# 2012-2013 Undergraduate Academic Assessment Plan

Microbiology and Cell Science

College of Agricultural and Life Sciences and

College of Liberal Arts and Sciences

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# College of Agricultural and Life Sciences and College of Liberal Arts and Sciences
## 2012-2013 Undergraduate Academic Assessment Plan

## Mission Statement

The Bachelor of Science in Microbiology and Cell Science offers a flexible curriculum that develops an in-depth knowledge base and understanding of concepts in microbiology, cell biology and the biomolecular sciences. By placing an emphasis on the application of the scientific method, the student gains an understanding of the biological world at the cellular and molecular levels. Students learn to evaluate hypotheses, interpret experimental data and to communicate results effectively.

The Microbiology and Cell Science program supports the missions of the University of Florida and the Colleges of Agricultural and Life Sciences and Liberal Arts and Sciences by providing a solid academic foundation in the biological sciences, in general, and in the specialties of our program that will enable students to secure gainful employment and make globally significant contributions in biological research and health-related professions. The program also provides excellent preparation for the pursuit of advanced studies in the biological and biomedical sciences, and in medicine and related areas.

## Student Learning Outcomes (SLOs)

Existing SLOs in the 2012-13 undergraduate catalog:

1. Knowledge of microbial classification, comparative physiology and metabolism, genetic information expression and cellular regulation, and mechanisms of hose and pathogen interaction.
2. Analyze experimental data and interpret results in the cellular and molecular sciences.
3. Demonstrate the ability to articulate experimental results clearly in speech and in writing in an accepted style of presentation.

Revised SLOs for the 2013-14 undergraduate catalog:

*Content*

1. Describe fundamental concepts, skills, and processes in microbiology, molecular biology, and in host/pathogen interactions.
2. Apply fundamental concepts, skills, and protocols used to conduct research in fields of microbiology, molecular biology, and in host/pathogen.

*Critical Thinking*

1. Evaluate information and data in the general areas of microbiology and the cellular/molecular biological sciences.
2. Solve typical problems that are encountered in general areas of microbiology and cellular/molecular biological sciences.

*Communication*

1. Communicate effectively in written form in a manner appropriate in the fields of microbiology and the cellular/molecular biological sciences.
2. Communicate orally (including visual aids) in an effective manner appropriate in the fields of microbiology and the cellular/molecular biological sciences.

| New/Revised SLOs, 2013-14* | Link to 2012-13* SLOs |
|---|---|
| Content | |
| Describe fundamental concepts, skills, and processes in microbiology, and in host/pathogen interactions. | Knowledge in microbial classification, comparative physiology and metabolism, genetic information expression and cellular regulation, and mechanisms of host and pathogen interaction. |
| Apply fundamental concepts, skills, and protocols used to conduct research in fields of microbiology, molecular biology, and in host/pathogen interactions. | |
| Critical Thinking | |
| Evaluate information and data in the general areas of microbiology and the cellular/molecular biological sciences. | Analyze experimental data and interpret results in the cellular and molecular sciences. |
| Solve typical problems that are encountered in general areas of microbiology and cellular/molecular biological sciences. | |
| Communication | |
| Communicate effectively in written form in a manner appropriate in the fields of microbiology and the cellular/molecular biological sciences. | Demonstrate the ability to articulate experimental results clearly in speech and in writing in an accepted style of presentation. |
| Communicate orally (including visual aids) in an effective manner appropriate in the fields of microbiology and the cellular/molecular biological sciences. | |

*undergraduate catalog date

## Curriculum Map

Curriculum Map for:

Microbiology and Cell Science CALS and CLAS

Key: **I**ntroduced **R**einforced **A**ssessed

| Courses<br>SLOs | AEC 3033C | AEC 3030C | MCB 3023 | MCB 3023L | MCB 4304 or PCB 4522 | MCB 4203 or PCB 4233 | MCB 4034L |
|---|---|---|---|---|---|---|---|
| **Content Knowledge** | | | | | | | |
| #1 | | | I, A | I, R | I, R, A<br>PCB4522: Genome Project; Essay exams in MCB4304 | I, R, **A**<br>Multiple choice exams | I, R |
| #2 | | | | I, R | I, R | I, R | I, R,<br>A = advanced lab project |
| **Critical Thinking** | | | | | | | |
| #1 | | | I | R | R,<br>A = PCB4522: Genome Project; Essay exams in MCB4304 | I, R | I, R,<br>A=Presentation |
| #2 | | | I | I, R,<br>A= Poster presentations | R | I, R | I, R, |
| **Communication** | | | | | | | |
| #1 | I,R<br>A = Course grade | | | | R | I, R | R |
| #2 | | I,R<br>A = Course grade | | R<br>Poster presentations | R | I, R | I, R |

## Assessment Cycle

SLOs will be assessed annually.

*Improvement Activities*: The Undergraduate Academic Assessment Committee comprised of the Undergraduate Curriculum Committee and all other faculty involved in the instruction of departmental core courses will meet no later than May 31st each year to review student learning outcomes for the preceding academic calendar year (summer, fall and spring semesters). The Committee will also be charged with developing a plan to address any short comings in the form of recommendations to instructors, the Departmental Chair and/or full faculty. The annual approach to assessment is reflected in the table below showing each year having assessment activity.

*Dissemination*: The recommendations will be presented to the Departmental Chair and/or full faculty for approval or modification by the start of the fall semester (August 1st).

## Assessment Cycle Chart

Assessment Cycle for:

Microbiology and Cell Science CALS and CLAS

Analysis and Interpretation: April – May of each year
Improvement Actions: Completed by May 31 of each year
Dissemination: Completed by August 1 of each year

| Year / SLOs | 10-11 | 11-12 | 12-13 | 13-14 | 14-15 | 15-16 |
|---|---|---|---|---|---|---|
| **Content Knowledge** | | | | | | |
| #1 | X | X | X | X | X | X |
| #2 | X | X | X | X | X | X |
| **Critical Thinking** | | | | | | |
| #3 | X | X | X | X | X | X |
| #4 | X | X | X | X | X | X |
| **Communication** | | | | | | |
| #5 | X | X | X | X | X | X |
| #6 | X | X | X | X | X | X |

# Methods and Procedures

## SLO Assessment Matrix for 2012-13

| 2012-13 Student Learning Outcome | Assessment Method | Measurement Procedure |
|---|---|---|
| Describe fundamental concepts, skills, and processes in microbiology, molecular biology, and in host/pathogen interactions. | Genome Project in PCB4522; Essay exams in MCB4304 | Rubric |
| Apply fundamental concepts, skills, and protocols used to conduct research in fields of microbiology, molecular biology, and in host/pathogen interactions. | Advanced lab project in MCB 4304L | Rubric |
| Evaluate information and data in the general areas of microbiology and the cellular/molecular biological sciences. | Genome Project in PCB4522; Essay exams in PCB4522; Presentation in MCB4304L | Rubric |
| Solve typical problems that are encountered in general areas of microbiology and cellular/molecular biological sciences. | Poster presentations in MCB3023L | Rubric |
| Communicate effectively in written form in a manner appropriate in the fields of microbiology and the cellular/molecular biological sciences. | AEC3033: Course grade | Rubric (example provided) |
| Communicate orally (including visual aids) in an effective manner appropriate in the fields of microbiology and the cellular/molecular biological sciences. | AEC3033: Course grade | Rubric |

*Direct Methods:*
Assessment of SLOs for the departmental core courses is shown in the Microbiology and Cell Science Curriculum Map above. The general strategy is to assess lecture courses by comparing the cumulative results of a pretest administered at the beginning of the course with the performance on the exams. Some instructors use either identical, or similar, questions from the exams on the pretest. Critical thinking will be assessed in the laboratory courses. As with lecture courses, a pretest will be administered and the results compared with final grades for the course. This approach of using pretest assessments will be most useful in relative comparisons over a series of years as the courses change content and format. Instructors will submit results of their assessments to the Program Coordinator of the Undergraduate Academic Oversight Committee, which will review the results on an annual basis.

A- The lecture courses required to conduct pretests included the following:
General Microbiology: MCB 3023 (General Microbiology)
Molecular Biology: MCB 4304 (Genetics of Microorganisms) and PCB 4522 (Molecular Genetics)
Host/Pathogen interactions: PCB 4233 (Immunology) and MCB 4203 (Bacterial and Viral Pathogens)

B-Laboratory courses required to conduct pretest assessments include the following:
MCB 3023L (General Microbiology Lab) and MCB 4304L (Advanced Lab, a combination of microbiological and molecular biological exercises)

Grades in AEC 3033C and AEC 3030C are used to assess achievement of the communication SLOs. In the technical writing courses all of the points awarded are for written work that is graded by rubric. An example rubric for a writing assignment is attached. In the oral communications courses all but 5% of the points awarded are based on oral presentations that are graded by rubric. Grades will be compiled by the Dean's office and provided to the Plant Science Coordinating Committee.

*Indirect Methods:*
Other methods to assess the program include 1) the annual evaluation of enrollment data, 2) retention/graduation rates and 3) a questionnaire for our majors. The enrollment numbers are influenced by factors both inside and external to the program, but provide a useful measure of program demand and competitiveness of the MCS program among competing majors. Retention/graduation rates are used a means of assessing student expectations for the program, enthusiasm for the curriculum and the capacity of the program to engage students at the appropriate preparedness-level in order to facilitate their progress towards the degree. The questionnaire is in the development stage and will be used to provide the Academic Oversight Committee with the opinions of students regarding the usefulness of the curriculum in preparing them for future careers, rigor and quality of the courses, effectiveness of the various presentation formats (*e.g.* formal lectures, group projects, assessment methods and distance learning).

## Assessment Oversight

This Academic Assessment Plan for the Microbiology and Cell Science will be overseen by a committee of 6 people including the program coordinator, with all members teaching in the program and serving on the Undergraduate Curriculum Committee. The responsibility of the Committee will be to conduct an annual review of SLO assessment data for the core curriculum and make recommendations to instructors, the Departmental Chair and full faculty, as appropriate, to ensure that high learning outcomes are achieved and maintained.

| Name | Department Affiliation | Email Address | Phone Number |
|---|---|---|---|
| William Gurley, Undergraduate Program Coordinator | Microbiology and Cell Science | wgurley@ufl.edu | 352-392-1568 |
| Karim Asghari | Microbiology and Cell Science | asghari@ufl.edu | 352-392-5226 |
| Valerie deCrecy | Microbiology and Cell Science | vcrecy@ufl.edu | 352-392-9416 |
| Jennifer Drew | Microbiology and Cell Science | jdrew@ufl.edu | 352-392-1906 |
| Joe Larkin | Microbiology and Cell Science | jlarkin3@ufl.edu | 352-392-6884 |
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# AEC 3033C Introduction & Literature Review

# 75 Points

**Assignment Objectives**

1. To create a document that introduces your topic and explains the need for your research through the support of secondary sources.
2. To apply proper APA style to your writing.
3. To build a foundation for your analytical report.

**Required Elements**

1) Length of 1 ½ pages or more
2) Double spaced
3) 12 pt font
4) 1 inch margins
5) At least 5 sources (in-text citations & reference page) – DON'T OVERUSE DIRECT QUOTES
    a. At least 2 specialized/government sources (i.e. academic journals, government documents)
    b. At least 2 trade/business sources (i.e. field specific or trade publications, books)
    c. At least 1 popular media source (i.e. newspapers, radio, blogs, magazines, TV, etc…)
    d. Make sure you include a reference page

**Description**

- Your introduction & literature review should provide the reader with information that explains and provides background information regarding your topic. Your introduction should build a case for your research topic and indicate why it is important. In other words, if the reader was to ask "So what?" about your research, your introduction and literature review should answer the so what question. Your introduction and literature review should demonstrate that you have begun thinking about and answering questions in your question web. Eventually this will be the first page of your final analytical report. The first page needs to attract the reader's attention and draw them into the topic. The information in your introduction and literature review should be supported by sources and be formatted in APA style.

## Introduction and Literature Review (75 points)

| Item | Unacceptable | Acceptable | Superior | Pts Available | Pts Earned |
|---|---|---|---|---|---|
| **"So What" question and need for research** | An introduction and literature review that needs extensive revisions to appropriately answer the "so what" question and describe the need for research **(0-7points)** | An introduction and literature review that satisfies most of these requirements, but could do more to answer the "so what" question, describe the need for research, or provide more supporting literature **(8-15 points)** | An introduction and literature review that meets professional requirements, answers the "so what" questions and describes the need for the research, is supported by literature **(16-20 points)** | **20** | |
| **Content and Detail** | An introduction and literature review that needs extensive revisions to demonstrate adequate content and detail **(0-7 points)** | An introduction and literature review that satisfies most of these requirements, but could benefit from additional content and detail **(7.5-10 points)** | An introduction and literature review that meets professional requirements, provides adequate content and detail, is supported by literature **(11-15 points)** | **15** | |
| **Grammar/Mechanics/Formatting/Page Length** | An introduction and literature review that has more than 6 grammar/mechanical mistakes, or the type or amount of mechanical, rhetorical, or formatting errors that would distract readers, length of document is 1/2 page or less **(0-8 points)** | An introduction and literature review that has between 3 and 6 grammar/mechanical mistakes, does not contain appropriate formatting, and is short of being 1 page long **(9-15 points)** | An introduction and literature review that has less than 3 grammar/mechanical mistakes, is formatted appropriately, and has an appropriate page length **(16-20 points)** | **20** | |
| **Sources** | Three or less of the required sources included, does not meet all requirements for each source level, all source not cited in-text or included on reference page **(0-5 points)** | Four of the required five sources included, or five sources included but does not meet the some requirements for each source level **(6-8 points)** | At least 5 sources included (at least 2 specialized/government sources, 2 trade/business sources, and 1 popular media source) both in in-text citations and on the reference page, no excessive | **10** | |

| | | | | | |
|---|---|---|---|---|---|
| | | | use of direct quotes **(9-10 points)** | | |
| **APA Style** | Correct APA style in-test citations and reference sheet with more than 6 errors **(0-4points)** | Correct APA style in-text citations and reference sheet with 6 or less errors **(5-7 points)** | Correct APA style in-text citations and reference sheet with 3 or less errors **(8-10 points)** | **10** | |
| Total Points | | | | **75** | |
| **Assignments submitted late (-10% each day)** | | | | | |
| **File not named correctly (-10%)** | | | | | |
| **Total Points Earned** | | | | | |
| Comments: | | | | | |