

Undergraduate Academic Assessment Plan 2012-13

Biological Engineering

College of Engineering

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Biological Engineering College of Engineering Undergraduate Academic Assessment Plan

Mission Statement

The mission of our department is to develop professionals, create and disseminate knowledge, and promote the application of engineering, science and management principles to meet societal needs with respect to agricultural, biological and land and water resource systems.

It is aligned with the College of Engineering's teaching mission that *fosters and provides world-class programs in engineering education, research and service to enhance the economic and social well-being of the citizens of Florida, the nation and the world* [UF Catalog].

It is aligned with the University's teaching mission as one of the *academic disciplines* [that] *represent the university's commitment to lead and serve the state of Florida, the nation and the world by pursuing and disseminating new knowledge while building upon the experiences of the past. The university aspires to advance by strengthening the human condition and improving the quality of life* [UF Catalog].

Student Learning Outcomes (SLOs)

Content

1. Apply knowledge of mathematics, science and engineering principles to biological and/or agricultural engineering problems. Students will be able to apply fundamental concepts, skills, and processes in Biological Engineering.
2. Design and conduct biological and/or agricultural engineering experiments and analyze and interpret the data in Biological Engineering.

Critical Thinking

3. Design a biological and/or agricultural system, component or process to meet desired needs within realistic economic, environmental, social, political, ethical, health and safety, manufacturability and sustainability constraints in Biological Engineering.

Communication

4. Communicate technical data and design information effectively in writing and in speech to other engineers in Biological Engineering.

SLOs may also be found [here](#).

Curriculum Map

The specific assessments, evaluation method, results and use of results can be found the Assessment of Program Goals and Student Learning Outcomes for the 2012-2013 academic year spreadsheet provided to the colleges.

Curriculum Map for:

Biological Engineering

College of Engineering

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

SLOs	Courses	ABE 2012C	ABE 3612C	ABE 4042C	ABE 4043C
Content Knowledge					
#1	Apply knowledge of mathematics, science and engineering principles to biological and/or agricultural engineering problems. Students will be able to apply fundamental concepts, skills, and processes in Biological Engineering. <u>Assessment method</u> : Assignments in three courses--ABE2012C, Introduction to Biological Engineering; ABE4042C, Design 1 in Biological Engineering; and ABE4043C, Design 2 in Biological Engineering.	I/A		R/A	R/A
#2	Design and conduct biological and/or agricultural engineering experiments and analyze and interpret the data in Biological Engineering. <u>Assessment method</u> : Assignment in two courses--ABE2012C, Introduction to Biological Engineering and ABE3612C, Heat and Mass Transfer.	I/A	R/A		
Critical Thinking					
#3	Design a biological and/or agricultural system, component or process to meet desired needs within realistic economic, environmental, social, political, ethical, health and safety, manufacturability and sustainability constraints in Biological Engineering. <u>Assessment method</u> : Design assignments in both ABE4042C, Design 1 in Biological Engineering; and ABE4043C, Design 2 in Biological Engineering.			I/A	R/A
Communication					
#4	Communicate technical data and design information effectively in writing and in speech to other engineers in Biological Engineering. <u>Assessment method</u> : Design reports in both ABE4042C, Design 1 in Biological Engineering; and ABE4043C, Design 2 in Biological Engineering.			I	R/A

Assessment Cycle

Three-Year Assessment Cycle

Assessment Cycle Chart

Assessment Cycle for:

Biological Engineering

Analysis and Interpretation:

Improvement Actions:

Dissemination:

College of Engineering

May 15, 2013

Fall 2012/Spring 2013

Fall 2012/Spring 2013

SLOs	Year	10-11	11-12	12-13	13-14	14-15	15-16
Content Knowledge							
#1 Apply knowledge of mathematics, science and engineering principles to biological and/or agricultural engineering problems. Students will be able to apply fundamental concepts, skills, and processes in Biological Engineering.		X			X		
#2 Design and conduct biological and/or agricultural engineering experiments and analyze and interpret the data in Biological Engineering.				X			X
Critical Thinking							
#3 Design a biological and/or agricultural system, component or process to meet desired needs within realistic economic, environmental, social, political, ethical, health and safety, manufacturability and sustainability constraints in Biological Engineering.			X			X	
Communication							
#4 Communicate technical data and design information effectively in writing and in speech to other engineers in Biological Engineering.		X			X		

Methods and Procedures

Once a year in the fall semester, each course that is associated with Student Learning Objectives will evaluate those objectives with which it is associated. Student design projects in the Senior Capstone Design course, ABE 4043C, are reviewed and ranked by ABE Advisory Board members and department faculty at the end to the spring semester. The students provide posters of their projects in a two-hour forum where they communicate the details of their designs and answer questions from Advisory Board members and faculty. In addition, exit interviews with graduating seniors are conducted by the department chair and those students will also complete an exit survey that provides student input on achievement of Student Learning Objectives.

Figure 1: SLO #3 Assessment Form

ABE 4042C: Biological Engineering Design II

Video Abstract (Goals/Objectives) SLO#3

Team: _____

Evaluator: _____

Assessment Metrics	Poor Showing	Marginally Acceptable	Average	Strong Showing	Exceeds Expectation
<i>How well did the team define the need/problem statement?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>How effectively did the team communicate the design's objectives and goals?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>How well did the team communicate the purpose and the potential impact of the design?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>How well did the team conduct themselves as professionals during the demonstration, including being on time and prepared?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>How well does the design fulfill the stated objectives?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If you were a member of the team, what would you like to see accomplished by the design team?

Notes for improvement:

Please list at least one area where the team did an excellent job

Grade Assessment	A	B	C	D	E
<i>I would grade the demonstration as a(n):</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>Based on the demonstration, I would grade the design as:</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Assessment Oversight

This Academic Assessment Plan for the Biological Engineering program will be overseen by a committee of three people including the program coordinator and two faculty that teach in the program.

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