WILLIAM WOODS
UNIVERSITY

Biology BA

Annual Assessment 2017-2018

Annual Assessment 17-18

Biology BA

Program Profile

Program Mission Statement
Please insert your program mission statement here

A program designed to both educate students and prepare them for immediate careers in the biological sciences (especially those in ecology or conservation), or for acceptance into graduate programs.

Program Data

Delivery Method

Traditional On Campus (selected)
Online
Hybrid

	Minors	Majors
2016-2017	11	20
2017-2018	7	14

Concentrations 2016-17
If your program contains concentrations, please list the concentrations and the number of students identified within each concentration.

N/A

Concentrations 2017-18
If your program contains concentrations, please list the concentrations and the number of students identified with each concentration.

N/A

Student Demographics
Program goals for student retention, persistence and degree completion are? What do the persistence numbers mean to the faculty in the program? Are your persistence numbers what you expected? If not, how could the numbers be improved? What is the optimal enrollment for the program?

Our Department has a program goal of 75% retention between freshman and sophomores, a 90% persistence per year, and with a 100% completing the program that enter their Senior year.

The retention data shows that 100%, totally surpassing our benchmark as well as the retention rate for the University. By our program goal mentioned above, we would then expect a graduation rate ~60%. The current data shows a graduation

rate of 66.7% for new students who entered during 2012/2013, and a 100% retention rate for those that transerred during the same academic year.

Is the Program Externally Accredited

Yes
No (selected)

External Accreditation
Name the Accrediting Agency or entity including the last review/approval. Is there an accrediting body for the field of study? If yes, what is the name of the group. Is the program seeking accreditation?If no, why?

Program Assessment

Standard/Outcome

Identifier	Description
WWU2016.1	Major Field Competence: Students will demonstrate excellence in an academic or professional discipline, and engage in the process of academic discovery.
WWU2016.2	Ethics: Students will exhibit values and behaviors that address self- respect and respect for others that will enable success and participation in the larger society.
WWU2016.3	Self-Liberation: Students will develop an honest understanding and appreciation of themselves and others resulting in an ability to make individual decisions.
WWU2016.4	Lifelong Education: Students will possess an intellectual curiosity and desire for continual learning both within and beyond formal education in preparation for participation in a global society.

Additional Standards/Outcomes

Identifier	Description
BIO.1	Evolution: Articulate knowledge that life evolved over time via mechanisms of mutation, natural selection, and genetic drift, and that there is concrete evidence for this fundamental concept _ evolution from common ancestry _ in the unity of numerous biological processes among species.
BIO.2	Interdisciplinary: Demonstrate that fundamental principles and laws of chemistry and physics are also underpinnings that govern complex living systems.
BIO.3	Diversity in structures, functions, and systems: Demonstrate and model, through reductionist and holistic approaches, the interconnectedness of life along a continuum from molecular structures to interactions among organisms and with ecosystems.
BIO.4	Information and Engergy: Demonstrate knowledge of major conserved metabolic, signaling, heritable, and molecular processes of all life on Earth.

General Education Alignment to Program
How do the General Education criteria align with the Program Objectives? What courses within your program build upon skills learned in general education courses (please list the program course and the general education criteria). The General Education clusters are: Critical Analysis, Creative Expression, Quantitative Inquiry, and Society & the Individual. See attached for more detailed breakdown.

Critical Analysis: (9 credit hours) – *Students apply logical and analytical reasoning skills to diverse source materials in the interest of discerning and debating aesthetic, thematic, and ethical content.*

In all biology coursework, students are expected to integrate sound logical arguments with the scientific method. Students are expected to analyze and interpret general textbooks, primary scientific literature, and data. Throughout biology

courses, students are expected to articulate the ethical interface of scientific practice and general societal issues, as well demonstrate integrity in their own scientific communications (oral and written).

Creative Expression: **(12 credit hours) –** ***Students develop the ability to express ideas and concepts, both logically and creatively, through written, oral, reflective, and aesthetic practices utilizing various media forms.***

In all biology coursework, students are expected to demonstrate creative and independent generation of ideas based upon scientific parameters that they are presented, *e.g.* independently generating novel hypotheses regarding specific issues that they might be given. Students are expected to prepare and perform presentations on content-specific topics, in addition to extensive written technical papers and essays.

Quantitative Inquiry: (10 credit hours) – ***Students will develop and practice quantitative problem-solving skills in order to analyze and critically evaluate information in a larger context.***

Quantitative inquiry is the foundation of the entire biology program. In all biology coursework students are expected to analyze data, evaluate it critically, and to be able to generate and interpret statistics. Math courses provide students with the quantitative background to perform these activities.

Society & the Individual: (12 credit hours) – ***Students integrate knowledge to articulate an understanding of diverse cultures, historical contexts, and human behaviors.***

In all biology coursework students are expected to apply their knowledge of human behavior in the context of molecular to organismal processes (*e.g.* how the human body works and thinks) in addition to the formation of new scientific ideas. Students are expected to be able to articulate that there are variable correct interpretations of authoritative scientific principles and demonstrate competency with the historical development of scientific principles – that the natural process of scientific development involves building upon the ideas of scientific progenitors.

GE_Cluster_Descriptions_FINAL_Version_Approved.docx

Curriculum Map

A - Assessed
R - Reinforced
I - Introduced
M - Master

Biology BA Curriculum Map(Imported)

	BIO 114	**BIO 124**	**BIO 231**	**BIO 310**	**BIO 330**	**BIO 313**	**BIO 317**	**BIO 401**	**BIO 450**
BIO.1 Evolution: Articulate knowledge that life evolved over time via mechanisms of mutation, natural selection, and genetic drift, and that there is concrete evidence for this fundamental concept _ evolution from common ancestry _ in the unity of numerous biological processes among species.	I	R, A	R	R	R	R	R	M, A	
BIO.2 Interdisciplinary: Demonstrate that fundamental principles and laws of chemistry and physics are also underpinnings that govern complex living systems.	I, A	R	R	R	R	R	R	R	
BIO.3 Diversity in structures, functions, and systems: Demonstrate and model, through reductionist and holistic approaches, the interconnectedness of life along	I	R, A	R	R	R	R	R	M	

a continuum from molecular structures to interactions among organisms and with ecosystems.									
BIO.4 Information and Energy: Demonstrate knowledge of major conserved metabolic, signaling, heritable, and molecular processes of all life on Earth.	I	R	R, A					R	

	CHM 114	**CHM 124**	**CHM 314**	**MAT 124**	**MAT 304**	**SPR**
BIO.1 Evolution: Articulate knowledge that life evolved over time via mechanisms of mutation, natural selection, and genetic drift, and that there is concrete evidence for this fundamental concept _ evolution from common ancestry _ in the unity of numerous biological processes among species.						A
BIO.2 Interdisciplinary: Demonstrate that fundamental principles and laws of chemistry and physics are also underpinnings that govern complex living systems.	I	R	R	R	R	A
BIO.3 Diversity in structures, functions, and systems: Demonstrate and model, through reductionist and holistic approaches, the interconnectedness of life along a continuum from molecular structures to interactions among organisms and with ecosystems.	I	R	R			A
BIO.4 Information and Energy: Demonstrate knowledge of major conserved metabolic, signaling, heritable, and molecular processes of all life on Earth.						A

Assessment Findings

Assessment Findings for the Assessment Measure level for Biology BA Curriculum Map

BIO.1 Evolution: Articulate knowledge that life evolved over time via mechanisms of mutation, natural selection, and genetic drift, and that there is concrete evidence for this fundamental concept _ evolution from common ancestry _ in the unity of numerous biological processes among species.

Assessment Measures

BIO 124				
Assessment Measure	**Criterion**	**Summary**	**Attachments of the Assessments**	**Improvement Narratives**
Direct - Final Exam	Has the criterion Questions from the lecture Final Exam (BIO124) that were relevant to objective 1 were selected for	91% of the students (n=34) scored 70% or better	BIO_124_OBJ_1.xlsx	- Curriculum Revision: Remove assessing this objective from BIO124 as this Objective is

	assessment. The benchmark is 70% of the students at Proficient or better. Proficient is defined as 70% or better on the assessed questions. been met yet? Met	on the six questions assessed		already assessed twice, BIO401 (Evolution) and the Major Field Test

BIO 401				
Assessment Measure	**Criterion**	**Summary**	**Attachments of the Assessments**	**Improvement Narratives**
Direct - Final Exam	Has the criterion Questions from the lecture Final Exam (BIO401) that were relevant to objective 1 were selected for assessment. The benchmark is 70% of the students at Proficient or better. Proficient is defined as 70% or better on the assessed questions. been met yet? Not met	Only 63% of the students (n=19) scored 70% or better on the six questions assessed	BIO_401_OBJ_1.xlsx	- Revise Assignment for Assessment: Near end of the course have a quiz that explicitly addresses this Objective Current benchmark will be maintained

SPR				
Assessment Measure	**Criterion**	**Summary**	**Attachments of the Assessments**	**Improvement Narratives**
Direct - Interview	Has the criterion Students are asked a question regarding some aspect of Evolution in which they must answer based on the knowledge they have gained through various Biology Courses. Benchmark: Average score for all students in the major 3/5 or higher been met yet? Met	The students (n=3) averaged a score of 3.3 (scale 1 -5) on this interview question	Student_Performance_Days_Interview_Results_for_Objectives_1_and_3__Spring_2018.xlsx	- Revise Program Benchmark: Revise to have 70% of students scoring 3.5/5 or better on question - Refine Assessment Tool: Move this from a Direct Interview format to a more Direct Formal Exam based assessment using VIA
Direct - External Testing	Has the criterion Major Field Test - Section: III Benchmark = Average score of 53 or higher on section, with 60% of students scoring a 46 or higher. been met yet? Not met	Only 50% of our students (n=4) scored a 46 or higher on Section III of the MFT and the average score for those students was 50. The average score of the BA cohort was just shy of the 53 average benchmark Part of the issue is the fact that there are only 4	Biology_MFT_Departmental_Roster_with_Section_Subscores_Seniors_Spring_2018.pdf	- Refine Assessment Tool: No changes to the benchmark or assessment using the Major Field Test will be made until we can incorporate data comparing the MFT scores as freshman to their senior MFT scores to assess "value added"

		students in this cohort greatly exaggerating any faults.		
Direct - External Testing	Has the criterion Major Field Test - Section: IV Benchmark = Average score of 53 or higher on section, with 60% of students scoring a 51 or higher. been met yet? Not met	Only 50% of our students (n=4) scored a 51 or higher on Section IV of the MFT and the average score for those students was 51. The average score of the BA cohort was just shy of the 53 average benchmark Part of the issue is the fact that there are only 4 students in this cohort greatly exaggerating any faults. See attachment for Bio Objective 1: Direct - External Testing - Major Field Test - Section: III for full results		

BIO.2 Interdisciplinary: Demonstrate that fundamental principles and laws of chemistry and physics are also underpinnings that govern complex living systems.

Assessment Measures

BIO 114				
Assessment Measure	**Criterion**	**Summary**	**Attachments of the Assessments**	**Improvement Narratives**
Direct - Final Exam	Has the criterion Questions from the lecture Third Exam (BIO114) that were relevant to objective 2 were selected for assessment. The benchmark is 70% of the students at Proficient or better. Proficient is defined as 70% or better on the assessed questions. been met yet? Met	84% of the students were proficient or better (n = 48).	Assesment_questions_bio_114_2017.docx	

SPR				
Assessment Measure	**Criterion**	**Summary**	**Attachments of the Assessments**	**Improvement Narratives**
Direct - External Testing	Has the criterion Major Field Test - Section: I Benchmark = Average score of 53 or higher on section, with 60% of students scoring at or above 51. been met yet? Not met	Only 25% of our students (n=4) scored a 51 or higher on Section I of the MFT and the average score for those students was 42. Both fall well below the benchmark for this portion of the MFT. Part of the problem with these data is the fact that there are only 4 students in this cohort, thus greatly exaggerating any faults. See attachment for Bio Objective 1: Direct - External Testing - Major Field Test - Section: III for full results		
Direct - External Testing	Has the criterion Major Field Test - Section: II Benchmark = Average score of 53 or higher on section, with 60% of students scoring at or above 51. been met yet? Not met	Only 25% of our students (n=4) scored a 51 or higher on Section II of the MFT and the average score for those students was 44. Both fall well below the benchmark for this portion of the MFT. Part of the problem with these data is the fact that there are only 4 students in this cohort, thus greatly exaggerating any faults. See attachment for Bio Objective 1: Direct - External Testing - Major Field Test - Section: III for full results		

BIO.3 Diversity in structures, functions, and systems: Demonstrate and model, through reductionist and holistic approaches, the interconnectedness of life along a continuum from molecular structures to interactions among organisms and with ecosystems.

Assessment Measures

BIO 124				
Assessment Measure	**Criterion**	**Summary**	**Attachments of the Assessments**	**Improvement Narratives**
Direct - Final Exam	Has the criterion Questions from the lecture Final Exam (BIO124) that were relevant to objective 3 were selected for assessment. The benchmark is 70% of the students at Proficient or better. Proficient is defined as 70% or better on the assessed questions. been met yet?	Only 67% of the students (n=34) scored 70% or better on the six questions assessed	BIO_124_OBJ_3.xlsx	- Revise Assignment for Assessment: Near end of the course have a quiz that explicitly addresses this Objective Current benchmark will be maintained

	Not met			

SPR				
Assessment Measure	**Criterion**	**Summary**	**Attachments of the Assessments**	**Improvement Narratives**
Direct - Interview	Has the criterion Students are asked a question regarding some aspect of Molecular structure in which they must answer based on the knowledge they have gained through various Biology Courses. Benchmark: Average score for all students in the major 3/5 or higher been met yet? Not met	Our students (n=3) only scored an average of 2.8/5 on this assessment question Evidence of results can be found in attachment from "Direct - Interview" for Objective 1 from the student interviews.		- Refine Assessment Tool: Move this from an interview format to a more formal based assessment using VIA
Direct - External Testing	Has the criterion Major Field Test - Section: I Benchmark = Average score of 53 or higher on section, with 60% of students scoring at or above 51. been met yet? Not met	Only 25% of our students (n=4) scored a 51 or higher on Section I of the MFT and the average score for those students was 42. Both fall well below the benchmark for this portion of the MFT. Part of the problem with these data is the fact that there are only 4 students in this cohort, thus greatly exaggerating any faults. See attachment for Bio Objective 1: Direct - External Testing - Major Field Test - Section: III for full results		
Direct - External Testing	Has the criterion Major Field Test - Section: II Benchmark = Average score of 53 or higher on section, with 60% of students scoring at or above 51. been met yet? Not met	Only 25% of our students (n=4) scored a 51 or higher on Section II of the MFT and the average score for those students was 44. Both fall well below the benchmark for this portion of the MFT. Part of the problem with these data is the fact that there are only 4 students in this cohort, thus greatly exaggerating any faults. See attachment for Bio Objective 1: Direct - External Testing - Major Field Test - Section: III for full results		
Direct - External Testing	Has the criterion Major Field Test - Section: III Benchmark = Average score of 53 or higher on section, with 60% of students scoring at or above 46. been met yet?	Only 50% of our students (n=4) scored a 46 or higher on Section II of the MFT and the average score for those students was 50. Even though the results were below both benchmarks for this portion of the MFT, it was just below those benchmarks. Part		

		of the problem with these data is the fact that there are only 4 students in this cohort, thus greatly exaggerating any faults. See attachment for Bio Objective 1: Direct - External Testing - Major Field Test - Section: III for full results		

BIO.4 Information and Engergy: Demonstrate knowledge of major conserved metabolic, signaling, heritable, and molecular processes of all life on Earth.

Assessment Measures

BIO 231				
Assessment Measure	**Criterion**	**Summary**	**Attachments of the Assessments**	**Improvement Narratives**
Direct - Final Exam	Has the criterion Questions from the lecture Final Exam (BIO231) that were relevant to objective 4 were selected for assessment. The benchmark is 70% of the students at Proficient or better. Proficient is defined as 60% or better on the assessed questions. been met yet? Met	74% of the students were proficient or better (n = 19).	Assessment_Questions___Genetics_FINAL_Exam_F17.docx Assesment_Data.xlsx	

SPR				
Assessment Measure	**Criterion**	**Summary**	**Attachments of the Assessments**	**Improvement Narratives**
Direct - External Testing	Has the criterion Major Field Test - Percentile Rank (This scores students in all 4 sections of the MFT) Benchmark = 50% of students scoring in the 50th percentile or higher. been met yet? Not met	Of our students (n=4) only one, 25%, scored at or above the 50th percentile on the Major Field Test as a whole	SUBSCORES_and_PERCENTILES_from_MFT_for_Seniors.docx	

Analysis of the Assessment Process

Describe your assessment process; clearly articulate how the program is using course work and or assessment day activities for program assessment. Note any changes that occurred to that process since the previous year. Discuss what activities were successful at assessment and which ones were not as helpful and why. Please include who met to discuss the changes (unless you are a program of one person) and when you met. – Include a discussion on the process for collection and analysis of program data.

This report was compiled by the three biology faculty, Dr. Kimberly L. Keller, Dr. Robin Hirsch-Jacobson, and Dr. Sarah Greenland-White.

There were a few areas in which our majors did not meet the benchmark for certain Objectives, and summaries and improvement narratives are discussed under each assessment field with this report. To summarize, the four main areas in which our students fell short of the benchmark were: (1) average score of 53 or higher on each section of the Major Field Test; (2) 60% of the students scoring a 51 or higher in three sections (1, 2, &4) or score a 46 or higher on section 3 of the Major Field Test; (3) 50% of the students scoring in the 50th percentile rank or higher on the Major Field Test; and (4) the interview question connected to Objective 3.

The Major Field Test (MFT) is given to our graduating seniors during Student Performance Days in February. We have struggled in past years with the amount of effort our students give for this exam; however, we do not feel this was the case this year. We feel the scores reflect the type and level of work the faculty have seen of these students in the classroom. While we do have a few students actively choose the Biology B.A program as freshman as it gives the most flexibility in scheduling and is generally more suited for those pursuing ecology and conservation orientated careers, not all students choose the B.A. for that reason. We have seen in recent years the B.A. has become a fallback for those who, for one reason or another, struggled with the heavy course requirements associated with the two concentration options under the B.S. checklist. While the rigor within the courses is no different, the sheer number of credits is less and this is the appeal for a sub-group of students to switch to the B.A., and at least this option provides these students with an opportunity to graduate with a Biology degree. While we are unclear whether it is this or other factors that led to a few of our students performing below the expected benchmark on the MFT, it is important to keep this in mind when looking at the data. We also need to realize the cohort size for the B.A. seniors this year was only four students and the cohort for combined sophomores & juniors was three students, so very small sample sizes. Such a small sample size makes interpreting the data for this program difficult because the low number of data points really exaggerates any difficulties a single student may have had and makes it hard to truly evaluate any problems students may have had in the content areas. Based on the MFT of the four senior B.A. students, the average score for the cohort per section did not meet the benchmark of a cohort average of 53 or higher (Sections 1 – 4 of MFT) and they also did not meet the benchmarks of 60% of students scoring a 51 or higher (Sections 1, 2, & 4 of MFT) or 60% of students at 46 or higher (Section 3 of MFT). In addition, the benchmark of 50% of students scoring at the 50th percentile rank or higher (Objective 4) was also “Not Met.” While we will have discussions to determine if there are ways to how to best use the MFT to truly assess student knowledge and the effectiveness of the program; we do acknowledge the fact with such small cohorts there will be years our students will not meet the benchmarks. In such cases we then look at the benchmark and our graduating seniors as a whole (both B.A. and B.S.) to determine whether the benchmark is satisfactory for the MFT. This problem strongly supports the usefulness of determining “knowledge added” assessment by determining “value added” to their score on the MFT we plan to assess in the near future that much more important. In addition, combining the B.A. with the B.S and having one assessment report may resolve many of the issues associated with the “Not Met” due to the small cohort sizes.

This is the second year we have had our incoming Biology Majors take the MFT; however, this is the first year we had them take the exam literally as they are entering the program. All incoming Biology Majors took the MFT during the second week of classes in the fall semester in BIO115, the laboratory associated with BIO114. As the data are for collection purposes only at this point, there is no benchmark attached to the scores for our “freshman.” Our long-term assessment plan for the program will occur when these same students take the MFT as an outgoing senior and then we will be able use the scores on the two exams to determine “value added” of each graduating student in the Biology Program at William Woods University. The Biology faculty are excited about adding this new level of assessment of our seniors. These data could show that while an outgoing senior may not meet the benchmarks of the MFT when comparing it to the national scores (our current assessment), the same student may improvement in their score, showing the program was successful as there would be a definite “value added” assessment.

We feel the failure to meet the benchmark for the Direct Student Interview for Objective 3 is largely due to incredibly low number of students participating in interviews (n=3). This means a poor performance by one student could pull down the average. Due to this problem, we have come up with a two-fold solution. First, we plan to change the benchmark, currently we believe the benchmark will be 70% of the students scoring 3.5 or better on the question. We also feel it is hard to distinguish if the low score for a question is due to lack of knowledge or due to poor interview skills and the stress of answering in front of all three biology faculty. The second change to this part of assessment will be to change from a Direct Interview format to a Direct Quiz format, in order to allow students to more completely answer each question. The only problem we have is this interview was also a time to 'check-in" with students and talk with them about things outside their course to make them successful. We will have further discussions about the importance of that component and if it feasible to do both a Direct Quiz and a Direct Interview during Student Performance Review Days.

We feel the failure to meet the benchmarks for the final exam questions in BIO124 and BIO401 was partially due to looking for questions on the exams that fit the objective instead of writing specific questions on the exam to meet the objective. This is actually a fault of all the Biology faculty and not unique to the faculty teaching those courses, and is something we as biology faculty are addressing for the upcoming assessment year. Our current new plan for assessment in courses is to have a Direct Quiz toward the end of the semester in which the questions are specifically designed around the objectives. As we have now completed our second assessment cycle with the new objectives, we feel we now have a better understanding of which courses and what type of data needs to be collected for each of these new objectives in order for our students to "met and/or surpass" the benchmarks next academic year. Changes in questions and benchmark reviews will occur next fall prior to the collection of data.

The addition of Dr. Sarah Greenland-White to the department has brought new knowledge and enthusiasm to the department. Weekly department meetings with all three Biology faculty took place throughout the academic year to discuss assessment and to communicate the types of data/questions we need to use for assessment purposes. As a department as a whole, we need to plan better for assessments occurring in our individual courses. Current discussions during the generation of this report is that we may begin to assess at least one of our objectives (possibly Objective 3) using the required Field courses and now that we have a full-time faculty teaching the required Anatomy & Physiology courses, we may want to consider assessing those as well. A comprehensive review of our Curriculum and Assessment maps will occur prior to the fall 2018 semester to make some possible changes to ensure everyone is satisfied with their respective course-specific components of the assessment of the program.

For a professions-oriented mission statement, we are satisfied with current preparation of our students, especially when you look at where our students are matriculating following graduation. Therefore, we feel only minor changes in our assessment are needed to accurately measure success of the Biology Program. Although we do feel strongly that writing one Assessment Report and combining the B.A. and B.S. students would be a much truer assessment of the Biology program as a whole and it would eliminate many "not met" benchmarks that are solely due to the extremely low sample sizes in the B.A. program.

Improvement Narrative List

Assessment Findings for the Assessment Measure level

<table>
<tr><td>Standard/Outcome</td><td>BIO.1 Evolution: Articulate knowledge that life evolved over time via mechanisms of mutation, natural selection, and genetic drift, and that there is concrete evidence for this fundamental concept _ evolution from common ancestry _ in the unity of numerous biological processes among species.</td></tr>
<tr><td>Legend</td><td>A</td></tr>
<tr><td>Course/Event</td><td>BIO 124</td></tr>
<tr><td>Assessment Measure</td><td>Direct - Final Exam</td></tr>
<tr><td>Assessment Findings</td><td>Met</td></tr>
<tr><td>Improvement Narrative</td><td>
<table>
<tr><th>Improvement Type</th><th>Summary</th></tr>
<tr><td>Curriculum</td><td>Remove assessing this objective from BIO124 as this Objective is already</td></tr>
</table>
</td></tr>
</table>

Revision	assessed twice, BIO401 (Evolution) and the Major Field Test

Standard/Outcome	BIO.3 Diversity in structures, functions, and systems: Demonstrate and model, through reductionist and holistic approaches, the interconnectedness of life along a continuum from molecular structures to interactions among organisms and with ecosystems.
Legend	A
Course/Event	BIO 124
Assessment Measure	Direct - Final Exam
Assessment Findings	Not met
Improvement Narrative	**Improvement Type**: Revise Assignment for Assessment **Summary**: Near end of the course have a quiz that explicitly addresses this Objective Current benchmark will be maintained

Standard/Outcome	BIO.1 Evolution: Articulate knowledge that life evolved over time via mechanisms of mutation, natural selection, and genetic drift, and that there is concrete evidence for this fundamental concept _ evolution from common ancestry _ in the unity of numerous biological processes among species.
Legend	A
Course/Event	BIO 401
Assessment Measure	Direct - Final Exam
Assessment Findings	Not met
Improvement Narrative	**Improvement Type**: Revise Assignment for Assessment **Summary**: Near end of the course have a quiz that explicitly addresses this Objective Current benchmark will be maintained

Standard/Outcome	BIO.1 Evolution: Articulate knowledge that life evolved over time via mechanisms of mutation, natural selection, and genetic drift, and that there is concrete evidence for this fundamental concept _ evolution from common ancestry _ in the unity of numerous biological processes among species.
Legend	A
Course/Event	Student Performance Review
Assessment Measure	Direct - Interview
Assessment Findings	Met

Improvement Narrative	

Improvement Type	Summary
Revise Program Benchmark	Revise to have 70% of students scoring 3.5/5 or better on question
Refine Assessment Tool	Move this from a Direct Interview format to a more Direct Formal Exam based assessment using VIA

Standard/Outcome	BIO.1 Evolution: Articulate knowledge that life evolved over time via mechanisms of mutation, natural selection, and genetic drift, and that there is concrete evidence for this fundamental concept _ evolution from common ancestry _ in the unity of numerous biological processes among species.
Legend	A
Course/Event	Student Performance Review
Assessment Measure	Direct - External Testing
Assessment Findings	Not met
Improvement Narrative	

Improvement Type	Summary
Refine Assessment Tool	No changes to the benchmark or assessment using the Major Field Test will be made until we can incorporate data comparing the MFT scores as freshman to their senior MFT scores to assess "value added"

Standard/Outcome	BIO.3 Diversity in structures, functions, and systems: Demonstrate and model, through reductionist and holistic approaches, the interconnectedness of life along a continuum from molecular structures to interactions among organisms and with ecosystems.
Legend	A
Course/Event	Student Performance Review
Assessment Measure	Direct - Interview
Assessment Findings	Not met
Improvement Narrative	

Improvement Type	Summary
Refine Assessment Tool	Move this from an interview format to a more formal based assessment using VIA

Program Activities

Student Performance Review

Describe the department assessment day activities if not already described previously. Please articulate the nature of the assessments are conducted, explain the process for assessment that happens on these two days. Include the schedule of assessment day for your program. What does the data and outcomes tell you? What changes will you make as a result of the data? What areas are successful for the program?

We use Student Performance Days to have our senior students take the Major Field Test (MFT) in Biology. The BA cohort is always smaller than our BS cohort, and this year was no difference, with a BA Senior Cohort of four students. This small "n" number always exaggerates any deficiencies in this group and we were not surprised this cohort did not meet any of the benchmarks associated with the MFT.

This academic year, we were able to administer the MFT to the incoming class of Biology Majors in the fall by doing it the second week of classes in the fall semester in BIO115, the laboratory associated with BIO114. This change was made in order to truly capture the entry level knowledge base of each of our incoming students majoring in Biology. In a few years, this data will be use to add another level of assessment of our program, we will be able to determine if there is in fact knowledge gained by measuring "value added" from participation in our Biology program. This will be a valuable assessment in addition to our current use of the MFT to evaluate the knowledge of our exiting seniors compared to other Biology majors on a national level. As this data is being used solely to generate an entry level baseline, there is no benchmark for this data at this time; however, the results of the MFT for those students is being placed here as evidence the data was collected, even though it occurred in the fall of 2017 and will not officially be utilized for a few years.

With the moving of the testing of incoming students to the fall, our incoming students Student Performance Day activities involved three separate 30 minute Breakout Sessions, one for each of our Biology Degree Programs. All incoming Biology students were required to attend Breakout Sessions specific to their degree in Biology in which requirements of their Major were discussed, as well as a Question & Answer session about their major, jobs, and other related issues.

This year our Biology BA students did poorly on the Interview Questions portions of the interview, and just barely missed the benchmark associated with content related to Objective 3. In previous years, for each Objective, we gave two questions and allowed students a choice as to which one they would answer. This year, in order to assess students on a more equal level, we only had one question per objective for students to answer, thus eliminating any question bias. We are considering making changes to this part of the Student Performance Day and to change from an interview format to a more formal testing process utilizing VIA to collect data. The questions will then be individually assessed by all Biology Faculty and an average score per question obtained. We feel we may get better answers per question if we have students type out their answers. Right now it is hard to assess whether their lack of an appropriate answer is due to their lack of knowledge obtained from their classes or whether their poor answers are due to being nervous about answering questions in an interview format in front of all three Biology Faculty.

Part of the Individual Interviews also involves questions inquiring what the students are doing "outside of their coursework" to make them competitive in the next stage of their career. We feel this is an important time to check in with our majors and learn about what their plans are for the summer. It provides an opportunity to stress the importance of shadowing, volunteering, and getting internships in order to be successful at the next stage of their careers. Since we also plan to collect the shadowing data using VIA as well for easier data collection for assessment, we will need to consider if it is feasible to maintain some type of interview to check in with students about their progress in obtaining the appropriate shadowing, volunteering, and internships to make them competitive.

Every year during Student Performance Days we bring in a Speaker who gives research-based talk to the entire department. We feel it is extremely valuable for our students to witness such talks and we attempt to alternate the area of research presented each year in order to expose our students to the variety of sub-disciplines within Biology during their 4-years here at William Woods. Our students continually provide positive feedback about the speakers and it is common to hear them discussing the talk amongst themselves for the next several days. We plan to continue this as part of our student performance days. This year we held a Meet & Greet/Question & Answer reception after the seminar for students to interact with the speaker, and that was well attend and successful. Therefore, it is definitely something we will continue to incorporate that into our Student Performance Day schedule.

Overall, we are very pleased with our Student Performance Days and feel we have a schedule that allows us to assess our students in a variety of manners, and the small changes mentioned above will only serve to better our assessment efforts of the Biology program.

Student Performance Review Schedule
Upload the program schedule for students during Performance Reviews.
Student_Performance_Days_Schedule___Spring_2018.pdf
Freshman_Fall_Biology_MFT_Departmental_Roster_with_Section_Subscores.pdf

Senior Showcase
Describe program Senior Showcase activities if not detailed previously in the report? What benefit does the program gain from the activities? What if any assessment of students happens during this event? What changes if any will occur due to what is learned by faculty on Senior Showcase?

We had 1 student present a poster at the Senior Showcase on Tuesday, November 28, 2017 but only 2 of our 4 Biology BA senior students presented a poster at the Senior Showcase on Thursday, April 19, 2018

Assessment Rubrics
Upload rubrics used for Senior Showcase or Student Performance Reviews for student assessment.

Service Learning
Does the Program include projects/ course content that uses the philosophy of service learning?
Yes
No (selected)

Service Learning Component
If so, how is service learning infused in the coursework within your department? Is service or community engagement in the program mission? Describe the Service Learning Activities that your students and department engaged in this past year. How did the activities improve student learning? How did the activities benefit the community?

N/A

LEAD Events
Highlight lead events sponsored by program faculty that are connected to program or general education objectives for the past academic year. Include a total number of lead events program faculty sponsored.

Robin Hirsch-Jacobson - **Conservation Within Our Zoos** - Learn about the efforts and actions that zoos are taking to help improve the lives of animals across the world through various conservation and wildlife projects. Also, hear direct accounts from individuals who interned at the St. Louis Zoo while also gaining knowledge on different animal species around the world. Monday, April 16, 2018

Kimberly L. Keller - Senior Showcase - Poster Presentations by Biology Majors - Senior Biology students completing their capstone course will present a scientific conference type poster on a topic of their choice for Senior Showcase. Students attending this event will complete a reflection form on the students/posters they visit to receive LEAD credit. The poster presentations will be given continuously throughout the scheduled event. Eighteen posters will be on display in Burton 104 and Burton 105 for students to review. April 19, 2018

Kimberly L. Keller - Parasitic Resistance in Horses - W**hat is it and does it exist in any of the horses at William Woods University.** Dr. Kimberly L. Keller, Assistant Professor of Biology, will present the results of her Cox Distinguished Professorship in Science Research which involved surveying the equine herd population for parasites. If any of the horses tested positive for parasites, attempts were made to determine if that parasite had acquired any

resistance to the deworming medicines used here on campus at William Woods University. Come and hear Dr. Keller talk about her research and the results of this study. April 25, 2018

Student Accomplishments

Highlight special examples of student successes in the field (academic: mentor-mentee, conference presentations, competitive internship, journal acceptance; extra-curricular: horse show championship, art exhibit). This is for any accomplishments that a student achieved outside of course work or the normal expectations of student success.

Alumni/Previous Graduates

Drew Olson (May 17) was admitted to University of Northern Colorado in their Master of Science in Biology program in January 2018

Faculty Accomplishments

Highlight special examples of faculty success in the profession/field/content area. This is for any accomplishment of a faculty activity/research/professional nature.

Kimberly L. Keller - Clark Cox Distinguished Professor in Science Research Project (2017 – 2018 academic year)
Assessment Rubric

Assessment Rubric

Assessment Rubric

Annual Assessment Rubric

12.000 pts 80.00%

	3.000 Assessment Reflects Best Practices	2.000 Assessment Meets the Expectations of the University	1.000 Assessment Needs Development	0.000 Assessment is Inadequate	N/A
Learning Objectives weight: 1.000	• Detailed, measurable program learning objectives • Objectives are shared with students and faculty	• Measurable program learning objectives. • Learning objectives are available to students.	• Program learning objectives are identified and are generally measurable	• Program learning objectives are not clear or measurable	N/A
Comment:					
Assessment Measures weight: 1.000	• Multiple measures are used to assess a student-learning objectives. • Rubrics or guides are used for the measures. • All measurements are clearly described. • External evaluation of student learning included.	• Assessment measures relate to program learning objectives. • Various measures are used to assess student learning. • Measures chosen provide useful information about student learning.	• Assessment focuses on class content only. • Minimal description of how the assessment relates to the objective. • Minimal assessment measures established.	• Assessment measures not connected to objectives. • Assessment measures are not clear. • No assessment measures are established.	N/A
Comment:					
Assessment Results weight: 1.000	• All objectives are assessed annually, or a rotation schedule is provided. • Data are collected and analyzed to show learning over time. • Standards for performance and gaps in student learning are clearly identified.	• Most objectives assessed annually. • Data collected and analyzed showing an annual snapshot of student learning. • Data are used to highlight gaps in student learning. • Some data from non-course based content.	• Data collected for at least one program objective. • Data collection is incomplete. • Gaps in student learning not identified. • Lacking external data to support course data.	• Learning objectives are not routinely assessed. • Routine data is not collected. • No discussion on gaps in student learning. • No use of external data to support student learning. • Assessment data not yet collected.	N/A
Comment:	The objectives are assessed a minimum of two times annually which is the standard for the university. The program looks at student work in the entry level coursework and then again in the senior year.				
Faculty Analysis and Conclusions weight: 1.000	• Data is shared that incorporates multiple faculty from the program. • Discussions on data results incorporate multiple faculty. • Opportunities for adjunct faculty to participate. • Includes input from external sources when possible.	• Multiple program faculty receive assessment results. • Assessment results are discussed • Specific conclusions about student learning are made based on the available assessment results.	• Minimal faculty input about results is sought • Data not used to determine success or not to the objective. • Minimal conclusions made.	• Faculty input is not sought. • Conclusions about student learning are not identified. • N/A Program recently started or too few graduates to suggest any changes.	N/A
Comment:	The analysis of the assessment in comprehensive and inclusive of all program faculty. The data are detailed and discussed clearly to showcase the issues and successes play within the program.				
Actions to Improve Learning and Assessment weight: 1.000	• All assessment methods, timetable for assessing, and evaluating the effectiveness modifications are included. • Changes to assessment are inclusive of multiple faculty. • Description of changes is detailed and and linked to assessment results.	• More than one change to assessment is proposed, timetable for assessment, and evaluating the change is provided. • Changes to assessment measures is highlighted. • Changes are realistic, with a good probability of improving learning or assessment.	• At least one change to improve learning or assessment is identified. • The proposed action(s) relates to faculty conclusions about areas for improvement. • Adjustments to the assessment are proposed but not clearly connected to data	• Lacking actions to improve student learning. • Actions discussed lack supportive data. • Lacking discussion of the effectiveness of the assessment plan	N/A
Comment:					