

## Request for Courses in the Core Curriculum

Originating Department or College: Department of Biology and Chemistry, College of Arts and Sciences

Person Making Request: Kameron Jorgensen

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Course Number and Title: CHEM 1111 General Chemistry I Lab

Please attach in separate documents:

Completed Catalog Add/Change Form

Syllabus

List the student learning outcomes for the course (Statements of what students will know and/or be able to do as a result of taking this course. See appended hints for constructing these statements.)

**Student Learning Outcomes:** Upon the conclusion of the course the students will be able to:

1. Design and conduct experiments, make observations and draw conclusions based on observations or data collected.
2. Solve quantitative problems involving unit conversions, chemical formulas and equations.
3. Display scientific data visually in an effective manner (graphs, figure, tables).
4. Demonstrate a basic understanding of laboratory techniques, safety regulations and waste disposal.
5. Perform the basic laboratory skills including: transfer and measurement of chemicals, filtration, solution preparation, mass percent determination, titrations, redox reactions, enthalpy of reactions, spectrochemical analysis, and gas stoichiometry applications in an undergraduate laboratory.

**Core-Curriculum Learning Outcomes:**

1. Critical Thinking: includes creative thinking, innovation, inquiry and analysis, evaluation, and synthesis of information. (SLOs: 1, 2)
2. Communication Skills: Students will demonstrate their ability to communicate effectively by using visual communication. (SLOs: 3)
3. Empirical and Quantitative Skills: includes the manipulation and analysis of numerical data or observable facts resulting in informed conclusions. (SLOs: 2, 3, 5)

Component Area for which the course is being proposed (check one):

Communication

American History

Mathematics

Government/Political Science

Language, Philosophy, & Culture

Social & Behavioral Science

Creative Arts

Component Area Option

Life & Physical Sciences

Competency areas addressed by the course (refer to the appended chart for competencies that are required and optional in each component area):

Critical Thinking

Teamwork

Communication Skills

Personal Responsibility

Written Communication

Social Responsibility

Oral Communication

Visual Communication

Empirical & Quantitative Skills

Because we will be assessing student learning outcomes across multiple core courses, assessment assigned in your course must include assessment of the core competencies. For each competency checked above, indicate the specific course assignment(s) which, when completed by students, will provide evidence of the competency. Provide detailed information, such as copies of the paper or project assignment, copies of individual test items, etc. A single assignment may be used to provide data for multiple competencies.

Critical Thinking:

During the "Separation of Components of a Mixture" lab, students will perform an experiment to separate 3 mixed chemical compounds. The students will use their critical thinking skills during the written lab report where they will explain how to apply these separation methodologies to separate other chemical mixtures, including some processes that are commonly used in manufacturing. A critical thinking rubric with domains for creative thinking, depth of inquiry, evaluation of importance and synthesis of information can be scored during the presentation by the instructor, or the written lab report can be up loaded for evaluation by the Core Curriculum Assessment Committee.

Communication Skills:

Upon the completion of the "Separation of Components of a Mixture" lab each student will write a 4 page lab report addressing critical thinking questions concerning the experiment and applications of these experimental methodologies. The instructor can score the written lab report for organization, focus, style and grammar using a modified WIN rubric, or the report can be up loaded for evaluation by the Core Curriculum Assessment Committee.

Empirical & Quantitative Skills:

During the "Separation of Components of a Mixture" lab, students will be asked to calculate percent yield and percent composition of the component products as well as percent error for the separation experiment. They will need to utilize the molecular masses and chemical formulas of each compound in order to perform these calculations. The instructor can assess the logical reasoning behind the calculations and the appropriateness of the statistical analysis, or the written lab report can be up loaded for evaluation by the Core Curriculum Assessment Committee.

Teamwork:

N/A

Personal Responsibility:

N/A

Social Responsibility:

N/A

Will the syllabus vary across multiple sections of the course?     Yes                             No

If yes, list the assignments that will be constant across the sections:

In each section, the first 5 student learning outcomes and the assignments described for assessment will be consistent across sections.

Inclusion in the core is contingent upon the course being offered and taught at least once every other academic year. Courses will be reviewed for renewal every five (5) years.

The department understands that instructors will be expected to provide student work and to participate in university-wide assessments of student work. This could include, but may not be limited to, designing instruments such as rubrics, and scoring work by students in this or other courses. In addition, instructors of core courses may be asked to include brief assessment activities in their courses.

Reviewed and approved by the Core Curriculum Committee on February 13, 2013.