Honolulu Community College
General Education – DIVERSIFICATION DESIGNATION
Certification and Recertification

Application Form
Spring 2012

APPLICANT: Michael Ferguson

E-MAIL: mferguso@hawaii.edu

COURSE ALPHA and NUMBER: Chem 100L

COURSE TITLE: Chemistry and Society

ESTIMATED NUMBER OF SECTIONS:
Fall: 1
Spring: 2

APPLICATION IS FOR:
☐ New Course ☐ Modified Course ☒ Existing Course ☐ Re-designation

☐ Certification x Re-Certification. Date of last certification:

DIVERSIFICATION AREA DESIGNATION SOUGHT:
☐ DA (Arts) ☐ DB (Biological Sciences) ☐ DH (Humanities) ☐ DL (Literature and Language)
☐ DP (Physical Sciences) ☐ DS (Social Sciences) x DY (Laboratory)

What percentage of the CONTENT of this course focuses on this diversification area? 90

What percentage of CLASS MEETINGS focuses on this diversification area? 90
Guidelines and explanatory notes for the following questions are located at the end of this document.

1. **Hallmarks and SLOs.** Please explain how course-specific SLOs align with the diversification area’s hallmarks.

   - **DY.1** uses the laboratory methods of the biological or physical sciences;
   
   - **SLO 1** Demonstrate skills in employing the scientific method.
   
   - **SLO 2** Demonstrate techniques and concepts of laboratory experimentation.

Both SLOs 1 and 2 address methods used in the laboratory in the skills like setting up an experiment, formulating a question and a plan to answer that question, collecting data, and analyzing those data. Furthermore, the scientific method is the method used in physical science justifying SLO 1 and the techniques used in experimentation for chemistry are those for a physical science because chemistry is a physical science.

   - **DY.2** involves processes and issues of design, testing, and measurement;
   
   - **SLO 2** Demonstrate techniques and concepts of laboratory experimentation.
   
   - **SLO 3** Demonstrate understanding of the limitations of measurements and the importance of careful observations.

   SLO 2 covers techniques and concepts involved in conducting laboratory experiments in chemistry, students are taught how to test a hypothesis by designing an experiment, collect data via measurements, analyze data, and draw conclusions. SLO 3 covers the limits of measurements so the students must design experiments around those limitations. All of the points in the hallmark are covered in SLO3

   - **DY.3** demonstrates the strengths and limitations of the scientific method.
   
   - **SLO 3** Demonstrate understanding of the limitations of measurements and the importance of careful observations.
   
   - **SLO 4** Perform experiments which demonstrate the chemicals, reactions and principles discussed in the lecture course.

For SLO 3, part of the limitations in science is in how effective the measurement is in terms of precision and accuracy. Also, error is a part of any experiment. These items all show the strengths and limitations in the application of the scientific method. For SLO 4, the lecture course involves the use of the scientific method. This lab course uses experiments to reinforce the concepts in the lecture. Included in this are the strengths and limitations of the scientific method.
2. **Assessment strategies.** Explain assessment strategies you have used (or plan to use) to measure the degree to which students exit the course with the course-specific SLOs. If there are multiple sections of the course taught by different instructors, please discuss how assessment is (or will be) carried out across instructors.

Assessment is completed in terms of formative assessments during the lab and summative laboratory reports. The formative assessment takes place during the laboratory and is used to ensure that safety and sustainability are foremost concerns. SLO 2 deals with techniques in laboratory experimentation. Safety and environmental consciousness is important to experimentation. The formative assessment also allows the instructor to dock points if a student is acting unsafely or if the student does something that may cause environmental damage like improper disposal of chemicals.

The laboratory reports assess how well the students understand the experiments and the specific concepts explored in the experiment. The experiments try to run parallel to the lecture course as much as possible. The remaining SLOs are tested directly in the laboratory reports. The methods used involve calculations, analysis of data, comparing different sets of data, and conclusions that a student would draw from those data.

At the end of the term, course evaluations are passed out where the students can assess the course instructor and content. The student evaluations give direct feedback to the course. There is only one instructor teaching this course per term. If there are more than one, then the instructors would meet to make sure the courses are congruent. This would be performed by each section having the same experiments, reports, and rubric for grading both the reports and formative assessments on safety and sustainability.

3. **Assessment of assessment.** How have you used (or plan to use) the assessment findings to modify or improve this course? If there are multiple sections of the course taught by different instructors, please discuss how review of assessment results is (or will be) carried out across instructors.

The results of the assessment have led the course to be changed so the content of the experiments more accurately parallel the lecture. As the lecture changes, so does the laboratory. Also, this course is designed specifically for non science majors. As such the experiments are not as difficult in terms of chemical skills and calculations as for the courses designed for science majors. Sometimes, the experiments are too difficult for the students in terms of the students having the rigor to analyze the data; therefore, the experiment will be replaced. Also, the experiments have changed to involve more the use of digital input/output devices such as thermometers attached to a data logger. This way the students will learn additional skills in rudimentary programming and in the use of digital input/output devices.

Assessment of assessment will happen on a semester-by-semester basis as the instructor looks back to the data from students’ performance. This also requires many formative assessments to the students’ skills in the laboratory as well as the relevance of the lab topics. Also not noted before is the need to improve safety in terms of hazardous waste management, personal protective equipment, and engineering controls. These types of assessments happen after every lab,
especially if there is are any accidents or spills.
DIVERSIFICATION BOARD DECISION:

☑ Approved
   Re-Certification Due: **SP 2017**

☐ Not approved
   If not approved, reasons for disapproval:

Diversification Board Chair Signature: ____________________________
Date: 5/29/19
Chem 100L
Course Outline

General Description of Course:

Experiments illustrating the role of chemistry in society to the nonscientist.

This course fulfills a physical science lab requirement for Honolulu CC for the AA degree, and a DY requirement for UHM

Upon successful completion of CHEM 100L

* Demonstrate skills in employing the scientific method.
* Demonstrate understanding of the techniques and concepts of laboratory experimentation.
* Demonstrate an understanding of the limitations of measurements and the importance of careful observations.
* Perform experiments which demonstrate the chemicals, reactions and principles discussed in the lecture course

Grading:

The student’s grades will be determined by the laboratory reports and a grade for safety and environmental consciousness. Laboratory reports are due a week after the experiment at the beginning of lab. Late labs will be docked a letter grade per day late. More than one absence from a lab will result in the failure of the course. Any types of academic dishonesty including cheating or plagiarism will result in the failure of the course.

Special note on safety: this is a laboratory course; so safe lab practices must always be in effect. Students participating in unsafe lab practices like improper personal protective equipment or mishandling of chemicals may either be docked 1-5% of the semester grade, be expelled from the lab with no chance of a make up and/or face other sanctions decided by the instructor. Every participant in the lab must have personal protective equipment when chemicals are present in the laboratory. If a student does not have proper personal protective equipment at the start of class he or she will be asked to leave the laboratory. Personal protective equipment includes safety glasses, closed toe shoes, pants (covering the knee) and shirts with sleeves.

10% of the semester grade will be tied to safety and environmental consciousness. A student will receive all marks unless he or she engages in unsafe behavior. In order to care for the Earth, environmental consciousness will also be a part of the lab grade. Improper disposal of laboratory waste will result in a loss of marks. Improper cleaning of lab station and/or
Course Grades:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>100-90%</td>
</tr>
<tr>
<td>B</td>
<td>89-80%</td>
</tr>
<tr>
<td>C</td>
<td>79-70%</td>
</tr>
<tr>
<td>D</td>
<td>69-60%</td>
</tr>
<tr>
<td>F</td>
<td>Below 60</td>
</tr>
</tbody>
</table>

Student ACCESS:

**Web Site:** http://honolulu.hawaii.edu/disability

Student ACCESS provides coordinated services to help students with documented disabilities achieve their educational goals. Students requiring disability accommodations should submit requests in advance to HCC's Student ACCESS Office with appropriate disability documentation. For more information visit the Student ACCESS web site or call 844-2392 (voice/text).

Academic Dishonesty:

**Academic Dishonesty:** Academic dishonesty cannot be condoned by the University. Such dishonesty includes cheating and plagiarism (examples of which are given below), which violate the Student Conduct Code and may result in expulsion from the University.

**Cheating** includes, but is not limited to:
- giving or receiving unauthorized assistance during an examination;
- obtaining unauthorized information about an examination before it is given;
- using inappropriate or unallowable sources of information during an examination;
- falsifying data in experiments and other research;
- altering the record of any grade;
- altering answers after an examination has been submitted;
- falsifying any official University record; or,
- misrepresenting the facts in order to obtain exemptions from course requirements.

**Plagiarism** includes, but is not limited to:
- submitting, in fulfillment of an academic requirement, any document that has been copied in whole or in part from another individual's work without attributing that borrowed portion to the individual;
- neglecting to identify as a quotation another's idea and particular phrasing that was not assimilated into the student's language and style or paraphrasing a passage so that the reader is misled as to the source;
- submitting the same written or oral material in more than one course without obtaining authorization from the instructors involved; or,
- drylabbing, which includes obtaining and using experimental data and laboratory
write-ups from other sections of the course or from previous terms, or fabricating data to fit the desired or expected results.

Copies of the Student Conduct Code are available at the HCC Office of the Dean of Student Services.

Native Hawaiian Values

An understanding within the course is that the instructor and students will form a community where the following values will be upheld:

Aloha – Love, compassion, charity etc.

Laulima – To work together, Cooperation. "Many hands make light work"

Lokahi – Unity, Harmony, Agreement etc.

Malama – To take care of, care for, Preserve, Protect etc.

Kuleana – Responsibility, Rights, Privilege etc.

'Ike – Knowledge, Awareness and/or Understanding

Tentative lab schedule:

<table>
<thead>
<tr>
<th>Date</th>
<th>Lab Topic</th>
<th>Safety Equipment needed?</th>
</tr>
</thead>
<tbody>
<tr>
<td>8/23</td>
<td>Safety</td>
<td>No</td>
</tr>
<tr>
<td>8/30</td>
<td>Measurements</td>
<td>No</td>
</tr>
<tr>
<td>9/6</td>
<td>Physical and Chemical Properties</td>
<td>Yes</td>
</tr>
<tr>
<td>9/13</td>
<td>Tie dye – bring a white cloth or shirt to tie dye</td>
<td>Glasses Only</td>
</tr>
<tr>
<td>9/20</td>
<td>Sunscreens</td>
<td>No</td>
</tr>
<tr>
<td>9/27</td>
<td>Models</td>
<td>No</td>
</tr>
<tr>
<td>10/4</td>
<td>Nuclear</td>
<td>No</td>
</tr>
<tr>
<td>10/11</td>
<td>Moles</td>
<td>No</td>
</tr>
<tr>
<td>10/18</td>
<td>Baking Soda</td>
<td>Yes</td>
</tr>
<tr>
<td>10/25</td>
<td>Vinegar</td>
<td>Yes</td>
</tr>
<tr>
<td>11/1</td>
<td>Soap</td>
<td>Yes</td>
</tr>
<tr>
<td>11/8</td>
<td>Aspirin</td>
<td>Yes</td>
</tr>
<tr>
<td>11/15</td>
<td>Plastics</td>
<td>Yes</td>
</tr>
<tr>
<td>11/22</td>
<td>Thanksgiving (eat turkey)</td>
<td></td>
</tr>
<tr>
<td>11/29</td>
<td>MSDS Lab</td>
<td>No</td>
</tr>
<tr>
<td>12/5</td>
<td>No Lab – meet to hand in all missing reports</td>
<td>No</td>
</tr>
</tbody>
</table>