

Program Outcomes Guide (POG)

Program Title: Biotechnology Certificate

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Expected Program Learning Outcomes (PLO)

1. Understand and apply basic skills essential for following Standard Operating Procedures (SOP)
2. Develop and maintain a notebook of laboratory records
3. Analyze and evaluate the effect of variables on experimental results
4. Relate aspects of biotechnology to society and personal career choices

Assessment (How do students demonstrate achievement of these PLO?)

Course-level assessments. Currently, most of the content-driven PLO are assessed at the course-level as follows: Cumulative final exams, common assessment exams, lab practical exams, biotechnology skills assessments

Validation (What methods are used to validate your assessment?)

- Feedback from industry on necessary skills for graduation
- Comparison of common assessment data between multiple sections taught by different instructors of the same course

Results

1. Understand and apply basic skills essential for following Standard Operating Procedures (SOP)
 - a. Skills checklist was developed for use in BTC202 (Biomanufacturing)
2. Develop and maintain a notebook of laboratory records
 - a. Collection and review of notebooks in the following courses: BIO205 (Microbiology); BTC102 (Introduction to Applied Biotechnology Research); BTC201 (Discovery Research); BTC202 (Biomanufacturing) and BIO201 (Cell Biology & Genetics)
3. Analyze and evaluate the effect of variables on experimental results
 - a. Students enrolled in BTC201 (Discovery Research) participate in research experiments where they must understand the variables within those experiments and how they will impact their results. Students enrolled in BTC269 (Internship) are required to participate in a research project and complete necessary experimentation to answer a hypothesis.
4. Relate aspects of biotechnology to society and personal career choices
 - a. Done through lecture in BTC101 (Introduction to Biotechnology), BTC202 (Biomanufacturing) and BTC269 (Internship)
 - b. Done through the interview of a person working in biotechnology field and followed by a paper written about that person and the students career goals
5. Apply a basic core of scientific and quantitative knowledge to situations in a working laboratory
 - a. All laboratory classes offered by the biotechnology program address these issues: BTC102 (Introduction to Applied Biotechnology Research); BTC201 (Discovery Research); BTC202 (Biomanufacturing)

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

1. In my Spring 2013 BIO 201 I had the students use their notebook for an “open book” lab final. The response was overwhelmingly positive. Many of the students commented that having to use their notebook made them more aware of what information needed to be recorded in it and that it needs to be in an easily accessible format. I plan to use this technique in Fall 2013 for BTC 201 (Discovery Research) to reinforce PLO #2
- 2.

In progress or planned:

- Plan to use lab notebooks in Fall 2013 for BTC 201 to reinforce PLO #2.

Budget Justification