td>
<td>Creative Expression</td>
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<td>Learning Outcomes: Questions</td>
<td>Learning Outcomes: Responses</td>
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<td>* 1. Identify and apply the fundamental concepts and methods of a life or physical science.</td>
<td>Two 1.5-hr lectures in one week combined with a 3-hr laboratory in another week are organized as one unit to seek answers to a specific question that will require the students to learn and apply the basic concepts of Environmental Science. The lecture will primarily be used to guide the students through the process of asking and defining questions based on existing knowledge. The laboratory will primarily be used to guide the students to establish possible answers to these questions. An important aspect in this process is to examine how assumptions, or the different choices we make in our daily lives, affect the answers. The goal here is to introduce the idea that there is often more than one answer or solution to most environmental problems.</td>
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<td>* 2. Apply the scientific method to explore natural phenomena, including hypothesis development, observation, experimentation, measurement, data analysis, and data presentation.</td>
<td>Fourteen 1.5-hour lectures have been planned for this course that will highlight the process of hypothesis formulation in the scientific method. For example, observations of real time air and water quality data can be used to begin the process of hypothesis development. The last topic to be presented in the lecture is a hot topic of concern. At present, it is hydraulic fracking to extract shale gas. Seven 3-hour laboratory sessions have been planned for this course. The first laboratory exercise introduces the scientific method. Three labs involve air and water quality measurements. Two more labs sessions involve estimation of carbon emission at personal and communal levels, and to begin a quantitative assessment of how greenhouse gases affect the temperature of the Earth through a simple energy balance model. A final lab session will be a debate on a current controversial environmental topic. The laboratory sessions give the students hands on experience in performing observations, making measurements, plotting data, analyzing data to test a specific hypothesis, and to test whether the results obtained are reasonable. Lab reports are graded.</td>
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<td>* 3. Use the tools of a scientific discipline to carry out collaborative laboratory investigations.</td>
<td>Students will use a variety of environmental monitoring tools to make measurements and to conduct experiments and data analysis in groups or small teams. Comparison of results by different groups is part of this learning process.</td>
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<td>* 4. Gather, analyze, and interpret data and present it in an effective written laboratory or field work report.</td>
<td>Students will submit individual lab reports. Each report is to have a brief description of the aim, the methods used in executing the work, the data and its analysis, the interpretation and discussion of the limitation of the data analysis, and conclusions. At least three laboratory sessions will involve sampling and/or analysis of air and water samples. A brief description of the field settings is also applicable.</td>
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<td>* 5. Identify and apply research ethics and unbiased assessment in gathering and reporting scientific data.</td>
<td>Laboratory sessions will be an opportunity for students to assess the validity of the experimental data. Reports will demonstrate how the data collection process or the assumptions in study design will introduce inherent bias in scientific data or data interpretation. Students will learn the ethical approach to interpret such data despite of its limitations.</td>
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| A. If there is a change to the course title, what is the new course title? | |
| B. If there is a change to the course description, what is the new course description? | |
| C. If there is a change to the pre-requisites and/or co-requisites, what are the new pre-requisites and/or co-requisites? | |
Course Title: A Practical Guide to Environmental Choices  
Offering Department: School of Earth and Environmental Sciences  
Course number: Environmental Science 99  
Credits: 3 credits, 3 hours

Course Description: Individuals make countless choices in our daily lives that have undesirable impact on the environment, which, in turn, affect our health and the quality of our life. Students will evaluate and compare the consequences of these choices on the environment, for example, our air and water. Students will explore the implications of our over-reliance on fossil fuels as energy sources and various approaches for an environmentally sustainable society, with examples drawn from New York City. The goal is to learn how to evaluate the merits of the choices with incomplete and imperfect information.

Pre-requisites: None

Requirements Fulfilled: CUNY Core 3-hour lab course in Life and Physical Science

Reading: Primary literature, including journal, magazine and newspaper articles at appropriate level and government reports, will be assigned for each topic.

Laboratory Manual: Open sourced laboratory modules developed with support by National Science Foundation, Geological Society of America, American Chemical Society, supplemented by laboratory exercises previously developed and implemented at Queens College, will be used for each topic.

Schedule: (A tentative schedule, or at least information on assignment due dates and in-class exam dates) Although the course meets for three hours every week, the structure is different from most courses with three contact hours. Each week lecture and laboratory sections will alternate. Class will meet for two 1.5-hr lecture sessions in a week followed by a 3-hr lab session. Depending on the section in which the students are enrolled, class may meet first for a 3-hr lab session in a week followed by two 1.5-hr lecture sessions in the next week. The lecture and lab sessions will usually have different instructors.

Grading: (Description of how student grades will be determined, including all components that contribute to the final grade and their relative weight) Students will be assessed by pop quizzes, a mid-term exam and a final exam that will count for 60% of the overall course grade. These will be graded by the lecture instructors. Each student will submit 6 lab reports. Lab reports are due 1 week after each laboratory session. The final lab is a debate lab for which the student performance during the debate will be used for grading purpose. These will be graded by the lab instructors and will count for 40% of the overall course grade.
CUNY Policies: The following will be explained in the first laboratory session:
- CUNY policy on academic integrity
- Course policy on use of student work
- Course evaluations
- Services for students with disabilities
- Tutoring or other support services

Schedule:

Week
1 (2) Lecture 1: Introduction to the course
Lecture 2: Is the air in my neighborhood safe today and how do I know?

2 (1) Lab 1: Scientific method in environmental science

3 (4) Lecture 3: Is the water I am drinking safe and how do I know?
Lecture 4: Should I buy bottled water or drink tap water?

4 (3) Lab 2: Air quality index: ozone

5 (6) Lecture 5: Should I switch to low flush toilets?
Lecture 6: Why can’t I swim in Flushing Bay?

6 (5) Lab 3: Maximum contaminant level for drinking water: arsenic

7 (8) Lecture 7: Mid-term Exam
Lecture 8: Should I take the subway, the bus or drive?

8 (7) Lab 4: Maximum contaminant level for drinking water: *E. coli*

9 (10) Lecture 9: Should I set my thermostat at 60 or 75 degree Fahrenheit?
Lecture 10: How many calories, really, is in my hamburger?

10 (9) Lab 5: Personal carbon footprint estimation

11 (12) Lecture 11: Is New York City climate-proof?
Lecture 12: Is Superstorm Sandy related to global warming?

12 (11) Lab 6: Exploring greenhouse effects through an energy balance model

13 (14) Lectures 13&14 Hot Topic*: What is all the fuss about hydrofracking?

14 (13) Lab 7 Debate: Are you for or against hydrofracking?

*Which topic is deemed hot will be assessed by a poll conducted in the beginning of the semester when the course is offered.