# COURSE PROPOSAL FORM AND NEW/REVISED COURSE OUTLINE

**COURSE NUMBER/NAME:** GS105 Physical Science: Environmental Chemistry

## SECTION I: PROPOSAL INFORMATION

<table>
<thead>
<tr>
<th>Course Developed By:</th>
<th>Bridgid Backus</th>
<th>Date:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course Revised By:</td>
<td>Deron Carter</td>
<td>Date: 10/20/14</td>
</tr>
<tr>
<td>Catalog Year to take effect:</td>
<td>2014-15</td>
<td></td>
</tr>
<tr>
<td>Include in Print Catalog:</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Effective Term of this course:</td>
<td>Fall</td>
<td>Winter</td>
</tr>
</tbody>
</table>

**TYPE OF PROPOSAL:**
- [ ] New Course
- [x] Revised Course
- [ ] Reactivated Course
- [ ] 199/299 Experimental

**TYPE OF COURSE:**
- [x] Lower Division Transfer
- [ ] Career-Technical (required or elective)
- [ ] Career-Technical (embedded)
- [ ] Occupational Preparatory (stand-alone)
- [ ] Occupational Supplemental
- [ ] Developmental, numbered below 100

**TYPE OF INSTRUCTION:**
- [x] Traditional
- [ ] Distance Education
- [ ] Hybrid
- [ ] Virtual College
- [ ] Other: Specify

**Which degree/program does this course apply to:** AS and AAOT

**Rationale:**
1. How does this proposal further the goals of the program or department?
   The department would like increase the appeal of a general education chemistry course designed for non-science majors interested in how chemistry relates to environmental problems and solutions.
2. What assessment evidence supports this proposal?
3. (New courses) How do you know there is a demand for this course?

## SECTION II: NEW/REVISED COURSE OUTLINE

1. **Course Number:** GS105

2. **Full Course Title for Print Catalog:** Physical Science: Environmental Chemistry
3. State Course Numbers (CHOOSE ONE ONLY)
   - ☒ Lower Division Collegiate
   - ☐ Career and Technical Education Occupational Preparatory
   - ☐ Career and Technical Education Stand-alone Occupational Preparatory
   - ☐ Career and Technical Education Occupational Supplementary
   - ☐ Developmental Education
   - ☐ Cooperative Work Experience

4. Offered For: ☒ Credit  Number of Credits 4 □ Non-Credit

5. How many times can this course be taken for credit?
   (This is not the same as repeating a course for a better grade. This refers to how many times a student can get credit on their transcript for the same course.)
   - ☒ Once  □ Twice  □ 3 Times  □ Other (Specify)  □ Unlimited

6. Course Load Type

<table>
<thead>
<tr>
<th>CLOCK HOURS</th>
<th>TOTAL COURSE HOURS</th>
<th>NUMBER OF CREDITS</th>
<th>Department of Education's Formula (Generate One Credit)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LECTURE</td>
<td>33</td>
<td>3</td>
<td>Lecture: 10-12 hours/term</td>
</tr>
<tr>
<td>LAB</td>
<td></td>
<td></td>
<td>Lab: 30-36 hours/term</td>
</tr>
<tr>
<td>LECTURE/LAB</td>
<td>22</td>
<td>1</td>
<td>Lecture/Lab: 20-24 hours/term</td>
</tr>
<tr>
<td>PE/ACTIVITY</td>
<td></td>
<td></td>
<td>PE/Activity: 30-36 hours/term</td>
</tr>
<tr>
<td>TBA LAB HOURS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

7. Course Description:
   An introductory level laboratory science course offering a non-quantitative and descriptive survey of chemical principles relevant to everyday life. Topics presented in this course include applications of chemistry to environmental issues such as nuclear energy, recycling, air and water pollution, global warming, and energy resources. May not be taken for credit if six or more hours of college level chemistry have been completed.

8. Required Prerequisites: (If more than one course is listed, please indicate with OR or AND.)
   Note: This information will be entered into Banner and required for students’ registration.

   Prerequisite Course(s): Math 065
   Minimum Grade Required in prerequisite(s): C
   Placement Test Score: Other:

9. Is Instructor Consent Required to Register? ☐ Yes ☒ No

10. Required Concurrent Courses:
    Note: This information will be entered into the system and required for students’ registration.
<table>
<thead>
<tr>
<th>Course Number(s):</th>
<th>Lab(s) Course Number:</th>
</tr>
</thead>
</table>

### 11. Required:
Note: Any other skill that is necessary to participate in the class such as age, skill level, etc. that cannot be expressed as a prerequisite.

### 12. Recommended:
Note: Any other competency, skill or course that does not fall into one of the above categories, but that would help the student succeed in this course.

### 13. Is this course double numbered?  
☐ Yes Course Number:  
☒ No

### 14. Student Learning Outcomes
What will the student know or be able to do at the end of the course? (Upon completion of the course the learner will...)

Have a broad understanding of how chemistry relates to everyday life and environmental problems and solutions.

Students will safely conduct experiments both qualitatively and quantitatively to solve scientific problems and answer scientific questions.

### 15. Assessments/Evaluation of Student Learning
What evidence will demonstrate that students have achieved course outcomes? (Assessment tools may include departmental tests, written products, portfolios, juried performances, quizzes and exams or alternative assessments such as qualitative studies, capstone projects, external reviewers, etc.)

Exams, quizzes, homework sets, written lab reports, class presentations.

### 16. Grading
☒ A,B,C,D,F,I  ☐ Optional  ☐ P/NP  ☐ NON-GRADED  ☐ Add WP Option

### 17. Does this course require a special fee?  
☐ Yes (complete Course Fee Request form)  
☒ No

### 18. Contents Outline
Themes: Matter and its properties as a chemical foundation, laboratory Skills, teamwork, problem solving, critical thinking, Scientific Literacy, Chemistry and the environment, science is observable and testable, theories evolve through history

Concepts: Measurement, states of matter, conservation of mass and energy, atomic structure, radioactivity, chemistry relates to environmental and societal issues

Issues: Quantifying processes that happen on a microscopic level, precision and accuracy in data recording, chemical and physical properties, chemical bonding

Skills: Balance chemical reactions, perform basic laboratory procedures safely, record and interpret measurements (should be specific items such as graphing, creating tables, etc.), use various sources of information to research, analyze and evaluate chemical information, Perform unit conversions, use and
apply SI units, use appropriate chemical vocabulary, be able to numerically estimate.

### SECTION III: DEGREE REQUIREMENTS

This course may be used to fulfill the following degree requirements:

#### AAS Related Instruction

- [ ] Computation*
- [ ] Communication*
- [ ] Human Relations*
- [ ] Computer Competency
- [ ] Environmental Awareness
- [ ] Job Search
- [ ] Safety

*Complete the Related Instruction for CTE Courses form for each course that includes embedded Related Instruction.

#### AAOT Foundational Requirement

- □ Writing
- □ Communication
- □ Mathematics
- □ Health/Wellness/Fitness

#### AS General Education Requirement

- □ Writing
- □ Communication
- □ Mathematics
- □ Health/Wellness/Fitness

#### AS Distribution Requirements

- □ Biological Science
- □ Physical Science
- □ Cultural Diversity
- □ Difference, Power & Discrimination
- □ Literature & Arts
- □ Biological Science
- □ Social Processes & Institutions
- □ Western Culture

#### AAOT Discipline Studies

- □ Arts and Letters
- □ Social Science
- □ Science/Math/Computer Science
- □ AAOT Cultural Literacy Requirement

#### AAS, AS, AAOT: □ Elective

- □ Other Specify:

### SECTION IV: TRANSFERABILITY (Lower Division Transfer only)

Department should contact the corresponding OSU department for confirmation that the class will be transferrable.
Check all that apply:
- There is an equivalent lower division course at OSU. Course Number:
- The department will accept the course for its major or minor requirements.
- The course will be accepted as part of the baccalaureate core requirement.
- The course will be accepted as a general elective.
- If not OSU, which OUS school will the course transfer to:

Provide evidence of transferability: □ Email correspondence  ☒ Other - provide evidence (minimum one, more preferred)

SECTION V: LIBRARY IMPACT STATEMENT
Under accreditation standards, Library consultation is essential for new programs, new courses and substantively revised courses when the revisions entail any change in library use.

Check One:
- ☒ Library/media resources are adequate to support this new/revised course.
- □ Additional resources are needed to support this new/revised course and we have contacted the library and/or media department to request additional resources.

SECTION VI: GREEN TOPICS
Does a percentage of the class focus on one or more of the following areas?
- □ Increase Energy Efficiency
- □ Clean Up & Restore Natural Environment
- □ Produce Renewable Energy
- □ Prevent, Reduce, Mitigate Environmental Degradation
- □ Educate, Consult, & Provide Other Services that Support these Categories

If one or more of the above areas are checked, please estimate the total amount of teaching time spent on these topics:

SECTION VII: WORKLOAD CALCULATIONS
Instructor workload/pay will be based on the information provided.

Check One:
- □ Course has no lab hours
- □ All hours use the .789 workload factor
- □ Complete sections below

Complete the following sections if: □ New course  □ Revised course with credit change

Lecture Hours (10 - 12 hrs per student cr) have a workload factor of 1.0.

Lab Hours (20 - 36 hours per student cr) have a workload factor of 1.0 or .682. In order for some lab hours to have a workload factor of 1.0, they must meet BOTH of the criteria shown below**. The total number of hours with a workload factor of 1.0 cannot exceed the number of credits the student earns.

Check one:
- □ The lab hours for this class do not meet both of the criteria listed below.
- ☒ The lab hours for this class meet both of the criteria listed below for the following reasons:
Criteria 1: In order to effectively achieve the outcomes of the course, the learning activities that occur during lab hours create work for faculty that must be accomplished outside of the scheduled course hours. This time required outside of lab is similar to the time required outside of a lecture class of similar length.

Criteria 2: Faculty are engaged in facilitating learning by leading demonstrations and by guiding and supervising a student’s application of learned concepts during lab hours. This regular and consistent interaction requires faculty and students to be present during the lab hours.

For classes that meet on a regular schedule and run for the full term, including a final during finals week, use the hours per week for the workload calculations below.

For classes that do not meet on a regular schedule, or do not run full term, take the total number of each type of contact hour and divide by 11 to get ‘weekly hours’. Round workload calculations to three decimal places.

<table>
<thead>
<tr>
<th>Workload Calculation</th>
<th>Workload for additional lab sections (if applicable):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lecture Hrs 3 x 1.0 WCE = 3.0</td>
<td>Lab Hrs at 1.0 1 x 1.0 WCE = 1.0</td>
</tr>
<tr>
<td>Lab Hrs at 1.0 x 1.0 WCE = ______</td>
<td>Lab Hrs at 0.682 1 x 0.682 WCE = 0.682</td>
</tr>
<tr>
<td>Lab Hrs at 0.682 x .682 WCE = ______</td>
<td>Total Workload: 3.0</td>
</tr>
<tr>
<td>Total Workload for each lab section: 1.682</td>
<td></td>
</tr>
</tbody>
</table>

SECTION VIII: DIVISIONAL APPROVAL

Department Chair Signature/Date: Dean Signature/Date:

SECTION IX: COLLEGE APPROVAL

Curriculum Specialist Signature/Date: CIP Code:

Dean of Instruction Signature/Date: Effective Date:

Curricular Issues Meeting Date: □ Approved □ Resubmit