

Request for Courses in the Core Curriculum

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

Person Making Request: Anju Gupta

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Course Number and Title: CHEM 1170 Survey of Chemistry 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 that will be used in future advanced laboratory courses.
6. Identify the important concepts introduced within CHEM 1370 by applying them in practice.
7. Identify types of chemical reactions and understand the relationships between reactions and the amounts of substances involved in the reaction.
8. Deduce relationship between the pH of a solution and its acidity or basicity.
9. Demonstrate a basic understanding of methods involved in organic and polymer chemistry.

Core-Curriculum Learning Outcomes:

1. Critical Thinking: includes creative thinking, innovation, inquiry and analysis, evaluation, and synthesis of information. (SLOs: 1, 5, 7)
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: 1, 2)

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):

- | | |
|---|--|
| <input checked="" type="checkbox"/> Critical Thinking | <input type="checkbox"/> Teamwork |
| <input type="checkbox"/> Communication Skills | <input type="checkbox"/> Personal Responsibility |
| <input type="checkbox"/> Written Communication | <input type="checkbox"/> Social Responsibility |
| <input type="checkbox"/> Oral Communication | |
| <input checked="" type="checkbox"/> Visual Communication | |
| <input checked="" type="checkbox"/> 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 “Graphing Gas-Law Relationship” assignment, students will examine the relationship between the volume of a gas and its temperature. Students will perform an experiment testing this relationship and be asked to extrapolate from their findings and apply their findings to a real-world example (the movement of a piston in a gas powered engine). A critical thinking rubric with domains for creative thinking, depth of inquiry, evaluation of importance and synthesis of information can be scored by the instructor from the lab report, or the lab report can be up loaded for evaluation by the Core Curriculum Assessment Committee.

Communication Skills:

During the “Graphing Gas-Law Relationship” assignment, students will produce graphs describing the empirical relationship between gas volume and temperature from their results as well as the theoretical relationship within a piston based on data provided. In the lab report, the students are asked to describe the mathematical proportion represented by the graph. The instructor can score a rubric for each student assessing the graphical representation of the data based on appropriateness of the axis, scale, organization and effectiveness of the titles and labels, or the lab report can be up loaded for evaluation by the Core Curriculum Assessment Committee.

Empirical & Quantitative Skills:

During the “Graphing Gas-Law Relationship” assignment, students will calculate the mathematical relationship between gas temperature and volume and express the empirically derived relationship in the form of a mathematical equation. They will also convert units of measurement for both temperature and pressure. The instructor can assess the logical reasoning behind the calculation and extrapolations, or the 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:

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.