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-101 Introduction to Biotechnology/ Biotechnology Program

Date: October 10, 2014

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Expected Learning Outcomes
1. Student will be able to relate aspects of biotechnology to societal services and personal career choices.
2. Students will apply a basic core of scientific and quantitative knowledge in problem-solving and knowledge of biological molecules.
3. Students will use computers to access scientific information, analyze and solve problems and explore ethical issues in biotechnology.
4. Students will access, process, analyze and synthesize scientific information.

Assessment (How do or will students demonstrate achievement of each outcome? Please attach a copy of your assessment electronically.)
- Relate aspects of biotechnology to society and personal career choices.
  - Discuss various career options during lectures throughout semester.
- Apply a basic core of scientific and quantitative knowledge in problem-solving and biotechnology procedures.
  - Students are required to do homework assignments with questions designed to train them in problem solving skills.
  - Quantitative knowledge is assessed by calculation based in-class and homework assignments
  - Core knowledge of biotechnology procedures is assessed by exams that measure the student's knowledge and understanding of the fundamental principles of basic biotechnology
- Use technology to access scientific information, generate and analyze empirical data, and solve problems.
  - Students will exhibit mastery of basic skills required for employment in biotechnology including: mathematical problem solving, pipetting, and solution preparation.
  - Compare and contrast the structure and function of nucleic acids and proteins and the processes used to study them.
- Common assessment exam given at the end of the semester to compare student learning between courses taught by different instructors.

Validation (What methods have you used or will you use to validate your assessment?)
- A paired t-test was performed to compare pre- and post-tests.
- No external validation has occurred.

Results (What do your assessment data show? If you have not yet assessed student achievement of your learning outcomes, when is assessment planned?)
- For the General Education Assessment, the scores at the beginning of the semester were 49.4% correct answers, compared to 85.9% at the end of the semester, showing an increase in comprehension of +36.5%.
- Students use take a pre-test on the first day of class and a post-test for their final exam. In all semester, students have shown significant improvement.

Follow-up (How have you used or how will you use the data to improve student learning?)
- New instructor is now the lead instructor for the course. In the transition between instructors the general education assessment was not completed. This will be done in Fall 2014.
- New instructor is using more hands-on activities to reach the wide audience of students taking this course. Students who plan to be a biotech major are required to take it along with students completing a gen ed science. This hands-on approach will hopefully give all involved a more balanced experience.

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

None at this time.

	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	FA 2013	SP 2014
# Active students	15	17	12	20	20	16	20	26	23	26	19	18	18	18	15
%W	0%	0%	8.3%	5%	0%	0%	5%	23.1%	8.7%	4%	0%	5.5%	5.5%	*	*
*% walk-away Fs	0%	5.9%	10.0%	0%	5.0%	6.25%	0%	0%	17.4%	0%	11%	5.5%	0%	*	*
% Success (A,B,C)	86.7%	82.3%	58.3%	75%	95%	75.1%	50%	65.3%	65.2%	96%	89%	89%	94%	*	*
Mean Common Lab Practical Score	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Common Comprehensive Final Exam Score	N/A	N/A	N/A	N/A	88.0% n = 18	78.5% n = 15	62.0% n=20	70.2% n=20	75.8% n=19	87.4% n=25	75.6% n=17	70.25% n=16	81.9% n=17	76% n=18	75.8% n=12
Mean course grade	2.86	2.41	2.18	2.79	3.30	2.44	1.88	2.68	2.29	3.12	2.84	2.76	2.94	*	*
Gen Ed Outcome Mean Score	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	67.2% n=14	68.3% n=25	63.75 n=17	73.75 n=16	85.86 n=17	Missing data	Missing data
Item Analysis **Weakest Content Areas**															

*need data from PIE