Expedited Application for Existing General Education Courses

College: Arts and Sciences
Department or Program: Biology
Sponsor: Sherri Bergsten
Sponsor Phone: X1772
Sponsor email: seberg@ship.edu
Course Title: Basic Biology
Course Number: BIO100

Catalog Course Description: Deals with the principles of biology. Topics include evolution and origins of life, cellular structure and physiology, growth and repair, reproduction and development, control, sources of food energy, inheritance, and human inter-relationship with the biological environment. Not open to biology majors. Three hours of lecture/week. Credit earned in this course is not applicable to credits required of the biology major.

Proposed Program Goal: Natural World

Please describe how the course addresses the learning objectives associated with the requested program goal, outlining multiple opportunities for students to meet learning outcomes.

Scientific Method: Students will be given opportunities to understand and apply the Scientific Method through a dedicated lecture at the beginning of the semester, discussion during other lectures of specific experiments that have led to biological principles (see below), and in class activities that involve reading excerpts from primary literature and/or coming up with ideas for additional experiments (Analysis of Low Carb Diets, Simulated Biotech Project, Biodiversity in the News, Studying the Genetics of Addiction, Experimental Evidence on Developmental Toxins, Causes and Solutions for Antibiotic Resistance).

Scientific Principles: Key biological principles will be described during lecture including cell theory and energetics, the model for DNA structure and replication, the central dogma of molecular biology DNA→RNA→protein, chromosomal theory of inheritance, Mendelian genetics, evolution, and basic physiology. Concepts will be emphasized through review of material during small group activities (Cellular Energetics, Transcription and Translation Art, Playdoh Chromosomes, Debating Evolution).

Data and Problem-Solving: Data from specific experiments that have led to biological principles will be covered in lecture as well as examples of recent work in biotechnology and human health/disease. One in class writing assignment will require analysis of data from a study on genetics of addiction. Several small group activities will be based on problem-solving (Chemistry Problem Set, Simulated Biotech Project, Genetic Counselor for a Day) or data analysis (Analysis of Low Carb Diets, Biodiversity in the News, Experimental Evidence on Developmental Toxins, Causes and Solutions for Antibiotic Resistance).
Please discuss the assessment plan for the course, including brief description of assignments that could be assessed with the associated rubric.

Scientific Method: Exam 1 as well as the final exam will have a series of multiple choice questions designed to assess understanding of the scientific method, using the number of correctly answered questions to determine the level of competency. The small group activity on Analysis of Low Carbohydrate Diets will assess the ability to design a well-controlled experiment. The small group activity on Experimental Evidence on Development Toxins will assess whether students can determine the quality of an experiment.

Scientific Principles: Multiple choice questions on exams will assess understanding of key biological principles, with particular questions aimed at particular levels of competency. Additional assessment will be done through grading of several of the relevant small group activities listed above.

Data and Problem-Solving: A set of multiple choice questions from exams that require data analysis or problem-solving will be chosen for assessment, with particular questions aimed at particular levels of competency. Problem-solving will be further assessed through small group activities like the Chemistry Problem Set and Genetics Counselor for a Day. Data analysis will be further assessed through the writing assignment on Genetics of Addiction.

Please attach an example syllabus.