



COMPREHENSIVE ACADEMIC PROGRAM REVIEW

Note: Enter "NA" wherever data are not applicable or not available for the program under review.

Program Characteristics

Academic Program Name: **Biology**

Degree: **Bachelor of Science (B.S.)**

Program CIP Code: **26.0101**

School and Department: **School of Science, Technology, and Mathematics – Department of Life Science**

Time frame for this review: **2013-2017**

Date of last internal review: **2014**

Current date program reviewed for this report: **April 2019**

Program Goal Statement and Student Learning Outcomes

Program goal statement:

Graduates of the B.S. Biology program will complete comprehensive course work designed to give them a firm understanding of research skills in the biological sciences, enabling them to apply scientific processes to address a diversity of biological questions and clearly communicate their findings written and orally.

Program outcomes:

1. Graduate knowledge and skills in the biological sciences. Student will demonstrate comprehensive understanding of the key student learning outcomes and critical skills in one of the following three general areas of biology: general biology, environmental biology, or pre-health sciences.
2. Graduate satisfaction with the biology program. Candidates for graduation in the B.S. in Biology program will report a high level of satisfaction with the program.
3. Graduates will be successful. Graduates of the B.S. in Biology program will find employment related to their degree or gain acceptance in graduate or professional schools.

Student learning outcomes

1. Students will be able to find, read, interpret, critically evaluate, and communicate the information on a range of biological research topics.
2. Students will be able to describe the structure and function of the cell.
3. Students will demonstrate an understanding of how genetic information is stored, utilized, and inherited.



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4. Students will understand how the complexities of biotic and abiotic interactions of organisms shape an ecosystem's structure and function.
5. Students will demonstrate an understanding of how selective pressures can lead to adaptive genetic changes in organisms over time.

Brief Assessment of Previous Program Review

Outcome of previous program review (brief narrative statement).

The biology program is an important and viable program in the School of Science, Technology, and Mathematics. With 498 students currently enrolled in the biology program, it is the largest bachelor's program on campus. The program produces graduates who are well prepared for graduate or professional school or for professional employment. From the previous review's action plan, a STEM Advisory Council has been established which is comprised of faculty members from the School of Science, Technology and Mathematics, the Wright School of Business, and several local industry leaders. This council provides an avenue for open lines of communication between Dalton State and local industry providing opportunities for us to better understand and meet industry needs and open opportunities for internships.

What improvements have occurred since the last program review or assessment?

- Changes have been made to address the assessment of the program and also to make the program even more relevant for our students in the current graduate/professional school and employment climate.
- The opening of Peebles Hall provided additional classroom and lab space and new equipment, allowing undergraduate research in the biology program to more fully develop and flourish.
 - Peebles Hall opened in January 2014 providing much needed space and equipment for the growing biology program.
 - 60,000 ft²
 - 8 teaching labs
 - 5 research labs
 - With the opening of Peebles Hall came the addition of state-of-the-art equipment.
 - HPLC – High Performance Liquid Chromatograph
 - AA – Atomic absorption spectroscope
 - ICP – Inductively Coupled Plasma spectroscope
 - DSC – Differential scanning calorimeter
 - GCMS – Gas chromatography mass spectrometer
 - LCMS – Liquid chromatography mass spectrometer
 - NMR – Nuclear magnetic resonance spectroscope
 - FTIR – Fourier-transform infrared spectroscope (*FTIR*)
 - SEM – scanning electron microscope
 - Fluorescent microscope
- TAC - Dalton State is home to a Turtle Assurance Colony (TAC) charged with the responsibility of preserving specific endangered turtle species. The TAC currently has 14 species with approximately 100 turtles and tortoises.
- The cadaver lab and human dissection course were created.
- New safety manuals were written.
 - Dalton State College Biosafety Manual
 - DSC Chemical Hygiene Plan
 - Laboratory Safety Manual

- Many students are involved in undergraduate research. During this review period, 125 biology majors were involved in undergraduate research. This number represents students receiving course credit for their research but does not include other students involved in research projects not for credit.
- New opportunities for internships in biology were established.
- The School of Science, Technology, and Mathematics Undergraduate Research Committee sponsors STEM Career Panels and STEM Grad School Panels each year to help prepare and inform our students.
- The addition of new biology courses made it possible to offer more elective courses which are more specific to students' professional goals allowing more flexibility in the program.
- The Pre-health Professions Club was established.
- An herbarium with plant and fungal samples was created.
- Free open-source text books were adopted in BIOL 1107, 1108, and BIOL 2215.
- Free Lab manuals were developed for BIOL 1107 and 1108.
- Faculty coordinators were assigned to each teaching and research lab.
- The Shaheen Collection of rocks and minerals was moved to Sequoya for display.
- The School of Science, Technology, and Mathematics acquired the Annie Mills-Smith shell collection.
- Program outcomes have been adjusted and procedures put in place to gather relevant data.

What changes or revisions have been made to the program, its curriculum, or its program/student learning outcomes since the last program review? Please include a follow-up discussion of the previous review's action plan?

- BIOL 4800 Service Learning in Biology was included as an elective in the program (not for Biology Secondary Certification). Students in this course gain professional experience and skills as they prepare for careers in higher education, health care, or for graduate or professional school.
- BIOL 3510K Plant Biology and BIOL 3000 Research Methods in Biology were added as required courses for Biology Secondary Certification to help better prepare students for the GACE test.
- Several new courses were created to provide additional diversity and flexibility to the program:
 - BIOL 3600 Ornithology
 - BIOL 4600 Ecotoxicology
 - BIOL 3700 Biology Field Techniques
 - MATH 3050 Biological Statistics
 - BIOL 3850 Neuroscience
 - BIOL 4850K Human Dissection
 - BIOL 3150 Science and Society
- Prerequisites for program courses were evaluated and adjusted as necessary.
- From the previous review's action plan, a STEM Advisory Council has been established which is comprised of faculty members from the School of Science, Technology and Mathematics, the Wright School of Business, and several local industry leaders. This council provides an avenue for open lines of communication between Dalton State and local industry providing opportunities for us to better understand and meet industry needs and open opportunities for internships.

Student Demographics

Enrollment	Fall 2013	Fall 2014	Fall 2015	Fall 2016	Fall 2017	% Change
Biology						
Headcount	350	361	403	420	462	32
FTE	320.3	329.4	372.4	381.1	430.1	34.3
Enrolled Full-time	268	272	309	311	354	32.1
Enrolled Part-time	82	89	94	109	108	31.7
Biology with Secondary Certification						
Headcount	31	15	29	26	32	3.1
FTE	28.3	12.6	27.3	25.6	29.0	2.4
Enrolled Full-time	21	10	24	24	21	0
Enrolled Part-time	10	5	5	2	11	10
Combined Biology and Biology Education						
Female	223	216	263	283	304	36.3
Male	158	160	169	163	190	20.3
Alaskan Native/Native American/American Indian	5	6	10	9	18	260
Asian, Hawaiian, Other Pacific Islander	16	18	17	16	17	6.3
Black/African-American	21	15	16	22	23	9.5
Hispanic	0	0	0	0	0	¹ DNE
Multi-racial	0	0	0	0	0	DNE
Undeclared	32	34	41	52	13	-59.4
White	307	304	348	347	423	37.8

Analysis and comments on student demographics.

Enrollment in the biology program increased by 32% (34.3% for FTE), and enrollment in biology education remained relatively steady with an increase of 3.1% (2.4% for FTE). Increases in full-time and part-time enrollments were virtually the same at 32.1% and 31.7%, respectively. In terms of ethnicity, enrollment of Alaskan Native/Native American/American Indian students increased 260% and white students increased 37.8% during the review period. Other increases were in Black/African-American at 9.5% and Asian, Hawaiian, Other Pacific Islander at 6.3%. Additionally, while the data show no Hispanic students enrolled in the biology program, there are students of Hispanic heritage in the program who, for whatever reason, may have chosen not to self-identify as Hispanic. The ratio of male to female remained about the same over the review period going from 158/223 to 190/304.

¹DNE is a mathematical abbreviation for "Does Not Exist" often used for undefined expressions or when a proper solution does not exist.



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Faculty Indicators of Program Quality	Fall 2013	Fall 2014	Fall 2015	Fall 2016	Fall 2017	% Change
School (not Department) faculty teaching in program (excluding Areas A through E)	6	6	6	6	6	0
Full-time program faculty	14	17	17	17	17	21.4
Part-time program faculty	2	1	1	4	6	200
Total program faculty	22	24	24	27	29	31.8
Percent of program classes taught by full-time program faculty	100	97	97	97	97	-3
Gender (full-time and part-time faculty)	Fall 2013	Fall 2014	Fall 2015	Fall 2016	Fall 2017	% Change
Male	11	12	12	12	12	9.1
Female	11	12	12	15	17	54.5
Race/Ethnicity (full-time and part-time faculty)	Fall 2013	Fall 2014	Fall 2015	Fall 2016	Fall 2017	% Change
Alaskan Native/Native American/American Indian	0	0	0	0	0	DNE
Asian, Hawaiian, Other Pacific Islander	0	0	0	0	0	DNE
Black/African-American	1	1	1	1	1	0
Hispanic	0	0	0	0	0	DNE
Multi-racial	0	0	0	0	0	DNE
Undeclared	0	1	1	1	1	DNE
White	21	22	22	25	27	28.6
Tenure Status (full-time faculty)	Fall 2013	Fall 2014	Fall 2015	Fall 2016	Fall 2017	% Change
Tenured	6	7	8	10	11	83.3
On-tenure track	8	10	9	7	6	-25
Non-tenure track	0	0	0	0	0	DNE
Rank (full-time faculty)	Fall 2013	Fall 2014	Fall 2015	Fall 2016	Fall 2017	% Change
Professor	4	4	4	4	5	25
Associate Professor	4	6	7	8	7	75
Assistant Professor	5	6	6	5	5	0
Instructor/Senior Lecturer/Lecturer	1	1	0	0	0	-100



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Faculty Indicators of Program Quality

Highest degree (full-time faculty)	2013-14	2014-15	2015-16	2016-17	2017-18	% Change
Doctorate	12	14	14	14	14	16.7
Specialist	0	0	0	0	0	DNE
Master's	2	2	2	2	2	0
Bachelor's	0	1	1	1	1	DNE
Associate's/Other	0	0	0	0	0	DNE

Provide additional details, analysis, and comments regarding faculty indicators of program quality.

The number of full-time faculty teaching in the biology program has remained basically constant during the current review period with 97% of biology program classes being taught by full-time faculty. Due to increased enrollment in the program, the number of part-time faculty increased by 200% as budget limitations have not allowed for new lines for full-time faculty. Part-time program faculty teach only in Area D in freshman principles BIOL 1107K/1108K. All 2000-4000 level program courses are taught by full-time faculty. The part-time faculty also accounts for the increase in females teaching in the program as all current part-time faculty members are female. Among full-time faculty the male/female ratio is almost one-to-one. The stability and quality of the faculty are strengths of the program. There has been very little turnover in faculty. All full-time faculty are tenure track, and an indicator of the stability of the faculty is the percentage increase in the number of tenured faculty with a decline in the number of on-tenure track faculty, as these faculty members earned tenure. Further indicators of the quality and stability of the faculty are the percentage increases in full professor and associate professor in addition to having over 80% of the full-time faculty holding a doctoral degree.



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Indicators of Measures of Quality

Student Input	Fall 2013	Fall 2014	Fall 2015	Fall 2016	Fall 2017	% Change
Mean ACT score	20.6	20.8	20.7	20.4	20.5	-0.5
Mean SAT score	481	487	480	476	473	-1.7

If applicable to your degree program, provide any additional external quality assurance data/information or results (e.g., professional accreditation results, National Survey of Student Engagement [NSSE], market rankings, etc.).

Neither external accrediting bodies nor market rankings are used or tracked for the biology program. During the review period, the mean ACT score experienced a very slight decrease while the mean SAT score decreased 1.7%. Students accepted into Dalton State can self-select into the biology program as there are no incoming qualification criteria for the program. Internally, both professional and faculty advisors monitor student progress through the program.



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Indicators of Measures of Quality

Student Output	2013-14	2014-15	2015-16	2016-17	2017-18	% Change
Exit scores on national/state licensure (if applicable)	NA	NA	NA	NA	NA	DNE
Graduating majors' mean GPA	3.18	3.32	3.32	3.3	3.19	0.3
Employment rate of graduates (if available)	NA	NA	NA	NA	NA	DNE
Number of students entering graduate/professional programs	NA	NA	NA	NA	NA	DNE

Describe the extent to which students have achieved current program outcomes during this program review cycle (most recent year).

Program outcomes:

1. Knowledge and skills in the biological sciences

Courses in the biology program are regularly assessed by the biology faculty using WEAVE as the assessment instrument. During 2017-18, several courses in the program were assessed. Four of these courses are referenced here as they are central and required courses in the program – BIOL 3000 Research Methods in Biology, BIOL 3400 Genetics, BIOL 3500 Ecology, and BIOL 4000 Senior Seminar. Course level GPAs for these courses averaged 3.3, and assessment results from the courses demonstrated that students had understanding of the key student learning outcomes and critical skills of the program.

2. Graduate satisfaction with biology program
3. Graduates will be successful

Data regarding these two program outcomes has not been regularly collected. Graduates that we are in contact with have found professional employment or graduate/professional school opportunities upon graduation. Beginning with the 2018-19 academic year, a new assessment plan has been put in place to aid in regularly collecting this data.

Describe the extent to which students have achieved current student learning outcomes during this program review cycle (most recent year).

Student learning outcomes

1. Students will be able to find, read, interpret, critically evaluate, and communicate the information on a range of biological research topics.

BIOL 3000 Research Methods in Biology

Target - 70% of students will achieve a 70% or better on the third reading assignment.

Findings - 81% of students achieved a 70% or better on the third reading assignment.

Target - 70% of students will achieve a 70% or better on developing and revising a research hypothesis.

Findings - 96% of students achieved a 70% or better on developing and revising a research hypothesis.

Target - 70% of students will receive a 70% or better on collecting, managing, analyzing, and interpreting data and presenting that data.

Findings - 100% of students achieved a 70% or better on collecting, managing, analyzing, and interpreting data and presenting that data.

Target - 70% of students will earn a 70% or better on drafting and revising a research proposal

Findings - 93% of students achieved a 70% or better on drafting and revising a research proposal.

Target - 70% of students will earn a 70% or better on ethics reflection and discussion.

Findings - 100% of students achieved a 70% or better on ethics reflection and discussion.

2. Students will be able to describe the structure and function of the cell.

BIOL 3200 Cellular Biology

Target - Reduce incorrect answers from pretest to post-test by 50%.

Findings - There was a 35% average decrease in the number of incorrect responses from pre-test to post-test questions on knowledge of the structure and function of viruses, and prokaryotic and eukaryotic cell at the molecular level.

Target - Reduce incorrect answers from pretest to post-test by 50%.

Findings - There was a 27% average decrease in the number of incorrect responses from pre-test to post-test questions on understanding of the processes of bioenergetics, metabolism, cellular respiration, photosynthesis, DNA replication and repair, and gene expression.

Target - Reduce incorrect answers from pretest to post-test by 50%.

Findings - There was a 67% average decrease in the number of incorrect responses from pre-test to post-test questions on knowledge of the structure and function of cell membranes and membrane systems, the interactions between cells and their environment, and the cytoskeleton.

Target - Reduce incorrect answers from pretest to post-test by 50%.

Findings - There was a 29% average decrease in the number of incorrect responses from pre-test to post-test questions on understanding of cell reproduction, communication between cells, apoptosis, cancer, and the immune response.

Target - Reduce incorrect answers from pretest to post-test by 50%.

Findings - On a lab practical exam, 93% of students demonstrated understanding of the laboratory techniques involved in microscopy, sterile technique, and cell culture.

3. Students will demonstrate an understanding of how genetic information is stored, utilized, and inherited.

BIOL 3400 Genetics

Target - There will be a 50% decrease in incorrect answers on the post test questions 5, 6, 10, and 11 related to transmission genetics.

Findings - There was a 57% decrease in the number of incorrect responses from pre-test to post-test questions on transmission genetics.

Target - There will be a 50% decrease in incorrect answers on the post test questions 2 and 4 related to genetic information.

Findings - There was a 64% decrease in the number of incorrect responses from pre-test to post-test questions on genetic information.

Target - There will be a 50% decrease in incorrect answers on the post test questions 7, 8, and 9 related to genetic variation and evolution.

Findings - There was a 62% decrease in the number of incorrect responses from pre-test to post-test questions on genetic variation and evolution.

Target - There will be a 50% decrease in incorrect answers on the post test questions 1 and 3 related to Roles of gene expression in cellular biology.

Findings - There was a 30% decrease in the number of incorrect responses from pre-test to post-test questions on role of gene expression in cellular biology.

4. Students will understand how the complexities of biotic and abiotic interactions of organisms shape an ecosystem structure and function.

BIOL 3500 Ecology

Target - There will be a 50% decrease in incorrect answers on the post test questions related to species abundance and diversity for students passing the class.

Findings - There was more than a 50% decrease (-53% average) in the number of incorrect responses from pre-test to post-test questions on species abundance and diversity.

Target - For the students passing the course with a C or better, average 75%+ on each lab after the first lab for the six labs that are graded for a full score.

Findings - Average score for six lab write ups was 82%.

Target - There will be a 50% decrease in incorrect answers on the post test questions related to ecological concepts for students passing the class.

Findings - There was more than a 50% decrease (-64% average) in the number of incorrect responses from pre-test to post-test questions on concepts of ecology.

Target - There will be a 50% decrease in incorrect answers on the post test questions related to succession for students passing the class.

Findings - There was more than a 50% decrease (-74% average) in the number of incorrect responses from pre-test to post-test questions on the process of succession.

5. Students will demonstrate an understanding of how selective pressures can lead to adaptive genetic changes in organisms over time.

BIOL 4250 Evolution

Target - There will be a 50% decrease in incorrect answers on the post test questions related to evolutionary processes.

Findings - There was a 46% average decrease in the number of incorrect responses from pre-test to post-test questions on understanding of the main processes involved in evolution: mutation, selection (including sexual, kin, etc.), migration, drift, isolation.



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Target - There will be a 50% decrease in incorrect answers on the post test questions related to evolutionary relationships.

Findings - There was a 66% average decrease in the number of incorrect responses from pre-test to post-test questions on describing why all organisms are related, and indicating what it means from an evolutionary perspective to say organisms are closely related.

Target - 80% of the students will receive a 75% or better on the phylogeny assignment.

Findings - On completing a phylogeny based on a character matrix for a fictitious set of organisms (birds), 91% of students scored at least 75%.

Target - There will be a 50% decrease in incorrect answers on the post test questions related to natural selection and its premises.

Findings - There was a 51% average decrease in the number of incorrect responses from pre-test to post-test questions on describing the basic premises and process of natural selection, indicating why it is that it virtually must be true that organisms change through time.

Target - There will be a 50% decrease in incorrect answers on the post test questions related to speciation.

Findings - There was a 73% average decrease in the number of incorrect responses from pre-test to post-test questions on understanding of the major possible mechanisms involved in speciation.

The findings in this section describe the extent to which the student learning outcome targets were achieved during the most recent year (2017-18) of the review period. When a target is not met, an Action Plan for Improvement is put in place by the instructor at the course level. These plans for improvement can be found in each course assessment in WEAVE.



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Indicators of Measures of Quality

If available, provide additional information and/or results of other indicators of quality related to student output such as completer satisfaction surveys, employer satisfaction surveys, stakeholder satisfaction surveys, completion and continuation rates, attrition rates, starting salaries of graduates, etc.

As noted earlier, obtaining employment placement and graduate/professional school acceptance rates has been problematic. Data regarding these measures has not been regularly collected. We do know that graduates we are in contact with have found professional employment or graduate/professional school opportunities upon graduation. Beginning with the 2018-19 academic year, a new assessment plan has been put in place to aid in regularly collecting this data. In addition to assessing the student learning outcomes, surveys of candidates for graduation in the program will measure their overall satisfaction with the program, and surveys of graduates will measure their success in finding employment or gaining acceptance into graduate or professional schools.

Describe efforts undertaken to achieve and maintain curricular alignment within the program and currency to the discipline.

The School of Science, Technology, and Mathematics has a standing curriculum committee. At least one member of the science faculty serves on the committee along with other faculty members from the school. Faculty members and advisors can make proposals to the curriculum committee regarding changes to the biology program curriculum. These proposals are reviewed and discussed based on their accompanying rationale. Rationales for curricula changes often reference comparisons to other institutions in the USG so as to ensure that our curriculum remains relevant and consist with that of other comparable schools and schools in the system such as Columbus State University, Georgia Highlands College, Georgia State University, Gordon State College, Kennesaw State University, University of Georgia, University of North Georgia, University of West Georgia, and Valdosta State University.



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Indicators of Measures of Viability

Internal Demand for the Program	Fall 2013	Fall 2014	Fall 2015	Fall 2016	Fall 2017	% Change
Number of students enrolled in the degree program	381	376	432	446	494	29.7
Number of students who applied to the program (if applicable)	NA	NA	NA	NA	NA	DNE
Number of students admitted to the program (if applicable)	NA	NA	NA	NA	NA	DNE
Percent of classes taught by full-time faculty	100	97	97	97	97	-3

Describe additional details as deemed appropriate.

Overall enrollment combining biology and biology education has increased 29.7% (31.7% for FTE) during the current review period. Student demographics are addressed more fully on page 5. As indicated in the faculty demographics on pages 6-7, the number of faculty teaching in the biology program has increased mainly due to an increase in the number of part-time faculty necessary to accommodate the increase in enrollment during the current review period, but still, 97% of biology program classes are taught by full-time faculty.



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Indicators of Measures of Productivity

Graduation	2013-14	2014-15	2015-16	2016-17	2017-18	% Change
Number of degrees conferred	23	31	33	34	44	91.3
Total student credit hours earned	130	125	122	119	123	-5.4

Describe any institutional-specific factors impacting time to degree.

In order to make the most efficient and effective use of faculty resources, required courses are offered so that students can progress through the program and graduate on time. Enrollment in the program was up and the number of graduates almost doubled during the review period requiring that careful attention be given to the number of sections offered so as not to impede the progress of students towards graduation while at the same time not offering too many sections resulting in low course densities. The schedule is monitored closely to make any necessary adjustments. The number of elective courses offered along with free electives, service learning courses and research courses in the program also allows for flexibility in choosing courses.



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Evidence of Program Viability

Based on evidence from ALL of the above information, data, and analysis, discuss whether continued resources should be devoted to this program. This discussion must be evidence-based. Your comments should consider external factors and address questions such as the following: Are your students getting jobs? What is the job outlook for graduates? Are students prepared for the jobs they get? How is the field changing? Are program faculty members in contact with employers and getting back feedback on graduates' job performance? Do employers state or suggest a need for changes in the program?

Graduates of the biology program can be employed in a number of fields. The program provides enough flexibility in preparation for positions in the private sector, government agencies or academia for general biologists or environmental scientists along with preparation for continued graduate education. Students focusing more on pre-health science graduate with a strong foundation required for post-graduate professional programs and degrees including medicine, physician assistant, physical therapy, dentistry, and veterinary medicine.

The U. S. Bureau of Labor Statistics *Occupational Outlook Handbook* reports that as of 2018, the forecast for jobs in many of these fields is extremely favorable for the period 2016-2026. Most jobs as environmental scientists, conservation scientists, and foresters require only a bachelor's degree and are forecasted to increase at an average (6%) or faster than average (11%) rate. Jobs in the biological sciences field requiring a doctoral or professional degree are all forecasted to grow faster than average or much faster than average such as physician (13%), physician assistant (37%), physical therapist (28%), dentist (19%), and veterinarian (19%). Additionally, high school science teachers continue to be in demand. According to the Georgia Professional Standards Commission, in the state of Georgia alone, over the last two years, there has been an average of 157 vacant teaching positions in science (6-12). The biology program offers excellent preparation for the bachelor's degree required positions and also for graduate or professional school in these fields.

There are currently 498 students enrolled in the biology program. The number of graduates per year almost doubled during the review period. Graduates that we are in contact with have found professional employment or graduate/professional school opportunities upon graduation. With the favorable job outlook for graduates of the biology program along with the large number of students in the major, the biology program continues to be a viable program. Beginning with the 2018-19 academic year, a new assessment plan has been put in place to aid in regularly collecting data regarding the success of graduates.



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Program Strengths and Weaknesses

Based upon this review, what are the strengths and weaknesses of the program?

Strengths:

- The biology program content is very thorough and should be excellent preparation for students as they pursue graduate/professional school or employment.
- Program course offerings are varied and flexible to suit interests in general biology, environmental sciences, and pre-health sciences.
- Many students are involved in undergraduate research with a number of students presenting at state and regional undergraduate research conferences.
- Many students participate in service learning.
- The program has dedicated, well-qualified and student-centered faculty.
- All 3000 and 4000 level program courses and 97% of other program courses are taught by experienced full-time faculty.
- Biology education students have a 100% pass rate on the GACE biology content exams.
- The biology program has experienced consistent increases in enrollment.
- Graduates that we are in contact with have found professional employment or graduate school opportunities upon graduation.
- There is a very favorable job outlook for graduates of the program, particularly in healthcare related fields.

Weaknesses and concerns:

- Very little data has been collected from graduates concerning their overall satisfaction with the program and their success after graduation.
- Measuring program outcomes and student learning outcomes at the program level has been inconsistent.

Recommendations for Follow-Up and/or Action Plans (if needed)Issue/Concern:

Two issues will be focused on over the next year in order to improve our ability to assess the program overall and also to create pathways in the program based on students' professional goals.

1. Regarding assessment of the program, very little data has been collected from graduates concerning their overall satisfaction with the program and their success after graduation, and accurately measuring program outcomes and student learning outcomes at both the program and course level has been inconsistent.
2. Create three pathways in the B.S. Biology program – General Biology, Environmental Biology, and Pre-Health Sciences.

Specific action(s):

1. A new assessment plan has been put in place for 2018-19 going forward to aid in regularly collecting data for the overall assessment of the biology program through graduate surveys and better evaluation of program and course level outcomes.
2. The three new pathways will be created with program electives tailored specifically for each pathway.

Expected outcomes:

1. New attention to the program and course level assessments along with surveys of graduates will aid in consistency and quality of data that is useful to the overall assessment of the program.
2. By choosing a pathway, students will be able to choose electives more aligned with their professional goals. With such a large number of students enrolled in the program, having students in specific pathways will also aid in effectively scheduling classes within the program.

Time frame for achievement:

1. Although a new assessment plan has been put in place beginning in 2018-19, this will be an ongoing process.
2. The pathways will be available beginning 2018-19.

Person(s) responsible:

1. Primary responsibility lies with the leadership team made up of the dean, assistant dean, and department chairs. Course level implementation of actions will lie with the faculty.
2. Primary responsibility lies with the leadership team made up of the dean, assistant dean, and the department chair along with the School of Science, Technology and Mathematics Curriculum Committee.

Resources needed:

1. None at this time
2. None at this time



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Prepared by: Joe Ann Nimmas Date: 05/10/2019

Dean's Approval: [Signature] Date: 5/10/2019

Approval of the Chair of the DSC Comprehensive Program Review Committee: [Signature] Date: 5/13/19

Vice President of Academic Affairs (VPAA) Categorical Summation:

Check any of the following to categorically describe action(s) the institution will take concerning this program.

- Program **MEETS** Institution's Criteria
 - Program is critical to the institutional mission and will be retained.
 - Program is critical to the institutional mission and is growing, or a high demand field, and thus will be enhanced.
- Program **DOES NOT MEET** Institution's Criteria for continuation.
 - Program will be placed on monitoring status.
 - Program will undergo substantive curricular revisions.
 - Program will be deactivated.
 - Program will be voluntarily terminated.
 - Other (Please elaborate):

VPAA Signature: Pat Chute Date: 5/13/19

Patricia M. Chute, Ed.D.
Vice President of Academic Affairs
Dalton State College