

Program:	Bioenvironmental Science & Environmental Studies, BS			
Cycle:	2016-2017			
Mission Statement:	Prepare capable, creative, and competent environmental scientists who practice critical thinking, scholarship, and integrity skills in preparation for leadership roles in either 1) entry level-positions in environmental project management, EHS compliance, or fundamental environmental research or 2) continued graduate education for professions such as law, engineering, public health or academia			
Outcome/Objective	Measure	Target	Finding	Action Plan
Outcome 1: Students in environmental degree programs associated with Bioenvironmental Sciences (BESC) will develop technical competency in subject matter essential to environmental professions.	Measure 1: BESC 201 Introduction to Bioenvironmental Sciences is required for all majors in the environmental programs associated with BESC. It is also a core curriculum science course for TAMU. The exams and quizzes in BESC 201 focus on fundamental skills associated with content mastery, an essential feature of technical competency. In other words, these elements of the course target the earlier aspects of Blooms Taxonomy of Learning - Knowledge, Comprehension, Application more than, but not exclusive of, higher order skills involved in Analysis, Synthesis, and Evaluation (problem solving). There are two main reasons for this focus: 1) there is a tremendous amount of content associated with the BESC 201 course and the content is pre-requisite for later BESC courses, 2) there are other assignments and activities within BESC 201 specifically designed directly evaluate higher order skills. There are weekly online reading Quizzes via eCampus (generated and deployed by random sampling of publisher test bank questions of various forms that are easily graded automatically (multiple choice, true/false, matching, etc)) used to measure mastery of concepts in the readings and online materials. There are 3 unit exams each corresponding to a third of the material in the course. Question format will include a combination of multiple-choice, matching, true/false, and diagramming/labeling. The exams are based on material from readings, posted resources, and class discussions/activities.	Reading Quiz Target: 80% of students score 70% or higher for the total available points. Unit Exam target: 80% of students will earn 70% of the total available points. (Identification of these targets was based on a discussion among faculty with experience teaching BESC 201. The target was selected for at least 3 reasons: 1) The course is a core curriculum science course with a broad range of students with different histories/interests in science; 2) BESC 201 is designed in a way to allow students with different strengths to be able to perform well, thus performance on concept mastery/multiple choice tests might not be a strength for all students but it seemed reasonable to expect at least 80% of students could reach a 70%; and 3) BESC 201 is executed in eCampus and eCampus displays data in the column summary as the number of students with the score between 90-100, 80-89, 70-79, 60-69, 50-59.....etc. Thus, for ease of data collection and reporting we set the point value to include a whole category rather than say 75% where we would need to further investigate how many in the summary fell at or about 75.)	Target: Partially Met Data for this finding are displayed in Figure 1 of the attached document "BESC figures and data AY2017". READING QUIZ: In all sections, across both semesters 80% or more of students scored 70% or higher. This result is similar to what we saw last report, where only one section X major combination with low sample size did not meet the target. UNIT EXAMS: In fall 2016 all the major categories in the face to face class met this target. However, in the online section for that semester (16C) and both sections for spring 2017 the percentage of students in a major who averaged 70% on the exams was almost always below the target value of 80%. Again, this is consistent with results from last report see pink cells in second column of both Figure 1A and Figure 1B.	<i>No affiliated Action Plan</i>
	Measure 4: In order to both practice and establish the skills necessary to interpret data Dr. Stoddard has designed a series of four empirical and quantitative problem sets (EPQS) to be taken in eCampus. The assignments involve receiving data in the form of a graph, table, or other graphic along with some amount of narrative and then responding to several multiple choice questions associated with what is presented. Dr. Stoddard designed this assignment in response to the learning outcomes required for core curriculum sciences courses and also based on feedback we have heard from industry partners about what they need/value in entry level environmental scientists.	80% of students will score at least 70% on the EQPS assignments	Target: Met For both face to face and online sections more than 80% of students exceeded 70% on the EQPS assignments. (see last column Fig 1A; Spring 2017; BESC figures and data AY 2017).	<i>No affiliated Action Plan</i>

<p>Outcome 1: Students in environmental degree programs associated with Bioenvironmental Sciences (BESC) will develop technical competency in subject matter essential to environmental professions.</p>	<p>Measure 5: BESC 367: US Environmental Regulations is a intermediate level course within the curriculum that builds on the concepts in BESC 201 (pre-requisite to BESC 367) to explore environmental policy in the US. As environmental laws and regulations are central to the various possible environmental professions sought by students in BESC associated programs, thus core competency is an important emphasis within this course. There are weekly online reading Quizzes via eCampus (generated and deployed by random sampling of publisher test bank questions of various forms that are easily graded automatically (multiple choice, true/false, matching, etc) used to measure mastery of concepts in the readings and online materials. There are 3 unit exams each corresponding to a third of the material in the course. Approximately 50% of each BESC 367 exam is designed to measure core competency. Within the core competency portion of exams question format will include a combination of multiple-choice, matching, true/false questions. The exams are based on material from readings, posted resources, and class discussions/activities.</p>	<p>Quiz Target: 70% of students will score 70% or higher on all quizzes. Exam Target: 70% of students will receive 70% of the points associated with core competency across the 3 exams. (Identification of these targets was based estimating performance during the first >7 years offering the course. The target was selected for at least 3 reasons: 1) The course is intermediate level, sometimes the first more in depth course they have taken within their environmental science major; 2) BESC 367 is designed in a way to allow students with different strengths to be able to perform well, thus performance on concept mastery/multiple choice tests might not be a strength for all students but it seemed reasonable to expect at least 70% of students could reach a 70%; and 3) BESC 367 is executed in eCampus and eCampus displays data in the column summary as the number of students with the score between 90-100, 80-89, 70-79, 60-69, 50-59.....etc. Thus, for ease of data collection and reporting we set the point value to include a whole category rather than say 75% where we would need to further investigate how many in the summary fell at or about 75.)</p>	<p>Target: Partially Met Students in the online section all met the target (70% earning at least 70% averaged across all quizzes) for quizzes but not for exams, a trend that was opposite from the previous year. This may make sense since the changes made were 1) to provide more frequent reminders to take the quizzes (sometimes online students are more likely to lose track of these due dates); and 2) to require the online students to take a common exam face-to-face rather than an online open-book and open-note exam. However, it is more difficult to reason why all the categories of students in the face to face course did not meet the targets. The face to face students were reminded to take the quizzes as well. The means for all 3 exams that semester fell below 70). The main explanation for this is simply that Dr. Wilkinson wrote challenging exams that semester. For the purposes of the course those scores were curved to standardize performances and estimate the course grade. However, the curved values were not used here. Data for this finding are in Figure 2 - BESC figures and data AY2017.</p>	<p>Action Plan 1: Given the poor performance on quizzes and exams in BESC 367, which has been chronic throughout the time we have tracked those measures, and given the previous action plan efforts to better scaffold the course and edit the existing test bank questions to remove or rephrase those most problematic to students have only partially impacted performance we are implementing a complete redesign of the content mastery assessments in BESC 367. We are building on the work done to scaffold the course. For each question in the notes guidance, which are there to help students recognize what is important about each slide in the lecture, we will directly map five different multiple choice questions addressing that point. Four of the 5 questions will be put into a "pool" for use in the online quiz in eCampus. The fifth question will be available for use on the content mastery portions of exams. The quizzes will be implemented such that students can take quizzes as often as they like during the week. They will be allowed to keep their highest score. No doubt this will improve weekly chapter quiz performance. The quizzes will serve as direct practice for mapped/similar questions on the exam. The weekly practice is focused on the material of a single chapter, thus it is SPACED PRACTICE, rather than just cramming. Further, the week prior to the exam I will create timed "practice exams" students can take as often as they like using randomly ordered collections of these same pools across all the chapters on that test. This will be INTERLEAVED PRACTICE. Practice, spaced practice, and interleaving are all proven to improve student learning (Make It Stick, The Science of Successful Learning, by Brown, Roediger & McDaniel; https://www.cultofpedagogy.com/learning-strategies/). Thus, this approach will employ better alignment of the scaffold materials to the assessments and also implementation that employs strategies known to improve learning. Implementation Description: Work began in early August 2017 to implement this plan for Fall 2017. It is reasonable to expect this plan will be tweaked further in Fall 2018 based on the findings from AY2018 data. The findings from Fall 2017 will be used to benchmark expectations.</p> <p>Projected Completion Date: 12/7/2018</p>
	<p>Measure 8: BESC 484 is a writing intensive -field experience course wherein students receive feedback from a faculty member via writing assignments about their high impact learning experience (study abroad, internships, laboratory research). The final project within this course is a poster. Students receive comments on a draft of the poster and then submit a final. So long as the student has not graduated they are strongly encouraged to present their posters at our Fall BESC poster symposium. (While we have used this assignment for several iterations of BESC 484 since 2012, the new rubric being developed is untested, thus the targets below are somewhat arbitrary, and presumable low given the fact that there is a draft/comment stage for the assignment prior to the final version).</p>	<p>Using the rubric designed for this assignment 80% of students will earn 75% of the points associated with technical competency</p>	<p>Target: Met Across all semesters and majors at least 80% of students earned at least 75% for technical competency. This is consistent with the preliminary results from last year. Data for this finding are in Figure 4 of the BESC figures and data AY 2017 document.</p>	<p><i>No affiliated Action Plan</i></p>

<p>Outcome 2: Students in the environmental degree programs associated with Bioenvironmental Sciences (BESC) will be able to articulate an effective oral presentation using the language and conventions of STEM professionals in environmental fields.</p>	<p>Measure 7: BESC 481 is a capstone communication course. The course includes a variety of activities (writing, group discussion, and 2 individual presentations with critical peer-review) to prepare and analyze a particular environmental issue in depth. Oral presentations and critique of oral presentations are the focus of the BESC 481. Students (peers) and instructors use a standard rubric to evaluate two presentations by each student in these small classes. All students are trained in use of the rubric prior to evaluating each other. The instructor summarizes the feedback and provides it after each presentation. Ideally each student has an opportunity to reflect on the feedback prior to the second presentation. Instructors also oversee the capacity of the peers to critically assess others and provide feedback.</p>	<p>Due to feedback from both instructor and peers student presentations will improve (increase in class average score based on the rubric) from presentation 1 to presentation 2. 100% of class averages for the instructor and peer review scores using the rubric will be greater than 75% for presentation 2. (The first target is based on reasoning due to the design of the course, the second target is based on targeting proficient or better at the task.)</p>	<p>Target: Partially Met 100% of class averages exceeded 75%. Not all presentations improved from the first to second presentation. Given that most scores for the presentation 1 were high it seems reasonable to expect there would be instances where performances would stay the same. These data are consistent with results from previous years</p>	<p><i>No affiliated Action Plan</i></p>
<p>Outcome 3: Students in the environmental degree programs associated with Bioenvironmental Sciences (BESC) will be able to demonstrate both effective visual presentation and also, effective interpretation of visuals used commonly (e.g. tables, graphs, infographics, heatmaps, maps, conceptual models, etc) within STEM professionals in environmental fields.</p>	<p>Measure 2: BESC 201 Introduction to Bioenvironmental Sciences is required for all majors in the environmental programs associated with BESC. It is also a core curriculum science course for TAMU. Each student creates an infographic supporting a position for an environmental matter that is of interest to them. Instructions for the assignment are delivered both via e-campus and during a designated discussion of the assignment designed to ensure they understand it.</p>	<p>80% of students will earn 70% of the points associated with effective visual communication. (Identification of this target was not based on experience with the assignment, since this was the first implementation, rather it was simply estimated to be a reasonable starting place.)</p>	<p>Target: Met During the Fall 2016 semester all major by section combinations had at least 80% of students earning 70% or higher on the infographic assignment. See last column of data in Figure 1A - "BESC figures and data AY2017". Due to issues with variability among students in the degree to which they performed well at quantitative skills Dr. Stoddard replaced this assignment with "Empirical and Quantitative Problem Sets (EQPS) beginning in Spring 2017. Thus this measure will retire with this report. Direct assessment of quantitative skills is required for this core curriculum course. The new assignment more explicitly measures empirical and quantitative reasoning across real world scenarios.</p>	<p><i>No affiliated Action Plan</i></p>
<p>Outcome 3: Students in the environmental degree programs associated with Bioenvironmental Sciences (BESC) will be able to demonstrate both effective visual presentation and also, effective interpretation of visuals used commonly (e.g. tables, graphs, infographics, heatmaps, maps, conceptual models, etc) within STEM professionals in environmental fields.</p>	<p>Measure 8: BESC 484 is a writing intensive -field experience course wherein students receive feedback from a faculty member via writing assignments about their high impact learning experience (study abroad, internships, laboratory research). The final project within this course is a poster. Students receive comments on a draft of the poster and then submit a final. So long as the student has not graduated they are strongly encouraged to present their posters at our Fall BESC poster symposium. (While we have used this assignment for several iterations of BESC 484 since 2012, the new rubric being developed is untested, thus the targets below are somewhat arbitrary, and presumable low given the fact that there is a draft/comment stage for the assignment prior to the final version).</p>	<p>Using the rubric designed for this assignment 80% of students will earn 75% of the points associated with effective visual communication.</p>	<p>Target: Met Across all semesters and majors at least 80% of students earned at least 75% for visual communication. This is consistent with the preliminary results from last year. Data for this finding are in Figure 4 of the BESC figures and data AY 2017 document.</p>	<p><i>No affiliated Action Plan</i></p>
<p>Outcome 4: Students in the environmental degree programs associated with Bioenvironmental Sciences (BESC) will be able to demonstrate effective written communication using the language and conventions of STEM professionals in environmental fields.</p>	<p>Measure 8: BESC 484 is a writing intensive -field experience course wherein students receive feedback from a faculty member via writing assignments about their high impact learning experience (study abroad, internships, laboratory research). The final project within this course is a poster. Students receive comments on a draft of the poster and then submit a final. So long as the student has not graduated they are strongly encouraged to present their posters at our Fall BESC poster symposium. (While we have used this assignment for several iterations of BESC 484 since 2012, the new rubric being developed is untested, thus the targets below are somewhat arbitrary, and presumable low given the fact that there is a draft/comment stage for the assignment prior to the final version).</p>	<p>Using the rubric designed for this assignment 80% of students will earn 75% of the points associated with effective written communication.</p>	<p>Target: Met Across all semesters and majors at least 80% of students earned at least 75% for effective written communication. This is consistent with the preliminary results from last year. Data for this finding are in Figure 4 of the BESC figures and data AY 2017 document.</p>	<p><i>No affiliated Action Plan</i></p>

	<p>Measure 3: BESC 201 Introduction to Bioenvironmental Sciences is required for all majors in the environmental programs associated with BESC. It is also a core curriculum science course for TAMU. For each of the three units students, in response to a prompt associated categorizing relevant aspects of their worldview, reflect on issues associated with chapter content and in class discussions of case studies within that unit. These serial essays are designed encourage metacognition, wherein the students not only build arguments about what they think using relevant examples, but also, they think about why they think what they think. Ideally students are able to discern aspects of their thinking that are on critical and objective evaluation of fact vs. ingrained biases based on culture, upbringing, environment, etc.</p>	<p>80% of students will received at least 80% of the points associated with this critical thinking assignment. (This target was based on use of some version of this assignment for >20 different implementations of the course, starting in AY2000. In its current version, students tend to score lowest on the first essay, but through feedback there and a renewed interest in identifying examples within the course case study discussions, they improve for essays 2 and 3).</p>	<p>Target: Met Across the wide array of semesters, sections and majors measured, every instance spare one had at least 80% of students earning 80% or greater. The one instance below 80 was not likely significantly different (see the pink square with a 79 score in the 3rd data row of Figure 1A - BESC figures and data AY2017). These results are a tremendous change from our previous report (Figure 1B) wherein most semester x section x major combinations were below 80% earning 80%. Dr Stoddard has refined the assignment quite a bit - see details provided in analysis question 2 under the heading BESC 201: Improving Assignments</p>	<p><i>No affiliated Action Plan</i></p>
<p>Outcome 5: Students in environmental degree programs associated with Bioenvironmental Sciences (BESC) will practice critical thinking and the development and expression of evidence based and well-reasoned arguments.</p>	<p>Measure 6: In the integrative essay assignment students are prompted to reflect on and articulate themes they discern across the weekly case study discussions. They are expected reference concepts from course readings and lectures and relevant case study details while discussing the themes they identify. A grading rubric developed for the assignment is provided to the students with the assignment instructions.</p>	<p>Using the rubric designed for this assignment 80% of students will earn 80% of the points. (Setting this target was based on previous experience with this assignment. There is a large emphasis placed on the case study discussions in this course and then this assignment is the culmination of those events. This is an ambitious target, but it seems doable since there is so much emphasis on the assignment throughout the course.)</p>	<p>Target: Not Met The performance of students in the course during AY 2017 for this assignment was not similar to last year. In all categories none met the target, most were far below. This is my course (Heather Wilkinson). I expect the difference this semester relative to last and other semesters was the TA grading them in fall 2017. Fall 2017 TA was excellent and also more of a subject matter expert than I normally have. I think she simply was more capable of discerning inconsistencies and had higher expectations. So her grading was much more discerning, despite using the same rubric for the assignment. Nonetheless, part of the rationale for the ACTION PLAN: Redesign the integrative essay assignment and rubric. this year is to address the such a strong grader effect. Once again the final course grades were curved. See last columns in Figure 2 A and Figure 2B - BESC figures and data AY2017.</p>	<p>Action Plan 3: Based on both 1) the findings this year, which, we suspect, indicate that the teaching assistant was much more stringent in grading the essays rather than a steep drop off in student performance and 2) an interest in capturing measures of both critical thinking and the integrative learning (new outcome added this cycle) with this assignment, Dr. Wilkinson is redesigning the integrative essay assignment and rubric for implementation in Fall 2017. Since the redesign is going to include implementation of the peerceptive program, a calibrated peer review tool in eCampus it is essential to create an assignment description and a new rubric that will be robust to grader variability. Further, the assignment will need explicit instructions for features that can be disentangled for critical thinking and integrative learning which are not completely orthogonal. AY2018 will include implementation of the revised assignment and rubrics and benchmarking the target. AY2019 will include any tweaks due to lessons learned and provide the first measure post benchmark.</p> <p>Connect technical knowledge, experiences, and self-knowledge to the discipline Implementation Description: The integrative essay is the final assignment in BESC 367. Dr. Wilkinson is currently revising the assignment and working with ITS and Dr. Stoddard to ensure that her implementation of the assignment in Peerceptive will work well. We plan to disentangled for critical thinking and integrative learning in the rubric. AY2018 will include implementation of the revised assignment and rubrics and benchmarking the target. AY2019 will include any tweaks and provide the first measures. Projected Completion Date: 12/7/2018 Responsible Party: Dr. Heather Wilkinson</p>
	<p>Measure 7: BESC 481 is a capstone communication course. The course includes a variety of activities (writing, group discussion, and 2 individual presentations with critical peer-review) to prepare and analyze a particular environmental issue in depth. Oral presentations and critique of oral presentations are the focus of the BESC 481. Students (peers) and instructors use a standard rubric to evaluate two presentations by each student in these small classes. All students are trained in use of the rubric prior to evaluating each other. The instructor summarizes the feedback and provides it after each presentation. Ideally each student has an opportunity to reflect on the feedback prior to the second presentation. Instructors also oversee the capacity of the peers to critically assess others and provide feedback.</p>	<p>Across all BESC 481 sections, average scores for student critical evaluation of peer presentations will mirror the instructor average (both in absolute value and in the trend from presentation 1 and presentation 2). (This target is based on reasoning with respect to the design of the course).</p>	<p>Target: Met The data reflect a general similarity between the peer evaluation and the that of the instructor. Instructors are more discerning, however, as stated previously all the scores are relatively high. This is an improvement over previous years where peers were less discerning and giving values to everyone close to maximum points. After some discussions and visiting speakers at the Curriculum and Assessment Committee (Valerie Ballester, speaking about peer review). Instructors seem to be explaining the peer review expectation better.</p>	<p><i>No affiliated Action Plan</i></p>

<p>Outcome 5: Students in environmental degree programs associated with Bioenvironmental Sciences (BESC) will practice critical thinking and the development and expression of evidence based and well-reasoned arguments.</p>	<p>Measure 8: BESC 484 is a writing intensive -field experience course wherein students receive feedback from a faculty member via writing assignments about their high impact learning experience (study abroad, internships, laboratory research). The final project within this course is a poster. Students receive comments on a draft of the poster and then submit a final. So long as the student has not graduated they are strongly encouraged to present their posters at our Fall BESC poster symposium. (While we have used this assignment for several iterations of BESC 484 since 2012, the new rubric being developed is untested, thus the targets below are somewhat arbitrary, and presumable low given the fact that there is a draft/comment stage for the assignment prior to the final version).</p>	<p>Using the rubric designed for this assignment 80% of students will earn 75% of the points associated with critical thinking skills.</p>	<p>Target: Partially Met As was the case in the last report (ie.this measure MET in 2015-2016) for all semesters measured, summer and fall 2016 students in all majors at least 80% of students earned 75% on the critical thinking aspects associated with this assignment (MET). However in the spring 2017 all three categories scored at or below 80% of students earning 75% (MET by ENST; NOT MET by BESC)). They were all quite close to the target. However, there is likely a good explanation for this in that semester. We implemented a revised rubric that semester. The new version provided more specific discrete aspects of critical thinking to evaluate. Further 30 points of the poster was dedicated to critical thinking in that rubric, rather than 20 in the previous one. Data for this finding are in Figure 4 of the BESC figures and data AY 2017 document.</p>	<p>Action Plan 2: Given the drop in performance measured for critical thinking in the BESC 484 poster in Spring 2017 after we began using a rubric with greater details of component measures we held discussions in the Curriculum and Assessment Committee meetings. We agree to provide greater feedback at the draft stage for the poster assignment. The goal is to ensure all faculty are explicitly referencing the rubric during their feedback on the poster. That the faculty ensure that both the critical thinking component and the integrative thinking components are well elaborated by the students. These two areas are near the highest levels of Bloom's taxonomy of cognitive domains. Further, given the capstone nature of this work product we have an interest in evaluating these higher order skills most in this context.</p>
<p>Outcome 6: Students in the environmental programs associated with Bioenvironmental Sciences will demonstrate an active interest in professional engagement and outreach.</p>	<p>Measure 8: BESC 484 is a writing intensive -field experience course wherein students receive feedback from a faculty member via writing assignments about their high impact learning experience (study abroad, internships, laboratory research). The final project within this course is a poster. Students receive comments on a draft of the poster and then submit a final. So long as the student has not graduated they are strongly encouraged to present their posters at our Fall BESC poster symposium. (While we have used this assignment for several iterations of BESC 484 since 2012, the new rubric being developed is untested, thus the targets below are somewhat arbitrary, and presumable low given the fact that there is a draft/comment stage for the assignment prior to the final version).</p>	<p>Using the rubric designed for this assignment 80% of students will earn 75% of the points associated with active interest in professional engagement and outreach.</p>	<p>Target: Met Data for this finding are in Figure 4 of the BESC figures and data AY 2017 document.</p>	<p><i>No affiliated Action Plan</i></p>
<p>Outcome 7: Students in environmental degree programs associated with Bioenvironmental Sciences (BESC) will be able to integrate information, data, experiences, or different perspectives and use that integrated synthesis to refine their knowledge or perspective.</p>	<p>Measure 6: In the integrative essay assignment students are prompted to reflect on and articulate themes they discern across the weekly case study discussions. They are expected reference concepts from course readings and lectures and relevant case study details while discussing the themes they identify. A grading rubric developed for the assignment is provided to the students with the assignment instructions.</p>	<p>New learning outcome with obvious connection to this measure. Creating a new rubric to capture these integrative learning aspects of the assignment independent from the critical thinking aspects during the 2017-2018 cycle.</p>	<p>Target: Not Reported This Cycle In 2017-2018 we are revising the rubric to capture data for this objective separately and we are benchmarking to establish the target.</p>	<p><i>See Action Plan 3 above</i></p>
	<p>Measure 8: BESC 484 is a writing intensive -field experience course wherein students receive feedback from a faculty member via writing assignments about their high impact learning experience (study abroad, internships, laboratory research). The final project within this course is a poster. Students receive comments on a draft of the poster and then submit a final. So long as the student has not graduated they are strongly encouraged to present their posters at our Fall BESC poster symposium. (While we have used this assignment for several iterations of BESC 484 since 2012, the new rubric being developed is untested, thus the targets below are somewhat arbitrary, and presumable low given the fact that there is a draft/comment stage for the assignment prior to the final version).</p>	<p>Using the rubric designed for this assignment 80% of students will earn 75% of the points associated with integrative learning (connect technical knowledge, experiences and self-knowledge to the discipline). Target set based on benchmark data from Spring 2017.</p>	<p>Target: Met 80% or more students across majors earned at least 75% of the points associated with integrative learning.</p>	<p><i>See Action Plan 2 above</i></p>

<p>(Analysis Question #1) Consider the Findings and the Action Plan(s) established this cycle. How did the program/unit identify these next steps for action? Why does the program/unit believe this Action Plan(s) should improve future assessment results?</p>	<p>Important changes in features this year not completely encompassed by an analysis of findings and action plans:</p> <p>Changes to our stated student learning outcomes.</p> <p>While there is an explicit statement that changes to outcomes should not be listed as Action Plans, it seems important to capture the rationale for changes we made this year in our analysis. Further these changes relate to new action plans and former action plans so it provides context. Based on the critique last year that our Active interest in professional engagement and outreach outcome was both programatic and not particularly measurable we are retiring it. We are in full agreement and we often found it difficult to evaluate this aspect of our assignments (e.g. the 484 poster). Further, the work we have done with our Curriculum and Assessment Committee and the College Assessment Liaisons to identify the learning outcome that better captures our intent and that maps to our curriculum and ultimately to our capstone field experience in BESC 484 (research or internship experiences) resulted in the most recent changes to the BESC 484 assignment, template, and rubric to include explicit assessment of both critical thinking and integrative learning. Thus, we added Connect technical knowledge, experiences, and self-knowledge to the discipline as a new learning outcome that captures the integrative learning. This LO has a natural fit with no fewer than two assignments already in place (e.g. BESC 367 integrative essay and the BESC 484 capstone experience poster). As stated, the BESC 484 assignment and rubric has already been revised to capture measures of this new LO. The Redesign the integrative essay assignment and rubric action plan implemented this cycle will provide data that disentangles measures of critical thinking and integrative learning in the integrative essay assignment. Since both of these outcomes are important as both transferable skills for competitive entry level positions and essential skills of life-long learners, we have an interest in having our students practice them and in assessing our student performances. Further, since our assignments and the associated rubrics are transparent to students we are potentially instilling in them a metacognitive distinction between critical thinking and integrative learning.</p> <p>Retiring one measure and implementing a new one.</p> <p>While students performed well with respect to our targets for the infographic in BESC 201, Dr Stoddard recognized the need to have students practice more quantitate data interpretation. To ensure this, she has created four problem sets that students complete instead of the infographic assignment. Thus the infographic is being retired and the empirical quantitative problem sets are a new measure. These problems satisfy the core curriculum requirement for empirical and quantitative skills while also satisfying technical knowledge aspect of our curricular assessment.</p> <p>Action plans and findings</p> <p>Because the BESC 367 integrative essay is designed to challenge students to integrate information across the various case studies in BESC 367 it is an excellent measure for our new learning outcome that focusses on integrative learning (ACTION PLANS:Connect technical knowledge, experiences, and self-knowledge to the discipline). Further given the discovery this year that the assignment was not resilient to a new grader reexamining the rubric and using calibrated peer review via Peerceptiv seem like reasonable approaches. Dr. Wilkinson is redesigning the assignment and the rubric to capture both critical thinking and integrative learning (ACTION PLAN:Redesign the integrative essay assignment and rubric).</p> <p>To date student content mastery for technical knowledge has improved only partially despite efforts to scaffold the course and identify problematic questions on the quizzes and exams. Thus, a complete redesign of all the content mastery assessments has begun and will be implemented the first time in Fall 2017 (ACTION PLAN: BESC 367: Redesign the content mastery assessments). We expect this to improve the technical knowledge measures for BESC 367 because the action plan employs both direct integration with earlier scaffolding improvements and also plan provides for PRACTICE, SPACED PRACTICE and across chapter INTERLEAVED PRACTICE all of which are evidence based strategies to improve student learning.</p> <p>Finally for the BESC 484 "partially met" finding for critical thinking we are addressing this issue by providing more targeted feedback to students during the draft stage (ACTION PLAN: Enhanced feedback during the draft stage of the BESC 484 poster assignment). We expect this to be effective because once the faculty were made aware the student critical thinking performance fell with the more elaborate rubric they expressed that recognized they had not provided enough feedback at the draft stage. Feedback and instruction reinforcement during a draft is crucial to student improvement.</p>
<p>(Analysis Question #2) Provide an update for completed or ongoing action plans from the previous year(s). Discuss any successes, challenges, and/or obstacles the program/unit has experienced while implementing the Action Plan(s). Address whether or not the program/unit has seen any improvement in assessment results for the targeted Outcome(s) the Action Plan(s) were designed to address and why the action plan may/may not have resulted in improvements.</p>	<p>Several action plans began in 2014-2015 and have been in planning or in progress for three cycles. We have "finished" many of them in as much as the actions stated within the plan are complete. No doubt some will continue to show up in future AQ2s.</p> <p>BESC 201: IMPROVE CONCEPT MASTERY and DEVELOPMENT OF GREATER SCAFFOLDING IN ONLINE BESC 201</p> <p>Dr. Stoddard has employed a wide variety of different tactics to improve concept mastery since the implementation of these action plans. Many of the tactics provide greater scaffolding for students who need tools or direction for how best to explore the content. The tactics have included: 1) allowing two attempts at the quiz and keeping the highest score (providing practice and incentive), 2) providing a comprehensive study guide for each chapter; 3) providing captioned video lectures for all chapters; 4) a module that explains how to take notes and study effectively from those notes; 5) SCORMS (Sharable Content Object Reference Models) that review more complex concepts or critical thinking questions. The SCORMS are interactive, often in the form of games or matching or flashcards, etc.</p> <p>Arguably these efforts have been successful. The performance on BESC 201 quizzes is excellent and the exam performances have improved as well. Frankly our target is quite ambitious for exam scores (80% of students scoring 70% or higher) for such a content rich course. The students are certainly coming closer to this target (Column 2 in Figure 1A vs Column 2 in Figure 1B; BESC figures and data AY 2017). In as much as, these tactics are implemented and in place the action plans are finished.</p> <p>BESC 201: IMPROVING ASSIGNMENTS</p> <p>The focus of this action plan was the Worldview assignment and the Infographic assignment. Dr. Stoddard implemented several changes to the worldview assignment including but not limited to creating templates to assist them in focusing on the scope of the assignment and implementing the assignment in Peerceptiv, an online calibrated peer review program. These changes clearly improved student performance on these assignments (See column 3 in Figure 1A vs. in Figure 1B; BESC figures and data AY 2017). While Dr. Stoddard also implemented changes to the infographic assignment which improved student performance, she recently decided to replace that assignment in order to better assess student empirical and quantitative skills (See in-progress action plan BESC 201 Practice and refine empirical and quantitative skills).</p> <p>BESC 367: Examining the quality of quiz and exam questions as well as the opportunities to reinforce core competence in BESC 367 and IMPLEMENTATION OF GREATER SCAFFOLDING IN BESC 367</p> <p>Dr. Wilkinson has finished these action plans, including 1) having a common evening exam for all students (not open book); 2) providing notetaking templates for all the chapters; 3) providing captioned narrated videos for each chapter rather than videos with transcripts, thus requiring them to engage the material for notetaking purposes in the online course; 4) employing more announcements/reminders about the quiz deadlines; 5) creating practice materials for terms and concepts across each chapter in Quizlet, which</p>

<p>(Analysis Question #2 continued) Provide an update for completed or ongoing action plans from the previous year(s). Discuss any successes, challenges, and/or obstacles the program/unit has experienced while implementing the Action Plan(s). Address whether or not the program/unit has seen any improvement in assessment results for the targeted Outcome(s) the Action Plan(s) were designed to address and why the action plan may/may not have resulted in improvements.</p>	<p>allows students to engage the information as flashcards, quizzes, matching games, etc.; and 6) an analysis of student performance across all questions in the test and quiz banks so as to remove or correct problematic wording. As such, these action plans are now in the "finished" category. Nonetheless, given the poor performance of students on the quizzes and exams, a new Action Plan is proposed this year to completely recreate the content mastery assessments for BESC 367.</p> <p>BESC 481: Discovering best practices for implementation of student peer review and rubric data collection in BESC 481. We had meetings where we asked both CTE professionals and members of the writing center to come discuss our approach to the peer review in this course. Since then we saw considerable change in the difference between student and faculty evaluations. While we will continue to track the 481 data, this action plan is considered finished. We will be renewing the certification of BESC 481 in spring 2018. Prior to that we will hold a discussion at the Curriculum and Assessment Committee meeting to determine how and whether our approaches in that course will change.</p> <p>Revise BESC 484 Poster Assignment Instructions, Rubric and Template</p> <p>The BESC 484 poster assignment instructions, rubric and template underwent many iterations of changes stemming from this action plan, discussions at curriculum and assessment committee meetings (e.g. Nov 2016, June 2017), and feedback from our college assessment liaisons in response to how the assignment fits as artifacts for either student research experiences or internship experiences during the independent TAMU assessment of high impact learning experiences. The current version of materials are attached. These materials are now in place. The rubric is a huge improvement. The data from Spring 2017 demonstrate an increased scrutiny with respect to critical thinking based on the shift in point allocation. We see this action plan as finished.</p> <p>Seek feedback from Internship Providers to help assess student performance across our learning outcomes.</p> <p>As indicated in last year's AQ1 we created a survey and have collected data from internship providers querying them about student performance since summer 2015 (https://plantpathology.tamu.edu/academics/undergraduate/about-besc/internship-supervisor-evaluation/). To maximize our investment in collecting these data we have decided to send it out only to the summer internship providers. Recall, we previewed some data in last year's assessment report (see Figure 1 - Figures for BESC AY2016). The data to date have been used by the BESC Professional Board to help shape their mentoring activities with the student including networking socials during the summer and winter breaks across three cities (Austin, Houston, and Dallas/Fort Worth). Further, the career panel event that occurs each fall (1st Tuesday of November) and is a collaboration between the BESC Professional Board, our Student organization –National Association of Environmental Professionals (NAEP) has been changed in format due in large part to the feedback from these internship providers. Their plans are to have many tables and a speed dating type format, where student receive advice about many entry level transferable skills. We view this action plan as finished, since we created the survey and are collecting the data. However, as of right now we do not have new specific action plan or planned measure for these data yet. Where possible the data from these surveys will be incorporated in future curricular goals and potentially then course imbedded measures for assessment. Direct assessment of the BESC Professional Board Programing is problematic as we are not inclined to constrain their designs or tell them data they should take. As these data contribute to future efforts we will report about that in the AQ2 of that year.</p>
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