# Program Assessment Report 2017-2018

Program Name: Biomathematics

Program Learning Outcome: 1).Demonstrate college-level knowledge in foundational mathematics

1. Identify the artifact(s) (i.e. student work or outputs) that you used to assess the PLO. [Projects, papers, presentations, portfolios, exam questions, specific assignments, capstone work]

Artifacts: Math 463 Topics in Biomathematics Model Report Assignments and Capstone Course Final Projects.

Other artifact(s) Math 463 Topics in Biomathematics exam questions

Each student graduating from the Biomathematics program is required to take a capstone course in Biomathematics. This course is Math 463 - Topics in Biomathematics and as part of the course, students are required to complete a model report assignment and a capstone final project. For both assignments, students are required to use foundational mathematics to solve problems related to Biomathematics. Based on a rubric used to assess these artifacts, Biomathematics students demonstrate a college-level knowledge in foundational mathematics represented by content in the mathematics courses Math 114 - Calculus I, Math 221 - Calculus II, Math 222 - Calculus III, and Math 351 - Linear Algebra.

2. Identify the instruments (e.g. rubrics, surveys, spreadsheets, statistical software) used to assess the artifact(s) (i.e. the way in which student output are analyzed).

Instruments: Rubrics

Other instruments Used n/a

3. Describe program collaboration to plan, implement and use the results of assessment.

We plan to use the results of assessment to pinpoint specific concepts in foundational mathematics courses, e.g. Calculus and Linear Algebra, that we may wish to reinforce in the Biomathematics Mathematics program. The results will be shared with the entire department and be up for discussion at department meetings.

Explain the results of the assessment activities.

All Biomathematics students take Calculus I-III and Linear Algebra. Furthermore, many of the concepts from Calculus and Linear Algebra are reinforced in other courses that students in the Applied Mathematics Program take, e.g. in Differential Equations and Topics in Biomathematics. Thus, there is good reason to expect that a majority of students graduating from the Biomathematics Program will have a reasonable level of knowledge in foundational mathematics as represented by Calculus and Linear Algebra courses. However, it should be noted that only a very small number of students have graduated from the Biomathematics program thus a much greater volume of data should be collected before any conclusive results can be drawn..

4. Where applicable, outline the steps you will take to make improvements to the program based on the results of assessment activities identified in #3.

We will continue to collect assessment on students in the Biomathematics Program. Additionally, we will discuss modifying the program learning outcomes to make them more measurable.

# Program Assessment Report 2017-2018

Program Name: Biomathematics

Program Learning Outcome: 2).Demonstrate college-level knowledge in applied mathematics

5. Identify the artifact(s) (i.e. student work or outputs) that you used to assess the PLO. [Projects, papers, presentations, portfolios, exam questions, specific assignments, capstone work]

Artifacts: Math 463 Topics in Biomathematics Model Report Assignments and Capstone Course Final Projects.

Other artifact(s) Math 463 Topics in Biomathematics exam questions and Math 371 Applied Combinatorics exam questions.

Each student graduating from the Biomathematics program is required to take a capstone course in Biomathematics. This course is Math 463 - Topics in Biomathematics and as part of the course, students are required to complete a model report assignment and a capstone final project. For both assignments, students are required to use applied mathematics to solve problems related to Biomathematics. Based on a rubric used to assess these artifacts, Biomathematics students demonstrate a college-level knowledge in applied mathematics represented by content in the mathematics courses Math 310 - Applied Probability and Mathematical Statistics, Math 341 - Differential Equations, Math 371 - Applied Combinatorics, Math 441 - Partial Differential Equations, and Math 463 - Topics in Biomathematics. In addition, Biomathematics students are asked to synthesize their knowledge of applied mathematics with problem solving in the biological sciences.

6. Identify the instruments (e.g. rubrics, surveys, spreadsheets, statistical software) used to assess the artifact(s) (i.e. the way in which student output are analyzed).

Instruments: Rubrics

Other instruments Used n/a

7. Describe program collaboration to plan, implement and use the results of assessment.

We plan to use the results of assessment to consider specific areas in applied mathematics were Biomathematics students may benefit from additional exposure. Furthermore, we will use the assessment results to consider ways in which Biomathematics students may synthesize applied mathematics with problem solving in the biological sciences.

Explain the results of the assessment activities.

The exposure of Biomathematics students to college-level knowledge in applied mathematics is highly focused. In addition, it is important for Biomathematics students to be able to synthesize the theories and techniques of college-level applied mathematics with problem solving in the biological sciences. This is highly developed in the capstone course Math 463 - Topics in Biomathematics.

8. Where applicable, outline the steps you will take to make improvements to the program based on the results of assessment activities identified in #3.

We will continue to collect assessment on students in the Applied Mathematics Program. Additionally, we will discuss modifying the program learning outcomes to make them more measurable.