

**The Ohio State University  
General Education Curriculum (GEC)  
Request for Course Approval Summary Sheet**

1. Academic Unit(s) Submitting Request

Entomology

2. Book 3/Registrar's Listing and Number (e.g., Arabic 367, English 110, Natural Resources 222)

Biology 103

3. GEC area(s) for which course is to be considered (e.g., Category 4. Social Science, Section A. Individuals and Groups; and Category 6. Diversity Experiences, Section B. International Issues, Non-Western or Global Course)

Second course of biological science sequence and second course in cluster with Chemistry 100 under natural sciences category

4. Attach:

- A statement as to how this course meets the general principles of the GEC Model Curriculum and the specific goals of the category(ies) for which it is being proposed;
- An assessment plan for the course; and
- The syllabus, which should include the category(ies) that it satisfies and objectives which state how this course meets the goals/objectives of the specific GEC category(ies).

5. Proposed Effective Date January 1, 2008

6. If your unit has faculty members on any of the regional campuses, have they been consulted? \_\_\_\_\_

7. Select the appropriate descriptor for this GEC request:


Existing course with no changes to the *Course Offerings Bulletin* information. Required documentation is this GEC summary sheet and the course syllabus.

Existing course with changes to the *Course Offerings Bulletin* information. Required documentation is this GEC summary sheet, the course change request, and the course syllabus.

**XX**  New course. Required documentation is this summary sheet, the new course request, and the course syllabus.

For ASC units, after approval by the academic unit, the documentation should be forwarded to the ASC Curriculum Office for consideration by the appropriate college curriculum committee and the Arts and Sciences Committee on Curriculum and Instruction (CCI). For other units, the course should be approved by the unit, college curriculum committee, and college office, if applicable, before forwarding to the ASC Curriculum Office. E-mail the syllabi and supporting documentation to [ascurofc@osu.edu](mailto:ascurofc@osu.edu).

9. Approval Signatures

  
Academic Unit

10/18/07  
Date

College Office/College Curriculum Committee

Date

Colleges of the Arts and Sciences Committee on Curriculum and Instruction

Date

## **How Biology 103 meets the General *Learning Objectives* for Natural Sciences**

### **1. *To understand basic principles and facts and their interrelationships.***

The course is structured to identify and explicate several major themes that would normally be found in an introductory biology course. They include:

- Cell structure and evolution
- Cellular energetics
- Evolution
- Ecology
- DNA structure & function

The lectures that address these topics are not divided into separate sections as would typically be done in an introductory course. Rather, these major biological themes are interwoven in individual lectures. For instance, four themes appear in the lectures on oxygen. Here, evolution is recounted, not just in biological terms, but chemical and geological evolution is addressed as well. Further, cellular structure and energetics are explicitly addressed in the origin of life lectures as is ecology when students are asked to understand the reciprocal ecological relationship between photosynthetic organisms and respiratory activity of all organisms. Thus, the lectures both instruct the students about the major themes of biology and explain the interrelationships between other areas of biology. One of the strengths of the cluster format is to extend this interweaving of themes to include relevant chemistry.

### **2. *To understand when, where and how principles and facts were discovered and impact on methods of science***

Experience with other introductory biology courses has shown that, despite rigorous coverage of the foundations of science, the scientific method and its history, and exploration of how scientific thought is different from other types of thought, students memorize enough to pass exams and fail to process and internalize the information. Such students emerge from their science classes with no real understanding of what it means when we say science is "evidence based" or that scientific thought is different from belief. Biology 103 will take this thorny issue on as a major focus in the recitation section. Students will be asked to read articles or analyze DVDs, prepared by the instructor, that address the history of scientific thought, the nature of science (and other modes of thought), scientific literacy and the relationship between science and technology. In addition, students will learn about and examine several current controversies, e.g., religion and science and stem cells and cloning. They will be asked to apply the principles of science to an examination of these issues. They will be graded on their participation and short writing assignments based on these exercises.

### *3. To understand the interaction between science and technology*

This issue will be explicitly addressed in the recitation section. First the, history of scientific thought will be traced and, in so doing, the nexus between science and technology will be explored. Several historically interesting examples will be given and discussed. For example, the article by Stephen J. Gould (The Great Asymmetry, recitation week 2) discusses how unsavory technical applications of science have led the public to distrust science. The specific example he uses to illustrate this point is a problem encountered by the executioner during the French Revolution in meeting the heavy demand to execute prisoners. His solution, an advance in technology, is suggested by the executioner's surname: Guillotin. The articles and DVDs have been carefully chosen to ignite interest and facilitate discussion.

### *4. To understand the social and philosophical implications of major scientific discoveries*

This goal will be addressed in both lecture and recitation. As basic biological themes are being covered in lecture, social and philosophical themes are interspersed. For instance, as carbon-based biological chemistry is covered, the ecological impact of the basic information will be embedded in the lectures as will the social consequences of that impact. Thus, global warming (introduced in Chemistry 100) will be revisited from a biological perspective as will measuring one's biological carbon footprint. The consequences of choices we might make and the political ramifications will be explored.

I believe that students come to us with a variety of skills which I, as a teacher, can use to teach biology. Non-majors will probably not have great interest or competence in science. However, they may have great interest in the arts (broadly defined) or technology. Biology 103 allows students to utilize such skills to explore and learn biology. The quarter-long project is an expression of this philosophy. Instead of having students do a project that is explicitly science-based, students can choose a modality that is of interest to them individually and use it to make connections between chemistry and biology.

### **GEC Model Curriculum: Assessment Plan:**

To assess if the students are achieving these learning objectives, three exams will contain questions that address require students to demonstrate an understanding of the learning objectives. Short papers completed for recitation as well as the quarter project will also be reviewed for evidence of achievement of learning objectives. Results of the review of the embedded questions, papers and projects will be used to modify the course as needed.