

Request for Courses in the Core Curriculum

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

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Course Number and Title: BIOL 1306 - Principles of Biology I (Cell and Molecular Biology)

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 successful completion of this course, students will be able to:

1. Apply critical thinking to examine primary literature concerning molecular biology in order to effectively defend a conclusion.
2. Use the scientific method to design an experiment and analyze a data set to determine a conclusion.
3. Demonstrate effective technical communication skills.
4. Collaborate effectively on a research project and on a presentation of scientific results
5. Describe the structure and function of biological molecules
6. Describe cellular processes and function.
7. Explain the principles of evolutionary theory.

**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 written communication. (SLOs: 3 & 4)
3. Empirical and Quantitative Skills: includes the manipulation and analysis of numerical data or observable facts resulting in informed conclusions. (SLOs: 2)
4. Teamwork: includes the ability to work effectively with others to support a shared goal. (SLOs: 4)

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:

Students will be assigned a "Paper Presentation" project in which groups of four students will construct a 10 minute oral presentation on a current (within the last 4 years) scientific paper (approved by the instructor) in the field of molecular biology. The students will use critical thinking skills to evaluate the experimental approach, the importance of the finding with regards to biology and the public in general and to develop the next reasonable experiment for the given field of study. 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 powerpoint presentations can be up loaded for evaluation by the Core Curriculum Assessment Committee.

#### Communication Skills:

The same "Paper Presentation" can be used to assess oral communication skills as well. The 10 minute presentation will require verbal delivery of concepts by each team member. Video of the presentation can be uploaded, or the instructor can score each presenter using an oral communication rubric with domains covering grammar, organization and clarity.

#### Empirical & Quantitative Skills:

On the final exam, students will be given a graph indicating the change of mass in 5 dialysis bags containing a sucrose solution. They will be asked the question "If each of the bags contained 10ml of a sucrose solution at equal concentration, then calculate how many grams of sucrose are in each bag given that the molecular weight of sucrose is 342g?" The student will have to calculate the molarity of the sucrose solution based on the change in mass due to osmosis under each condition and then convert molarity to grams of sucrose. The instructor can assess the logical reasoning behind the calculation and extrapolations, or the students' answers can be up loaded for evaluation by the Core Curriculum Assessment Committee.

#### Teamwork:

The same "Paper Presentation" can be used to assess teamwork as well. The students will be given a survey to assess their participation on the project as well as an evaluation of their each member's contribution.

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.