Course Outcomes Guide (COG)

Directions: Please complete this form to document your progress toward improving student learning. For each item, indicate your progress and your anticipated next steps. Thank you!

Course Title: Bio 201 Spring 2014 **Date: 5/13/14**

Course Team: Lennon

Expected Learning Outcomes
STUDENT LEARNING OUTCOMES:

1. Apply a basic core of scientific and quantitative knowledge to enhance understanding of cell structure and function at the molecular level.
2. Develop and maintain a notebook of laboratory records.
3. Utilize laboratory skills to enhance understanding of cell structure and function while participating in a group environment.

COURSE CONTENT OBJECTIVES:

1. Build on the fundamental concepts of cell structure and function from previous study to include:
    a. the relationship between molecular structure and function.
    b. the dynamic character of cellular organelles.
    c. the use of chemical energy in running cellular activities.
    d. ensuring accurate macromolecular biosynthesis.
    e. unity and diversity at the macromolecular and cellular levels and the relationship to adaptation through time.
    f. homeostatic mechanisms that regulate cellular activity.
2. Relate experimental processes and evidence to the knowledge of cell structure and function that is being learned.
3. Relate the molecular and sub-cellular components of a cell to a framework of heredity and evolution.
4. Integrate classical research findings to current hands-on experiences with the latest biotechnology and information technology.

Assessment (How do or will students demonstrate achievement of each outcome? Please attach a copy of your assessment electronically.)

- Assessment of lecture learning content:
    - 3 multiple choice, true/false, short answer, and essay exams (100 pts each)
    - 1 cumulative final exam (100 pts)
    - Worksheet/quiz for each chapter covered (points vary)

    - Presentation of an original research paper related to course content. (25 pts)
- Assessment of lab learning content:
    - 8 lab reports in lab notebook (varying points value)
    - 3 experimental design activities (15 pts each)
    - 1 final project involving design of experiment, carrying out of experiment, and presentation to class (35 pts)

Grades were determined as follows:

Exams were worth 50% of the final grade
Lecture work was worth 20% of the final grade
Lab was worth 30% of the final grade

Validation (What methods have you used or will you use to validate your assessment?)
A variety of assessment strategies were employed to address student strengths, weaknesses, and assessment preferences. No one type of tool was used, allowing the student to demonstrate proficiency more fully.

Rubrics are created for each assignment/exercise, and students are given access to the rubrics used to assess their work, often prior to the work being due.

Results (What do your assessment data show? If you have not yet assessed student achievement of your learning outcomes, when is assessment planned?)

Avg Exam I	Avg Exam II	Avg Exam III	Avg Final Exam	Avg Lab Grade
76%	**70%**	**77%**	**88%**	**83.7%%**

%A	%B	%C	%D	%F	Avg Course Grade
20%	**40%**	**40%**	**0%**	**0%**	**82.4%**

Students were given a pre-test to assess retention of knowledge from Introductory Biology/General Biology class: Student average score was: 73%

Follow-up (How have you used or how will you use the data to improve student learning?)
As this was the first time through this class, with very little lead time, it is expected that these initial scores will shift when the course is taught again.
I would expect a very high success rate in this upper level, majors class. Data support this expectation.
I plan to create a pre-/post-test assessment tool to gauge student understanding and give me the ability to compare learning across semesters.

Budget Justification (What resources are necessary to improve student learning?)
Class will require supplies to support labs.
Labs focus on increasing students' understanding of the nature of science, including experimental design, carrying out of experiments, data analysis, and presentation of results.
Supplies need to be flexible to support student-designed experiments.
Request funds to allow students to print research posters.