

2021-2022 Assessment Cycle

Assessment Findings

Program Assessment Accomplishments

For the current assessment cycle we report our findings on each of the 5 PSLOs listed in our assessment plan. Unfortunately, overall there are several assessment measures where thresholds determined for the program PSLOs have not been met. The report here is for the AY 2019-2020, 2020-2021 and 2021-2022 and is therefore marred by the occurrence of a global pandemic. During the last few years there was a shift in classroom experience and overall educational experience. We hope to see the trends normalize and greater success rate for our program starting this year and over the course of the next assessment cycle.

Finding per Measure

BS Molecular & Biotechnology Outcome Set

PSLO 1

Outcome: Acquire a comprehensive understanding of biological principles

Acquire a comprehensive understanding of biological principles including cell biology, genetics, organismal biology, structure and function, ecology and evolution.

▼ **Measure:** Biology Major Field Test
Other level Direct - Exam

Details/Description:

The Major Field Test in Biology assesses mastery of concepts principles and knowledge by graduating Biology students. It is a multiple-choice test with 150 questions organized into four major areas; 1) cell biology, 2) molecular biology and genetics, 3) organismal biology, and 4) population biology, evolution and ecology.

Acceptable Target:

Above the national standard un all sub-areas of the exam

Findings for Biology Major Field Test


Summary of Findings: While the average Washburn score for the individual sub-areas is higher than the national average, the data shows that about 60% of our students (individually) met this threshold. Unfortunately the number of students in this assessment group is low and the data therefore is not very meaningful.


Results : Acceptable Target Achievement: Not Met

Recommendations:

Reflections/Notes:

Substantiating Evidence:

 MFT MBB (2020-21).xlsx (Excel Workbook (Open XML))

 MFT MBB (2021-22).xlsx (Excel Workbook (Open XML))

▼ **Measure:** Course Grades
Course level Direct - Exam

Details/Description:

Acceptable Target: 60% earn a B or better for BI 102; 75% earn a B or better for all other courses.

Findings for Course Grades

Summary of Findings: About 40% of the students met the threshold of earning a B or better in BI 102 and 73% met the threshold of earning B or better in all other courses assessed for PSLO.


Results : Acceptable Target Achievement: Not Met

Recommendations:

Reflections/Notes: As stated above since the overall number of

students is the program is low, the data may not be meaningful. However, when each individual student's data is reviewed it is evident that students are gaining the required skill, knowledge and experience over the course of the program. There is also overall improvement in student performance.

Substantiating Evidence:


 Assessment Data for MBB 2020-2022 anonymous.xlsx (Excel Workbook (Open XML))

▼ **Measure:** Senior Exit Survey *Program level Indirect - Survey*

Details/Description:

Acceptable Target: 100% of students agree with survey questions pertaining to PSLO 1

Supporting Attachments:

 Senior Exit Survey Questionnaire (Word Document (Open XML))

Findings for Senior Exit Survey

Summary of Findings: On the senior exit survey, 100% of students agreed that they acquired a comprehensive understanding of biological principles including cell biology, genetics, organismal biology, structure and function, ecology and evolution.

Results : Acceptable Target Achievement: Met

Recommendations:

Reflections/Notes:

Substantiating Evidence:

 MBB senior exit surveyys.pdf (Adobe Acrobat Document)

PSLO 2

Outcome: Scientific method

Acquire the ability to understand and utilize the scientific method.

▼ **Measure:** Course Grades
Course level Direct - Exam

Details/Description:

Acceptable Target: 60% earn a B or better for BI 102; 75% earn a B or better for all other courses

Findings for Course Grades

Summary of Findings: About 40% of the students met the threshold of earning a B or better in BI 102 and 73% met the threshold of earning B or better in all other courses assessed for PSLO.

Results : Acceptable Target Achievement: Not Met

Recommendations:

Reflections/Notes: While the data reflect that we did not meet threshold for this measurement for PSLO 2, once again each individual student's data demonstrates that students are gaining the required skill, knowledge and experience


over the course of the program. Overall, each student shows a remarkable progress over the course of their program.

▼ **Measure:** Senior Exit Survey
Program level Indirect - Survey

Details/Description:

Acceptable Target: 100% of students agree with survey questions pertaining to PSLO 2

Supporting Attachments:

 Senior Exit Survey Questionnaire (Word Document (Open XML))

Findings for Senior Exit Survey

Summary of Findings: On the senior exit survey, 100% of students agreed that they acquired the ability to understand and utilize the scientific method.

Results : Acceptable Target Achievement: Met

Recommendations:

Reflections/Notes:

PSLO 3

Outcome: Master a variety of scientific techniques

Master a variety of scientific techniques in the core biology disciplines of organismal biology, microbiology, genetics, molecular biology and undergraduate research.

▼ **Measure:** Course Grades
Course level Direct - Exam

Details/Description:

Acceptable Target: 100% earn a B or better in BI 395; 75% earn a B or better in all other courses

Findings for Course Grades

Summary of Findings: The data shows that 100% of the students earned a B or better in BI 395. However, we missed the threshold for a B or better in other courses by a very small margin. Our data shows that 73% of the students met this threshold.

Results : Acceptable Target Achievement: Not Met

Recommendations:

Reflections/Notes: While overall the data reflects that the direct assessment measure for PSLO 3 was not met, 100% of the students earned a B or better in BI 395 (a capstone research course). This strongly demonstrates that students ARE gaining the essential skills and knowledge through our program and showing tremendous improvement over time.

▼ **Measure:** Senior Exit Survey
Program level Indirect - Survey

Details/Description:

Acceptable Target: 100% of students agree with survey questions pertaining to PSLO 3

Supporting Attachments:

 Senior Exit Survey Questionnaire (Word Document (Open XML))

Findings for Senior Exit Survey

Summary of Findings: 100% of students agreed that they mastered a variety of scientific techniques in the core biology disciplines of organismal biology, microbiology, genetics, molecular biology and undergraduate research.

Results : Acceptable Target Achievement: Met

Recommendations:

Reflections/Notes:

PSLO 4

Outcome: Scientific data

Develop the ability to analyze and interpret scientific data.

▼ **Measure:** Course Embedded Assignment

Course level Direct - Other

Details/Description:

Acceptable Target:

Oral Communication Rubric - 90% of majors are at target (3) level for all rubric components involving oral presentation

Written Communication Rubric – 80% of majors earn a B or better in research paper writing for BI 333

Findings for Course Embedded Assignment

Summary of Findings:	Our findings show that 80% of the students met the threshold set for written communication having earned a B or better on the research paper writing in BI 333. Unfortunately at this time, a complete data set for the oral communication assessment is not available. And, this data is therefore not provided here.
Results :	Acceptable Target Achievement: Not Met
Recommendations:	
Reflections/Notes:	Specific data collection sheets will henceforth be send to all faculty members assessing oral communication each semester to gather data with greater uniformity. This goal has therefore only been partially met.

▼ **Measure:** Course Grades
Course level Direct - Exam

Details/Description:
Acceptable Target: 75% earn a B or better in BI 333 and BI 390

Findings for Course Grades

Summary of Findings:	Our data reflects that 80% of the students met this threshold indicating successful completion of this assessment measure.
Results :	Acceptable Target Achievement: Exceeded
Recommendations:	
Reflections/Notes:	

▼ **Measure:** Senior Exit Survey
Program level Indirect - Survey

Details/Description:

Acceptable Target: 100% of students agree with survey questions pertaining to PSLO 4

Supporting Attachments:

 Senior Exit Survey Questionnaire (Word Document (Open XML))

Findings for Senior Exit Survey

Summary of Findings: 100% of students agreed that they developed the ability to analyze and interpret scientific data, in the senior exit survey.

Results : Acceptable Target Achievement: Met

Recommendations:

Reflections/Notes:

PSLO 5

Outcome: Oral and written presentation skills

Develop the oral and written presentation skills to successfully communicate scientific information in a professional manner.

▼ **Measure:** Course Embedded Assignment
Course level Direct - Other

Details/Description:

Acceptable Target: Oral Communication Rubric - 90% of majors are at target (3) level for all rubric components involving oral presentation

Findings for Course Embedded Assignment

Summary of Findings: As stated above, the data set for the oral communication assessment is incomplete and therefore has not been provided here.

Results : Acceptable Target Achievement: Not Met

Recommendations:

Reflections/Notes:

▼ **Measure:** Course Grades
Course level Direct - Exam

Details/Description:

Acceptable Target: 75% earn a B or better in BI 390, BI 395 and BI 440

Findings for Course Grades

Summary of Findings: Our data shows that 100% of the students met this threshold.

Results : Acceptable Target Achievement: Exceeded

Recommendations:

Reflections/Notes: The three courses listed here are capstone courses for the MBB program. We expect that after multiple years of rigorous training our students would be able to excel in these courses and the data supports our

hypothesis.

▼ **Measure:** Performance Assessment
Course level Direct - Student Artifact

Details/Description:

Acceptable Target: 60% of majors present at least once at a conference

Findings for Performance Assessment

Summary of Findings: Every one of our majors has participated in oral presentations at classroom-, local- and/or regional levels. During the past few years, students did not have the opportunity to attend many conferences due to Covid. As a result, only about 40% of the current group of students assessed have met this threshold, and some of these presentations were made on a online platform.

Results : Acceptable Target Achievement: Not Met

Recommendations:

Reflections/Notes:

▼ **Measure:** Senior Exit Survey
Program level Indirect - Survey

Details/Description:

Acceptable Target: 100% of students agree with survey questions pertaining to PSLO 5

Supporting Attachments:

 Senior Exit Survey Questionnaire (Word Document (Open XML))

Findings for Senior Exit Survey

Summary of Findings: 100% of students agreed that they developed oral and written presentation skills to successfully communicate scientific information, in the senior exit survey.

Results : Acceptable Target Achievement: Met

Recommendations:

Reflections/Notes:

Overall Recommendations

No text specified

Overall Reflection

The Molecular Biology and Biotechnology program is still relatively small. Typically we have between 3-6 graduating students each year. Due to these small numbers the overall data acquired for assessments may not always be meaningful. However, it does give us a very good idea of the progress that each individual student makes over the course of their degree program. It is evident from the data that are students are making tremendous progress as they navigate through the program and are gaining knowledge and experience that is essential for their career path.

For the future assessment cycles, the plan is to report on 1-2 PSLOs each year (irrespective of the number of students in the program). Data will be collected by providing specific data collection sheets to all the members of the department to ensure participation and uniformity.

Faculty Collaboration

The assessment plan created was a result of a collaborative effort by the members of the department. If and when changes are made to individual courses or degree programs the assessment measures are reviewed and modified, if deemed necessary. Once assessment findings are submitted the faculty of the department review and discuss these finding during one of our regular departmental meetings.

Communication & Collaboration with Students

Assessment findings are posted in the Biology department for students to review. The website will also be updated once this year's findings are submitted. Unfortunately, since department chairs can no longer edit the website content, sharing these finding with external stakeholders and providing general access to students has been difficult.

Communication & Collaboration with External Stakeholders

For the Molecular Biology and Biotechnology degree program our internship partners are significant external stakeholders. Internship partners are provided general information of student training, preparedness and skills. The internship partners receive additional information on each student or students who are actively engaged in research or internships are these off-campus institutions.

Communication & Collaboration with University

No text specified

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