

Course Outcomes Guide

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/Program Title: BTC-201 Discovery Research/ Biotechnology Program

Date: August 22, 2013

Course/Program Team: Alicia Manfre, Rebecca Beecroft, Judith Peisen, Cindy Dove

Expected Learning Outcomes

1. Apply a basic core of scientific and quantitative knowledge to enhance understanding of DNA, RNA, protein and tissue culture related to advancement in biotechnology related to research.
2. Develop and maintain a notebook of laboratory records.
3. Analyze and evaluate the effect of variables on experimental results including enzymes, assay parameters and sample concentration while participating in a group environment.
4. Relate different biotechnology skills to various career paths.

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

- Apply a basic core of scientific and quantitative knowledge to enhance understanding of DNA, RNA, protein and tissue culture related to advancement in biotechnology related to research
 - Each week the students will learn a new laboratory skill designed to enhance their scientific and quantitative knowledge of the various topics of biotechnology
 - The students will be required to complete homework assignments pertaining to the information that will be learned during the laboratory component of the course. This will allow the instructor to determine if the students comprehend the material presented during the lecture component of the course.
- Develop and maintain a notebook of laboratory records
 - Laboratory notebooks will be kept by the student to document what skills they learn each week during the course of the semester.
- Analyze and evaluate the effect of variables on experimental results including enzymes, assay parameters and sample concentration while participating in a group environment.
 - The students will perform various laboratory exercises throughout the semester that will involve the analysis of variables on experimental results.
 - The students work in groups of three to four during the lab component of this course. They are graded each week on a scale of 1 to 5 (1 = lowest; 5 = highest) as to how they work in a group

- Relate different biotechnology skills to various career paths
 - The lab skills learned in this class will be discussed and related to various biotechnology career paths.

Validation (What methods have you used or will you use to validate your assessment?)

In Progress, Working with Rebecca Kendrick to develop a validation approach

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

- In Fall 2012 I included a large data analysis portion for the quantitative real time PCR module. The students really struggled with this section and scored very low on the exam for this module (average 64%). Students most struggled with proper graphing skills and the ability to relate data to developing a conclusion. After seeing the grades on this module, we spent another class period working through the analysis and I allowed them to re-take that section of the exam for additional credit. The new average (with the extra credit) brought their scores to an average of 76%.

Follow-up (How have you used or how will you use the data to improve student learning?)

- I used the lab notebooks as part of an open book exam for BIO 201 in Spring 2013, with great success. I plan to use lab notebooks in Fall 2013 for BTC 201 lab exams to reinforce learning outcome #2.
- Given the struggle of the students last fall to understand data analysis I plan to spend more time working with them on the module and giving an additional homework assignment to help me gauge their understanding prior to the exam. Also, (as a recommendation from the students) I will have laptops in class when we first go over the material so they can work with me as we go along to manipulate the numbers and properly analyze the data with me side by side .

Budget Justification (What resources are necessary to improve student learning?)

None at this time

Course: BTC 201

SLOA Data

Faculty Team: A. Manfre

	SU 2009	FA 2009	SP 2010	SU 2010	FA 2010	SP 2011	SU 2011	FA 2011	SP 2012	SU 2012	FA 2012	SP 2013	SU 2013
# Active students		9			10			17			13		
% W		0%			0%			23.5% n=4			15.4% n=2		
*% walk-away Fs No final exam/grade = F		0%			0%			0%			0%		
% Success (A,B,C)		81.9%			80%			70.5%			100%		
Mean Common Lab Practical Score								78.6% n=13			73.4% n=11		
Common Comprehensive Final Exam Score								69.6% n=13			73.1% n=11		
Mean course grade		2.80			3.00			2.92			3.27		
Item Analysis Weakest Content Areas											Data analysis		

*% Walk-away Fs = Did not take the final exam and received a grade of F.

Highlighted cells indicate information that I do not have data (A. Manfre)