

## Program Outcomes Guide (POG)

**Program Title:** Biotechnology

**Program Team:** A. Manfre; J. Peisen; R. Beecroft; C. Dove; R. Nickerson

### 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. Effectively communicate and function as a professional laboratory team member
5. Relate aspects of biotechnology to society and personal career choices
6. Apply a basic core of scientific and quantitative knowledge to situations in a working laboratory

**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

- Understand and apply basic skills essential for following Standard Operating Procedures (SOP)
  - Skills checklist was developed for use in BTC202 (Biomanufacturing) and BTC269/270 (Internship)
  - Supervisor evaluation of students for BTC269 (Internship)
- Develop and maintain a notebook of laboratory records
  - Collection and review of notebooks in the following courses: BIO205 (Microbiology); BTC102 (Introduction to Applied Biotechnology Research); BTC201 (Discovery Research); BTC202 (Biomanufacturing); BTC269/270 (Internship)
- Analyze and evaluate the effect of variables on experimental results
  - Students enrolled in BTC269 (Internship) participate in research projects where they must develop analysis skills to determine the results of their experiments and the variables within those experiments
- Effectively communicate and function as a professional laboratory team member
  - Students enrolled in BTC269 (Internship) must learn to communicate with their co-workers and supervisors
  - Supervisors evaluate of students for BTC269 (Internship) and communication is one of the points they grade
- Relate aspects of biotechnology to society and personal career choices
  - Done through lecture in BTC101 (Introduction to Biotechnology) and BTC202 (Biomanufacturing)
  - 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
- Apply a basic core of scientific and quantitative knowledge to situations in a working laboratory
  - All laboratory classes offered by the biotechnology program address these issues: BTC102 (Introduction to Applied Biotechnology Research); BTC201 (Discovery Research); BTC202 (Biomanufacturing); BTC269/270 (Internship)

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

**In progress or planned:**

**Budget Justification**