California State University, San Marcos

FORM X (WHITE)

- Authorization To Offer Non-Degree Extension Credit Course Through Extended Studies

1. Desired Term: Spring 2008

2a. Course abbreviation and Number: EDST E1013

2b. Abbreviated Title: Water Quality

(No more than 25 characters, including spaces)

4. Number of Units: 3

5. Billing Units: 0 ($0)

6. Allowed Student Levels: UG X GR X EE X (Default is to check all three levels)

7. Grading Method:
   - N Normal (N) (Default is Letter Grade +/-, Students may request Credit/No Credit)
   - Normal Plus Report-in-Progress (NP) (As for Normal: also allows Report-in-Progress)
   - Credit/No Credit Only (C)
   - Credit/No Credit or Report-in-Progress Only (CP)

8. Mode of Instruction:

   (See pages 17-23 at http://www.calstate.edu/ceiv/data-elem/dic/ADPB-Transaction-DED-SectionY.pdf for definitions of the Course Classification Numbers)

<table>
<thead>
<tr>
<th>Type of Instruction</th>
<th>Number of Credit Units</th>
<th>Instructional Mode (Course Classification Number)</th>
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<tbody>
<tr>
<td>Lecture</td>
<td>3</td>
<td>C-02</td>
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<tr>
<td>Activity</td>
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<td>Lab</td>
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9. Attributes: Course Requires Consent for Enrollment? Yes X No
   - Faculty ______ Credential Analyst ______ Dean ______ Program/Department - Director/Chair

Prerequisites: __________ Co-requisites: __________

10. Does this course impact other discipline(s)? (If there is any uncertainty as to whether a particular discipline is affected, check "yes" and obtain signature.) Yes X No
    If yes, obtain signature(s). Any objections should be stated in writing and attached to this form.

    | Discipline | Signature | Date | Support | Oppose |
    |------------|-----------|------|---------|--------|
    |            |           |      |         |        |

Important: Please Complete

1. Instructor: Kathy Norman

2. Extension Course Proposal Form (attached)

SIGNATURES: (COLLEGE LEVEL)

   Kelly Norman  1/4/08
   [Program Director/Chair Date]

   [College Dean (or Designee) Date]

   (UNIVERSITY LEVEL)

   (Registrar)  01/06/08
   [Dean of Enrollment Studies (or Designee) Date]

   [Vice President for Academic Affairs (or Designee) Date]
Water Quality Edited Syllabus 2007

Faculty Information

Faculty Name: Greg Curran

Address: East Fordham Road, Bronx, NY 10428

Phone: 718.367.7500

Email Address: currang@fordhamprep.org

Course Title: Water Quality

Course Description: Water Quality, a five-week course, examines the properties of water, available water resources, the factors affecting the quality of those resources, and what citizens can do to improve the quality of the water they use. Students read a variety of course content materials and perform weekly assignments, including one to two discussion board activities per week. These activities comprise approximately 45 hours of "student seat time." Students taking the course for 3 graduate credits also complete a 10-15 page Action Research Paper.

Course Delivery: Critical to the professional development experience of teachers today is learning to function effectively in an online learning environment, one that is destined to expand in the future. Water Quality is an online course completed in five weeks, with an additional one-week grace period for submitting assignments. Although students may work on assignments offline, all course content, links to supplementary information, interactions with other students, class discussions, assessments, submission of assignments, and interaction with the instructor are carried out online, through email and the course site. This online format is designed for educators who need access to professional development on a flexible schedule and who are in different locations worldwide. Not all participants in this course are taking it for college credit; some are earning CEUs or auditing. This course asks students to understand issues of water quality in local regions by developing a snapshot of local water resources and the factors affecting them. There is a specific task defined for each of the five Topics. At the end of the course, students will have a profile of local water resources. Students taking this course for three graduate credits may use this information as the basis for the Action Research paper. Students earning graduate credit are required to participate in advanced discussions and complete all assignments.

Course Objectives/Outcomes:
Performance Objectives
In this course students will:
1. Understand and appreciate the special properties of water.
2. Develop an appreciation for the limited nature of fresh water.
3. Locate content-related online resources that support an instructional unit on water quality.
4. Investigate sources of fresh water.
5. Understand water treatment processes.

Lesson Plans:

Topic One: What is the distribution of water on Earth?
This topic looks at the distribution of water on Earth. Students determine their water address; examine the properties and importance of water; and calculate their water usage.

Major Ideas:
A. Distribution of Water on Earth. Examines the amount of fresh water available on Earth.
B. Water – A renewable resource. Explores the water cycle.
C. How much water is available for our use? Examines pollution and other factors that limit the availability of fresh water.
D. How long can we survive without water? Examines the water needs of humans.
E. Do you know your water address? Identifies watersheds.
F. How much water do you use? Learn to calculate your water usage.

**Topic One Assignments:**
- a) Declare the nature of the credit sought – Graduate, CEU, or Audit.
- b) Read the Course Documents for Topic One.
- c) Take the Topic Quiz.
- d) Build a homepage.
- e) Post expectations for the course on the discussion board entitled Course Application.
- f) Complete the project for Topic One and post the information in the Project Folder.

**Topic One Project:** Students will choose a local site, a river, stream, lake, reservoir, or appropriate body of water and describe the site answering these questions: Where does the water come from? Where does it go? How large is the water source? Is the water moving? What is the water velocity? Are plants growing in the water? How would you describe the other living organisms that are found in the water or in the watershed? What are all the ways the water at the site is used? If the site is a river, describe what happens upstream and downstream from your location. Include all of the uses but keep in mind that humans are not the only ones who depend upon this water source.

**Topic Two: Physical and Chemical Features of Water**
This Topic presents the unique properties of water and the factors which determine if water is a solid, liquid, or gas. Students examine the characteristics of water which affect its density.

**Major Ideas:**
- A. What gives water its unique properties? Explore the chemical and physical properties of water.
- B. What substances will dissolve in water? Examine the solubility of water.
- C. What determines if water is a solid, liquid, or gas? Examine phases and phase changes.
- D. What is "specific heat"? Study the concept of specific heat.
- E. What characteristics of water affect its density? Explore why ice floats on liquid water.
- F. How do insects walk on water? Learn about surface tension.

**Topic Two Assignments:**
- a) Read the Course Documents for Topic Two.
- b) Take the Topic Quiz.
- c) Share an activity or strategy for introducing students to a physical or chemical feature of water. Include the developmentally appropriate grade level and a misconception of students about the feature.
- d) Complete the project for Topic Two and post the information in the Project Folder.

**Topic Two Project:** In Topic One, you surveyed a local water site. Now, you will look at some of the characteristics of the water at the site and answer these questions: What color is the water? What does it smell like? Is the temperature of the water warm or cold? What substances might be dissolved in the water?

**Topic Three: Sources of water on Earth**
This Topic examines potential sources of water on Earth.

**Major Ideas:**
- A. How salty is ocean water? Learn to measure salinity.
- B. Can you imagine a chunk of ice the size of a baseball stadium? Explore glaciers.
- C. How does water get into the ground? Learn about ground water.
- D. Is the water in the lake fresh water? Study types of lakes.
E. Where does water in streams come from? Explore streams and rivers.
F. Why does it rain? Learn how rain forms.

**Topic Three Assignments:**

a) Read the Course Documents for Topic Three.
b) Take the Topic Quiz.
c) Discuss the primary source of your home water supply, share any concerns (limited supply, polluted, etc.) you might have about this source.
d) In the discussion board called "Websites", share your favorite websites on "water sources" and share how these might be used in a classroom. Remember to read and respond to at least two other responses.
e) Complete the project for Topic Three and post the information in the Project Folder.

**Topic Three Project:** The site you chose for Topic One is a part of a larger picture, a watershed. Research and answer these questions: What is the source of the water at your site? How far is the site from the source of the water supply? Where does it come from? How much rain or snow falls in the area? If the water source is connected to other sources, sketch the route from the source to its final destination, the ocean. What cities, town, bridges, canals, etc. are located along this route?

**Topic Four: Factors Affecting the Quality of Water**

This Topic examines the criteria used to determine the quality of a water supply and applies these criteria to determine the quality of a water supply.

**Major Ideas:**

A. What does water quality mean? Examine what makes drinking water "safe".
B. How do we measure water quality? Explore water testing.
C. What life exists in a spoonful of water? Examine the biological contaminants found in some drinking water.
D. What is turbidity? Learn how to measure quality of water based on the amounts of solids suspended in it.
E. How does a change in water’s pH affect organisms? Examine the pH scale and how it affects the quality of water.
F. How do nutrients affect water quality? Learn how specific elements affect the water we drink.

**Topic Four Assignments:**

a) Read the Course Documents for Topic Four.
b) Take the Topic Quiz.
c) Share an activity that would introduce students to the quality of the water in their watershed.
d) Present the goals and objectives of the 10-15 page Action Research Paper to the Instructor. List resources and strategies for developing this educational unit.
e) Complete the project for Topic Four and post the information in the Project Folder.

**Topic Four Project:** How do your activities affect the quality of your water supply? Make a list of all the substances you and your family use that are added to water and go down the drain. Remember to include detergents, bleach, fertilizers, weed killers, and other substances. Write a short story describing how this wastewater may get from your drain into the watershed of the site you have chosen. Post this information to the appropriate Forum.

**Action Research Guide:**

Students taking the course for 3 graduate credits will design a ten to fifteen page Action Research Project. These lesson plans should include questions to investigate, student background information, misconceptions, vocabulary, procedures, appropriate teacher notes, curriculum connections, and related websites, student activity sheets, and an assessment.

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**Topic Five: Clean Water**

This Topic examines the issues of clean water and the methods for ensuring the safety of the water.

**Major Ideas:**

A. Why should I be concerned about water quality? Learn about problems caused by lack of quality drinking water.

B. How can we be sure that the water that comes from our tap is safe to drink? Examine measures that are in place to keep our water safe.

C. How does water treatment work? Explore the processes of water treatment in more detail.

D. How can contaminants be removed from water? Explore the processes of water treatment in still more detail.

E. Where does waste water go? Follow the pathway of waste water.

F. It's time to conserve! Examine ways to limit water waste.

**Topic Five Assignments:**

a) Read the Course Documents for Topic Five.

b) Take the Topic Quiz.

c) Complete the JASON Course survey.

d) Identify and describe naive ideas you may have held about water, for example, its abundance, availability, quality, etc, and describe a strategy you might use in a classroom to correct this naive idea.

e) Complete the project for Topic Five and post the information in the Project Folder.

f) Complete and submit the final Action Research Paper to the Instructor. Present your findings to the class by posting to an appropriate Discussion Forum and gather feedback from student peers.

**Topic Five Project:** Look at the various ways you and your family use water. Discuss how much water could be saved by altering your actions, such as fixing a leaky faucet, turning off the water while brushing your teeth, etc. How many ways could you conserve water? Estimate how much water could be saved if you followed this water saving adventure. If you already conserve water, discuss how much water you save on a yearly basis.

**Texts (required readings):** Course Content found in Blackboard

**Bibliography (optional readings):** Course Content not found in Blackboard

a) *Fresh Water* by E.C. Pielou, The University of Chicago Press

b) *Homework Helpers: Chemistry* by Greg Curran, Career Press

**Student Evaluation Process:**

Students are evaluated through a series of on-line discussions; topical activities; multiple choice quizzes; and curriculum design projects. Not all students seek college credit; some earn CEUs or audit. Students earning graduate credit are required to participate in advanced discussions and complete all assignments. Students taking the course for 3 graduate credits will design a ten-fifteen page Action Research Project. Students may earn 30 points through discussions and inquiry activities, 30 points on quizzes, 20 points on the Topic Projects, and 20 points on the final Active Research Paper. During the first week of the course students must declare the nature of the credit sought—Graduate, CEUs, or Audit. During the final week of the course students must complete the JASON Course Survey.

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* Students not taking the course for graduate credit do not have to complete the Action Research Paper and must obtain at least 70 points to pass the course.

* Students taking the course for graduate credit will be graded according to the Plus/Minus Grading Scale:

- A+ 97-100
- A 94 - 96.99
- A- 90 - 93.99
- B+ 87 - 89.99
- B 84 - 86.99
- B- 80 - 83.99
- C+ 77 - 79.99
- C 74 - 76.99
- C- 70 - 73.99
- D 50 - 69.99
- F 50 >
Gregory L. Curran  
Director of Technology, Chair of the Science Department, Fordham Preparatory School

CONTACT  
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EDUCATION  
M.S. in Curriculum and Teaching, Fordham University. 1995  
B.A. in Psychology/Biology, SUNY Purchase. 1989  
Additional Coursework 1989-present emphasizing Chemistry and Physics  
Teaching Certification: New York State in Biology

PROFESSIONAL EXPERIENCE  
Gregory Curran has been teaching Science and Math in the Bronx for 18 years. Working as an online instructor for the JASON Academy has helped him develop a love for online learning. As Chairman of the Science department at Fordham Preparatory School, he has worked to integrate technology into the curriculum. More recently, he has also been serving as the Director of Technology, working with the faculty on professional development and technology support.  
2006-present Director of Technology at Fordham Preparatory School. Duties include the supervision of two network administrators, responsible for maintaining the computer network and equipment. Responsible for the professional development of approximately 60 full-time teachers with regards to integrating technology into the curriculum. Responsible for updating and overseeing the school’s Technology Plan.  
1993-present Science Teacher at Fordham Preparatory School. Teaching lab-based Science courses, including; AP Physics, Honors Physics, Physics, Honors Chemistry and Chemistry.  
2001-present Chairman of the Science Department at Fordham Preparatory School. Duties include hiring, supervision and development of a staff of 10 full-time Science teachers.  
2004-present Online Instructor for the JASON Academy. Instructor for the Electricity and Magnetism and Water Quality courses.  
2006-present Chairman of the Technology Committee at Fordham Preparatory School. Duties include planning and implementing technology workshops for the faculty, planning and overseeing the expansion of the computer network and related resources.  
2004-present Co-Chairman of the Curriculum Committee and Fordham Preparatory School. Duties include planning and implementing workshops related to Curriculum Development.  
PUBLICATIONS

ORGANIZATIONS
National Science Teachers Association (NSTA), Science Teachers Association of New York State (STANYS).