

Program Name: Biology Clinical Laboratory Science

Assessed by: Jeff Goff, Dept. of Natural Sciences

Date/Cycle of Assessment: Submitted on 10/31/2016; Reporting cycle of January 2015 - December 2015

Mission Statement:

The Malone University Department of Natural Sciences exists to engage students in the study of God's majesty and character by exploring His handiwork as it is revealed in Nature, both animate and inanimate; to promote the wise and thoughtful stewardship of the natural resources He has entrusted to us; and to encourage students to demonstrate God's love in their respective communities by using the knowledge and skills they acquire here.

- Students should comprehend the central concepts of biology and chemistry, the underlying assumptions of biological knowledge and chemical knowledge, and be able to employ the methods of inquiry commonly utilized by practicing biologists and chemists at a level sufficient for entrance into graduate school, professional schools, and other biological vocations (Stems from Malone Educ. Goals A4, D1, and D3).
- Students should become proficient in solving biological and chemical problems using both quantitative and qualitative approaches and in analyzing / interpreting data generated by experimental protocols commonly employed by practicing biologists/chemists (Stems from Malone Educ. Goals C3, D4, and D5).
- Students should be able to apply the principles of Christian Stewardship to biological practice and interpret biological and chemical phenomena within a Christian worldview (Stems from Malone Educ. Goals D2, E1, and E5).

• Students should develop an enriched understanding of the nature of human identity, development, and behavior through a study of human anatomy and physiology. (Stems from Malone Educ. Goal A3)

Department: Natural Sciences

Program: Biology Clinical Laboratory Science
Assessed by: Jeffrey M. Goff - Dept. of Natural Sciences

Time Period Covered: *January 2015-December 2015*

Program Intended Learning Outcomes (PILO)	Means of Program Assessment & Criteria for Success	Summary of Data Collected	Use of Results
Demonstrate the capability of integrating data and assessing phenomena within a Christian paradigm (Departmental Outcome A).	1) Average cumulative score ≥ 12; minimum cumulative score of 8; no individual component score of 1 on the Faith and Learning Assessment Instrument as scored by the associated rubric.	Average composite score = 14.41; minimum composite score = 8; # of individual component scores of 1 was 3.	Data here represent the sixth data set ever collected with this instrument. Average composite score and individual composite scores all met the departmental criteria for success. However, 3 individual component scores were not acceptable. Two of the low individual component scores were from a single individual's essays who, we believe, avoided the question due to the sensitivity of the material. As a result, the department reworded the instrument to be less offensive to students whose worldviews differ significantly from Malone's in order to elicit more on-task participation.
Demonstrate a comprehension of the central concepts of chemistry including the major theories and laws which govern chemical phenomena (Departmental Outcome B).	1) Mean score no lower than 0.5σ below national mean and no individual score lower than 1.5σ below the national mean on the ACS Gen Chem II Exam. 2) ACS Gen Chem II Exam score used as a Pre-Test for obtaining baseline data only (not used to assess success, but merely preparation for freshman chemistry sequence).	1) Mean score on the ACS Gen Chem Exam is 29.14 (-0.80 σ). Ten individuals failed to meet the -1.5 σ criterion. 2) Class average on ACS Gen Chem pretest is 18.81 giving strong evidence of student improvement, but the scores of the freshman cohort as it exits is well below the national average (24 th percentile)	The 10 low ACS Gen Chem Exam scores and the low average score for the cohort are in keeping with other recent cohorts and are disappointing to the department. The extremely low CCDT results for Fall 2008 - Fall 2010 are evidence that our students enter well below the national average, so cohorts exiting below the national average do not necessarily imply a poor program. The ACS Gen Chem II pre-test scores, when compared to the post-test scores, are extremely strong evidence that our students are improving as a result of our freshman chemistry sequence. The department has concluded that our students enter below the national average and then exit below the national average in spite of the significant improvement in content knowledge. The department responded by developing a new, alternative Gen Chem II course for Zoo and Wildlife Biology Majors. Course is scheduled to run for the first time in Spring 2017.

Demonstrate an understanding of the relationships between structure and behavior of the chemical elements in their various forms and combinations	1) Mean score no lower than 0.5σ below national mean and no individual score lower than 1.5σ below the national mean on the ACS Organic Chem Exam. 2) Mean	1) Mean score on the ACS Organic Chem Exam was 36.45 (-0.23 \sigma). No individuals failed to meet the -1.5 \sigma criterion. 2) Average sub-score on the	1) This data set represents the fifth year in a row that ACS scores have met the departmental criteria for success. This may be the result of two changes that have been implemented in the Organic Chemistry sequence within the last 5 years. It is still too early to draw any conclusions regarding the implementation of these
(Departmental Outcome C).	score no lower than 0.5σ below national mean and no individual score lower than 1.5σ below the national mean on the ETS chemistry exam Organic subcategory.	Organic section of the ETS chemistry exam was 61.0 (+0.89σ). No individuals failed to meet the –1.5σ criterion on the organic section.	changes, though. The introduction of a more rigorous prerequisite for Chem 132 (i.e., Chem 131 grade of C) is awaiting approval by the department pending the implementation of Chem 135 for Zoo & Wildlife Biology Majors in Spring 2017. 2) ETS scores were acceptable this year. The department has opted to not make any changes to the curriculum at this time.
Demonstrate safe laboratory practices and an environmental ethic as it pertains to chemical use and disposal (Departmental Outcome D).	Minimum scores of 20, 21, and 20 must be obtained respectively on 3 safety projects completed as a component of our Chem 201 course (Stewardship and Safety in Chemical Practice) and graded via associated rubrics. In addition to the composite scores criteria on all 3 projects, minimum individual element scores have also been set.	Of 9 students, only 1 student failed to reach the minimum score of 20 on Safety Project #1 (1 individual element score missed criterion). On Safety Project #2, all students met the minimum composite score criterion of 21 and all individual element scores were satisfactory as well. On Safety Project #3, all students met the minimum composite score criterion of 20, though 1 individual element score missed the minimum standard.	1) Although two individual element scores were low and 1 student failed to meet a minimum composite score, the instructor feels strongly that this was due to a lack of time. The extensive one-on-one time required of the professor/student precluded these individuals from repeating a few of the assessments. Rather than fail the students, the instructor opted to allow the few sub-par scores with the intention of scheduling additional sessions at the next offering to give each student enough opportunities to meet the minimum scores on each project. The same problem was noted in last year's report, so the good intentions of the instructor may not be sufficient to accomplish the desired change. To step the efforts up a notch, the instructor has also incorporated feedback from the class in a proposal to the department that would add an additional credit hour to the class to assure that the assessments have adequate time for completion.
Demonstrate an ability to analyze various kinds of experimental data used in the chemical disciplines including the output of various instrumental techniques (Departmental Outcome E).	1) Each student must obtain a minimum cumulative score of 15 on each of 5 instrumental assignments (i.e., IR/MS/NMR assignments) completed in Chem 322.	All students who passed the class met the minimum score of 15 on all 5 assignments.	Since 2012, a passing grade on each assignment has been officially required in order to pass the class. In Spring 2014, the instructor implemented a policy of assigning a grade of "Incomplete" until all students had met the minimum criteria. As a result, the number of deficient criteria has dropped dramatically. At the encouragement of the Chemistry Program's external reviewers, the departmental chemistry faculty have agreed to add an additional 4 instrumental assignments to the existing slate of 5. The chemistry faculty are hoping to implement these new assignments within the next one or two reporting cycles.

Demonstrate an understanding of the biological characteristics of each of the major kingdoms (Departmental Outcome F)	1) Mean score no lower than 0.5σ below national mean and no individual score lower than 1.5σ below the national mean on the ETS biology exam Organismal Subscore.	1) Average Organismal subscore is $61.1 \ (+0.60\sigma)$. No individuals failed to meet the -1.5σ criterion.	In light of the successful scores of several recent cohorts on the organismal sub-section of the ETS, the department has opted to not make any programmatic changes at this time. Individuals missing the criterion of -1.5σ on other sub-sections or even as composite scores are a concern for us, but legitimate reasons for individual students missing the cutoff (e.g., illness, test anxiety) do exist. The department is more concerned when students who have acceptable GPAs routinely miss this threshold. This has occasionally happened, but not routinely. The department has slated this as an agenda item for a future departmental meeting.
Demonstrate an understanding of the fundamental concepts of molecular biology and genetics (Departmental Outcome G).	1) Mean score no lower than 0.5σ below national mean and no individual score lower than 1.5σ below the national mean on the ETS biology exam Molecular Biology and Genetics sub-scores.	1) Average Molecular Biology/Genetics sub-score is $58.8 \ (+0.45 \sigma)$. Two individuals failed to meet the -1.50σ criterion.	The composite average score was well-above the national average this year. Although this is cause for celebration, individuals missing the criterion of –1.5 σ are a concern for us. This has occasionally happened (two this year), but not routinely. Although legitimate reasons for individual students missing the cutoff (e.g., illness, test anxiety) do exist, the department has an intuition that it can do more. It remains to be seen how the recent personnel changes in the biology faculty will impact this weakness, but early insights should begin to become evident in the 2016 Assessment Report. In addition, several options are currently being discussed in the department and have been slated to be agenda items at an upcoming department meeting.

Demonstrate an ability to properly relate biological structure and function (Departmental Outcome I).	1) Mean score no lower than 0.5σ below national mean and no individual score lower than 1.5σ below the national mean on the ETS biology exam Cell Biology subscore.	1) Average Cell Biology subscore is 53.9 (+0.07 σ). A single individual failed to meet the – 1.5 σ criterion.	This sub-section of the ETS has historically been lowest. For this reason, a curricular change was proposed and passed by the full faculty that added one credit hour to the introductory Cell Biology course effective Fall 2012. It is still too early to tell if this curricular change will impact our scores on this section (i.e., Spring 2016 graduating class will be the first to take the ETS having benefited from this curricular change). Individuals missing the criterion of –1.5σ on other sub-sections or even as composite
			scores are a concern for us. This has occasionally happened (one this year on this sub-section), but not routinely. Although legitimate reasons for individual students missing the cutoff (e.g., illness, test anxiety) do exist, the department has an intuition that it can do more. It remains to be seen how the recent personnel changes in the biology faculty will impact this weakness, but early insights should begin to become evident in the 2016 Assessment Report. In addition, several options are currently being discussed in the department and have been slated to be agenda items at an upcoming department meeting. Lastly, in last year's report, we
			indicated that we would like to add an additional instrument to assess this outcome a minimum score of 70% on the cell biology content of our in-house biology post-test. This has proved more difficult than at first anticipated and was not completed for this report. Since so many of our curricular/personnel changes should begin impacting the 2016 report data, we are holding off on the new assessment until then as well.
Demonstrate the capability of analyzing and reporting empirical data from the biological sciences (Departmental Outcome K).	Instrument has been dropped in favor of a newer one that has yet to be developed.	NO DATA	Previous reports have indicated that our department has been having a long and rather continuous conversation about the need to implement a research methods course. This course was finally developed and approved by the department and full faculty. It is scheduled to run in Fall 2016 for the first time. The exact nature of the assessment instrument is still in flux, but the department has completed the most difficult step in addressing this shortfall. It will be possible to build an appropriate assessment instrument into the course as it runs in Fall 2016.

Demonstrate a balanced concept of molecular, micro, and macro levels of biological phenomena in the context of human systems (Departmental Outcome L).	1) Mean score no lower than 8/12 on the A&P questions of the inhouse biology post-test. No individual with a score lower than 5/12. (Note: New instrument – criteria are still being evaluated).	1) NO DATA for this reporting period.	Although Biol 132 exam scores were retained for several years with the goal of extracting the scores of our graduates from the overwhelming number of nursing students who took the course, the retirement of our A&P instructor has caused us to change course. The current in-house biology pre-test / post-test exam has been altered to accommodate roughly 12 questions covering human A&P content. The performance of our biology pre-professional students on these 12 questions will be used to show improvement in human A&P content knowledge. The first administration of this altered exam was tentatively scheduled for Spring 2015, but did not occur until Fall 2016. Preliminary data will be included in the 2016 assessment report. The current A&P instructor is also researching an additional assessment that might allow for true comparisons with national averages.
Demonstrate the ability to properly relate biological structure and function in the context of human systems (Departmental Outcome M).	1) Mean score no lower than 8/12 on the A&P questions of the inhouse biology post-test. No individual with a score lower than 5/12. (Note: New instrument – criteria are still being evaluated).	1) NO DATA for this reporting period.	See comments in table cell for Departmental PILO 'L'.
Demonstrate the level of content mastery required for potential successful performance in graduate school biology programs or professional schools (Departmental Outcome N).	1) Mean score no lower than 0.5σ below national mean and no individual score lower than 1.5σ below the national mean on the ETS biology exam composite score. 2) Mean score no lower than $31/50$ and no individual score lower than $24/50$ on the departmental biology Post-Test	1) Average ETS composite score is 160.1 (+0.53σ). Lowest individual score is 132 (-1.64σ). 2) Mean score on in-house Biology post-test is 34.07. One individual failed to meet the minimum score of 24 (lowest score was 17).	1) As has been the case for several years, the average ETS composite score has been meeting the departmental standard. Occasionally, an individual student fails to meet the minimum score – this happened again this year. The score of 132 in this year's data marks the second lowest ETS composite score ever obtained by a Malone student. Although legitimate reasons for individual students missing the cutoff do exist (e.g., illness, test anxiety), the department has an intuition that it can do more. 2) The score of 17 in this year's data was achieved by the same student that achieved the 132 on the ETS exam. This student obtained a score of 17 on the pre-test as well, and the lack of change, at face value, indicates that this student did not absorb any content knowledge whatsoever. Results of this nature are most unsettling. Several options to address the occasional outlier are currently being discussed in the department and have been slated to be agenda items at an upcoming department meeting. Until the impact of the extra credit hour in Biol 144 and the impact of biology faculty personnel changes are manifested, it seems premature to us to alter the curriculum.



Program Name: Biology (Pre-Medicine track)

Assessed by: Jeff Goff, Dept. of Natural Sciences

Date/Cycle of Assessment: Submitted on 10/31/2016; Reporting cycle of January 2015 - December 2015

Mission Statement:

The Malone University Department of Natural Sciences exists to engage students in the study of God's majesty and character by exploring His handiwork as it is revealed in Nature, both animate and inanimate; to promote the wise and thoughtful stewardship of the natural resources He has entrusted to us; and to encourage students to demonstrate God's love in their respective communities by using the knowledge and skills they acquire here.

- Students should comprehend the central concepts of biology and chemistry, the underlying assumptions of biological knowledge and chemical knowledge, and be able to employ the methods of inquiry commonly utilized by practicing biologists and chemists at a level sufficient for entrance into graduate school, professional schools, and other biological vocations (Stems from Malone Educ. Goals A4, D1, and D3).
- Students should become proficient in solving biological and chemical problems using both quantitative and qualitative approaches and in analyzing / interpreting data generated by experimental protocols commonly employed by practicing biologists/chemists (Stems from Malone Educ. Goals C3, D4, and D5).
- Students should be able to apply the principles of Christian Stewardship to biological practice and interpret biological and chemical phenomena within a Christian worldview (Stems from Malone Educ. Goals D2, E1, and E5).

Department: Natural Sciences

Program: Biology (Pre-Medicine Track)

Assessed by: Jeffrey M. Goff - Dept. of Natural Sciences

Time Period Covered: *January 2015-December 2015*

Program Intended Learning Outcomes (PILO)	Means of Program Assessment & Criteria for Success	Summary of Data Collected	Use of Results
Demonstrate the capability of integrating data and assessing phenomena within a Christian paradigm (Departmental Outcome A).	1) Average cumulative score ≥ 12; minimum cumulative score of 8; no individual component score of 1 on the Faith and Learning Assessment Instrument as scored by the associated rubric.	Average composite score = 14.41; minimum composite score = 8; # of individual component scores of 1 was 3.	Data here represent the sixth data set ever collected with this instrument. Average composite score and individual composite scores all met the departmental criteria for success. However, 3 individual component scores were not acceptable. Two of the low individual component scores were from a single individual's essays who, we believe, avoided the question due to the sensitivity of the material. As a result, the department reworded the instrument to be less offensive to students whose worldviews differ significantly from Malone's in order to elicit more on-task participation.
Demonstrate a comprehension of the central concepts of chemistry including the major theories and laws which govern chemical phenomena (Departmental Outcome B).	1) Mean score no lower than 0.5σ below national mean and no individual score lower than 1.5σ below the national mean on the ACS Gen Chem II Exam. 2) ACS Gen Chem II Exam score used as a Pre-Test for obtaining baseline data only (not used to assess success, but merely preparation for freshman chemistry sequence).	1) Mean score on the ACS Gen Chem Exam is 29.14 (-0.80 σ). Ten individuals failed to meet the -1.5 σ criterion. 2) Class average on ACS Gen Chem pretest is 18.81 giving strong evidence of student improvement, but the scores of the freshman cohort as it exits is well below the national average (24 th percentile)	The 10 low ACS Gen Chem Exam scores and the low average score for the cohort are in keeping with other recent cohorts and are disappointing to the department. The extremely low CCDT results for Fall 2008 - Fall 2010 are evidence that our students enter well below the national average, so cohorts exiting below the national average do not necessarily imply a poor program. The ACS Gen Chem II pre-test scores, when compared to the post-test scores, are extremely strong evidence that our students are improving as a result of our freshman chemistry sequence. The department has concluded that our students enter below the national average and then exit below the national average in spite of the significant improvement in content knowledge. The department responded by developing a new, alternative Gen Chem II course for Zoo and Wildlife Biology Majors. Course is scheduled to run for the first time in Spring 2017.

Demonstrate an	1) Mean score no lower	1) Mean score on the ACS	1) This data set represents the fifth year in a row that ACS scores have met the
understanding of the	•	Organic Chem Exam was	departmental criteria for success. This may be the result of two changes that have
	than 0.5σ below national		, ,
relationships between	mean and no individual	36.45 (–0.23 σ). No	been implemented in the Organic Chemistry sequence within the last 5 years. It is
structure and behavior of	score lower than 1.5 σ	individuals failed to meet	still too early to draw any conclusions regarding the implementation of these
the chemical elements in	below the national mean on	the -1.5 σ criterion. 2)	changes, though. The introduction of a more rigorous prerequisite for Chem 132
their various forms and	the ACS Organic Chem	Average sub-score on the	(i.e., Chem 131 grade of C) is awaiting approval by the department pending the
combinations	Exam. 2) Mean score no	Organic section of the ETS	implementation of Chem 135 for Zoo & Wildlife Biology Majors in Spring 2017. 2)
(Departmental Outcome C).	lower than 0.5 σ below	chemistry exam was 61.0	ETS scores were acceptable this year. The department has opted to not make any
	national mean and no	$(+0.89\sigma)$. No individuals	changes to the curriculum at this time.
	individual score lower than	failed to meet the −1.5σ	
	1.5 σ below the national	criterion on the organic	
	mean on the ETS chemistry	section.	
	exam Organic sub-category.		
Demonstrate an ability to	1) Each student must	All students who passed	Since 2012, a passing grade on each assignment has been officially required in order
analyze various kinds of	obtain a minimum	the class met the	to pass the class. In Spring 2014, the instructor implemented a policy of assigning a
experimental data used in	cumulative score of 15 on	minimum score of 15 on	grade of "Incomplete" until all students had met the minimum criteria. As a result,
the chemical disciplines	each of 5 instrumental	all 5 assignments.	the number of deficient criteria has dropped dramatically. At the encouragement of
including the output of	assignments (i.e.,		the Chemistry Program's external reviewers, the departmental chemistry faculty
various instrumental	IR/MS/NMR assignments)		have agreed to add an additional 4 instrumental assignments to the existing slate of
techniques (Departmental	completed in Chem 322.		5. The chemistry faculty are hoping to implement these new assignments within the
Outcome E).			next one or two reporting cycles.
Demonstrate an	1) Mean score no lower	1) Average Organismal	In light of the successful scores of several recent cohorts on the organismal sub-
understanding of the	than 0.5σ below national	sub-score is 61.1 (+0.60 σ).	section of the ETS, the department has opted to not make any programmatic
biological characteristics of	mean and no individual	No individuals failed to	changes at this time. Individuals missing the criterion of -1.5σ on other sub-sections
each of the major kingdoms	score lower than 1.5 σ	meet the -1.5 σ criterion.	or even as composite scores are a concern for us, but legitimate reasons for
(Departmental Outcome F)	below the national mean on		individual students missing the cutoff (e.g., illness, test anxiety) do exist. The
	the ETS biology exam		department is more concerned when students who have acceptable GPAs routinely
	Organismal Sub-score.		miss this threshold. This has occasionally happened, but not routinely. The
	g		department has slated this as an agenda item for a future departmental meeting.

Demonstrate an understanding of the fundamental concepts of molecular biology and genetics (Departmental Outcome G).	1) Mean score no lower than 0.5σ below national mean and no individual score lower than 1.5σ below the national mean on the ETS biology exam Molecular Biology and Genetics sub-scores.	1) Average Molecular Biology/Genetics sub-score is 58.8 ($+0.45\sigma$). Two individuals failed to meet the -1.50σ criterion.	The composite average score was well-above the national average this year. Although this is cause for celebration, individuals missing the criterion of -1.5σ are a concern for us. This has occasionally happened (two this year), but not routinely. Although legitimate reasons for individual students missing the cutoff (e.g., illness, test anxiety) do exist, the department has an intuition that it can do more. It remains to be seen how the recent personnel changes in the biology faculty will impact this weakness, but early insights should begin to become evident in the 2016 Assessment Report. In addition, several options are currently being discussed in the department and have been slated
Demonstrate an understanding of the various factors that impact biological populations (Departmental Outcome H).	1) Mean score no lower than 0.5σ below national mean and no individual score lower than 1.5σ below the national mean on the ETS biology exam Population Biology/Evolution/Ecology subscore.	1) Average Population Biology/Evolution/Ecology subscore is $60.4 \ (+0.61\sigma)$. All individuals met the -1.5 σ criterion.	to be agenda items at an upcoming department meeting. In light of the successful scores of several recent cohorts on the population biology/evolution/ecology sub-section, the department has opted to not make any programmatic changes at this time. The institutional cohort averages on this section are some of the highest and represent strengths of the department's biology programs.

Demonstrate an ability to properly relate biological structure and function (Departmental Outcome I).	1) Mean score no lower than 0.5σ below national mean and no individual score lower than 1.5σ below the national mean on the ETS biology exam Cell Biology subscore.	1) Average Cell Biology subscore is 53.9 (+0.07 σ). A single individual failed to meet the – 1.5 σ criterion.	This sub-section of the ETS has historically been lowest. For this reason, a curricular change was proposed and passed by the full faculty that added one credit hour to the introductory Cell Biology course effective Fall 2012. It is still too early to tell if this curricular change will impact our scores on this section (i.e., Spring 2016 graduating class will be the first to take the ETS having benefited from this curricular change). Individuals missing the criterion of –1.5σ on other sub-sections or even as composite
			scores are a concern for us. This has occasionally happened (one this year on this sub-section), but not routinely. Although legitimate reasons for individual students missing the cutoff (e.g., illness, test anxiety) do exist, the department has an intuition that it can do more. It remains to be seen how the recent personnel changes in the biology faculty will impact this weakness, but early insights should begin to become evident in the 2016 Assessment
			Report. In addition, several options are currently being discussed in the department and have been slated to be agenda items at an upcoming department meeting. Lastly, in last year's report, we indicated that we would like to add an additional instrument to assess this outcome a minimum score of 70% on the cell biology content of our in-house biology post-test. This has proved more difficult than at first anticipated and was not completed for this report. Since so many of our curricular/personnel changes should begin impacting the 2016 report data, we are holding off on the new assessment until then as well.
Demonstrate the capability of analyzing and reporting empirical data from the biological sciences (Departmental Outcome K).	Instrument has been dropped in favor of a newer one that has yet to be developed.	NO DATA	Previous reports have indicated that our department has been having a long and rather continuous conversation about the need to implement a research methods course. This course was finally developed and approved by the department and full faculty. It is scheduled to run in Fall 2016 for the first time. The exact nature of the assessment instrument is still in flux, but the department has completed the most difficult step in addressing this shortfall. It will be possible to build an appropriate assessment instrument into the course as it runs in Fall 2016.

Demonstrate the level of content	1) Mean score no lower than 0.5σ	1
mastery required for potential	below national mean and no	is
successful performance in	individual score lower than 1.5 σ	ir
graduate school biology programs	below the national mean on the	2
or professional schools	ETS biology exam composite score.	В
(Departmental Outcome N).	2) Mean score no lower than	ir
	31/50 and no individual score	n
	lower than 24/50 on the	S
	departmental biology Post-Test	

- Average ETS composite score is 160.1 (+0.53σ). Lowest individual score is 132 (-1.64σ).
 Mean score on in-house Biology post-test is 34.07. One individual failed to meet the minimum score of 24 (lowest score was 17).
- 1) As has been the case for several years, the average ETS composite score has been meeting the departmental standard. Occasionally, an individual student fails to meet the minimum score – this happened again this year. The score of 132 in this year's data marks the second lowest ETS composite score ever obtained by a Malone student. Although legitimate reasons for individual students missing the cutoff do exist (e.g., illness, test anxiety), the department has an intuition that it can do more. 2) The score of 17 in this year's data was achieved by the same student that achieved the 132 on the ETS exam. This student obtained a score of 17 on the pre-test as well, and the lack of change, at face value, indicates that this student did not absorb any content knowledge whatsoever. Results of this nature are most unsettling. Several options to address the occasional outlier are currently being discussed in the department and have been slated to be agenda items at an upcoming department meeting. Until the impact of the extra credit hour in Biol 144 and the impact of biology faculty personnel changes are manifested, it seems premature to us to alter the curriculum.



Program Name: Biochemistry

Assessed by: Jeff Goff, Dept. of Natural Sciences

Date/Cycle of Assessment: Submitted on 10/31/2016; Reporting cycle of January 2015 - December 2015

Mission Statement:

The Malone University Department of Natural Sciences exists to engage students in the study of God's majesty and character by exploring His handiwork as it is revealed in Nature, both animate and inanimate; to promote the wise and thoughtful stewardship of

the natural resources He has entrusted to us; and to encourage students to demonstrate God's love in their respective communities by using the knowledge and skills they acquire here.

- Students should comprehend the central concepts of biology and chemistry, the underlying assumptions of biological knowledge and chemical knowledge, and be able to employ the methods of inquiry commonly utilized by practicing biologists and chemists at a level sufficient for entrance into graduate school, professional schools, and other biological vocations (Stems from Malone Educ. Goals A4, D1, and D3).
- Students should become proficient in solving biological and chemical problems using both quantitative and qualitative approaches and in analyzing / interpreting data generated by experimental protocols commonly employed by practicing biologists/chemists (Stems from Malone Educ. Goals C3, D4, and D5).
- Students should be able to apply the principles of Christian Stewardship to biological practice and interpret biological and chemical phenomena within a Christian worldview (Stems from Malone Educ. Goals D2, E1, and E5).

Department: Natural Sciences **Program:** Biochemistry

Assessed by: Jeffrey M. Goff - Dept. of Natural Sciences

Time Period Covered: *January 2015-December 2015*

Program Intended Learning Outcomes (PILO)	Means of Program Assessment & Criteria for Success	Summary of Data Collected	Use of Results
Demonstrate the capability of integrating data and assessing phenomena within a Christian paradigm (Departmental Outcome A).	1) Average cumulative score ≥ 12; minimum cumulative score of 8; no individual component score of 1 on the Faith and Learning Assessment Instrument as scored by the associated rubric.	Average composite score = 14.41; minimum composite score = 8; # of individual component scores of 1 was 3.	Data here represent the sixth data set ever collected with this instrument. Average composite score and individual composite scores all met the departmental criteria for success. However, 3 individual component scores were not acceptable. Two of the low individual component scores were from a single individual's essays who, we believe, avoided the question due to the sensitivity of the material. As a result, the department reworded the instrument to be less offensive to students whose worldviews differ significantly from Malone's in order to elicit more on-task participation.
Demonstrate a comprehension of the central concepts of chemistry including the major theories and laws which govern chemical phenomena (Departmental Outcome B).	1) Mean score no lower than 0.5σ below national mean and no individual score lower than 1.5σ below the national mean on the ACS Gen Chem II Exam. 2) ACS Gen Chem II Exam score used as a Pre-Test for obtaining baseline data only (not used to assess success, but merely preparation for freshman chemistry sequence).	1) Mean score on the ACS Gen Chem Exam is 29.14 (-0.80 σ). Ten individuals failed to meet the -1.5 σ criterion. 2) Class average on ACS Gen Chem pretest is 18.81 giving strong evidence of student improvement, but the scores of the freshman cohort as it exits is well below the national average (24 th percentile)	The 10 low ACS Gen Chem Exam scores and the low average score for the cohort are in keeping with other recent cohorts and are disappointing to the department. The extremely low CCDT results for Fall 2008 - Fall 2010 are evidence that our students enter well below the national average, so cohorts exiting below the national average do not necessarily imply a poor program. The ACS Gen Chem II pre-test scores, when compared to the post-test scores, are extremely strong evidence that our students are improving as a result of our freshman chemistry sequence. The department has concluded that our students enter below the national average and then exit below the national average in spite of the significant improvement in content knowledge. The department responded by developing a new, alternative Gen Chem II course for Zoo and Wildlife Biology Majors. Course is scheduled to run for the first time in Spring 2017.

<u></u>	Τ .	г ,	
Demonstrate an understanding of	1) Mean score no lower than 0.5σ	1) Mean score on the ACS	1) This data set represents the fifth year in a row that ACS
the relationships between	below national mean and no	Organic Chem Exam was 36.45	composite scores have met the departmental criteria for success.
structure and behavior of the	individual score lower than 1.5 σ	(-0.23σ) . No individuals failed	This may be the result of two changes that have been
chemical elements in their	below the national mean on the	to meet the -1.5 σ criterion. 2)	implemented in the Organic Chemistry sequence within the last 5
various forms and combinations	ACS Organic Chem Exam. 2) Mean	Most recent mean score on the	years. It is still too early to draw any conclusions regarding the
(Departmental Outcome C).	score no lower than 0.5σ below	ACS Inorganic Chem Exam was	implementation of these changes, though. 2) Composite scores
	national mean and no individual	25.67 (–0.33σ). Only 1	on the ACS Inorganic exam have met the minimum standard set
	score lower than 1.5 σ below the	individual failed to meet the -	by the department since 2009. The occasional individual still
	national mean on the ACS	1.5σ criterion. 3) Average sub-	misses the -1.5σ criterion, however. The success of our students
	Inorganic Chem Exam. 3) Mean	scores on the Organic and	on the ETS inorganic sub-section, however, is comforting and
	score no lower than 0.5σ below	Inorganic sections of the ETS	leads us to believe that no programmatic changes are warranted
	national mean and no individual	chemistry exam are 61.0 and	at this time. 3) ETS scores were acceptable again this year. The
	score lower than 1.5 σ below the	56.7 respectively (+0.89σ and	department has opted to not make any changes to the curriculum
	national mean on the ETS	+0.56σ respectively). No	at this time.
	chemistry exam Organic and	individuals failed to meet the –	
	Inorganic Sub-scores.	1.5σ criterion on either sub-	
	0	section).	
Demonstrate an ability to analyze	1) Each student must obtain a	All students who passed the	Since 2012, a passing grade on each assignment has been
various kinds of experimental	minimum cumulative score of 15	class met the minimum score of	officially required in order to pass the class. In Spring 2014, the
data used in the chemical	on each of 5 instrumental	15 on all 5 assignments.	instructor implemented a policy of assigning a grade of
disciplines including the output of	assignments (i.e., IR/MS/NMR	15 on an 5 assignments.	"Incomplete" until all students had met the minimum criteria. As
various instrumental techniques	assignments) completed in Chem		a result, the number of deficient criteria has dropped
(Departmental Outcome E).	322.		dramatically. At the encouragement of the Chemistry Program's
(Departmental Outcome L).	322.		external reviewers, the departmental chemistry faculty have
			agreed to add an additional 4 instrumental assignments to the
			existing slate of 5. The chemistry faculty are hoping to implement
			these new assignments within the next one or two reporting
			cycles.
			Cycles.

Demonstrate an understanding of the fundamental concepts of molecular biology and genetics (Departmental Outcome G).	1) Mean score no lower than 0.5σ below national mean and no individual score lower than 1.5σ below the national mean on the ETS biology exam Molecular Biology and Genetics sub-scores.	1) Average Molecular Biology/Genetics sub-score is 58.8 (+0.45 σ). Two individuals failed to meet the -1.50σ criterion.	The composite average score was well-above the national average this year. Although this is cause for celebration, individuals missing the criterion of -1.5σ are a concern for us. This has occasionally happened (two this year), but not routinely. Although legitimate reasons for individual students missing the cutoff (e.g., illness, test anxiety) do exist, the department has an intuition that it can do more. It remains to be seen how the recent personnel changes in the biology faculty will impact this weakness, but early insights should begin to become evident in the 2016 Assessment Report. In addition, several options are currently being discussed in the department and have been slated to be agenda items at an upcoming department meeting.
Demonstrate an ability to properly relate biological structure and function (Departmental Outcome I).	1) Mean score no lower than 0.5σ below national mean and no individual score lower than 1.5σ below the national mean on the ETS biology exam Cell Biology subscore.	1) Average Cell Biology subscore is 53.9 (\pm 0.07 σ). A single individual failed to meet the \pm 1.5 σ criterion.	This sub-section of the ETS has historically been lowest. For this reason, a curricular change was proposed and passed by the full faculty that added one credit hour to the introductory Cell Biology course effective Fall 2012. It is still too early to tell if this curricular change will impact our scores on this section (i.e., Spring 2016 graduating class will be the first to take the ETS having benefited from this curricular change). Individuals missing the criterion of –1.5σ on other sub-sections or even as composite scores are a concern for us. This has occasionally happened (one this year on this sub-section), but not routinely. Although legitimate reasons for individual students missing the cutoff (e.g., illness, test anxiety) do exist, the department has an intuition that it can do more. It remains to be seen how the recent personnel changes in the biology faculty will impact this weakness, but early insights should begin to become evident in the 2016 Assessment Report. In addition, several options are currently being discussed in the department and have been slated to be agenda items at an upcoming department meeting. Lastly, in last year's report, we indicated that we would like to add an additional instrument to assess this outcome — a minimum score of 70% on the cell biology content of our in-house biology post-test. This has proved more difficult than at first anticipated and was not completed for this report. We are holding off on the new assessment until 2016.
Demonstrate the capability of analyzing and reporting empirical data from the biological sciences (Departmental Outcome K).	Instrument has been dropped in favor of a newer one that has yet to be developed.	NO DATA	Previous reports have indicated that our department has been having a long and rather continuous conversation about the need to implement a research methods course. This course was finally developed and approved by the department and full faculty. It is scheduled to run in Fall 2016 for the first time. The exact nature of the assessment instrument is still in flux, but the department has completed the most difficult step in addressing this shortfall.

Demonstrate the level of content mastery required for potential successful performance in graduate school biology programs or professional schools (Departmental Outcome N).	1) Mean score no lower than 0.5 σ below national mean and no individual score lower than 1.5 σ below the national mean on the ETS biology exam composite score. 2) Mean score no lower than 31/50 and no individual score lower than 24/50 on the departmental biology Post-Test	1) Average ETS composite score is 160.1 (+0.53σ). Lowest individual score is 132 (-1.64σ). 2) Mean score on in-house Biology post-test is 34.07. One individual failed to meet the minimum score of 24 (lowest score was 17).	It will be possible to build an appropriate assessment instrument into the course as it runs in Fall 2016. 1) As has been the case for several years, the average ETS composite score has been meeting the departmental standard. Occasionally, an individual student fails to meet the minimum score – this happened again this year. The score of 132 in this year's data marks the second lowest ETS composite score ever obtained by a Malone student. Although legitimate reasons for individual students missing the cutoff do exist (e.g., illness, test anxiety), the department has an intuition that it can do more. 2) The score of 17 in this year's data was achieved by the same student that achieved the 132 on the ETS exam. This student obtained a score of 17 on the pre-test as well, and the lack of change, at face value, indicates that this student did not absorb any content knowledge whatsoever. Results of this nature are most unsettling. Several options to address the occasional outlier are currently being discussed in the department and have been slated to be agenda items at an upcoming department meeting. Until the impact of the extra credit hour in Biol 144 and the impact of biology faculty personnel changes are manifested, it seems premature to us to alter the curriculum.
Demonstrate the level of content mastery required for potential successful performance in chemical industry, graduate school chemistry programs, or professional schools (Departmental Outcome P).	1) Mean score no lower than 0.5σ below national mean and no individual score lower than 1.5σ below the national mean on the ETS chemistry exam composite score. 2) Mean score no lower than 0.5σ below national mean and no individual score lower than 1.5σ below the national mean on the ACS Organic Chemistry exam.	1) Mean ETS composite score is 155.7. (+0.51 σ). No individuals failed to meet the -1.5 σ criterion. 2) Mean score on the ACS Organic Chem Exam was 36.45 (-0.23 σ). No individuals failed to meet the -1.5 σ criterion.	1) ETS Composite data have been acceptable for the last several years. 2) This data set represents the fifth year in a row that ACS scores have met the departmental criteria for success in organic. This may be the result of two changes that have been implemented in the Organic Chemistry sequence within the last 5 years. It is still too early to draw any conclusions regarding the implementation of these changes, though. No changes appear to be warranted at this time.



Program Name: Biology (General Track)

Assessed by: Jeff Goff, Dept. of Natural Sciences

Date/Cycle of Assessment: Submitted on 10/31/2016; Reporting cycle of January 2015 - December 2015

Mission Statement:

The Malone University Department of Natural Sciences exists to engage students in the study of God's majesty and character by exploring His handiwork as it is revealed in Nature, both animate and inanimate; to promote the wise and thoughtful stewardship of the natural resources He has entrusted to us; and to encourage students to demonstrate God's love in their respective communities by using the knowledge and skills they acquire here.

- Students should comprehend the central concepts of biology, the underlying assumptions of biological knowledge, and be able to employ the methods of inquiry commonly utilized by practicing biologists at a level sufficient for entrance into graduate school, professional schools, and other biological vocations (Stems from Malone Educ. Goals A4, D1, and D3).
- Students should become proficient in solving biological problems using both quantitative and qualitative approaches and in analyzing / interpreting data generated by experimental protocols commonly employed by practicing biologists (Stems from Malone Educ. Goals C3, D4, and D5).
- Students should be able to apply the principles of Christian Stewardship to biological practice and interpret biological phenomena within a Christian worldview (Stems from Malone Educ. Goals D2, E1, and E5).

Department: Natural Sciences

Program: Biology (General Track)

Assessed by: Jeffrey M. Goff - Dept. of Natural Sciences

Time Period Covered: *January 2015-December 2015*

Program Intended Learning Outcomes (PILO)	Means of Program Assessment & Criteria for Success	Summary of Data Collected	Use of Results
Demonstrate the capability of integrating data and assessing phenomena within a Christian paradigm (Departmental Outcome A).	1) Average cumulative score ≥ 12; minimum cumulative score of 8; no individual component score of 1 on the Faith and Learning Assessment Instrument as scored by the associated rubric.	Average composite score = 14.41; minimum composite score = 8; # of individual component scores of 1 was 3.	Data here represent the sixth data set ever collected with this instrument. Average composite score and individual composite scores all met the departmental criteria for success. However, 3 individual component scores were not acceptable. Two of the low individual component scores were from a single individual's essays who, we believe, avoided the question due to the sensitivity of the material. As a result, the department reworded the instrument to be less offensive to students whose worldviews differ significantly from Malone's in order to elicit more on-task participation.
Demonstrate a comprehension of the central concepts of chemistry including the major theories and laws which govern chemical phenomena (Departmental Outcome B).	1) Mean score no lower than 0.5σ below national mean and no individual score lower than 1.5σ below the national mean on the ACS Gen Chem II Exam. 2) ACS Gen Chem II Exam score used as a Pre-Test for obtaining baseline data only (not used to assess success, but merely preparation for freshman chemistry sequence).	1) Mean score on the ACS Gen Chem Exam is 29.14 (-0.80σ). Ten individuals failed to meet the -1.5σ criterion. 2) Class average on ACS Gen Chem pretest is 18.81 giving strong evidence of student improvement, but the scores of the freshman cohort as it exits is well below the national average (24^{th} percentile)	The 10 low ACS Gen Chem Exam scores and the low average score for the cohort are in keeping with other recent cohorts and are disappointing to the department. The extremely low CCDT results for Fall 2008 - Fall 2010 are evidence that our students enter well below the national average, so cohorts exiting below the national average do not necessarily imply a poor program. The ACS Gen Chem II pre-test scores, when compared to the post-test scores, are extremely strong evidence that our students are improving as a result of our freshman chemistry sequence. The department has concluded that our students enter below the national average and then exit below the national average in spite of the significant improvement in content knowledge. The department responded by developing a new, alternative Gen Chem II course for Zoo and Wildlife Biology Majors. Course is scheduled to run for the first time in Spring 2017.

Demonstrate an understanding of the biological characteristics of each of the major kingdoms (Departmental Outcome F)	1) Mean score no lower than 0.5σ below national mean and no individual score lower than 1.5σ below the national mean on the ETS biology exam Organismal Subscore.	1) Average Organismal subscore is 61.1 (+0.60 σ). No individuals failed to meet the – 1.5 σ criterion.	In light of the successful scores of several recent cohorts on the organismal sub-section of the ETS, the department has opted to not make any programmatic changes at this time. Individuals missing the criterion of -1.5σ on other sub-sections or even as composite scores are a concern for us, but legitimate reasons for individual students missing the cutoff (e.g., illness, test anxiety) do exist. The department is more concerned when students who have acceptable GPAs routinely miss this threshold. This has occasionally happened, but not routinely. The department has slated this as an agenda item for a future departmental meeting.
Demonstrate an understanding of the fundamental concepts of molecular biology and genetics (Departmental Outcome G).	1) Mean score no lower than 0.5σ below national mean and no individual score lower than 1.5σ below the national mean on the ETS biology exam Molecular Biology and Genetics sub-scores.	1) Average Molecular Biology/Genetics sub-score is $58.8 \ (+0.45 \ \sigma)$. Two individuals failed to meet the $-1.50 \ \sigma$ criterion.	The composite average score was well-above the national average this year. Although this is cause for celebration, individuals missing the criterion of -1.5σ are a concern for us. This has occasionally happened (two this year), but not routinely. Although legitimate reasons for individual students missing the cutoff (e.g., illness, test anxiety) do exist, the department has an intuition that it can do more. It remains to be seen how the recent personnel changes in the biology faculty will impact this weakness, but early insights should begin to become evident in the 2016 Assessment Report. In addition, several options are currently being discussed in the department and have been slated to be agenda items at an upcoming department meeting.

Demonstrate an understanding of	1) Mean score no lower than 0.5σ	1) Average Population	In light of the successful scores of several recent cohorts on the
the various factors that impact	below national mean and no	Biology/Evolution/Ecology sub-	population biology/evolution/ecology sub-section, the
biological populations	individual score lower than 1.5 σ	score is 60.4 (+0.61 <i>σ</i>). All	department has opted to not make any programmatic changes at
(Departmental Outcome H).	below the national mean on the	individuals met the -1.5 σ	this time. The institutional cohort averages on this section are
	ETS biology exam Population	criterion.	some of the highest and represent strengths of the department's
	Biology/Evolution/Ecology sub-		biology programs.
	score.		
Demonstrate an ability to	1) Mean score no lower than 0.5σ	Average Cell Biology sub-	This sub-section of the ETS has historically been lowest. For this
properly relate biological	below national mean and no	score is 53.9 (+0.07 σ). A single	reason, a curricular change was proposed and passed by the full
structure and function	individual score lower than 1.5 σ	individual failed to meet the –	faculty that added one credit hour to the introductory Cell Biology
(Departmental Outcome I).	below the national mean on the	1.5σ criterion.	course effective Fall 2012. It is still too early to tell if this
	ETS biology exam Cell Biology sub-		curricular change will impact our scores on this section (i.e.,
	score.		Spring 2016 graduating class will be the first to take the ETS
			having benefited from this curricular change). Individuals missing
			the criterion of -1.5σ on other sub-sections or even as composite
			scores are a concern for us. This has occasionally happened (one
			this year on this sub-section), but not routinely. Although
			legitimate reasons for individual students missing the cutoff (e.g.,
			illness, test anxiety) do exist, the department has an intuition that
			it can do more. It remains to be seen how the recent personnel
			changes in the biology faculty will impact this weakness, but early
			insights should begin to become evident in the 2016 Assessment
			Report. In addition, several options are currently being discussed
			in the department and have been slated to be agenda items at an
			upcoming department meeting. Lastly, in last year's report, we
			indicated that we would like to add an additional instrument to
			assess this outcome a minimum score of 70% on the cell biology
			content of our in-house biology post-test. This has proved more
			difficult than at first anticipated and was not completed for this
			report. Since so many of our curricular/personnel changes should
			begin impacting the 2016 report data, we are holding off on the
			new assessment until then as well.

Demonstrate the capability of analyzing and reporting empirical data from the biological sciences (Departmental Outcome K).	Instrument has been dropped in favor of a newer one that has yet to be developed.	NO DATA	Previous reports have indicated that our department has been having a long and rather continuous conversation about the need to implement a research methods course. This course was finally developed and approved by the department and full faculty. It is scheduled to run in Fall 2016 for the first time. The exact nature of the assessment instrument is still in flux, but the department has completed the most difficult step in addressing this shortfall. It will be possible to build an appropriate assessment instrument into the course as it runs in Fall 2016.
Demonstrate the level of content mastery required for potential successful performance in graduate school biology programs or professional schools (Departmental Outcome N).	1) Mean score no lower than 0.5 σ below national mean and no individual score lower than 1.5 σ below the national mean on the ETS biology exam composite score. 2) Mean score no lower than 31/50 and no individual score lower than 24/50 on the departmental biology Post-Test	1) Average ETS composite score is 160.1 (+0.53σ). Lowest individual score is 132 (-1.64σ). 2) Mean score on in-house Biology post-test is 34.07. One individual failed to meet the minimum score of 24 (lowest score was 17).	1) As has been the case for several years, the average ETS composite score has been meeting the departmental standard. Occasionally, an individual student fails to meet the minimum score – this happened again this year. The score of 132 in this year's data marks the second lowest ETS composite score ever obtained by a Malone student. Although legitimate reasons for individual students missing the cutoff do exist (e.g., illness, test anxiety), the department has an intuition that it can do more. 2) The score of 17 in this year's data was achieved by the same student that achieved the 132 on the ETS exam. This student obtained a score of 17 on the pre-test as well, and the lack of change, at face value, indicates that this student did not absorb any content knowledge whatsoever. Results of this nature are most unsettling. Several options to address the occasional outlier are currently being discussed in the department and have been slated to be agenda items at an upcoming department meeting. Until the impact of the extra credit hour in Biol 144 and the impact of biology faculty personnel changes are manifested, it seems premature to us to alter the curriculum.



Program Name: Biology (Pre-Optometry track)

Assessed by: Jeff Goff, Dept. of Natural Sciences

Date/Cycle of Assessment: Submitted on 10/31/2016; Reporting cycle of January 2015 - December 2015

Mission Statement:

The Malone University Department of Natural Sciences exists to engage students in the study of God's majesty and character by exploring His handiwork as it is revealed in Nature, both animate and inanimate; to promote the wise and thoughtful stewardship of the natural resources He has entrusted to us; and to encourage students to demonstrate God's love in their respective communities by using the knowledge and skills they acquire here.

- Students should comprehend the central concepts of biology and chemistry, the underlying assumptions of biological knowledge and chemical knowledge, and be able to employ the methods of inquiry commonly utilized by practicing biologists and chemists at a level sufficient for entrance into graduate school, professional schools, and other biological vocations (Stems from Malone Educ. Goals A4, D1, and D3).
- Students should become proficient in solving biological and chemical problems using both quantitative and qualitative approaches and in analyzing / interpreting data generated by experimental protocols commonly employed by practicing biologists/chemists (Stems from Malone Educ. Goals C3, D4, and D5).
- Students should be able to apply the principles of Christian Stewardship to biological practice and interpret biological and chemical phenomena within a Christian worldview (Stems from Malone Educ. Goals D2, E1, and E5).

• Students should develop an enriched understanding of the nature of human identity, development, and behavior through a study of human anatomy and physiology. (Stems from Malone Educ. Goal A3)

Department: Natural Sciences

Program: Biology (Pre-Optometry Track)

Assessed by: Jeffrey M. Goff - Dept. of Natural Sciences

Time Period Covered: *January 2015-December 2015*

Program Intended Learning Outcomes (PILO)	Means of Program Assessment & Criteria for Success	Summary of Data Collected	Use of Results
Demonstrate the capability of integrating data and assessing phenomena within a Christian paradigm (Departmental Outcome A).	1) Average cumulative score ≥ 12; minimum cumulative score of 8; no individual component score of 1 on the Faith and Learning Assessment Instrument as scored by the associated rubric.	Average composite score = 14.41; minimum composite score = 8; # of individual component scores of 1 was 3.	Data here represent the sixth data set ever collected with this instrument. Average composite score and individual composite scores all met the departmental criteria for success. However, 3 individual component scores were not acceptable. Two of the low individual component scores were from a single individual's essays who, we believe, avoided the question due to the sensitivity of the material. As a result, the department reworded the instrument to be less offensive to students whose worldviews differ significantly from Malone's in order to elicit more on-task participation.
Demonstrate a comprehension of the central concepts of chemistry including the major theories and laws which govern chemical phenomena (Departmental Outcome B).	1) Mean score no lower than 0.5σ below national mean and no individual score lower than 1.5σ below the national mean on the ACS Gen Chem II Exam. 2) ACS Gen Chem II Exam score used as a Pre-Test for obtaining baseline data only (not used to assess success, but merely preparation for freshman chemistry sequence).	1) Mean score on the ACS Gen Chem Exam is $29.14 (-0.80\sigma)$. Ten individuals failed to meet the -1.5σ criterion. 2) Class average on ACS Gen Chem pretest is 18.81 giving strong evidence of student improvement, but the scores of the freshman cohort as it exits is well below the national average $(24^{th}$ percentile)	The 10 low ACS Gen Chem Exam scores and the low average score for the cohort are in keeping with other recent cohorts and are disappointing to the department. The extremely low CCDT results for Fall 2008 - Fall 2010 are evidence that our students enter well below the national average, so cohorts exiting below the national average do not necessarily imply a poor program. The ACS Gen Chem II pre-test scores, when compared to the post-test scores, are extremely strong evidence that our students are improving as a result of our freshman chemistry sequence. The department has concluded that our students enter below the national average and then exit below the national average in spite of the significant improvement in content knowledge. The department responded by developing a new, alternative Gen Chem II course for Zoo and Wildlife Biology Majors. Course is scheduled to run for the first time in Spring 2017.

	1	Τ .	T
Demonstrate an understanding of	1) Mean score no lower than 0.5σ	1) Mean score on the ACS	1) This data set represents the fifth year in a row that ACS scores
the relationships between	below national mean and no	Organic Chem Exam was 36.45	have met the departmental criteria for success. This may be the
structure and behavior of the	individual score lower than 1.5 σ	(-0.23σ) . No individuals failed	result of two changes that have been implemented in the Organic
chemical elements in their	below the national mean on the	to meet the -1.5 σ criterion. 2)	Chemistry sequence within the last 5 years. It is still too early to
various forms and combinations	ACS Organic Chem Exam. 2) Mean	Average sub-score on the	draw any conclusions regarding the implementation of these
(Departmental Outcome C).	score no lower than 0.5σ below	Organic section of the ETS	changes, though. The introduction of a more rigorous
	national mean and no individual	chemistry exam was 61.0	prerequisite for Chem 132 (i.e., Chem 131 grade of C) is awaiting
	score lower than 1.5 σ below the	(+0.89σ). No individuals failed	approval by the department pending the implementation of
	national mean on the ETS	to meet the -1.5σ criterion on	Chem 135 for Zoo & Wildlife Biology Majors in Spring 2017. 2)
	chemistry exam Organic sub-	the organic section.	ETS scores were acceptable this year. The department has opted
	category.		to not make any changes to the curriculum at this time.
Demonstrate an ability to analyze	1) Each student must obtain a	All students who passed the	Since 2012, a passing grade on each assignment has been
various kinds of experimental	minimum cumulative score of 15	class met the minimum score of	officially required in order to pass the class. In Spring 2014, the
data used in the chemical	on each of 5 instrumental	15 on all 5 assignments.	instructor implemented a policy of assigning a grade of
disciplines including the output of	assignments (i.e., IR/MS/NMR		"Incomplete" until all students had met the minimum criteria. As
various instrumental techniques	assignments) completed in Chem		a result, the number of deficient criteria has dropped
(Departmental Outcome E).	322.		dramatically. At the encouragement of the Chemistry Program's
			external reviewers, the departmental chemistry faculty have
			agreed to add an additional 4 instrumental assignments to the
			existing slate of 5. The chemistry faculty are hoping to implement
			these new assignments within the next one or two reporting
			cycles.
Demonstrate an understanding of	1) Mean score no lower than 0.5σ	1) Average Organismal sub-	In light of the successful scores of several recent cohorts on the
the biological characteristics of	below national mean and no	score is 61.1 (+0.60 σ). No	organismal sub-section of the ETS, the department has opted to
each of the major kingdoms	individual score lower than 1.5 σ	individuals failed to meet the -	not make any programmatic changes at this time. Individuals
(Departmental Outcome F)	below the national mean on the	1.5σ criterion.	missing the criterion of -1.5σ on other sub-sections or even as
	ETS biology exam Organismal Sub-		composite scores are a concern for us, but legitimate reasons for
	score.		individual students missing the cutoff (e.g., illness, test anxiety)
			do exist. The department is more concerned when students who
			have acceptable GPAs routinely miss this threshold. This has
			occasionally happened, but not routinely. The department has
			slated this as an agenda item for a future departmental meeting.

Demonstrate an understanding of the fundamental concepts of molecular biology and genetics (Departmental Outcome G).	1) Mean score no lower than 0.5σ below national mean and no individual score lower than 1.5σ below the national mean on the ETS biology exam Molecular Biology and Genetics sub-scores.	1) Average Molecular Biology/Genetics sub-score is $58.8 \ (+0.45 \ \sigma)$. Two individuals failed to meet the $-1.50 \ \sigma$ criterion.	The composite average score was well-above the national average this year. Although this is cause for celebration, individuals missing the criterion of -1.5σ are a concern for us. This has occasionally happened (two this year), but not routinely. Although legitimate reasons for individual students missing the cutoff (e.g., illness, test anxiety) do exist, the department has an intuition that it can do more. It remains to be seen how the recent personnel changes in the biology faculty will impact this weakness, but early insights should begin to become evident in the 2016 Assessment Report. In addition, several options are currently being discussed in the department and have been slated to be agenda items at an upcoming department meeting.
Demonstrate an ability to properly relate biological structure and function (Departmental Outcome I).	1) Mean score no lower than 0.5σ below national mean and no individual score lower than 1.5σ below the national mean on the ETS biology exam Cell Biology subscore.	1) Average Cell Biology subscore is 53.9 (+0.07 σ). A single individual failed to meet the – 1.5 σ criterion.	This sub-section of the ETS has historically been lowest. For this reason, a curricular change was proposed and passed by the full faculty that added one credit hour to the introductory Cell Biology course effective Fall 2012. It is still too early to tell if this curricular change will impact our scores on this section (i.e., Spring 2016 graduating class will be the first to take the ETS having benefited from this curricular change). Individuals missing the criterion of −1.5σ on other sub-sections or even as composite scores are a concern for us. This has occasionally happened (one this year on this sub-section), but not routinely. Although legitimate reasons for individual students missing the cutoff (e.g., illness, test anxiety) do exist, the department has an intuition that it can do more. It remains to be seen how the recent personnel changes in the biology faculty will impact this weakness, but early insights should begin to become evident in the 2016 Assessment Report. In addition, several options are currently being discussed in the department and have been slated to be agenda items at an upcoming department meeting. Lastly, in last year's report, we indicated that we would like to add an additional instrument to assess this outcome a minimum score of 70% on the cell biology content of our in-house biology post-test. This has proved more difficult than at first anticipated and was not completed for this report. We are holding off on the new assessment until 2016.
Demonstrate the capability of analyzing and reporting empirical data from the biological sciences (Departmental Outcome K).	Instrument has been dropped in favor of a newer one that has yet to be developed.	NO DATA	Previous reports have indicated that our department has been having a long and rather continuous conversation about the need to implement a research methods course. This course was finally developed and approved by the department and full faculty. It is scheduled to run in Fall 2016 for the first time. The exact nature of the assessment instrument is still in flux, but the department has completed the most difficult step in addressing this shortfall. It will be possible to build an appropriate assessment instrument into the course as it runs in Fall 2016.

Demonstrate a balanced concept of molecular, micro, and macro levels of biological phenomena in the context of human systems (Departmental Outcome L).	1) Mean score no lower than 8/12 on the A&P questions of the inhouse biology post-test. No individual with a score lower than 5/12. (Note: New instrument – criteria are still being evaluated).	1) NO DATA for this reporting period.	Although Biol 132 exam scores were retained for several years with the goal of extracting the scores of our graduates from the overwhelming number of nursing students who took the course, the retirement of our A&P instructor has caused us to change course. The current in-house biology pre-test / post-test exam has been altered to accommodate roughly 12 questions covering human A&P content. The performance of our biology pre-professional students on these 12 questions will be used to show improvement in human A&P content knowledge. The first administration of this altered exam was tentatively scheduled for Spring 2015, but did not occur until Fall 2016. Preliminary data will be included in the 2016 assessment report. The current A&P instructor is also researching an additional assessment that might allow for true comparisons with national averages.
Demonstrate the ability to properly relate biological structure and function in the context of human systems (Departmental Outcome M).	1) Mean score no lower than 8/12 on the A&P questions of the inhouse biology post-test. No individual with a score lower than 5/12. (Note: New instrument – criteria are still being evaluated).	1) NO DATA for this reporting period.	See comments in table cell for Departmental PILO 'L'.
Demonstrate the level of content mastery required for potential successful performance in graduate school biology programs or professional schools (Departmental Outcome N).	1) Mean score no lower than 0.5σ below national mean and no individual score lower than 1.5σ below the national mean on the ETS biology exam composite score. 2) Mean score no lower than $31/50$ and no individual score lower than $24/50$ on the departmental biology Post-Test	1) Average ETS composite score is 160.1 (+0.53σ). Lowest individual score is 132 (-1.64σ). 2) Mean score on in-house Biology post-test is 34.07. One individual failed to meet the minimum score of 24 (lowest score was 17).	1) As has been the case for several years, the average ETS composite score has been meeting the departmental standard. Occasionally, an individual student fails to meet the minimum score – this happened again this year. The score of 132 in this year's data marks the second lowest ETS composite score ever obtained by a Malone student. Although legitimate reasons for individual students missing the cutoff do exist (e.g., illness, test anxiety), the department has an intuition that it can do more. 2) The score of 17 in this year's data was achieved by the same student that achieved the 132 on the ETS exam. This student obtained a score of 17 on the pre-test as well, and the lack of change, at face value, indicates that this student did not absorb any content knowledge whatsoever. Results of this nature are most unsettling. Several options to address the occasional outlier are currently being discussed in the department and have been slated to be agenda items at an upcoming department meeting. Until the impact of the extra credit hour in Biol 144 and the impact of biology faculty personnel changes are manifested, it seems premature to us to alter the curriculum.



Program Name: Biology (Pre-Physician's Assistant Track)

Assessed by: Jeff Goff, Dept. of Natural Sciences

Date/Cycle of Assessment: Submitted on 10/31/2016; Reporting cycle of January 2015 - December 2015

Mission Statement:

The Malone University Department of Natural Sciences exists to engage students in the study of God's majesty and character by exploring His handiwork as it is revealed in Nature, both animate and inanimate; to promote the wise and thoughtful stewardship of the natural resources He has entrusted to us; and to encourage students to demonstrate God's love in their respective communities by using the knowledge and skills they acquire here.

- Students should comprehend the central concepts of biology and chemistry, the underlying assumptions of biological knowledge and chemical knowledge, and be able to employ the methods of inquiry commonly utilized by practicing biologists and chemists at a level sufficient for entrance into graduate school, professional schools, and other biological vocations (Stems from Malone Educ. Goals A4, D1, and D3).
- Students should become proficient in solving biological and chemical problems using both quantitative and qualitative approaches and in analyzing / interpreting data generated by experimental protocols commonly employed by practicing biologists/chemists (Stems from Malone Educ. Goals C3, D4, and D5).
- Students should be able to apply the principles of Christian Stewardship to biological practice and interpret biological and chemical phenomena within a Christian worldview (Stems from Malone Educ. Goals D2, E1, and E5).

• Students should develop an enriched understanding of the nature of human identity, development, and behavior through a study of human anatomy and physiology. (Stems from Malone Educ. Goal A3)

Department: Natural Sciences

Program: Biology (Pre-Physician's Assistant Track)
Assessed by: Jeffrey M. Goff - Dept. of Natural Sciences

Time Period Covered: *January 2015-December 2015*

Program Intended Learning Outcomes (PILO)	Means of Program Assessment & Criteria for Success	Summary of Data Collected	Use of Results
Demonstrate the capability of integrating data and assessing phenomena within a Christian paradigm (Departmental Outcome A).	1) Average cumulative score ≥ 12; minimum cumulative score of 8; no individual component score of 1 on the Faith and Learning Assessment Instrument as scored by the associated rubric.	Average composite score = 14.41; minimum composite score = 8; # of individual component scores of 1 was 3.	Data here represent the sixth data set ever collected with this instrument. Average composite score and individual composite scores all met the departmental criteria for success. However, 3 individual component scores were not acceptable. Two of the low individual component scores were from a single individual's essays who, we believe, avoided the question due to the sensitivity of the material. As a result, the department reworded the instrument to be less offensive to students whose worldviews differ significantly from Malone's in order to elicit more on-task participation.
Demonstrate a comprehension of the central concepts of chemistry including the major theories and laws which govern chemical phenomena (Departmental Outcome B).	1) Mean score no lower than 0.5σ below national mean and no individual score lower than 1.5σ below the national mean on the ACS Gen Chem II Exam. 2) ACS Gen Chem II Exam score used as a Pre-Test for obtaining baseline data only (not used to assess success, but merely preparation for freshman chemistry sequence).	1) Mean score on the ACS Gen Chem Exam is $29.14 (-0.80\sigma)$. Ten individuals failed to meet the -1.5σ criterion. 2) Class average on ACS Gen Chem pretest is 18.81 giving strong evidence of student improvement, but the scores of the freshman cohort as it exits is well below the national average $(24^{th}$ percentile)	The 10 low ACS Gen Chem Exam scores and the low average score for the cohort are in keeping with other recent cohorts and are disappointing to the department. The extremely low CCDT results for Fall 2008 - Fall 2010 are evidence that our students enter well below the national average, so cohorts exiting below the national average do not necessarily imply a poor program. The ACS Gen Chem II pre-test scores, when compared to the post-test scores, are extremely strong evidence that our students are improving as a result of our freshman chemistry sequence. The department has concluded that our students enter below the national average and then exit below the national average in spite of the significant improvement in content knowledge. The department responded by developing a new, alternative Gen Chem II course for Zoo and Wildlife Biology Majors. Course is scheduled to run for the first time in Spring 2017.

	·		4) =1 1 1
Demonstrate an understanding of	1) Mean score no lower than 0.5σ	1) Mean score on the ACS	1) This data set represents the fifth year in a row that ACS scores
the relationships between	below national mean and no	Organic Chem Exam was 36.45	have met the departmental criteria for success. This may be the
structure and behavior of the	individual score lower than 1.5 σ	(-0.23σ) . No individuals failed	result of two changes that have been implemented in the Organic
chemical elements in their	below the national mean on the	to meet the -1.5 σ criterion. 2)	Chemistry sequence within the last 5 years. It is still too early to
various forms and combinations	ACS Organic Chem Exam. 2) Mean	Average sub-score on the	draw any conclusions regarding the implementation of these
(Departmental Outcome C).	score no lower than 0.5σ below	Organic section of the ETS	changes, though. The introduction of a more rigorous
	national mean and no individual	chemistry exam was 61.0	prerequisite for Chem 132 (i.e., Chem 131 grade of C) is awaiting
	score lower than 1.5 σ below the	(+0.89σ). No individuals failed	approval by the department pending the implementation of
	national mean on the ETS	to meet the -1.5σ criterion on	Chem 135 for Zoo & Wildlife Biology Majors in Spring 2017. 2)
	chemistry exam Organic sub-	the organic section.	ETS scores were acceptable this year. The department has opted
	category.		to not make any changes to the curriculum at this time.
Demonstrate an ability to analyze	1) Each student must obtain a	All students who passed the	Since 2012, a passing grade on each assignment has been
various kinds of experimental	minimum cumulative score of 15	class met the minimum score of	officially required in order to pass the class. In Spring 2014, the
data used in the chemical	on each of 5 instrumental	15 on all 5 assignments.	instructor implemented a policy of assigning a grade of
disciplines including the output of	assignments (i.e., IR/MS/NMR		"Incomplete" until all students had met the minimum criteria. As
various instrumental techniques	assignments) completed in Chem		a result, the number of deficient criteria has dropped
(Departmental Outcome E).	322.		dramatically. At the encouragement of the Chemistry Program's
			external reviewers, the departmental chemistry faculty have
			agreed to add an additional 4 instrumental assignments to the
			existing slate of 5. The chemistry faculty are hoping to implement
			these new assignments within the next one or two reporting
			cycles.
Demonstrate an understanding of	1) Mean score no lower than 0.5 σ	1) Average Organismal sub-	In light of the successful scores of several recent cohorts on the
the biological characteristics of	below national mean and no	score is 61.1 (+0.60 <i>σ</i>). No	organismal sub-section of the ETS, the department has opted to
each of the major kingdoms	individual score lower than 1.5 σ	individuals failed to meet the -	not make any programmatic changes at this time. Individuals
(Departmental Outcome F)	below the national mean on the	1.5σ criterion.	missing the criterion of -1.5σ on other sub-sections or even as
	ETS biology exam Organismal Sub-		composite scores are a concern for us, but legitimate reasons for
	score.		individual students missing the cutoff (e.g., illness, test anxiety)
			do exist. The department is more concerned when students who
			have acceptable GPAs routinely miss this threshold. This has
			occasionally happened, but not routinely. The department has
			slated this as an agenda item for a future departmental meeting.

Demonstrate an understanding of the fundamental concepts of molecular biology and genetics (Departmental Outcome G).	1) Mean score no lower than 0.5σ below national mean and no individual score lower than 1.5σ below the national mean on the ETS biology exam Molecular Biology and Genetics sub-scores.	1) Average Molecular Biology/Genetics sub-score is 58.8 (+0.45 σ). Two individuals failed to meet the -1.50σ criterion.	The composite average score was well-above the national average this year. Although this is cause for celebration, individuals missing the criterion of -1.5σ are a concern for us. This has occasionally happened (two this year), but not routinely. Although legitimate reasons for individual students missing the cutoff (e.g., illness, test anxiety) do exist, the department has an intuition that it can do more. It remains to be seen how the recent personnel changes in the biology faculty will impact this weakness, but early insights should begin to become evident in the 2016 Assessment Report. In addition, several options are currently being discussed in the department and have been slated to be agenda items at an upcoming department meeting.
Demonstrate an ability to properly relate biological structure and function (Departmental Outcome I).	1) Mean score no lower than 0.5σ below national mean and no individual score lower than 1.5σ below the national mean on the ETS biology exam Cell Biology subscore.	1) Average Cell Biology subscore is 53.9 (+0.07 σ). A single individual failed to meet the – 1.5 σ criterion.	This sub-section of the ETS has historically been lowest. For this reason, a curricular change was proposed and passed by the full faculty that added one credit hour to the introductory Cell Biology course effective Fall 2012. It is still too early to tell if this curricular change will impact our scores on this section (i.e., Spring 2016 graduating class will be the first to take the ETS having benefited from this curricular change). Individuals missing the criterion of −1.5σ on other sub-sections or even as composite scores are a concern for us. This has occasionally happened (one this year on this sub-section), but not routinely. Although legitimate reasons for individual students missing the cutoff (e.g., illness, test anxiety) do exist, the department has an intuition that it can do more. It remains to be seen how the recent personnel changes in the biology faculty will impact this weakness, but early insights should begin to become evident in the 2016 Assessment Report. In addition, several options are currently being discussed in the department and have been slated to be agenda items at an upcoming department meeting. Lastly, in last year's report, we indicated that we would like to add an additional instrument to assess this outcome a minimum score of 70% on the cell biology content of our in-house biology post-test. This has proved more difficult than at first anticipated and was not completed for this report. We are holding off on the new assessment until 2016.
Demonstrate the capability of analyzing and reporting empirical data from the biological sciences (Departmental Outcome K).	Instrument has been dropped in favor of a newer one that has yet to be developed.	NO DATA	Previous reports have indicated that our department has been having a long and rather continuous conversation about the need to implement a research methods course. This course was finally developed and approved by the department and full faculty. It is scheduled to run in Fall 2016 for the first time. The exact nature of the assessment instrument is still in flux, but the department has completed the most difficult step in addressing this shortfall. It will be possible to build an appropriate assessment instrument into the course as it runs in Fall 2016.

Demonstrate a balanced concept of molecular, micro, and macro levels of biological phenomena in the context of human systems (Departmental Outcome L).	1) Mean score no lower than 8/12 on the A&P questions of the inhouse biology post-test. No individual with a score lower than 5/12. (Note: New instrument – criteria are still being evaluated).	1) NO DATA for this reporting period.	Although Biol 132 exam scores were retained for several years with the goal of extracting the scores of our graduates from the overwhelming number of nursing students who took the course, the retirement of our A&P instructor has caused us to change course. The current in-house biology pre-test / post-test exam has been altered to accommodate roughly 12 questions covering human A&P content. The performance of our biology pre-professional students on these 12 questions will be used to show improvement in human A&P content knowledge. The first administration of this altered exam was tentatively scheduled for Spring 2015, but did not occur until Fall 2016. Preliminary data will be included in the 2016 assessment report. The current A&P instructor is also researching an additional assessment that might allow for true comparisons with national averages.
Demonstrate the ability to properly relate biological structure and function in the context of human systems (Departmental Outcome M).	1) Mean score no lower than 8/12 on the A&P questions of the inhouse biology post-test. No individual with a score lower than 5/12. (Note: New instrument – criteria are still being evaluated).	1) NO DATA for this reporting period.	See comments in table cell for Departmental PILO 'L'.
Demonstrate the level of content mastery required for potential successful performance in graduate school biology programs or professional schools (Departmental Outcome N).	1) Mean score no lower than 0.5 σ below national mean and no individual score lower than 1.5 σ below the national mean on the ETS biology exam composite score. 2) Mean score no lower than 31/50 and no individual score lower than 24/50 on the departmental biology Post-Test	1) Average ETS composite score is 160.1 (+0.53σ). Lowest individual score is 132 (-1.64σ). 2) Mean score on in-house Biology post-test is 34.07. One individual failed to meet the minimum score of 24 (lowest score was 17).	1) As has been the case for several years, the average ETS composite score has been meeting the departmental standard. Occasionally, an individual student fails to meet the minimum score – this happened again this year. The score of 132 in this year's data marks the second lowest ETS composite score ever obtained by a Malone student. Although legitimate reasons for individual students missing the cutoff do exist (e.g., illness, test anxiety), the department has an intuition that it can do more. 2) The score of 17 in this year's data was achieved by the same student that achieved the 132 on the ETS exam. This student obtained a score of 17 on the pre-test as well, and the lack of change, at face value, indicates that this student did not absorb any content knowledge whatsoever. Results of this nature are most unsettling. Several options to address the occasional outlier are currently being discussed in the department and have been slated to be agenda items at an upcoming department meeting. Until the impact of the extra credit hour in Biol 144 and the impact of biology faculty personnel changes are manifested, it seems premature to us to alter the curriculum.



Program Name: Biology (Pre-Veterinary Medicine track)

Assessed by: Jeff Goff, Dept. of Natural Sciences

Date/Cycle of Assessment: Submitted on 10/31/2016; Reporting cycle of January 2015 - December 2015

Mission Statement:

The Malone University Department of Natural Sciences exists to engage students in the study of God's majesty and character by exploring His handiwork as it is revealed in Nature, both animate and inanimate; to promote the wise and thoughtful stewardship of the natural resources He has entrusted to us; and to encourage students to demonstrate God's love in their respective communities by using the knowledge and skills they acquire here.

- Students should comprehend the central concepts of biology and chemistry, the underlying assumptions of biological knowledge and chemical knowledge, and be able to employ the methods of inquiry commonly utilized by practicing biologists and chemists at a level sufficient for entrance into graduate school, professional schools, and other biological vocations (Stems from Malone Educ. Goals A4, D1, and D3).
- Students should become proficient in solving biological and chemical problems using both quantitative and qualitative approaches and in analyzing / interpreting data generated by experimental protocols commonly employed by practicing biologists/chemists (Stems from Malone Educ. Goals C3, D4, and D5).
- Students should be able to apply the principles of Christian Stewardship to biological practice and interpret biological and chemical phenomena within a Christian worldview (Stems from Malone Educ. Goals D2, E1, and E5).

•	Students should develop an enriched understanding of the nature of human identity, development, and behavior through a study of human anatomy and physiology. (Stems from Malone Educ. Goal A3)

Department: Natural Sciences

Program: Biology (Pre-Veterinary Medicine Track)
Assessed by: Jeffrey M. Goff - Dept. of Natural Sciences

Time Period Covered: *January 2015-December 2015*

Program Intended Learning Outcomes (PILO)	Means of Program Assessment & Criteria for Success	Summary of Data Collected	Use of Results
Demonstrate the capability of integrating data and assessing phenomena within a Christian paradigm (Departmental Outcome A).	1) Average cumulative score ≥ 12; minimum cumulative score of 8; no individual component score of 1 on the Faith and Learning Assessment Instrument as scored by the associated rubric.	Average composite score = 14.41; minimum composite score = 8; # of individual component scores of 1 was 3.	Data here represent the sixth data set ever collected with this instrument. Average composite score and individual composite scores all met the departmental criteria for success. However, 3 individual component scores were not acceptable. Two of the low individual component scores were from a single individual's essays who, we believe, avoided the question due to the sensitivity of the material. As a result, the department reworded the instrument to be less offensive to students whose worldviews differ significantly from Malone's in order to elicit more on-task participation.
Demonstrate a comprehension of the central concepts of chemistry including the major theories and laws which govern chemical phenomena (Departmental Outcome B).	1) Mean score no lower than 0.5σ below national mean and no individual score lower than 1.5σ below the national mean on the ACS Gen Chem II Exam. 2) ACS Gen Chem II Exam score used as a Pre-Test for obtaining baseline data only (not used to assess success, but merely preparation for freshman chemistry sequence).	1) Mean score on the ACS Gen Chem Exam is 29.14 (-0.80 σ). Ten individuals failed to meet the -1.5 σ criterion. 2) Class average on ACS Gen Chem pretest is 18.81 giving strong evidence of student improvement, but the scores of the freshman cohort as it exits is well below the national average (24 th percentile)	The 10 low ACS Gen Chem Exam scores and the low average score for the cohort are in keeping with other recent cohorts and are disappointing to the department. The extremely low CCDT results for Fall 2008 - Fall 2010 are evidence that our students enter well below the national average, so cohorts exiting below the national average do not necessarily imply a poor program. The ACS Gen Chem II pre-test scores, when compared to the post-test scores, are extremely strong evidence that our students are improving as a result of our freshman chemistry sequence. The department has concluded that our students enter below the national average and then exit below the national average in spite of the significant improvement in content knowledge. The department responded by developing a new, alternative Gen Chem II course for Zoo and Wildlife Biology Majors. Course is scheduled to run for the first time in Spring 2017.

Demonstrate an understanding of the relationships between structure and behavior of the chemical elements in their various forms and combinations (Departmental Outcome C).	1) Mean score no lower than 0.5σ below national mean and no individual score lower than 1.5σ below the national mean on the ACS Organic Chem Exam. 2) Mean score no lower than 0.5σ below national mean and no individual score lower than 1.5σ below the national mean on the ETS chemistry exam Organic subcategory.	1) Mean score on the ACS Organic Chem Exam was 36.45 (-0.23 σ). No individuals failed to meet the -1.5 σ criterion. 2) Average sub-score on the Organic section of the ETS chemistry exam was 61.0 (+0.89 σ). No individuals failed to meet the -1.5 σ criterion on the organic section.	1) This data set represents the fifth year in a row that ACS scores have met the departmental criteria for success. This may be the result of two changes that have been implemented in the Organic Chemistry sequence within the last 5 years. It is still too early to draw any conclusions regarding the implementation of these changes, though. The introduction of a more rigorous prerequisite for Chem 132 (i.e., Chem 131 grade of C) is awaiting approval by the department pending the implementation of Chem 135 for Zoo & Wildlife Biology Majors in Spring 2017. 2) ETS scores were acceptable this year. The department has opted to not make any changes to the curriculum at this time.
Demonstrate an ability to analyze various kinds of experimental data used in the chemical disciplines including the output of various instrumental techniques (Departmental Outcome E).	1) Each student must obtain a minimum cumulative score of 15 on each of 5 instrumental assignments (i.e., IR/MS/NMR assignments) completed in Chem 322.	All students who passed the class met the minimum score of 15 on all 5 assignments.	Since 2012, a passing grade on each assignment has been officially required in order to pass the class. In Spring 2014, the instructor implemented a policy of assigning a grade of "Incomplete" until all students had met the minimum criteria. As a result, the number of deficient criteria has dropped dramatically. At the encouragement of the Chemistry Program's external reviewers, the departmental chemistry faculty have agreed to add an additional 4 instrumental assignments to the existing slate of 5. The chemistry faculty are hoping to implement these new assignments within the next one or two reporting cycles.
Demonstrate an understanding of the biological characteristics of each of the major kingdoms (Departmental Outcome F)	1) Mean score no lower than 0.5σ below national mean and no individual score lower than 1.5σ below the national mean on the ETS biology exam Organismal Subscore.	1) Average Organismal subscore is $61.1 (+0.60 \sigma)$. No individuals failed to meet the - 1.5σ criterion.	In light of the successful scores of several recent cohorts on the organismal sub-section of the ETS, the department has opted to not make any programmatic changes at this time. Individuals missing the criterion of -1.5σ on other sub-sections or even as composite scores are a concern for us, but legitimate reasons for individual students missing the cutoff (e.g., illness, test anxiety) do exist. The department is more concerned when students who have acceptable GPAs routinely miss this threshold. This has occasionally happened, but not routinely. The department has slated this as an agenda item for a future departmental meeting.
Demonstrate an understanding of the fundamental concepts of molecular biology and genetics (Departmental Outcome G).	1) Mean score no lower than 0.5σ below national mean and no individual score lower than 1.5σ below the national mean on the ETS biology exam Molecular Biology and Genetics sub-scores.	1) Average Molecular Biology/Genetics sub-score is $58.8 \ (+0.45\sigma)$. Two individuals failed to meet the -1.50σ criterion.	The composite average score was well-above the national average this year. Although this is cause for celebration, individuals missing the criterion of –1.5σ are a concern for us. This has occasionally happened (two this year), but not routinely. Although legitimate reasons for individual students missing the cutoff (e.g., illness, test anxiety) do exist, the department has an intuition that it can do more. It remains to be seen how the recent personnel changes in the biology faculty will impact this weakness, but early insights should begin to become evident in the 2016 Assessment Report. In addition, several options are currently being discussed in the department and have been slated to be agenda items at an upcoming department meeting.

Demonstrate an ability to properly relate biological structure and function (Departmental Outcome I).	1) Mean score no lower than 0.5σ below national mean and no individual score lower than 1.5σ below the national mean on the ETS biology exam Cell Biology subscore.	1) Average Cell Biology subscore is 53.9 (+0.07 σ). A single individual failed to meet the – 1.5 σ criterion.	This sub-section of the ETS has historically been lowest. For this reason, a curricular change was proposed and passed by the full faculty that added one credit hour to the introductory Cell Biology course effective Fall 2012. It is still too early to tell if this curricular change will impact our scores on this section (i.e., Spring 2016 graduating class will be the first to take the ETS having benefited from this curricular change). Individuals missing the criterion of –1.5σ on other sub-sections or even as composite scores are a concern for us. This has occasionally happened (one this year on this sub-section), but not routinely. Although legitimate reasons for individual students missing the cutoff (e.g., illness, test anxiety) do exist, the department has an intuition that it can do more. It remains to be seen how the recent personnel changes in the biology faculty will impact this weakness, but early insights should begin to become evident in the 2016 Assessment Report. In addition, several options are currently being discussed in the department and have been slated to be agenda items at an upcoming department meeting. Lastly, in last year's report, we indicated that we would like to add an additional instrument to assess this outcome a minimum score of 70% on the cell biology content of our in-house biology post-test. This has proved more difficult than at first anticipated and was not completed for this report. Since so many of our curricular/personnel changes should begin impacting the 2016 report data, we are holding off on the new assessment until then as well.
Demonstrate the capability of working with animals in safe and ethical ways that conform to state and national guidelines (Departmental Outcome J).	1) Minimum score of 35/60 on an Animal Care Portfolio with no single sub-score lower than 2.	All Animal Care Portfolio composite scores met the departmental criteria for success, while five individual element scores did not.	This instrument is still fairly new (this is the third year of good data collected with this instrument). Last year, the department began checking for completion of the Animal Care Portfolio during advising week of a student's junior spring; still, some students procrastinated on their portfolios and did not turn them in until their senior year. The department should be able to enforce this more effectively by opening up lines of communication with the registrar's office. If the department refuses to approve potential graduates or the registrar refuses to release diplomas until the portfolio meets the minimum standards, the desired portfolio quality seems obtainable. What is necessary is a point person within the department to address these concerns. Two or three such individuals are good candidates for this role, and these individuals have been involved in a discussion to address this issue.

Demonstrate the capability of	Instrument has been dropped in	NO DATA	Previous reports have indicated that our department has been
analyzing and reporting empirical	favor of a newer one that has yet		having a long and rather continuous conversation about the need
data from the biological sciences	to be developed.		to implement a research methods course. This course was finally
(Departmental Outcome K).			developed and approved by the department and full faculty. It is
			scheduled to run in Fall 2016 for the first time. The exact nature
			of the assessment instrument is still in flux, but the department
			has completed the most difficult step in addressing this shortfall.
			It will be possible to build an appropriate assessment instrument
			into the course as it runs in Fall 2016.
Demonstrate a balanced concept	1) Mean score no lower than 8/12	1) NO DATA for this reporting	Although Biol 132 exam scores were retained for several years
of molecular, micro, and macro	on the A&P questions of the in-	period.	with the goal of extracting the scores of our graduates from the
levels of biological phenomena in	house biology post-test. No		overwhelming number of nursing students who took the course,
the context of human systems	individual with a score lower than		the retirement of our A&P instructor has caused us to change
(Departmental Outcome L).	5/12. (Note: New instrument –		course. The current in-house biology pre-test / post-test exam
	criteria are still being evaluated).		has been altered to accommodate roughly 12 questions covering
			human A&P content. The performance of our biology pre-
			professional students on these 12 questions will be used to show
			improvement in human A&P content knowledge. The first
			administration of this altered exam was tentatively scheduled for
			Spring 2015, but did not occur until Fall 2016. Preliminary data
			will be included in the 2016 assessment report. The current A&P
			instructor is also researching an additional assessment that might
			allow for true comparisons with national averages.
Demonstrate the ability to	1) Mean score no lower than 8/12	1) NO DATA for this reporting	See comments in table cell for Departmental PILO 'L'.
properly relate biological	on the A&P questions of the in-	period.	
structure and function in the	house biology post-test. No		
context of human systems	individual with a score lower than		
(Departmental Outcome M).	5/12. (Note: New instrument –		
	criteria are still being evaluated).		

Demonstrate the level of content	1) Mean score no lower than 0.5σ	1) Average ETS composite score	1) As has been the case for several years, the average ETS
mastery required for potential	below national mean and no	is 160.1 (+0.53σ). Lowest	composite score has been meeting the departmental standard.
successful performance in	individual score lower than 1.5 σ	individual score is 132 (-1.64σ).	Occasionally, an individual student fails to meet the minimum
graduate school biology programs	below the national mean on the	2) Mean score on in-house	score – this happened again this year. The score of 132 in this
or professional schools	ETS biology exam composite score.	Biology post-test is 34.07. One	year's data marks the second lowest ETS composite score ever
(Departmental Outcome N).	2) Mean score no lower than	individual failed to meet the	obtained by a Malone student. Although legitimate reasons for
	31/50 and no individual score	minimum score of 24 (lowest	individual students missing the cutoff do exist (e.g., illness, test
	lower than 24/50 on the	score was 17).	anxiety), the department has an intuition that it can do more.
	departmental biology Post-Test	·	2) The score of 17 in this year's data was achieved by the same
			student that achieved the 132 on the ETS exam. This student
			obtained a score of 17 on the pre-test as well, and the lack of
			change, at face value, indicates that this student did not absorb
			any content knowledge whatsoever. Results of this nature are
			most unsettling. Several options to address the occasional outlier
			are currently being discussed in the department and have been
			slated to be agenda items at an upcoming department meeting.
			Until the impact of the extra credit hour in Biol 144 and the
			impact of biology faculty personnel changes are manifested, it
			seems premature to us to alter the curriculum.



Program Name: Chemistry (Forensic Science Track)

Assessed by: Jeff Goff, Dept. of Natural Sciences

Date/Cycle of Assessment: Submitted on 10/31/2016
Reporting cycle of January 2015 - December 2015

Mission Statement:

The Malone University Department of Natural Sciences exists to engage students in the study of God's majesty and character by exploring His handiwork as it is revealed in Nature, both animate and inanimate; to promote the wise and thoughtful stewardship of the natural resources He has entrusted to us; and to encourage students to demonstrate God's love in their respective communities by using the knowledge and skills they acquire here.

- Students should comprehend the central concepts of chemistry, the underlying assumptions of chemical knowledge, and be able to employ the methods of inquiry commonly utilized by practicing chemists at a level sufficient for entrance into graduate school, professional schools, and industry (Stems from Malone Educ. Goals A4, D1, and D3).
- Students should become proficient in solving chemical problems using both quantitative and qualitative approaches and in interpreting data generated by analytical instruments commonly employed by practicing chemists (Stems from Malone Educ. Goals C3, D4, and D5).
- Students should be able to apply the principles of Christian Stewardship to chemical practice and interpret chemical phenomena within a Christian worldview (Stems from Malone Educ. Goals D2, E1, and E5).

Department: Natural Sciences

Program: Chemistry (Forensic Science Track)
Assessed by: Jeffrey M. Goff - Dept. of Natural Sciences

Time Period Covered: *January 2015-December 2015*

Program Intended Learning Outcomes (PILO)	Means of Program Assessment & Criteria for Success	Summary of Data Collected	Use of Results
Demonstrate the capability of integrating data and assessing phenomena within a Christian paradigm (Departmental Outcome A).	1) Average cumulative score ≥ 12; minimum cumulative score of 8; no individual component score of 1 on the Faith and Learning Assessment Instrument as scored by the associated rubric.	Average composite score = 14.41; minimum composite score = 8; # of individual component scores of 1 was 3.	Data here represent the sixth data set ever collected with this instrument. Average composite score and individual composite scores all met the departmental criteria for success. However, 3 individual component scores were not acceptable. Two of the low individual component scores were from a single individual's essays who, we believe, avoided the question due to the sensitivity of the material. As a result, the department reworded the instrument to be less offensive to students whose worldviews differ significantly from Malone's in order to elicit more on-task participation.
Demonstrate a comprehension of the central concepts of chemistry including the major theories and laws which govern chemical phenomena (Departmental Outcome B).	1) Mean score no lower than 0.5σ below national mean and no individual score lower than 1.5σ below the national mean on the ACS Gen Chem II Exam. 2) ACS Gen Chem II Exam score used as a Pre-Test for obtaining baseline data only (not used to assess success, but merely preparation for freshman chemistry sequence).	1) Mean score on the ACS Gen Chem Exam is 29.14 (-0.80 σ). Ten individuals failed to meet the -1.5 σ criterion. 2) Class average on ACS Gen Chem pretest is 18.81 giving strong evidence of student improvement, but the scores of the freshman cohort as it exits is well below the national average (24 th percentile)	The 10 low ACS Gen Chem Exam scores and the low average score for the cohort are in keeping with other recent cohorts and are disappointing to the department. The extremely low CCDT results for Fall 2008 - Fall 2010 are evidence that our students enter well below the national average, so cohorts exiting below the national average do not necessarily imply a poor program. The ACS Gen Chem II pre-test scores, when compared to the post-test scores, are extremely strong evidence that our students are improving as a result of our freshman chemistry sequence. The department has concluded that our students enter below the national average and then exit below the national average in spite of the significant improvement in content knowledge. The department responded by developing a new, alternative Gen Chem II course for Zoo and Wildlife Biology Majors. Course is scheduled to run for the first time in Spring 2017.

Demonstrate an understanding of	1) Mean score no lower than 0.5σ	1) Mean score on the ACS	1) This data set represents the fifth year in a row that ACS
the relationships between	below national mean and no	Organic Chem Exam was 36.45	composite scores have met the departmental criteria for success.
structure and behavior of the	individual score lower than 1.5 σ	(−0.23 σ). No individuals failed	This may be the result of two changes that have been
chemical elements in their	below the national mean on the	to meet the -1.5 σ criterion. 2)	implemented in the Organic Chemistry sequence within the last 5
various forms and combinations	ACS Organic Chem Exam. 2) Mean	Most recent mean score on the	years. It is still too early to draw any conclusions regarding the
(Departmental Outcome C).	score no lower than 0.5σ below	ACS Inorganic Chem Exam was	implementation of these changes, though. 2) Composite scores
	national mean and no individual	25.67 (–0.33σ). Only 1	on the ACS Inorganic exam have met the minimum standard set
	score lower than 1.5 σ below the	individual failed to meet the –	by the department since 2009. The occasional individual still
	national mean on the ACS	1.5σ criterion. 3) Average sub-	misses the –1.5σ criterion, however. The success of our students
	Inorganic Chem Exam. 3) Mean	scores on the Organic and	on the ETS inorganic sub-section, however, is comforting and
	score no lower than 0.5σ below	Inorganic sections of the ETS	leads us to believe that no programmatic changes are warranted
	national mean and no individual	chemistry exam are 61.0 and	at this time. 3) ETS scores were acceptable again this year. The
	score lower than 1.5σ below the	56.7 respectively (+0.89 σ and	department has opted to not make any changes to the curriculum
	national mean on the ETS	+0.56 σ respectively). No	at this time.
	chemistry exam Organic and	individuals failed to meet the –	
	Inorganic Sub-scores.	1.5σ criterion on either sub-	
		section).	
Demonstrate safe laboratory	Minimum scores of 20, 21, and 20	Of 9 students, only 1 student	1) Although two individual element scores were low and 1
practices and an environmental	must be obtained respectively on 3	failed to reach the minimum	student failed to meet a minimum composite score, the instructor
ethic as it pertains to chemical	safety projects completed as a	score of 20 on Safety Project #1	feels strongly that this was due to a lack of time. The extensive
use and disposal (Departmental	component of our Chem 201	(1 individual element score	one-on-one time required of the professor/student precluded
Outcome D).	course (Stewardship and Safety in	missed criterion). On Safety	these individuals from repeating a few of the assessments.
,	Chemical Practice) and graded via	Project #2, all students met the	Rather than fail the students, the instructor opted to allow the
	associated rubrics. In addition to	minimum composite score	few sub-par scores with the intention of scheduling additional
	the composite scores criteria on all	criterion of 21 and all individual	sessions at the next offering to give each student enough
	3 projects, minimum individual	element scores were	opportunities to meet the minimum scores on each project. The
	element scores have also been set.	satisfactory as well. On Safety	same problem was noted in last year's report, so the good
		Project #3, all students met the	intentions of the instructor may not be sufficient to accomplish
		minimum composite score	the desired change. To step the efforts up a notch, the instructor
		criterion of 20, though 1	has also incorporated feedback from the class in a proposal to the
		individual element score missed	department that would add an additional credit hour to the class
		the minimum standard.	to assure that the assessments have adequate time for
			completion.

Demonstrate an ability to analyze various kinds of experimental data used in the chemical disciplines including the output of	1) Each student must obtain a minimum cumulative score of 15 on each of 5 instrumental assignments (i.e., IR/MS/NMR	All students who passed the class met the minimum score of 15 on all 5 assignments.	Since 2012, a passing grade on each assignment has been officially required in order to pass the class. In Spring 2014, the instructor implemented a policy of assigning a grade of "Incomplete" until all students had met the minimum criteria. As
various instrumental techniques (Departmental Outcome E).	assignments) completed in Chem 322.		a result, the number of deficient criteria has dropped dramatically. At the encouragement of the Chemistry Program's
			external reviewers, the departmental chemistry faculty have agreed to add an additional 4 instrumental assignments to the existing slate of 5. The chemistry faculty are hoping to implement
			these new assignments within the next one or two reporting cycles.
Demonstrate the level of content mastery required for potential	1) Mean score no lower than 0.5σ below national mean and no	1) Mean ETS composite score is 155.7. (+0.51 σ). No individuals	1) ETS Composite data have been acceptable for the last several years. 2) This data set represents the fifth year in a row that ACS
successful performance in chemical industry, graduate	individual score lower than 1.5 σ below the national mean on the	failed to meet the -1.5 σ criterion. 2) Mean score on the	scores have met the departmental criteria for success in organic. This may be the result of two changes that have been
school chemistry programs, or professional schools	ETS chemistry exam composite score. 2) Mean score no lower	ACS Organic Chem Exam was 36.45 (-0.23σ). No individuals	implemented in the Organic Chemistry sequence within the last 5 years. It is still too early to draw any conclusions regarding the
(Departmental Outcome P).	than 0.5σ below national mean and no individual score lower than	failed to meet the -1.5 σ criterion.	implementation of these changes, though. No changes appear to be warranted at this time.
	1.5σ below the national mean on the ACS Organic Chemistry exam.		



Program Name: Chemistry (Graduate School Track)

Assessed by: Jeff Goff, Dept. of Natural Sciences

Date/Cycle of Assessment: Submitted on 10/31/2016
Reporting cycle of January 2015 - December 2015

Mission Statement:

The Malone University Department of Natural Sciences exists to engage students in the study of God's majesty and character by exploring His handiwork as it is revealed in Nature, both animate and inanimate; to promote the wise and thoughtful stewardship of the natural resources He has entrusted to us; and to encourage students to demonstrate God's love in their respective communities by using the knowledge and skills they acquire here.

- Students should comprehend the central concepts of chemistry, the underlying assumptions of chemical knowledge, and be able to employ the methods of inquiry commonly utilized by practicing chemists at a level sufficient for entrance into graduate school, professional schools, and industry (Stems from Malone Educ. Goals A4, D1, and D3).
- Students should become proficient in solving chemical problems using both quantitative and qualitative approaches and in interpreting data generated by analytical instruments commonly employed by practicing chemists (Stems from Malone Educ. Goals C3, D4, and D5).
- Students should be able to apply the principles of Christian Stewardship to chemical practice and interpret chemical phenomena within a Christian worldview (Stems from Malone Educ. Goals D2, E1, and E5).

Department: Natural Sciences

Program: Chemistry (Graduate School Track)
Assessed by: Jeffrey M. Goff - Dept. of Natural Sciences

Time Period Covered: *January 2015-December 2015*

Program Intended Learning Outcomes (PILO)	Means of Program Assessment & Criteria for Success	Summary of Data Collected	Use of Results
Demonstrate the capability of integrating data and assessing phenomena within a Christian paradigm (Departmental Outcome A).	1) Average cumulative score ≥ 12; minimum cumulative score of 8; no individual component score of 1 on the Faith and Learning Assessment Instrument as scored by the associated rubric.	Average composite score = 14.41; minimum composite score = 8; # of individual component scores of 1 was 3.	Data here represent the sixth data set ever collected with this instrument. Average composite score and individual composite scores all met the departmental criteria for success. However, 3 individual component scores were not acceptable. Two of the low individual component scores were from a single individual's essays who, we believe, avoided the question due to the sensitivity of the material. As a result, the department reworded the instrument to be less offensive to students whose worldviews differ significantly from Malone's in order to elicit more on-task participation.
Demonstrate a comprehension of the central concepts of chemistry including the major theories and laws which govern chemical phenomena (Departmental Outcome B).	1) Mean score no lower than 0.5σ below national mean and no individual score lower than 1.5σ below the national mean on the ACS Gen Chem II Exam. 2) ACS Gen Chem II Exam score used as a Pre-Test for obtaining baseline data only (not used to assess success, but merely preparation for freshman chemistry sequence).	1) Mean score on the ACS Gen Chem Exam is 29.14 (-0.80 σ). Ten individuals failed to meet the -1.5 σ criterion. 2) Class average on ACS Gen Chem pretest is 18.81 giving strong evidence of student improvement, but the scores of the freshman cohort as it exits is well below the national average (24 th percentile)	The 10 low ACS Gen Chem Exam scores and the low average score for the cohort are in keeping with other recent cohorts and are disappointing to the department. The extremely low CCDT results for Fall 2008 - Fall 2010 are evidence that our students enter well below the national average, so cohorts exiting below the national average do not necessarily imply a poor program. The ACS Gen Chem II pre-test scores, when compared to the post-test scores, are extremely strong evidence that our students are improving as a result of our freshman chemistry sequence. The department has concluded that our students enter below the national average and then exit below the national average in spite of the significant improvement in content knowledge. The department responded by developing a new, alternative Gen Chem II course for Zoo and Wildlife Biology Majors. Course is scheduled to run for the first time in Spring 2017.

Demonstrate an understanding of	1) Mean score no lower than 0.5σ	1) Mean score on the ACS	1) This data set represents the fifth year in a row that ACS
the relationships between	below national mean and no	Organic Chem Exam was 36.45	composite scores have met the departmental criteria for success.
structure and behavior of the	individual score lower than 1.5 σ	(−0.23 σ). No individuals failed	This may be the result of two changes that have been
chemical elements in their	below the national mean on the	to meet the -1.5 σ criterion. 2)	implemented in the Organic Chemistry sequence within the last 5
various forms and combinations	ACS Organic Chem Exam. 2) Mean	Most recent mean score on the	years. It is still too early to draw any conclusions regarding the
(Departmental Outcome C).	score no lower than 0.5σ below	ACS Inorganic Chem Exam was	implementation of these changes, though. 2) Composite scores
	national mean and no individual	25.67 (–0.33σ). Only 1	on the ACS Inorganic exam have met the minimum standard set
	score lower than 1.5 σ below the	individual failed to meet the –	by the department since 2009. The occasional individual still
	national mean on the ACS	1.5σ criterion. 3) Average sub-	misses the -1.5σ criterion, however. The success of our students
	Inorganic Chem Exam. 3) Mean	scores on the Organic and	on the ETS inorganic sub-section, however, is comforting and
	score no lower than 0.5σ below	Inorganic sections of the ETS	leads us to believe that no programmatic changes are warranted
	national mean and no individual	chemistry exam are 61.0 and	at this time. 3) ETS scores were acceptable again this year. The
	score lower than 1.5σ below the	56.7 respectively (+0.89 σ and	department has opted to not make any changes to the curriculum
	national mean on the ETS	+0.56 σ respectively). No	at this time.
	chemistry exam Organic and	individuals failed to meet the –	
	Inorganic Sub-scores.	1.5σ criterion on either sub-	
		section).	
Demonstrate safe laboratory	Minimum scores of 20, 21, and 20	Of 9 students, only 1 student	1) Although two individual element scores were low and 1
practices and an environmental	must be obtained respectively on 3	failed to reach the minimum	student failed to meet a minimum composite score, the instructor
ethic as it pertains to chemical	safety projects completed as a	score of 20 on Safety Project #1	feels strongly that this was due to a lack of time. The extensive
use and disposal (Departmental	component of our Chem 201	(1 individual element score	one-on-one time required of the professor/student precluded
Outcome D).	course (Stewardship and Safety in	missed criterion). On Safety	these individuals from repeating a few of the assessments.
,	Chemical Practice) and graded via	Project #2, all students met the	Rather than fail the students, the instructor opted to allow the
	associated rubrics. In addition to	minimum composite score	few sub-par scores with the intention of scheduling additional
	the composite scores criteria on all	criterion of 21 and all individual	sessions at the next offering to give each student enough
	3 projects, minimum individual	element scores were	opportunities to meet the minimum scores on each project. The
	element scores have also been set.	satisfactory as well. On Safety	same problem was noted in last year's report, so the good
		Project #3, all students met the	intentions of the instructor may not be sufficient to accomplish
		minimum composite score	the desired change. To step the efforts up a notch, the instructor
		criterion of 20, though 1	has also incorporated feedback from the class in a proposal to the
		individual element score missed	department that would add an additional credit hour to the class
		the minimum standard.	to assure that the assessments have adequate time for
			completion.

	_		
Demonstrate an ability to analyze	1) Each student must obtain a	All students who passed the	Since 2012, a passing grade on each assignment has been
various kinds of experimental	minimum cumulative score of 15	class met the minimum score of	officially required in order to pass the class. In Spring 2014, the
data used in the chemical	on each of 5 instrumental	15 on all 5 assignments.	instructor implemented a policy of assigning a grade of
disciplines including the output of	assignments (i.e., IR/MS/NMR		"Incomplete" until all students had met the minimum criteria. As
various instrumental techniques	assignments) completed in Chem		a result, the number of deficient criteria has dropped
(Departmental Outcome E).	322.		dramatically. At the encouragement of the Chemistry Program's
			external reviewers, the departmental chemistry faculty have
			agreed to add an additional 4 instrumental assignments to the
			existing slate of 5. The chemistry faculty are hoping to implement
			these new assignments within the next one or two reporting
			cycles.
Demonstrate the level of content	1) Mean score no lower than 0.5σ	1) Mean ETS composite score is	1) ETS Composite data have been acceptable for the last several
mastery required for potential	below national mean and no	155.7. (+0.51σ). No individuals	years. 2) This data set represents the fifth year in a row that ACS
successful performance in	individual score lower than 1.5 σ	failed to meet the -1.5 σ	scores have met the departmental criteria for success in organic.
chemical industry, graduate	below the national mean on the	criterion. 2) Mean score on the	This may be the result of two changes that have been
school chemistry programs, or	ETS chemistry exam composite	ACS Organic Chem Exam was	implemented in the Organic Chemistry sequence within the last 5
professional schools	score. 2) Mean score no lower	36.45 (-0.23σ). No individuals	years. It is still too early to draw any conclusions regarding the
(Departmental Outcome P).	than 0.5σ below national mean	failed to meet the -1.5 σ	implementation of these changes, though. No changes appear to
	and no individual score lower than	criterion.	be warranted at this time.
	1.5σ below the national mean on		
	the ACS Organic Chemistry exam.		



Program Name: Chemistry (Pre-Dentistry Track)

Assessed by: Jeff Goff, Dept. of Natural Sciences

Date/Cycle of Assessment: Submitted on 10/31/2016; Reporting cycle of January 2015 - December 2015

Mission Statement:

The Malone University Department of Natural Sciences exists to engage students in the study of God's majesty and character by exploring His handiwork as it is revealed in Nature, both animate and inanimate; to promote the wise and thoughtful stewardship of the natural resources He has entrusted to us; and to encourage students to demonstrate God's love in their respective communities by using the knowledge and skills they acquire here.

- Students should comprehend the central concepts of chemistry, the underlying assumptions of chemical knowledge, and be able to employ the methods of inquiry commonly utilized by practicing chemists at a level sufficient for entrance into graduate school, professional schools, and industry (Stems from Malone Educ. Goals A4, D1, and D3).
- Students should become proficient in solving chemical problems using both quantitative and qualitative approaches and in interpreting data generated by analytical instruments commonly employed by practicing chemists (Stems from Malone Educ. Goals C3, D4, and D5).
- Students should be able to apply the principles of Christian Stewardship to chemical practice and interpret chemical phenomena within a Christian worldview (Stems from Malone Educ. Goals D2, E1, and E5).

Department: Natural Sciences

Program: Chemistry (Pre-Dentistry Track)

Assessed by: Jeffrey M. Goff - Dept. of Natural Sciences

Time Period Covered: *January 2015-December 2015*

Program Intended Learning Outcomes (PILO)	Means of Program Assessment & Criteria for Success	Summary of Data Collected	Use of Results
Demonstrate the capability of integrating data and assessing phenomena within a Christian paradigm (Departmental Outcome A).	1) Average cumulative score ≥ 12; minimum cumulative score of 8; no individual component score of 1 on the Faith and Learning Assessment Instrument as scored by the associated rubric.	Average composite score = 14.41; minimum composite score = 8; # of individual component scores of 1 was 3.	Data here represent the sixth data set ever collected with this instrument. Average composite score and individual composite scores all met the departmental criteria for success. However, 3 individual component scores were not acceptable. Two of the low individual component scores were from a single individual's essays who, we believe, avoided the question due to the sensitivity of the material. As a result, the department reworded the instrument to be less offensive to students whose worldviews differ significantly from Malone's in order to elicit more on-task participation.
Demonstrate a comprehension of the central concepts of chemistry including the major theories and laws which govern chemical phenomena (Departmental Outcome B).	1) Mean score no lower than 0.5σ below national mean and no individual score lower than 1.5σ below the national mean on the ACS Gen Chem II Exam. 2) ACS Gen Chem II Exam score used as a Pre-Test for obtaining baseline data only (not used to assess success, but merely preparation for freshman chemistry sequence).	1) Mean score on the ACS Gen Chem Exam is 29.14 (-0.80 σ). Ten individuals failed to meet the -1.5 σ criterion. 2) Class average on ACS Gen Chem pretest is 18.81 giving strong evidence of student improvement, but the scores of the freshman cohort as it exits is well below the national average (24 th percentile)	The 10 low ACS Gen Chem Exam scores and the low average score for the cohort are in keeping with other recent cohorts and are disappointing to the department. The extremely low CCDT results for Fall 2008 - Fall 2010 are evidence that our students enter well below the national average, so cohorts exiting below the national average do not necessarily imply a poor program. The ACS Gen Chem II pre-test scores, when compared to the post-test scores, are extremely strong evidence that our students are improving as a result of our freshman chemistry sequence. The department has concluded that our students enter below the national average and then exit below the national average in spite of the significant improvement in content knowledge. The department responded by developing a new, alternative Gen Chem II course for Zoo and Wildlife Biology Majors. Course is scheduled to run for the first time in Spring 2017.

Demonstrate an understanding of	1) Mean score no lower than 0.5σ	1) Mean score on the ACS	1) This data set represents the fifth year in a row that ACS
the relationships between	below national mean and no	Organic Chem Exam was 36.45	composite scores have met the departmental criteria for success.
structure and behavior of the	individual score lower than 1.5 σ	(-0.23σ) . No individuals failed	This may be the result of two changes that have been
chemical elements in their	below the national mean on the	to meet the -1.5 σ criterion. 2)	implemented in the Organic Chemistry sequence within the last 5
various forms and combinations	ACS Organic Chem Exam. 2) Mean	Most recent mean score on the	years. It is still too early to draw any conclusions regarding the
(Departmental Outcome C).	score no lower than 0.5σ below	ACS Inorganic Chem Exam was	implementation of these changes, though. 2) Composite scores
	national mean and no individual	25.67 (–0.33σ). Only 1	on the ACS Inorganic exam have met the minimum standard set
	score lower than 1.5 σ below the	individual failed to meet the –	by the department since 2009. The occasional individual still
	national mean on the ACS	1.5σ criterion. 3) Average sub-	misses the –1.5σ criterion, however. The success of our students
	Inorganic Chem Exam. 3) Mean	scores on the Organic and	on the ETS inorganic sub-section, however, is comforting and
	score no lower than 0.5σ below	Inorganic sections of the ETS	leads us to believe that no programmatic changes are warranted
	national mean and no individual	chemistry exam are 61.0 and	at this time. 3) ETS scores were acceptable again this year. The
	score lower than 1.5σ below the	56.7 respectively (+0.89 σ and	department has opted to not make any changes to the curriculum
	national mean on the ETS	+0.56σ respectively). No	at this time.
	chemistry exam Organic and	individuals failed to meet the –	
	Inorganic Sub-scores.	1.5 σ criterion on either sub-	
		section).	
Demonstrate safe laboratory	Minimum scores of 20, 21, and 20	Of 9 students, only 1 student	1) Although two individual element scores were low and 1
practices and an environmental	must be obtained respectively on 3	failed to reach the minimum	student failed to meet a minimum composite score, the instructor
ethic as it pertains to chemical	safety projects completed as a	score of 20 on Safety Project #1	feels strongly that this was due to a lack of time. The extensive
use and disposal (Departmental	component of our Chem 201	(1 individual element score	one-on-one time required of the professor/student precluded
Outcome D).	course (Stewardship and Safety in	missed criterion). On Safety	these individuals from repeating a few of the assessments.
,	Chemical Practice) and graded via	Project #2, all students met the	Rather than fail the students, the instructor opted to allow the
	associated rubrics. In addition to	minimum composite score	few sub-par scores with the intention of scheduling additional
	the composite scores criteria on all	criterion of 21 and all individual	sessions at the next offering to give each student enough
	3 projects, minimum individual	element scores were	opportunities to meet the minimum scores on each project. The
	element scores have also been set.	satisfactory as well. On Safety	same problem was noted in last year's report, so the good
		Project #3, all students met the	intentions of the instructor may not be sufficient to accomplish
		minimum composite score	the desired change. To step the efforts up a notch, the instructor
		criterion of 20, though 1	has also incorporated feedback from the class in a proposal to the
		individual element score missed	department that would add an additional credit hour to the class
		the minimum standard.	to assure that the assessments have adequate time for
			completion.

Demonstrate an ability to analyze various kinds of experimental data used in the chemical disciplines including the output of various instrumental techniques (Departmental Outcome E).	1) Each student must obtain a minimum cumulative score of 15 on each of 5 instrumental assignments (i.e., IR/MS/NMR assignments) completed in Chem 322.	All students who passed the class met the minimum score of 15 on all 5 assignments.	Since 2012, a passing grade on each assignment has been officially required in order to pass the class. In Spring 2014, the instructor implemented a policy of assigning a grade of "Incomplete" until all students had met the minimum criteria. As a result, the number of deficient criteria has dropped dramatically. At the encouragement of the Chemistry Program's external reviewers, the departmental chemistry faculty have agreed to add an additional 4 instrumental assignments to the existing slate of 5. The chemistry faculty are hoping to implement these new assignments within the next one or two reporting cycles.
Demonstrate a balanced concept of molecular, micro, and macro levels of biological phenomena in the context of human systems (Departmental Outcome L).	1) Mean score no lower than 8/12 on the A&P questions of the inhouse biology post-test. No individual with a score lower than 5/12. (Note: New instrument – criteria are still being evaluated).	1) NO DATA for this reporting period.	Although Biol 132 exam scores were retained for several years with the goal of extracting the scores of our graduates from the overwhelming number of nursing students who took the course, the retirement of our A&P instructor has caused us to change course. The current in-house biology pre-test / post-test exam has been altered to accommodate roughly 12 questions covering human A&P content. The performance of our biology pre-professional students on these 12 questions will be used to show improvement in human A&P content knowledge. The first administration of this altered exam was tentatively scheduled for Spring 2015, but did not occur until Fall 2016. Preliminary data will be included in the 2016 assessment report. The current A&P instructor is also researching an additional assessment that might allow for true comparisons with national averages.
Demonstrate the ability to properly relate biological structure and function in the context of human systems (Departmental Outcome M).	1) Mean score no lower than 8/12 on the A&P questions of the inhouse biology post-test. No individual with a score lower than 5/12. (Note: New instrument – criteria are still being evaluated).	1) NO DATA for this reporting period.	See comments in table cell for Departmental PILO 'L'.

Demonstrate the level of content mastery required for potential successful performance in chemical industry, graduate school chemistry programs, or professional schools (Departmental Outcome P).	1) Mean score no lower than 0.5σ below national mean and no individual score lower than 1.5σ below the national mean on the ETS chemistry exam composite score. 2) Mean score no lower than 0.5σ below national mean and no individual score lower than 1.5σ below the national mean on the ACS Organic Chemistry exam.	1) Mean ETS composite score is 155.7. (+0.51 σ). No individuals failed to meet the -1.5 σ criterion. 2) Mean score on the ACS Organic Chem Exam was 36.45 (-0.23 σ). No individuals failed to meet the -1.5 σ criterion.	1) ETS Composite data have been acceptable for the last several years. 2) This data set represents the fifth year in a row that ACS scores have met the departmental criteria for success in organic. This may be the result of two changes that have been implemented in the Organic Chemistry sequence within the last 5 years. It is still too early to draw any conclusions regarding the implementation of these changes, though. No changes appear to be warranted at this time.
----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------



Program Name: Chemistry (Pre-Medicine Track)

Assessed by: Jeff Goff, Dept. of Natural Sciences

Date/Cycle of Assessment: Submitted on 10/31/2016; Reporting cycle of January 2015 - December 2015

Mission Statement:

The Malone University Department of Natural Sciences exists to engage students in the study of God's majesty and character by exploring His handiwork as it is revealed in Nature, both animate and inanimate; to promote the wise and thoughtful stewardship of the natural resources He has entrusted to us; and to encourage students to demonstrate God's love in their respective communities by using the knowledge and skills they acquire here.

- Students should comprehend the central concepts of chemistry, the underlying assumptions of chemical knowledge, and be able to employ the methods of inquiry commonly utilized by practicing chemists at a level sufficient for entrance into graduate school, professional schools, and industry (Stems from Malone Educ. Goals A4, D1, and D3).
- Students should become proficient in solving chemical problems using both quantitative and qualitative approaches and in interpreting data generated by analytical instruments commonly employed by practicing chemists (Stems from Malone Educ. Goals C3, D4, and D5).
- Students should be able to apply the principles of Christian Stewardship to chemical practice and interpret chemical phenomena within a Christian worldview (Stems from Malone Educ. Goals D2, E1, and E5).

Department: Natural Sciences

Program: Chemistry (Pre-Medicine Track)

Assessed by: Jeffrey M. Goff - Chair, Dept. of Natural Sciences

Time Period Covered: *January 2015-December 2015*

Program Intended Learning Outcomes (PILO)	Means of Program Assessment & Criteria for Success	Summary of Data Collected	Use of Results
Demonstrate the capability of integrating data and assessing phenomena within a Christian paradigm (Departmental Outcome A).	1) Average cumulative score ≥ 12; minimum cumulative score of 8; no individual component score of 1 on the Faith and Learning Assessment Instrument as scored by the associated rubric.	Average composite score = 14.41; minimum composite score = 8; # of individual component scores of 1 was 3.	Data here represent the sixth data set ever collected with this instrument. Average composite score and individual composite scores all met the departmental criteria for success. However, 3 individual component scores were not acceptable. Two of the low individual component scores were from a single individual's essays who, we believe, avoided the question due to the sensitivity of the material. As a result, the department reworded the instrument to be less offensive to students whose worldviews differ significantly from Malone's in order to elicit more on-task participation.
Demonstrate a comprehension of the central concepts of chemistry including the major theories and laws which govern chemical phenomena (Departmental Outcome B).	1) Mean score no lower than 0.5σ below national mean and no individual score lower than 1.5σ below the national mean on the ACS Gen Chem II Exam. 2) ACS Gen Chem II Exam score used as a Pre-Test for obtaining baseline data only (not used to assess success, but merely preparation for freshman chemistry sequence).	1) Mean score on the ACS Gen Chem Exam is 29.14 (-0.80 σ). Ten individuals failed to meet the -1.5 σ criterion. 2) Class average on ACS Gen Chem pretest is 18.81 giving strong evidence of student improvement, but the scores of the freshman cohort as it exits is well below the national average (24 th percentile)	The 10 low ACS Gen Chem Exam scores and the low average score for the cohort are in keeping with other recent cohorts and are disappointing to the department. The extremely low CCDT results for Fall 2008 - Fall 2010 are evidence that our students enter well below the national average, so cohorts exiting below the national average do not necessarily imply a poor program. The ACS Gen Chem II pre-test scores, when compared to the post-test scores, are extremely strong evidence that our students are improving as a result of our freshman chemistry sequence. The department has concluded that our students enter below the national average and then exit below the national average in spite of the significant improvement in content knowledge. The department responded by developing a new, alternative Gen Chem II course for Zoo and Wildlife Biology Majors. Course is scheduled to run for the first time in Spring 2017.

Demonstrate an understanding of	1) Mean score no lower than 0.5σ	1) Mean score on the ACS	1) This data set represents the fifth year in a row that ACS
the relationships between	below national mean and no	Organic Chem Exam was 36.45	composite scores have met the departmental criteria for success.
structure and behavior of the	individual score lower than 1.5 σ	(-0.23σ) . No individuals failed	This may be the result of two changes that have been
chemical elements in their	below the national mean on the	to meet the -1.5 σ criterion. 2)	implemented in the Organic Chemistry sequence within the last 5
various forms and combinations	ACS Organic Chem Exam. 2) Mean	Most recent mean score on the	years. It is still too early to draw any conclusions regarding the
(Departmental Outcome C).	score no lower than 0.5σ below	ACS Inorganic Chem Exam was	implementation of these changes, though. 2) Composite scores
	national mean and no individual	25.67 (–0.33σ). Only 1	on the ACS Inorganic exam have met the minimum standard set
	score lower than 1.5 σ below the	individual failed to meet the -	by the department since 2009. The occasional individual still
	national mean on the ACS	1.5σ criterion. 3) Average sub-	misses the -1.5σ criterion, however. The success of our students
	Inorganic Chem Exam. 3) Mean	scores on the Organic and	on the ETS inorganic sub-section, however, is comforting and
	score no lower than 0.5σ below	Inorganic sections of the ETS	leads us to believe that no programmatic changes are warranted
	national mean and no individual	chemistry exam are 61.0 and	at this time. 3) ETS scores were acceptable again this year. The
	score lower than 1.5 σ below the	56.7 respectively (+0.89σ and	department has opted to not make any changes to the curriculum
	national mean on the ETS	+0.56σ respectively). No	at this time.
	chemistry exam Organic and	individuals failed to meet the -	
	Inorganic Sub-scores.	1.5σ criterion on either sub-	
		section).	
Demonstrate safe laboratory	Minimum scores of 20, 21, and 20	Of 9 students, only 1 student	1) Although two individual element scores were low and 1
practices and an environmental	must be obtained respectively on 3	failed to reach the minimum	student failed to meet a minimum composite score, the instructor
ethic as it pertains to chemical	safety projects completed as a	score of 20 on Safety Project #1	feels strongly that this was due to a lack of time. The extensive
use and disposal (Departmental	component of our Chem 201	(1 individual element score	one-on-one time required of the professor/student precluded
Outcome D).	course (Stewardship and Safety in	missed criterion). On Safety	these individuals from repeating a few of the assessments.
	Chemical Practice) and graded via	Project #2, all students met the	Rather than fail the students, the instructor opted to allow the
	associated rubrics. In addition to	minimum composite score	few sub-par scores with the intention of scheduling additional
	the composite scores criteria on all	criterion of 21 and all individual	sessions at the next offering to give each student enough
	3 projects, minimum individual	element scores were	opportunities to meet the minimum scores on each project. The
	element scores have also been set.	satisfactory as well. On Safety	same problem was noted in last year's report, so the good
		Project #3, all students met the	intentions of the instructor may not be sufficient to accomplish
		minimum composite score	the desired change. To step the efforts up a notch, the instructor
		criterion of 20, though 1	has also incorporated feedback from the class in a proposal to the
		individual element score missed	department that would add an additional credit hour to the class
		the minimum standard.	to assure that the assessments have adequate time for
			completion.

Demonstrate an ability to analyze various kinds of experimental data used in the chemical disciplines including the output of various instrumental techniques (Departmental Outcome E).	1) Each student must obtain a minimum cumulative score of 15 on each of 5 instrumental assignments (i.e., IR/MS/NMR assignments) completed in Chem 322.	All students who passed the class met the minimum score of 15 on all 5 assignments.	Since 2012, a passing grade on each assignment has been officially required in order to pass the class. In Spring 2014, the instructor implemented a policy of assigning a grade of "Incomplete" until all students had met the minimum criteria. As a result, the number of deficient criteria has dropped dramatically. At the encouragement of the Chemistry Program's external reviewers, the departmental chemistry faculty have agreed to add an additional 4 instrumental assignments to the existing slate of 5. The chemistry faculty are hoping to implement these new assignments within the next one or two reporting cycles.
Demonstrate an understanding of the fundamental concepts of molecular biology and genetics (Departmental Outcome G).	1) Mean score no lower than 0.5σ below national mean and no individual score lower than 1.5σ below the national mean on the ETS biology exam Molecular Biology and Genetics sub-scores.	1) Average Molecular Biology/Genetics sub-score is 58.8 (\pm 0.45 σ). Two individuals failed to meet the \pm 1.50 σ criterion.	The composite average score was well-above the national average this year. Although this is cause for celebration, individuals missing the criterion of -1.5σ are a concern for us. This has occasionally happened (two this year), but not routinely. Although legitimate reasons for individual students missing the cutoff (e.g., illness, test anxiety) do exist, the department has an intuition that it can do more. It remains to be seen how the recent personnel changes in the biology faculty will impact this weakness, but early insights should begin to become evident in the 2016 Assessment Report. In addition, several options are currently being discussed in the department and have been slated to be agenda items at an upcoming department meeting.
Demonstrate the level of content mastery required for potential successful performance in chemical industry, graduate school chemistry programs, or professional schools (Departmental Outcome P).	1) Mean score no lower than 0.5σ below national mean and no individual score lower than 1.5σ below the national mean on the ETS chemistry exam composite score. 2) Mean score no lower than 0.5σ below national mean and no individual score lower than 1.5σ below the national mean on the ACS Organic Chemistry exam.	1) Mean ETS composite score is 155.7. (+0.51 σ). No individuals failed to meet the -1.5 σ criterion. 2) Mean score on the ACS Organic Chem Exam was 36.45 (-0.23 σ). No individuals failed to meet the -1.5 σ criterion.	1) ETS Composite data have been acceptable for the last several years. 2) This data set represents the fifth year in a row that ACS scores have met the departmental criteria for success in organic. This may be the result of two changes that have been implemented in the Organic Chemistry sequence within the last 5 years. It is still too early to draw any conclusions regarding the implementation of these changes, though. No changes appear to be warranted at this time.



Program Name: Chemistry (Pre-Pharmacy Track)

Assessed by: Jeff Goff, Dept. of Natural Sciences

Date/Cycle of Assessment: Submitted on 10/31/2016; Reporting cycle of January 2015 - December 2015

Mission Statement:

The Malone University Department of Natural Sciences exists to engage students in the study of God's majesty and character by exploring His handiwork as it is revealed in Nature, both animate and inanimate; to promote the wise and thoughtful stewardship of the natural resources He has entrusted to us; and to encourage students to demonstrate God's love in their respective communities by using the knowledge and skills they acquire here.

- Students should comprehend the central concepts of chemistry, the underlying assumptions of chemical knowledge, and be able to employ the methods of inquiry commonly utilized by practicing chemists at a level sufficient for entrance into graduate school, professional schools, and industry (Stems from Malone Educ. Goals A4, D1, and D3).
- Students should become proficient in solving chemical problems using both quantitative and qualitative approaches and in interpreting data generated by analytical instruments commonly employed by practicing chemists (Stems from Malone Educ. Goals C3, D4, and D5).
- Students should be able to apply the principles of Christian Stewardship to chemical practice and interpret chemical phenomena within a Christian worldview (Stems from Malone Educ. Goals D2, E1, and E5).

Department: Natural Sciences

Program: Chemistry (Pre-Pharmacy Track)

Assessed by: Jeffrey M. Goff - Dept. of Natural Sciences

Time Period Covered: *January 2015-December 2015*

Program Intended Learning Outcomes (PILO)	Means of Program Assessment & Criteria for Success	Summary of Data Collected	Use of Results
Demonstrate the capability of integrating data and assessing phenomena within a Christian paradigm (Departmental Outcome A).	1) Average cumulative score ≥ 12; minimum cumulative score of 8; no individual component score of 1 on the Faith and Learning Assessment Instrument as scored by the associated rubric.	Average composite score = 14.41; minimum composite score = 8; # of individual component scores of 1 was 3.	Data here represent the sixth data set ever collected with this instrument. Average composite score and individual composite scores all met the departmental criteria for success. However, 3 individual component scores were not acceptable. Two of the low individual component scores were from a single individual's essays who, we believe, avoided the question due to the sensitivity of the material. As a result, the department reworded the instrument to be less offensive to students whose worldviews differ significantly from Malone's in order to elicit more on-task participation.
Demonstrate a comprehension of the central concepts of chemistry including the major theories and laws which govern chemical phenomena (Departmental Outcome B).	1) Mean score no lower than 0.5σ below national mean and no individual score lower than 1.5σ below the national mean on the ACS Gen Chem II Exam. 2) ACS Gen Chem II Exam score used as a Pre-Test for obtaining baseline data only (not used to assess success, but merely preparation for freshman chemistry sequence).	1) Mean score on the ACS Gen Chem Exam is 29.14 (-0.80 σ). Ten individuals failed to meet the -1.5 σ criterion. 2) Class average on ACS Gen Chem pretest is 18.81 giving strong evidence of student improvement, but the scores of the freshman cohort as it exits is well below the national average (24 th percentile)	The 10 low ACS Gen Chem Exam scores and the low average score for the cohort are in keeping with other recent cohorts and are disappointing to the department. The extremely low CCDT results for Fall 2008 - Fall 2010 are evidence that our students enter well below the national average, so cohorts exiting below the national average do not necessarily imply a poor program. The ACS Gen Chem II pre-test scores, when compared to the post-test scores, are extremely strong evidence that our students are improving as a result of our freshman chemistry sequence. The department has concluded that our students enter below the national average and then exit below the national average in spite of the significant improvement in content knowledge. The department responded by developing a new, alternative Gen Chem II course for Zoo and Wildlife Biology Majors. Course is scheduled to run for the first time in Spring 2017.

Demonstrate an understanding of	1) Mean score no lower than 0.5σ	1) Mean score on the ACS	1) This data set represents the fifth year in a row that ACS
the relationships between	below national mean and no	Organic Chem Exam was 36.45	composite scores have met the departmental criteria for success.
structure and behavior of the	individual score lower than 1.5 σ	(-0.23σ) . No individuals failed	This may be the result of two changes that have been
chemical elements in their	below the national mean on the	to meet the -1.5 σ criterion. 2)	implemented in the Organic Chemistry sequence within the last 5
various forms and combinations	ACS Organic Chem Exam. 2) Mean	Most recent mean score on the	years. It is still too early to draw any conclusions regarding the
(Departmental Outcome C).	score no lower than 0.5σ below	ACS Inorganic Chem Exam was	implementation of these changes, though. 2) Composite scores
	national mean and no individual	25.67 (–0.33σ). Only 1	on the ACS Inorganic exam have met the minimum standard set
	score lower than 1.5 σ below the	individual failed to meet the –	by the department since 2009. The occasional individual still
	national mean on the ACS	1.5σ criterion. 3) Average sub-	misses the -1.5σ criterion, however. The success of our students
	Inorganic Chem Exam. 3) Mean	scores on the Organic and	on the ETS inorganic sub-section, however, is comforting and
	score no lower than 0.5σ below	Inorganic sections of the ETS	leads us to believe that no programmatic changes are warranted
	national mean and no individual	chemistry exam are 61.0 and	at this time. 3) ETS scores were acceptable again this year. The
	score lower than 1.5 σ below the	56.7 respectively (+0.89 σ and	department has opted to not make any changes to the curriculum
	national mean on the ETS	+0.56σ respectively). No	at this time.
	chemistry exam Organic and	individuals failed to meet the –	
	Inorganic Sub-scores.	1.5 σ criterion on either sub-	
	morgame dus decresi	section).	
Demonstrate safe laboratory	Minimum scores of 20, 21, and 20	Of 9 students, only 1 student	1) Although two individual element scores were low and 1
practices and an environmental	must be obtained respectively on 3	failed to reach the minimum	student failed to meet a minimum composite score, the instructor
ethic as it pertains to chemical	safety projects completed as a	score of 20 on Safety Project #1	feels strongly that this was due to a lack of time. The extensive
use and disposal (Departmental	component of our Chem 201	(1 individual element score	one-on-one time required of the professor/student precluded
Outcome D).	course (Stewardship and Safety in	missed criterion). On Safety	these individuals from repeating a few of the assessments.
outcome by.	Chemical Practice) and graded via	Project #2, all students met the	Rather than fail the students, the instructor opted to allow the
	associated rubrics. In addition to	minimum composite score	few sub-par scores with the intention of scheduling additional
	the composite scores criteria on all	criterion of 21 and all individual	sessions at the next offering to give each student enough
	3 projects, minimum individual	element scores were	opportunities to meet the minimum scores on each project. The
	element scores have also been set.	satisfactory as well. On Safety	same problem was noted in last year's report, so the good
	element scores have also been set.	Project #3, all students met the	intentions of the instructor may not be sufficient to accomplish
		minimum composite score	the desired change. To step the efforts up a notch, the instructor
		criterion of 20, though 1	has also incorporated feedback from the class in a proposal to the
		individual element score missed	department that would add an additional credit hour to the class
		the minimum standard.	to assure that the assessments have adequate time for
		the millimum standard.	•
			completion.

Demonstrate an ability to analyze various kinds of experimental data used in the chemical disciplines including the output of various instrumental techniques (Departmental Outcome E).	1) Each student must obtain a minimum cumulative score of 15 on each of 5 instrumental assignments (i.e., IR/MS/NMR assignments) completed in Chem 322.	All students who passed the class met the minimum score of 15 on all 5 assignments.	Since 2012, a passing grade on each assignment has been officially required in order to pass the class. In Spring 2014, the instructor implemented a policy of assigning a grade of "Incomplete" until all students had met the minimum criteria. As a result, the number of deficient criteria has dropped dramatically. At the encouragement of the Chemistry Program's external reviewers, the departmental chemistry faculty have agreed to add an additional 4 instrumental assignments to the existing slate of 5. The chemistry faculty are hoping to implement these new assignments within the next one or two reporting cycles.
Demonstrate a balanced concept of molecular, micro, and macro levels of biological phenomena in the context of human systems (Departmental Outcome L).	1) Mean score no lower than 8/12 on the A&P questions of the inhouse biology post-test. No individual with a score lower than 5/12. (Note: New instrument – criteria are still being evaluated).	1) NO DATA for this reporting period.	Although Biol 132 exam scores were retained for several years with the goal of extracting the scores of our graduates from the overwhelming number of nursing students who took the course, the retirement of our A&P instructor has caused us to change course. The current in-house biology pre-test / post-test exam has been altered to accommodate roughly 12 questions covering human A&P content. The performance of our biology pre-professional students on these 12 questions will be used to show improvement in human A&P content knowledge. The first administration of this altered exam was tentatively scheduled for Spring 2015, but did not occur until Fall 2016. Preliminary data will be included in the 2016 assessment report. The current A&P instructor is also researching an additional assessment that might allow for true comparisons with national averages.
Demonstrate the ability to properly relate biological structure and function in the context of human systems (Departmental Outcome M).	1) Mean score no lower than 8/12 on the A&P questions of the inhouse biology post-test. No individual with a score lower than 5/12. (Note: New instrument – criteria are still being evaluated).	1) NO DATA for this reporting period.	See comments in table cell for Departmental PILO 'L'.

Demonstrate the level of content mastery required for potential successful performance in chemical industry, graduate school chemistry programs, or professional schools (Departmental Outcome P).	1) Mean score no lower than 0.5σ below national mean and no individual score lower than 1.5σ below the national mean on the ETS chemistry exam composite score. 2) Mean score no lower than 0.5σ below national mean and no individual score lower than 1.5σ below the national mean on the ACS Organic Chemistry exam.	1) Mean ETS composite score is 155.7. (+0.51 σ). No individuals failed to meet the -1.5 σ criterion. 2) Mean score on the ACS Organic Chem Exam was 36.45 (-0.23 σ). No individuals failed to meet the -1.5 σ criterion.	1) ETS Composite data have been acceptable for the last several years. 2) This data set represents the fifth year in a row that ACS scores have met the departmental criteria for success in organic. This may be the result of two changes that have been implemented in the Organic Chemistry sequence within the last 5 years. It is still too early to draw any conclusions regarding the implementation of these changes, though. No changes appear to be warranted at this time.
----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------



Program Name: Exercise Science

Assessed by: Steve Wirick

Date/Cycle of Assessment: Submitted on 10/31/2016; Reporting cycle of August 2015 – July 2016

Mission Statement:

The Malone University Department of Science and Mathematics exists to engage students in the study of God's majesty and character by exploring His handiwork as it is revealed in Nature, both animate and inanimate; to promote the wise and thoughtful stewardship of the natural resources He has entrusted to us; and to encourage students to demonstrate God's love in their respective communities by using the knowledge and skills they acquire here.

- Understand the physiological and behavioral foundations of physical activity, health and fitness.
- Explain the impact of physical activity, exercise, and sport on the health of individuals, groups, and communities.
- Promote basic and applied research on health, disease prevention, human behavior, and human performance.
- Assess the educational and fitness needs of individuals, groups and communities to promote health and human performance.
- Implement strategies to help individuals, groups, and communities to maintain and enhance physical performance, fitness, health, and quality of life.
- Study the structural, functional and behavioral phenomena related to health and exercise behavior in sport, clinical, and community settings.

MALONE UNIVERSITY ANNUAL ASSESSMENT REPORT

Department: Science and Mathematics

Program: Exercise Science
Assessed by: Steve Wirick

Time Period Covered: August 2015 – July 2016

Submission Date: 3/18/2016

Program Intended Learning	Means of Program Assessment & Criteria for Success	Summary of Data Collected	Use of Results
Outcomes (PILO)	-	-	
Demonstrate understanding	Direct:		Our students are consistently reaching
of anatomical, kinesiological,	-Pre-test in PE 265	-N=11, Mean = 56.2, 48.87%	the benchmark of 80% on the post-test
and physiological concepts	-Post-test in EXSC 435	-N=11, Mean = 93.4, 81.22%	which is correlating well to their success
of exercise science	-Criteria: 80% on post-test		in passing certification exams in the exercise science field.
	Indirect:	N=11, Mean = 4.25, 85%	Students generally feel well equipped to
	-Senior exit survey		pursue careers in the exercise science
	-Criteria: 80%		profession
Demonstrate knowledge of	Direct:		Our students are consistently reaching
the prevention, care,	-Pre-test in PE 265	-N=11, Mean = 56.2, 48.87%	the benchmark of 80% on the post-test
treatment, and rehabilitation	-Post-test in EXSC 435	-N=11, Mean = 93.4, 81.22%	which is correlating well to their success
of injuries	-Criteria: 80% on post-test		in passing certification exams in the exercise science field.
	Indirect:	N=11, Mean = 4.25, 85%	Students generally feel well equipped to
	-Senior exit survey		pursue careers in the exercise science
	-Criteria: 80%		profession
Demonstrate ability to	Indirect:	N=11, Mean = 3.82, 95.5%	Our students continue to receive
assess fitness needs of	-Internship evaluation		exceptional evaluations from their
individuals and groups	-Criteria: 80%		supervisors at the internship sites. We
			continue to develop strong relationships
			with area hospitals, private PT practices,
			fitness centers, and corporate facilities.
Demonstrate ability to plan	Indirect:	N=11, Mean = 3.82, 95.5%	Our students continue to receive
effective exercise	-Internship evaluation		exceptional evaluations from their
prescriptions for various	-Criteria: 80%		supervisors at the internship sites. We
populations			continue to develop strong relationships
			with area hospitals, private PT practices,
			fitness centers, and corporate facilities.

The revised curriculum for Exercise Science that was referenced during last year's assessment report is under its final modifications and we are anticipating it being presented to the full faculty for review later this semester. We are confident these curricular changes will establish Malone as the distinct University in the region that prepares our students exceptionally well for the Medical Fitness industry.



Program Name: Life Science Education

Assessed by: Jeff Goff, Dept. of Natural Sciences

Date/Cycle of Assessment: Submitted on 10/31/2016; Reporting cycle of January 2015 - December 2015

Mission Statement:

The Malone University Department of Natural Sciences exists to engage students in the study of God's majesty and character by exploring His handiwork as it is revealed in Nature, both animate and inanimate; to promote the wise and thoughtful stewardship of the natural resources He has entrusted to us; and to encourage students to demonstrate God's love in their respective communities by using the knowledge and skills they acquire here.

- Students should comprehend the central concepts of biology and chemistry, the underlying assumptions of biological knowledge and chemical knowledge, and be able to employ the methods of inquiry commonly utilized by practicing biologists and chemists at a level sufficient for competent teaching at the high school level (Stems from Malone Educ. Goals A4, D1, and D3).
- Students should become proficient in solving biological and chemical problems using both quantitative and qualitative approaches and in analyzing / interpreting data generated by experimental protocols commonly employed by practicing biologists/chemists (Stems from Malone Educ. Goals C3, D4, and D5).
- Students should be able to apply the principles of Christian Stewardship to biological practice and interpret biological and chemical phenomena within a Christian worldview (Stems from Malone Educ. Goals D2, E1, and E5).

Department: Natural Sciences **Program:** Life Science Education

Assessed by: Jeffrey M. Goff - Dept. of Natural Sciences

Time Period Covered: *January 2015-December 2015*

Program Intended Learning Outcomes (PILO)	Means of Program Assessment & Criteria for Success	Summary of Data Collected	Use of Results
Demonstrate the capability of integrating data and assessing phenomena within a Christian paradigm (Departmental Outcome A).	1) Average cumulative score ≥ 12; minimum cumulative score of 8; no individual component score of 1 on the Faith and Learning Assessment Instrument as scored by the associated rubric.	Average composite score = 14.41; minimum composite score = 8; # of individual component scores of 1 was 3.	Data here represent the sixth data set ever collected with this instrument. Average composite score and individual composite scores all met the departmental criteria for success. However, 3 individual component scores were not acceptable. Two of the low individual component scores were from a single individual's essays who, we believe, avoided the question due to the sensitivity of the material. As a result, the department reworded the instrument to be less offensive to students whose worldviews differ significantly from Malone's in order to elicit more on-task participation.
Demonstrate a comprehension of the central concepts of chemistry including the major theories and laws which govern chemical phenomena (Departmental Outcome B).	1) Mean score no lower than 0.5σ below national mean and no individual score lower than 1.5σ below the national mean on the ACS Gen Chem II Exam. 2) ACS Gen Chem II Exam score used as a Pre-Test for obtaining baseline data only (not used to assess success, but merely preparation for freshman chemistry sequence).	1) Mean score on the ACS Gen Chem Exam is 29.14 (-0.80 σ). Ten individuals failed to meet the -1.5 σ criterion. 2) Class average on ACS Gen Chem pretest is 18.81 giving strong evidence of student improvement, but the scores of the freshman cohort as it exits is well below the national average (24 th percentile)	The 10 low ACS Gen Chem Exam scores and the low average score for the cohort are in keeping with other recent cohorts and are disappointing to the department. The extremely low CCDT results for Fall 2008 - Fall 2010 are evidence that our students enter well below the national average, so cohorts exiting below the national average do not necessarily imply a poor program. The ACS Gen Chem II pre-test scores, when compared to the post-test scores, are extremely strong evidence that our students are improving as a result of our freshman chemistry sequence. The department has concluded that our students enter below the national average and then exit below the national average in spite of the significant improvement in content knowledge. The department responded by developing a new, alternative Gen Chem II course for Zoo and Wildlife Biology Majors. Course is scheduled to run for the first time in Spring 2017.

	T	T	
Demonstrate safe laboratory	Minimum scores of 20, 21, and 20	Of 9 students, only 1 student	1) Although two individual element scores were low and 1
practices and an environmental	must be obtained respectively on 3	failed to reach the minimum	student failed to meet a minimum composite score, the instructor
ethic as it pertains to chemical	safety projects completed as a	score of 20 on Safety Project #1	feels strongly that this was due to a lack of time. The extensive
use and disposal (Departmental	component of our Chem 201	(1 individual element score	one-on-one time required of the professor/student precluded
Outcome D).	course (Stewardship and Safety in	missed criterion). On Safety	these individuals from repeating a few of the assessments.
	Chemical Practice) and graded via	Project #2, all students met the	Rather than fail the students, the instructor opted to allow the
	associated rubrics. In addition to	minimum composite score	few sub-par scores with the intention of scheduling additional
	the composite scores criteria on all	criterion of 21 and all individual	sessions at the next offering to give each student enough
	3 projects, minimum individual	element scores were	opportunities to meet the minimum scores on each project. The
	element scores have also been set.	satisfactory as well. On Safety	same problem was noted in last year's report, so the good
		Project #3, all students met the	intentions of the instructor may not be sufficient to accomplish
		minimum composite score	the desired change. To step the efforts up a notch, the instructor
		criterion of 20, though 1	has also incorporated feedback from the class in a proposal to the
		individual element score missed	department that would add an additional credit hour to the class
		the minimum standard.	to assure that the assessments have adequate time for
			completion.
Demonstrate an understanding of	1) Mean score no lower than 0.5σ	1) Average Organismal sub-	In light of the successful scores of several recent cohorts on the
the biological characteristics of	below national mean and no	score is 61.1 (+0.60 <i>σ</i>). No	organismal sub-section of the ETS, the department has opted to
each of the major kingdoms	individual score lower than 1.5 σ	individuals failed to meet the -	not make any programmatic changes at this time. Individuals
(Departmental Outcome F)	below the national mean on the	1.5σ criterion.	missing the criterion of -1.5σ on other sub-sections or even as
	ETS biology exam Organismal Sub-		composite scores are a concern for us, but legitimate reasons for
	score.		individual students missing the cutoff (e.g., illness, test anxiety)
			do exist. The department is more concerned when students who
			have acceptable GPAs routinely miss this threshold. This has
			occasionally happened, but not routinely. The department has
			slated this as an agenda item for a future departmental meeting.

Demonstrate an understanding of the fundamental concepts of molecular biology and genetics (Departmental Outcome G).	1) Mean score no lower than 0.5σ below national mean and no individual score lower than 1.5σ below the national mean on the ETS biology exam Molecular Biology and Genetics sub-scores.	1) Average Molecular Biology/Genetics sub-score is $58.8 \ (+0.45 \ \sigma)$. Two individuals failed to meet the $-1.50 \ \sigma$ criterion.	The composite average score was well-above the national average this year. Although this is cause for celebration, individuals missing the criterion of -1.5σ are a concern for us. This has occasionally happened (two this year), but not routinely. Although legitimate reasons for individual students missing the cutoff (e.g., illness, test anxiety) do exist, the department has an intuition that it can do more. It remains to be seen how the recent personnel changes in the biology faculty will impact this weakness, but early insights should begin to become evident in the 2016 Assessment Report. In addition, several options are currently being discussed in the department and have been slated
Demonstrate an understanding of the various factors that impact biological populations (Departmental Outcome H).	1) Mean score no lower than 0.5σ below national mean and no individual score lower than 1.5σ below the national mean on the ETS biology exam Population Biology/Evolution/Ecology subscore.	1) Average Population Biology/Evolution/Ecology subscore is 60.4 (+ 0.61σ). All individuals met the - 1.5σ criterion.	to be agenda items at an upcoming department meeting. In light of the successful scores of several recent cohorts on the population biology/evolution/ecology sub-section, the department has opted to not make any programmatic changes at this time. The institutional cohort averages on this section are some of the highest and represent strengths of the department's biology programs.

Demonstrate an ability to properly relate biological structure and function (Departmental Outcome I).	1) Mean score no lower than 0.5σ below national mean and no individual score lower than 1.5σ below the national mean on the ETS biology exam Cell Biology subscore.	1) Average Cell Biology subscore is 53.9 ($+0.07\sigma$). A single individual failed to meet the -1.5σ criterion.	This sub-section of the ETS has historically been lowest. For this reason, a curricular change was proposed and passed by the full faculty that added one credit hour to the introductory Cell Biology course effective Fall 2012. It is still too early to tell if this curricular change will impact our scores on this section (i.e., Spring 2016 graduating class will be the first to take the ETS having benefited from this curricular change). Individuals missing the criterion of −1.5σ on other sub-sections or even as composite scores are a concern for us. This has occasionally happened (one this year on this sub-section), but not routinely. Although legitimate reasons for individual students missing the cutoff (e.g., illness, test anxiety) do exist, the department has an intuition that it can do more. It remains to be seen how the recent personnel changes in the biology faculty will impact this weakness, but early insights should begin to become evident in the 2016 Assessment Report. In addition, several options are currently being discussed in the department and have been slated to be agenda items at an upcoming department meeting. Lastly, in last year's report, we indicated that we would like to add an additional instrument to assess this outcome a minimum score of 70% on the cell biology content of our in-house biology post-test. This has proved more difficult than at first anticipated and was not completed for this report. Since so many of our curricular/personnel changes should begin impacting the 2016 report data, we are holding off on the new assessment until then as well.
Demonstrate the capability of working with animals in safe and ethical ways that conform to state and national guidelines (Departmental Outcome J).	1) Minimum score of 35/60 on an Animal Care Portfolio with no single sub-score lower than 2.	All Animal Care Portfolio composite scores met the departmental criteria for success, while five individual element scores did not.	This instrument is still fairly new (this is the third year of good data collected with this instrument). Last year, the department began checking for completion of the Animal Care Portfolio during advising week of a student's junior spring; still, some students procrastinated on their portfolios and did not turn them in until their senior year. The department should be able to enforce this more effectively by several means. The simplest alternative is to not clear students to register for the fall semester of their senior year if their portfolios are not in hand.

Demonstrate the capability of analyzing and reporting empirical data from the biological sciences (Departmental Outcome K).	Instrument has been dropped in favor of a newer one that has yet to be developed.	NO DATA	Previous reports have indicated that our department has been having a long and rather continuous conversation about the need to implement a research methods course. This course was finally developed and approved by the department and full faculty. It is scheduled to run in Fall 2016 for the first time. The exact nature of the assessment instrument is still in flux, but the department has completed the most difficult step in addressing this shortfall. It will be possible to build an appropriate assessment instrument into the course as it runs in Fall 2016.
Demonstrate the level of content mastery required for potential successful performance in secondary science education (Departmental Outcome O).	1) 100% passing scores on appropriate OAE test.	1) One student took the Biology OAE test in 2015. This student failed with a score of 213 (220 required to pass).	1) Malone has a long history of 100% pass rates on the Praxis II tests. The fact that this student failed an OAE test, though disappointing, does not warrant any programmatic changes at this time. However, the possibility that the OAE test might be more rigorous is something the department must consider and be proactive about. If another student fails this test within the next 3-5 years, the department believes that a much more serious response is in order. Incidentally, the student who failed this test retook the test and passed it at a later date (data to be included in 2016 report).



Program Name: Life Science - Chemistry Education

Assessed by: Jeff Goff, Dept. of Natural Sciences

Date/Cycle of Assessment: Submitted on 10/31/2016; Reporting cycle of January 2015 - December 2015

Mission Statement:

The Malone University Department of Natural Sciences exists to engage students in the study of God's majesty and character by exploring His handiwork as it is revealed in Nature, both animate and inanimate; to promote the wise and thoughtful stewardship of the natural resources He has entrusted to us; and to encourage students to demonstrate God's love in their respective communities by using the knowledge and skills they acquire here.

Program Goals:

- Students should comprehend the central concepts of biology and chemistry, the underlying assumptions of biological knowledge and chemical knowledge, and be able to employ the methods of inquiry commonly utilized by practicing biologists and chemists at a level sufficient for competent teaching at the high school level (Stems from Malone Educ. Goals A4, D1, and D3).
- Students should become proficient in solving biological and chemical problems using both quantitative and qualitative approaches and in analyzing / interpreting data generated by experimental protocols commonly employed by practicing biologists/chemists (Stems from Malone Educ. Goals C3, D4, and D5).
- Students should be able to apply the principles of Christian Stewardship to biological practice and interpret biological and chemical phenomena within a Christian worldview (Stems from Malone Educ. Goals D2, E1, and E5).

MALONE UNIVERSITY ANNUAL ASSESSMENT REPORT (See Appendix for Raw Data and Detailed Analysis)

Department: Natural Sciences

Program: Life Science – Chemistry Education
Assessed by: Jeffrey M. Goff - Dept. of Natural Sciences

Time Period Covered: *January 2015-December 2015*

Submission Date: 10/31/2016

Program Intended Learning Outcomes (PILO)	Means of Program Assessment & Criteria for Success	Summary of Data Collected	Use of Results
Demonstrate the capability of integrating data and assessing phenomena within a Christian paradigm (Departmental Outcome A).	1) Average cumulative score ≥ 12; minimum cumulative score of 8; no individual component score of 1 on the Faith and Learning Assessment Instrument as scored by the associated rubric.	Average composite score = 14.41; minimum composite score = 8; # of individual component scores of 1 was 3.	Data here represent the sixth data set ever collected with this instrument. Average composite score and individual composite scores all met the departmental criteria for success. However, 3 individual component scores were not acceptable. Two of the low individual component scores were from a single individual's essays who, we believe, avoided the question due to the sensitivity of the material. As a result, the department reworded the instrument to be less offensive to students whose worldviews differ significantly from Malone's in order to elicit more on-task participation.
Demonstrate a comprehension of the central concepts of chemistry including the major theories and laws which govern chemical phenomena (Departmental Outcome B).	1) Mean score no lower than 0.5σ below national mean and no individual score lower than 1.5σ below the national mean on the ACS Gen Chem II Exam. 2) ACS Gen Chem II Exam score used as a Pre-Test for obtaining baseline data only (not used to assess success, but merely preparation for freshman chemistry sequence).	1) Mean score on the ACS Gen Chem Exam is 29.14 (-0.80 σ). Ten individuals failed to meet the -1.5 σ criterion. 2) Class average on ACS Gen Chem pretest is 18.81 giving strong evidence of student improvement, but the scores of the freshman cohort as it exits is well below the national average (24 th percentile)	The 10 low ACS Gen Chem Exam scores and the low average score for the cohort are in keeping with other recent cohorts and are disappointing to the department. The extremely low CCDT results for Fall 2008 - Fall 2010 are evidence that our students enter well below the national average, so cohorts exiting below the national average do not necessarily imply a poor program. The ACS Gen Chem II pre-test scores, when compared to the post-test scores, are extremely strong evidence that our students are improving as a result of our freshman chemistry sequence. The department has concluded that our students enter below the national average and then exit below the national average in spite of the significant improvement in content knowledge. The department responded by developing a new, alternative Gen Chem II course for Zoo and Wildlife Biology Majors. Course is scheduled to run for the first time in Spring 2017.

	_		
Demonstrate an understanding of	1) Mean score no lower than 0.5σ	1) Mean score on the ACS	1) This data set represents the fifth year in a row that ACS
the relationships between	below national mean and no	Organic Chem Exam was 36.45	composite scores have met the departmental criteria for success.
structure and behavior of the	individual score lower than 1.5 σ	(-0.23σ) . No individuals failed	This may be the result of two changes that have been
chemical elements in their	below the national mean on the	to meet the -1.5 σ criterion. 2)	implemented in the Organic Chemistry sequence within the last 5
various forms and combinations	ACS Organic Chem Exam. 2) Mean	Most recent mean score on the	years. It is still too early to draw any conclusions regarding the
(Departmental Outcome C).	score no lower than 0.5σ below	ACS Inorganic Chem Exam was	implementation of these changes, though. 2) Composite scores
	national mean and no individual	25.67 (–0.33σ). Only 1	on the ACS Inorganic exam have met the minimum standard set
	score lower than 1.5 σ below the	individual failed to meet the -	by the department since 2009. The occasional individual still
	national mean on the ACS	1.5σ criterion. 3) Average sub-	misses the -1.5σ criterion, however. The success of our students
	Inorganic Chem Exam. 3) Mean	scores on the Organic and	on the ETS inorganic sub-section, however, is comforting and
	score no lower than 0.5σ below	Inorganic sections of the ETS	leads us to believe that no programmatic changes are warranted
	national mean and no individual	chemistry exam are 61.0 and	at this time. 3) ETS scores were acceptable again this year. The
	score lower than 1.5 σ below the	56.7 respectively (+0.89σ and	department has opted to not make any changes to the curriculum
	national mean on the ETS	$+0.56\sigma$ respectively). No	at this time.
	chemistry exam Organic and	individuals failed to meet the -	
	Inorganic Sub-scores.	1.5σ criterion on either sub-	
		section).	
Demonstrate safe laboratory	Minimum scores of 20, 21, and 20	Of 9 students, only 1 student	1) Although two individual element scores were low and 1
practices and an environmental	must be obtained respectively on 3	failed to reach the minimum	student failed to meet a minimum composite score, the instructor
ethic as it pertains to chemical	safety projects completed as a	score of 20 on Safety Project #1	feels strongly that this was due to a lack of time. The extensive
use and disposal (Departmental	component of our Chem 201	(1 individual element score	one-on-one time required of the professor/student precluded
Outcome D).	course (Stewardship and Safety in	missed criterion). On Safety	these individuals from repeating a few of the assessments.
	Chemical Practice) and graded via	Project #2, all students met the	Rather than fail the students, the instructor opted to allow the
	associated rubrics. In addition to	minimum composite score	few sub-par scores with the intention of scheduling additional
	the composite scores criteria on all	criterion of 21 and all individual	sessions at the next offering to give each student enough
	3 projects, minimum individual	element scores were	opportunities to meet the minimum scores on each project. The
	element scores have also been set.	satisfactory as well. On Safety	same problem was noted in last year's report, so the good
		Project #3, all students met the	intentions of the instructor may not be sufficient to accomplish
		minimum composite score	the desired change. To step the efforts up a notch, the instructor
		criterion of 20, though 1	has also incorporated feedback from the class in a proposal to the
		individual element score missed	department that would add an additional credit hour to the class
		the minimum standard.	to assure that the assessments have adequate time for
			completion.

Demonstrate an ability to analyze various kinds of experimental data used in the chemical disciplines including the output of various instrumental techniques (Departmental Outcome E).	1) Each student must obtain a minimum cumulative score of 15 on each of 5 instrumental assignments (i.e., IR/MS/NMR assignments) completed in Chem 322.	All students who passed the class met the minimum score of 15 on all 5 assignments.	Since 2012, a passing grade on each assignment has been officially required in order to pass the class. In Spring 2014, the instructor implemented a policy of assigning a grade of "Incomplete" until all students had met the minimum criteria. As a result, the number of deficient criteria has dropped dramatically. At the encouragement of the Chemistry Program's external reviewers, the departmental chemistry faculty have agreed to add an additional 4 instrumental assignments to the existing slate of 5. The chemistry faculty are hoping to implement these new assignments within the next one or two reporting cycles.
Demonstrate an understanding of the biological characteristics of each of the major kingdoms (Departmental Outcome F)	1) Mean score no lower than 0.5σ below national mean and no individual score lower than 1.5σ below the national mean on the ETS biology exam Organismal Subscore.	1) Average Organismal subscore is $61.1 \ (+0.60 \ \sigma)$. No individuals failed to meet the $-1.5 \ \sigma$ criterion.	In light of the successful scores of several recent cohorts on the organismal sub-section of the ETS, the department has opted to not make any programmatic changes at this time. Individuals missing the criterion of -1.5σ on other sub-sections or even as composite scores are a concern for us, but legitimate reasons for individual students missing the cutoff (e.g., illness, test anxiety) do exist. The department is more concerned when students who have acceptable GPAs routinely miss this threshold. This has occasionally happened, but not routinely. The department has slated this as an agenda item for a future departmental meeting.
Demonstrate an understanding of the fundamental concepts of molecular biology and genetics (Departmental Outcome G).	1) Mean score no lower than 0.5σ below national mean and no individual score lower than 1.5σ below the national mean on the ETS biology exam Molecular Biology and Genetics sub-scores.	1) Average Molecular Biology/Genetics sub-score is 58.8 ($+0.45\sigma$). Two individuals failed to meet the -1.50σ criterion.	The composite average score was well-above the national average this year. Although this is cause for celebration, individuals missing the criterion of –1.5σ are a concern for us. This has occasionally happened (two this year), but not routinely. Although legitimate reasons for individual students missing the cutoff (e.g., illness, test anxiety) do exist, the department has an intuition that it can do more. It remains to be seen how the recent personnel changes in the biology faculty will impact this weakness, but early insights should begin to become evident in the 2016 Assessment Report. In addition, several options are currently being discussed in the department and have been slated to be agenda items at an upcoming department meeting.

Demonstrate an understanding of	1) Mean score no lower than 0.5σ	1) Average Population	In light of the successful scores of several recent cohorts on the
the various factors that impact	below national mean and no	Biology/Evolution/Ecology sub-	population biology/evolution/ecology sub-section, the
biological populations	individual score lower than 1.5 σ	score is 60.4 (+0.61 <i>σ</i>). All	department has opted to not make any programmatic changes at
(Departmental Outcome H).	below the national mean on the	individuals met the -1.5 σ	this time. The institutional cohort averages on this section are
	ETS biology exam Population	criterion.	some of the highest and represent strengths of the department's
	Biology/Evolution/Ecology sub-		biology programs.
	score.		
Demonstrate an ability to	1) Mean score no lower than 0.5σ	Average Cell Biology sub-	This sub-section of the ETS has historically been lowest. For this
properly relate biological	below national mean and no	score is 53.9 (+0.07 σ). A single	reason, a curricular change was proposed and passed by the full
structure and function	individual score lower than 1.5 σ	individual failed to meet the –	faculty that added one credit hour to the introductory Cell Biology
(Departmental Outcome I).	below the national mean on the	1.5σ criterion.	course effective Fall 2012. It is still too early to tell if this
	ETS biology exam Cell Biology sub-		curricular change will impact our scores on this section (i.e.,
	score.		Spring 2016 graduating class will be the first to take the ETS
			having benefited from this curricular change). Individuals missing
			the criterion of -1.5σ on other sub-sections or even as composite
			scores are a concern for us. This has occasionally happened (one
			this year on this sub-section), but not routinely. Although
			legitimate reasons for individual students missing the cutoff (e.g.,
			illness, test anxiety) do exist, the department has an intuition that
			it can do more. It remains to be seen how the recent personnel
			changes in the biology faculty will impact this weakness, but early
			insights should begin to become evident in the 2016 Assessment
			Report. In addition, several options are currently being discussed
			in the department and have been slated to be agenda items at an
			upcoming department meeting. Lastly, in last year's report, we
			indicated that we would like to add an additional instrument to
			assess this outcome a minimum score of 70% on the cell biology
			content of our in-house biology post-test. This has proved more
			difficult than at first anticipated and was not completed for this
			report. Since so many of our curricular/personnel changes should
			begin impacting the 2016 report data, we are holding off on the
			new assessment until then as well.

Damanatusta tha sanahiliti -f	1) Minimum and of 25 /CO = = = =	1) All Animael Come Doubfelie	This is shown and is still faigh, as and the third are a first of
Demonstrate the capability of	1) Minimum score of 35/60 on an	All Animal Care Portfolio	This instrument is still fairly new (this is the third year of good
working with animals in safe and	Animal Care Portfolio with no	composite scores met the	data collected with this instrument). Last year, the department
ethical ways that conform to	single sub-score lower than 2.	departmental criteria for	began checking for completion of the Animal Care Portfolio
state and national guidelines		success, while five individual	during advising week of a student's junior spring; still, some
(Departmental Outcome J).		element scores did not.	students procrastinated on their portfolios and did not turn them
			in until their senior year. The department should be able to
			enforce this more effectively by several means. The simplest
			alternative is to not clear students to register for the fall semester
			of their senior year if their portfolios are not in hand.
Demonstrate the capability of	Instrument has been dropped in	NO DATA	Previous reports have indicated that our department has been
analyzing and reporting empirical	favor of a newer one that has yet		having a long and rather continuous conversation about the need
data from the biological sciences	to be developed.		to implement a research methods course. This course was finally
(Departmental Outcome K).			developed and approved by the department and full faculty. It is
			scheduled to run in Fall 2016 for the first time. The exact nature
			of the assessment instrument is still in flux, but the department
			has completed the most difficult step in addressing this shortfall.
			It will be possible to build an appropriate assessment instrument
			into the course as it runs in Fall 2016.
Demonstrate the level of content	1) 100% passing scores on	1) One student took the	1) Malone has a long history of 100% pass rates on the Praxis II
mastery required for potential	appropriate OAE test.	Integrated Science OAE test in	tests. The fact that this student passed is another affirmation of
successful performance in		2015. This student passed with	the program's strength. However, the possibility that the OAE
secondary science education		a score of 249 (220 required to	test might be more rigorous is something the department must
(Departmental Outcome O).		pass).	consider and be proactive about. If a student fails this test within
			the next 3-5 years, the department believes that a much more
			serious response is in order.



Program Name: Zoo and Wildlife Biology (both tracks assessed)

Assessed by: Jeff Goff, Dept. of Natural Sciences

Date/Cycle of Assessment: Submitted on 10/31/2016; Reporting cycle of January 2015 - December 2015

Mission Statement:

The Malone University Department of Natural Sciences exists to engage students in the study of God's majesty and character by exploring His handiwork as it is revealed in Nature, both animate and inanimate; to promote the wise and thoughtful stewardship of the natural resources He has entrusted to us; and to encourage students to demonstrate God's love in their respective communities by using the knowledge and skills they acquire here.

Program Goals:

- Students should comprehend the central concepts of biology, the underlying assumptions of biological knowledge, and be able to employ the methods of inquiry commonly utilized by practicing biologists at a level sufficient for entrance into graduate school, professional schools, and other biological vocations (Stems from Malone Educ. Goals A4, D1, and D3).
- Students should become proficient in solving biological problems using both quantitative and qualitative approaches and in analyzing / interpreting data generated by experimental protocols commonly employed by practicing biologists (Stems from Malone Educ. Goals C3, D4, and D5).
- Students should be able to apply the principles of Christian Stewardship to biological practice and interpret biological phenomena within a Christian worldview (Stems from Malone Educ. Goals D2, E1, and E5).

MALONE UNIVERSITY ANNUAL ASSESSMENT REPORT (See Appendix for Raw Data and Detailed Analysis)

Department:Natural SciencesProgram:Zoo and Wildlife Biology

Assessed by: Jeffrey M. Goff - Dept. of Natural Sciences

Time Period Covered: *January 2015-December 2015*

Submission Date: 10/31/2016

Program Intended Learning Outcomes (PILO)	Means of Program Assessment & Criteria for Success	Summary of Data Collected	Use of Results
Demonstrate the capability of integrating data and assessing phenomena within a Christian paradigm (Departmental Outcome A).	1) Average cumulative score ≥ 12; minimum cumulative score of 8; no individual component score of 1 on the Faith and Learning Assessment Instrument as scored by the associated rubric.	Average composite score = 14.41; minimum composite score = 8; # of individual component scores of 1 was 3.	Data here represent the sixth data set ever collected with this instrument. Average composite score and individual composite scores all met the departmental criteria for success. However, 3 individual component scores were not acceptable. Two of the low individual component scores were from a single individual's essays who, we believe, avoided the question due to the sensitivity of the material. As a result, the department reworded the instrument to be less offensive to students whose worldviews differ significantly from Malone's in order to elicit more on-task participation.
Demonstrate a comprehension of the central concepts of chemistry including the major theories and laws which govern chemical phenomena (Departmental Outcome B).	1) Mean score no lower than 0.5σ below national mean and no individual score lower than 1.5σ below the national mean on the ACS Gen Chem II Exam. 2) ACS Gen Chem II Exam score used as a Pre-Test for obtaining baseline data only (not used to assess success, but merely preparation for freshman chemistry sequence).	1) Mean score on the ACS Gen Chem Exam is 29.14 (-0.80 σ). Ten individuals failed to meet the -1.5 σ criterion. 2) Class average on ACS Gen Chem pretest is 18.81 giving strong evidence of student improvement, but the scores of the freshman cohort as it exits is well below the national average (24 th percentile)	The 10 low ACS Gen Chem Exam scores and the low average score for the cohort are in keeping with other recent cohorts and are disappointing to the department. The extremely low CCDT results for Fall 2008 - Fall 2010 are evidence that our students enter well below the national average, so cohorts exiting below the national average do not necessarily imply a poor program. The ACS Gen Chem II pre-test scores, when compared to the post-test scores, are extremely strong evidence that our students are improving as a result of our freshman chemistry sequence. The department has concluded that our students enter below the national average and then exit below the national average in spite of the significant improvement in content knowledge. The department responded by developing a new, alternative Gen Chem II course for Zoo and Wildlife Biology Majors. Course is scheduled to run for the first time in Spring 2017.

T	T	T = 6 = 1 = 1 = 1 = 1 = 1	
Demonstrate safe laboratory	Minimum scores of 20, 21, and 20	Of 9 students, only 1 student	1) Although two individual element scores were low and 1
practices and an environmental	must be obtained respectively on 3	failed to reach the minimum	student failed to meet a minimum composite score, the instructor
ethic as it pertains to chemical	safety projects completed as a	score of 20 on Safety Project #1	feels strongly that this was due to a lack of time. The extensive
use and disposal (Departmental	component of our Chem 201	(1 individual element score	one-on-one time required of the professor/student precluded
Outcome D).	course (Stewardship and Safety in	missed criterion). On Safety	these individuals from repeating a few of the assessments.
	Chemical Practice) and graded via	Project #2, all students met the	Rather than fail the students, the instructor opted to allow the
	associated rubrics. In addition to	minimum composite score	few sub-par scores with the intention of scheduling additional
	the composite scores criteria on all	criterion of 21 and all individual	sessions at the next offering to give each student enough
	3 projects, minimum individual	element scores were	opportunities to meet the minimum scores on each project. The
	element scores have also been set.	satisfactory as well. On Safety	same problem was noted in last year's report, so the good
		Project #3, all students met the	intentions of the instructor may not be sufficient to accomplish
		minimum composite score	the desired change. To step the efforts up a notch, the instructor
		criterion of 20, though 1	has also incorporated feedback from the class in a proposal to the
		individual element score missed	department that would add an additional credit hour to the class
		the minimum standard.	to assure that the assessments have adequate time for
			completion.
Demonstrate an understanding of	1) Mean score no lower than 0.5σ	1) Average Organismal sub-	In light of the successful scores of several recent cohorts on the
the biological characteristics of	below national mean and no	score is 61.1 (+0.60 σ). No	organismal sub-section of the ETS, the department has opted to
each of the major kingdoms	individual score lower than 1.5 σ	individuals failed to meet the –	not make any programmatic changes at this time. Individuals
(Departmental Outcome F)	below the national mean on the	1.5σ criterion.	missing the criterion of -1.5σ on other sub-sections or even as
	ETS biology exam Organismal Sub-		composite scores are a concern for us, but legitimate reasons for
	score.		individual students missing the cutoff (e.g., illness, test anxiety)
			do exist. The department is more concerned when students who
			have acceptable GPAs routinely miss this threshold. This has
			occasionally happened, but not routinely. The department has
			slated this as an agenda item for a future departmental meeting.
Demonstrate an understanding of	1) Mean score no lower than 0.5σ	Average Molecular	The composite average score was well-above the national
the fundamental concepts of	below national mean and no	Biology/Genetics sub-score is	average this year. Although this is cause for celebration,
molecular biology and genetics	individual score lower than 1.5 σ	58.8 (+0.45 σ). Two individuals	individuals missing the criterion of -1.5σ are a concern for us.
(Departmental Outcome G).	below the national mean on the	failed to meet the –1.50 σ	This has occasionally happened (two this year), but not routinely.
	ETS biology exam Molecular	criterion.	Although legitimate reasons for individual students missing the
	Biology and Genetics sub-scores.		cutoff (e.g., illness, test anxiety) do exist, the department has an
			intuition that it can do more. It remains to be seen how the
			recent personnel changes in the biology faculty will impact this
			weakness, but early insights should begin to become evident in
			the 2016 Assessment Report. In addition, several options are
			currently being discussed in the department and have been slated
			to be agenda items at an upcoming department meeting.

Demonstrate an understanding of the various factors that impact biological populations (Departmental Outcome H).	1) Mean score no lower than 0.5σ below national mean and no individual score lower than 1.5σ below the national mean on the ETS biology exam Population Biology/Evolution/Ecology subscore.	1) Average Population Biology/Evolution/Ecology subscore is $60.4 \ (+0.61 \ \sigma)$. All individuals met the $-1.5 \ \sigma$ criterion.	In light of the successful scores of several recent cohorts on the population biology/evolution/ecology sub-section, the department has opted to not make any programmatic changes at this time. The institutional cohort averages on this section are some of the highest and represent strengths of the department's biology programs.
Demonstrate an ability to properly relate biological structure and function (Departmental Outcome I).	1) Mean score no lower than 0.5σ below national mean and no individual score lower than 1.5σ below the national mean on the ETS biology exam Cell Biology subscore.	1) Average Cell Biology subscore is 53.9 ($+0.07\sigma$). A single individual failed to meet the -1.5σ criterion.	This sub-section of the ETS has historically been lowest. For this reason, a curricular change was proposed and passed by the full faculty that added one credit hour to the introductory Cell Biology course effective Fall 2012. It is still too early to tell if this curricular change will impact our scores on this section (i.e., Spring 2016 graduating class will be the first to take the ETS having benefited from this curricular change). Individuals missing the criterion of –1.5σ on other sub-sections or even as composite scores are a concern for us. This has occasionally happened (one this year on this sub-section), but not routinely. Although legitimate reasons for individual students missing the cutoff (e.g., illness, test anxiety) do exist, the department has an intuition that it can do more. It remains to be seen how the recent personnel changes in the biology faculty will impact this weakness, but early insights should begin to become evident in the 2016 Assessment Report. In addition, several options are currently being discussed in the department and have been slated to be agenda items at an upcoming department meeting. Lastly, in last year's report, we indicated that we would like to add an additional instrument to assess this outcome — a minimum score of 70% on the cell biology content of our in-house biology post-test. This has proved more difficult than at first anticipated and was not completed for this report. We are holding off on the new assessment until 2016.

Demonstrate the capability of working with animals in safe and ethical ways that conform to state and national guidelines (Departmental Outcome J).	1) Minimum score of 35/60 on an Animal Care Portfolio with no single sub-score lower than 2.	All Animal Care Portfolio composite scores met the departmental criteria for success, while five individual element scores did not.	This instrument is still fairly new (this is the third year of good data collected with this instrument). Last year, the department began checking for completion of the Animal Care Portfolio during advising week of a student's junior spring; still, some students procrastinated on their portfolios and did not turn them in until their senior year. The department should be able to enforce this more effectively by several means. The simplest alternative is to not clear students to register for the fall semester of their senior year if their portfolios are not in hand.
Demonstrate the capability of analyzing and reporting empirical data from the biological sciences (Departmental Outcome K).	Instrument has been dropped in favor of a newer one that has yet to be developed.	NO DATA	Previous reports have indicated that our department has been having a long and rather continuous conversation about the need to implement a research methods course. This course was finally developed and approved by the department and full faculty. It is scheduled to run in Fall 2016 for the first time. The exact nature of the assessment instrument is still in flux, but the department has completed the most difficult step in addressing this shortfall. It will be possible to build an appropriate assessment instrument into the course as it runs in Fall 2016.
Demonstrate the level of content mastery required for potential successful performance in graduate school biology programs or professional schools (Departmental Outcome N).	1) Mean score no lower than 0.5 σ below national mean and no individual score lower than 1.5 σ below the national mean on the ETS biology exam composite score. 2) Mean score no lower than 31/50 and no individual score lower than 24/50 on the departmental biology Post-Test	1) Average ETS composite score is 160.1 (+0.53σ). Lowest individual score is 132 (-1.64σ). 2) Mean score on in-house Biology post-test is 34.07. One individual failed to meet the minimum score of 24 (lowest score was 17).	1) As has been the case for several years, the average ETS composite score has been meeting the departmental standard. Occasionally, an individual student fails to meet the minimum score – this happened again this year. The score of 132 in this year's data marks the second lowest ETS composite score ever obtained by a Malone student. Although legitimate reasons for individual students missing the cutoff do exist (e.g., illness, test anxiety), the department has an intuition that it can do more. 2) The score of 17 in this year's data was achieved by the same student that achieved the 132 on the ETS exam. This student obtained a score of 17 on the pre-test as well, and the lack of change, at face value, indicates that this student did not absorb any content knowledge whatsoever. Results of this nature are most unsettling. Several options to address the occasional outlier are currently being discussed in the department and have been slated to be agenda items at an upcoming department meeting. Until the impact of the extra credit hour in Biol 144 and the impact of biology faculty personnel changes are manifested, it seems premature to us to alter the curriculum.