COURSE INFORMATION FORM

DISCIPLINE: Technology
COURSE TITLE: Water Quality Management
CR.HR 3 LECT HR. 3 LAB HR. _______ CLIN/INTERN HR. _______ CLOCK HR. _______

CATALOG DESCRIPTION
This course provides an overview of regulatory programs and requirements of the Clean Water Act (CWA) and the Safe Drinking Water Act (SDWA); typical treatment processes for drinking water, municipal and industrial wastewater and hazardous wastes; and basic permits for storm water and effluent. The course will provide an overview of the Spill Prevention Control and Countermeasure (SPCC) plans. Students will develop a practical understanding of the advantage and disadvantages of established and new treatment processes, conduct case studies and evaluate treatment options.

PREREQUISITES
EHSS 203

EXPECTED STUDENT OUTCOMES IN THE COURSE (ESO)
Upon completion of this course, the student will be able to:
1. Locate specific regulations in the Clean Water Act or Safe Drinking Water Standard.
2. Discuss how to complete a National Pollution discharge Elimination System (NPDES) permit.
3. Discuss the basic elements of a Spill Prevention, Control and Countermeasure (SPCC) plan.
4. List and describe some basic types of water treatment.
GENERAL EDUCATION OUTCOMES (ESO)
Specify which general education outcomes, if any, are substantially addressed by the course. Numbers in parentheses identify the Expected Student Outcomes linked to the specific General Education Outcome.

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>ESO</th>
</tr>
</thead>
</table>

PROGRAM-LEVEL OUTCOMES

CAREER AND TECHNICAL EDUCATION PROGRAM OUTCOMES
Specify which Career and Technical program outcomes, if any, are substantially addressed by the course by completing the “Career and Technical Education template” to show the relationship between course and program outcomes to assessment measures.

1. Students will demonstrate the ability to apply foundational skill in an industrial setting, safely and to industry guidelines.
2. Students will think critically and apply problem-solving skills.
3. The program will graduate individuals who exhibit competence in the entry-level skills of technical profession environmental health and safety technology.
4. The program will graduate individual who can interact and communicate with managerial, supervisory, labor and external public using a combination of skills for a clear exchange of ideas and information.

CLASS-LEVEL ASSESSMENT MEASURES
Student accomplishment of expected student outcomes may be assessed using the following measures. (Identify which measures are used to assess which outcomes.)

1. Assignments, (1-4)
2. Written examinations, (1-4)
3. Student participation and in-class discussions, (1-4)
COURSE OUTLINE FORM

DISCIPLINE: EHSS

COURSE TITLE: Water Quality Management

Individual instructors may order this outline as fits the needs of their individual courses. In addition, they may place more emphasis on some areas than on others. What is assured is that this particular list is covered in the course. Other topics may be added to a course as the instructor sees fit, and as time and interest allow. An *asterisk can be used to mark an item as optional.

I. Water Quality
   A. Overview and history
   B. Hydrology/Basic Water Chemistry
   C. Water Cycle/Natural Resources
   D. Surface Water
   E. Groundwater
   F. Contaminant Movement in the Environment

II. Water Quality Standards
   A. Clean Water Act
      1. 1899 Rivers & Harbors Act
      2. 1948 Water Pollution Control Act
      3. 1965 Federal Water Pollution Control Act
   B. FWPCA 1972
      2. 40CFR 131.1 – Scope
      3. 40CFR 131.2 – Purpose
      4. 40CFR 131.3.2 - Waters of U.S.
      5. 40CFR 131.4 - State Authority
      6. 40CFR 131.5 - EPA Authority
      7. Structure in Title 33USC, Chapter 26
   D. Safe Drinking Water Act – 1974
      1. Treatment
      2. MCL-States
      3. Number of Contaminants
      4. Monitoring programs for unregulated contaminants

III. Treatment Processes For Water
   A. Overview
      1. POTW (Primary and Secondary)
      2. Advance Treatment
      3. Sludge
B. Chlorine
   1. Applicability
   2. Advantages
   3. Disadvantages
C. Ozone
   1. Applicability
   2. Advantages
   3. Disadvantages
D. Ultraviolet Light
   1. Applicability
   2. Advantages
   3. Disadvantages
IV. Program Requirements/Tools
   A. National Pollution discharge Elimination System (NPDES) permit
   B. Spill Prevention, Control and Countermeasure (SPCC) plan
   C. Other Permits Including Water Parameters
V. Tools for Water Quality Management*
   A. (Mathematical Water Quality)
   B. Modeling (Regulatory Water Quality Models)