

Thomas Harriot College of Arts and Sciences

Undergraduate Examples

Actions Taken to Improve Student Learning Based on Analysis of Results



Undergraduate

*Programs included:

- Business and Technical Communication (Certificate)
- Chemistry (BA/BS)
- Foreign Languages and Literatures (BA)
- Forensic Anthropology (Certificate)
- Geology (BS)
- Mathematics (BA/BS/Stats Minor)
- Multidisciplinary Studies (BA/BS/Minors)
- Psychology (BA)

Undergraduate Examples

- Created guidelines for students to identify and explain use of theoretical principles in writing and in course work
- Developed new educational modules to address specific content areas
- Introduced self-assessment of writing assignments to better connect class lessons to writing projects
- Created greater focus on experimental design, writing, data analysis, and group work into laboratory settings
- Incorporated professional and interpretative communication through group work and research
- Provided study guides with relevant articles, videos and lectures
- Offered in-class, hands-on investigative technique practice and application
- Increased focus on basic quantitative skills
- Assigned follow-up problems
- Created assignments to compare, contrast, and analyze texts to look for themes

Program name	Business and Technical Communication (Undergraduate Certificate)
Delivery mode	Face to Face
Outcome being summarized	Relationship between theory and practice – Upon completion of the program, students will be able to demonstrate knowledge of the relationship between theory and practice.
Program level example	<p>The undergraduate certificate in business and technical communication provides students with opportunities to develop analytical and practical skills in planning, writing, designing, editing, and managing a range of professional texts for print and online publication. The program measures outcomes on the relationship between theory and practice, knowledge of audience, global awareness and analytical skills. Each outcome is assessed by reviewing student portfolios using a 5 point rubric with criteria specific to the outcome. The criterion for success is that 80% of students will score 4 or higher on the appropriate section of the rubric.</p> <p>For the knowledge of the relationship between theory and practice outcome, in 2016-17, 40% of the students (n=10) scored a 4 or higher on the rubric. The average score across the group was 3.6. The criterion for success was not met.</p> <p>In order to seek improvement in this outcome, in 2017-18, faculty worked with students on identifying and explaining key theoretical principles and incorporated additional readings, discussion, and practice with these principles in courses. Assignments in the core courses were revised so that most assignments asked students to explicitly identify and address theories and/or concepts that informed the course work. Faculty provided additional practice in articulating the relationships between theoretical concepts and disciplinary practices through discussion and short in-class writing assignments. Faculty teaching ENGL 3040 and ENGL 3870 provided more guidance on and opportunities for students to self-assess writing assignments and their work in courses to explain how they demonstrated theoretical concepts their work and how they might apply those theories to other projects or contexts. Students were given more specific guidelines and questions to help them prepare their assessments.</p> <p>Results from 2017-18 showed that 55% of the students (n=20) scored a 4 or higher on the rubric. The average score was 3.8. Faculty noted that while this was an improvement over the previous year, the criterion was still not met. Analysis of the students' work indicates that students' ability to connect theory</p>

to practice was not always sufficiently demonstrated in their assignments. Interestingly, most students were able to articulate the relationship between theory and discuss various theoretical concepts quite effectively in self-assessments. Students were able to assess their own work and what they learned in the course at a much higher level and used more specific concepts. In that sense, the additional guidance on explaining theories and accomplishing self-assessment, which were the actions implemented this year, are proving very successful.

Some students have difficulty applying principles and theories in their work, though they do demonstrate in assessments that they can identify the theories they are learning and explain how theories relate to practices. Even when students can discuss what they need to do, some have difficulty producing work that implements writing and rhetorical strategies connected to theory and concepts. It seems that with more guidance they are able to better articulate these ideas, but need to improve at implementing them. Faculty noted concern last year that differences in students' fields might be a consideration, but one aspect of self-assessment and reflections stressed this year is looking at theories and concepts as they are applicable to student's particular areas of study.

For the upcoming year, faculty will add additional models of writing that effectively apply theory and work with students on analyzing the application of the concepts to promote transfer from analysis to practice. Faculty will consider ways to make theories more approachable and applicable for all students in the courses, and use more models and examples from more contexts and fields to allow students to consider how concepts are implemented in successful writing. Students will find their own examples from their fields and disciplines.

Program name	Chemistry (BA/BS)
Delivery mode	Face to Face
Outcome being summarized	Research Methodology - Students will demonstrate knowledge of the research methodology, principles and concepts required to understand and conduct undergraduate-level research in basic science.
Program level example	<p>The Chemistry BA program provides a flexible major designed to provide students with a broad education in chemistry appropriate for further study in a wide range of fields such as business, medicine, pharmacy, dental, and law as well as careers dependent on a basic knowledge in chemistry. The BS degree in chemistry is the appropriate program for students considering advanced degree programs in chemistry, biochemistry, and other related fields or a professional career in chemistry. Graduates of this program meet certification requirements of the American Chemical Society. The assessment of the two programs is combined and includes student learning outcomes of knowledge of concepts such as: analytical chemistry, biochemistry, inorganic chemistry, organic chemistry, physical chemistry and research methodology. Lab reports, final exam questions and sub-sections of the Diagnostic of Undergraduate Chemistry knowledge exam (from the American Chemical Society) are used as means of assessment.</p> <p>Students are expected to demonstrate knowledge of the research methodology, principles and concepts required to conduct research in basic sciences. Faculty assess how well they do this by using an end of lab practical exam in CHEM 1151 and CHEM 1161 (General Chemistry Laboratory I and II, respectively). The criterion for success is that 60% of the students will score 70% or higher on the exam questions related to the outcome.</p> <p>In 2016-17, a new faculty person with a doctorate in Science Education was hired. She led an overhaul of the general chemistry lab sequence with the adoption of the Argument Driven Inquiry (ADI) approach. Faculty piloted ADI in a few sections of CHEM 1151 and CHEM 1161 (three sections each semester out of approximately 45 total sections). This approach moves away from the “cookbook” approach where students are given specific instructions for lab exercises and incorporates more experimental design, writing, data analysis and group work into the laboratory.</p> <p>That year, 73% of students in CHEM 1151 and 68% of students in CHEM 1161 met the criterion for success. While students in the</p>

ADI sections did slightly better, the difference was not statistically significant.

In 2017-18, faculty fully implemented the ADI approach to all sections in CHEM 1151 and CHEM 1161.

Results showed that the criterion was met in CHEM 1161 but not in CHEM 1151. Faculty analyzed the results and concluded the ADI method has improved student writing and engagement. They also noted that the pilot implementation in 2016-17 was done by three senior instructors, which may have led to the success that year. Additional training will be provided in the upcoming academic year to instructors to address comfort and compliance with the method.

The Chemistry Department completed Academic Program Review in January 2018. The External Committee Report noted, "The faculty have implemented or are actively testing new teaching methods, including team-based learning, argument-driven inquiry (ADI), and course-based undergraduate research experiences (CURE), utilizing learning assistants (LAs) and undergraduate teaching assistant (UAs) to enhance teaching quality in large classes. Student success in chemistry courses has been satisfactory, as measured by DFW rates, student feedback, and independent assessment methods. The Department is meeting the general subject knowledge outcomes as assessed by the ACS DUCK exam in inorganic chemistry and in analytical chemistry. The Department is addressing deficits in research methodology learning outcomes in the general chemistry sequence (CHEM 1150-1160). The implementation of the Argument-Driven Inquiry has improved the outcomes in the accompanying lab (CHEM 1151) and the Department seems committed to further improving research methodology learning outcomes in CHEM 1161."

Program name	Foreign Languages and Literatures (BA)
Delivery mode	Face to Face
Outcome being summarized	Presentational Communication (Writing) -Students are able to create coherent and cohesive discourse in the target language.
Program level example	<p>Students who complete a Bachelor of Arts degree in Foreign Languages and Literatures learn to communicate in French, German or Spanish in all four skills (reading, writing, listening, speaking). In addition, students study the literature, linguistics, culture, and civilization of the countries where those languages are spoken, combining cultural competence with the communicative skills necessary for the workplace or advanced study. Program faculty have set up an assessment schedule that rotates through all three languages. The Oral Proficiency Exam, short writing samples, and research papers are used to assess the outcomes.</p> <p>In 2016-17, faculty assessed students in the German concentration on their ability to create coherent and cohesive written discourse. Faculty used a rubric to review a writing sample in an upper level class on a topic related to the target language or culture. The criterion for success was that 70% of students would achieve a minimum level of “Competency-Meets Expectations” on each component of the rubric. That year, all students (n=13) met the criterion for success. Faculty noted that although the results obtained were strong overall, several students reported having difficulty organizing their papers concisely and coherently.</p> <p>To improve the coherence and organization of student written samples, students enrolled in GERM 3002 began to work on their capstone papers with assignments throughout the semester that fed into the short final paper they produced at the end of the term. Students worked in groups and as a class to identify possible paper topics and, once they had found suitable articles on the topic with feedback from the instructor, they practiced outlining, in German, responses to the articles. These brief outlines were put on the board so that the class could discuss and critique them, adding or subtracting information as necessary. These outlines served as models for the students when writing their capstone papers.</p> <p>In 2017-18, faculty again assessed the students in the German concentration in order to address the coherence and organization problems in student writing detected in last year's assessment report. Results from 2017-18 showed that 81.8% of students (n=11) met the criterion for success. Faculty felt that</p>

	<p>the actions taken had improved the coherence and organization of the student writing samples. During faculty discussion of the results, faculty noted student performance could be improved in the area of cultural competency. The topics covered by the students in their papers were often controversial and quite foreign to them because students tend to approach issues through the context of their own cultural lenses as students raised in the U.S., many of them in the Southeast U.S. The topic of legalized prostitution served as a prime example (Germany relaxed its prostitution laws in 2002 in an effort to bring sex workers out of the shadows and grant them access to healthcare and even retirement.) Students tend to have a visceral response to the subject without considering the societal and cultural perspectives that might have influenced such a decision. German will address this issue when assessing "Cultural Competence" next AY according to the yearly rotation of assessment outcomes established by the faculty in the Department of Foreign Languages and Literatures.</p>
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Program name	Forensic Anthropology (Undergraduate Certificate)
Delivery mode	Face to Face
Outcome being summarized	Anthropological Techniques in Forensic Investigations - Students will demonstrate knowledge of core concepts and basic forensic anthropological techniques in death investigations.
Program level example	<p>The purpose of the Forensic Anthropology undergraduate certificate is to provide students with competency in the role of forensic anthropologists, the methods and techniques used to create a biological profile based on skeletal remains, and how they assess antemortem, perimortem, and postmortem changes to the skeleton. The program assesses student learning outcomes around knowledge of the role of the forensic anthropologist in death scene investigations, forensic anthropological techniques, and postmortem processes.</p> <p>For the forensic anthropological techniques outcome, students are assessed two ways:</p> <ol style="list-style-type: none"> 1. In ANTH 3026 students complete a Skeletal Analysis Report documenting the following information regarding a set of human skeletal remains: Inventory, Sex, Age-at-Death, Ancestry, Stature, Dental characteristics, Anomalous traits, FORDISC computations. The criterion for success is that 80% of students correctly document the human skeletal remains in all categories. 2. Embedded exam questions on basic forensic anthropological techniques in death investigations. The criterion for success is that 70% of students score 80% or better on the embedded exam questions. <p>In 2016-17, 86% of students met the criterion for success on the Skeletal Analysis Report and 48% of students scored 80% or better on the embedded exam questions. Faculty analysis of the exam identified areas that needed more emphasis, including the observations necessary for identifying trauma timing (antemortem, perimortem, or postmortem) and duration (e.g., creep fractures vs. rapid-loading fractures).</p> <p>To address this area for improvement, in 2017-18 the instructor added an in-class trauma matching exercise, where students had to identify the timing and duration of forces resulting in trauma based on photographs or actual specimens. In addition, more detail was provided in lectures regarding analysis and interpretation of skeletal trauma.</p>

	<p>Results from 2017-18 show that 93% of students met the criterion for success on the Skeletal Analysis report, an improvement over the previous year. However, only 44% met the criterion for success on the embedded exam questions, which was a slight decrease from the previous year. After review of the results, faculty noted which question was most often missed on the exam (differentiating perimortem vs. postmortem trauma in the bone) and have planned a hands-on laboratory exercise that will distinguish between the two for the upcoming year.</p>
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Program name	Geology (BS)
Delivery mode	Face to Face
Outcome being summarized	Quantitative Skills - Students will demonstrate an appropriate level of knowledge of and ability to implement quantitative methods required within the general areas of geology.
Program level example	<p>The purpose of the Geology BS program is to provide students with the education and skills necessary to think critically and to conduct independent and collaborative investigations within the geological sciences. Students in the program are assessed on knowledge of geology, quantitative skills, scientific inquiry, problem solving, collaboration and scientific communication using a variety of course embedded assignments and exams.</p> <p>One of the outcomes that students are assessed on is their quantitative skills, more specifically their knowledge of and ability to implement quantitative methods required within the general areas of geology. For this student learning outcome, three means of assessment are used on a rotating cycle: a pre- and post-test in GEOL 2000 and laboratory exercises in GEOL 3300 and GEOL 3050.</p> <p>This example includes results from the pre- and post-test in GEOL 2000 for 2015-16 and 2017-18. The criterion for success for this measure is that 80% of students will attain a score of 80% or higher on the post-test, and 50% of students will improve their scores by at least 10 points over the pre-test.</p> <p>In 2015-16, 20 out of the 23 students in the course completed both the pre- and post-tests. 65% of the students attained a score of 80% or higher. All but 2 of the students (90%) improved their scores from the pre-test by at least 10 points. Those 2 students had the highest grades on the pre-test to begin with which didn't leave a lot of room for improvement. The results were analyzed in detail to determine which particular skills had the least improvement. These were identified as: unit conversions, basic statistics, trigonometry, other aspects of powers of ten and plotting on log paper.</p> <p>To address the areas for improvement from the previous reporting cycle, in 2017-18 faculty devoted more class time to learning basic statistics and plotting graphs on log paper. In addition, students had additional homework assignments on these topics to practice their skills. In 2017-18, 10 of the 16 students in the course took both the pre- and post-test. Of those 10 students, only 30% scored 80% or higher on the post-test, which was a decrease from the previous reporting cycle.</p>

	<p>However, 100% of the students improved their pre-test scores by at least 10 percentage points. The course instructor noted the low response rates and poor performance can be explained by the lack of seriousness and/or interest from the students because the pre- and post-tests did not count for credit. Going forward, the instructor will embed the post-test questions on an exam that will be taken for credit.</p>
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Program name	Mathematics (BA/BS/Statistics Minor)
Delivery mode	Face to Face
Outcome being summarized	Knowledge of Linear Algebra - Students will demonstrate knowledge of the foundations of linear algebra.
Program level example	<p>The Mathematics BA, Mathematics BS and Statistics minor are assessed together because there is significant overlap in the core courses for each program. The purpose of the BA/BS degree program of the Department of Mathematics is to prepare students majoring in Mathematics for career readiness, advanced study in the discipline, responsible citizenship and global competitiveness. The purpose of the Statistics minor is to prepare students taking the minor for employment in statistics or related fields and for graduate study in statistics.</p> <p>One of learning outcomes for the combined unit is that students will demonstrate knowledge of the foundations of linear algebra. Faculty assess this outcome using questions embedded on the final exam in MATH 3265 (Linear Algebra). The exam questions address the following five aspects of linear algebra: span, linear independence, basis, invertibility of matrices and determinants. The criterion for success is that in each of the five areas, at least 75% of the students will correctly answer the exam questions.</p> <p>In 2015-16, students did not meet the criterion for success on three of the five aspects: determinants, span and linear independence.</p> <p>In order to improve student performance on these aspects, in 2016-17, faculty assigned follow-up homework review problems in the three areas identified.</p> <p>Results from 2016-17 showed that students met the criterion for success for determinants, span and linear independence. However, students did not meet the criterion for invertibility of matrices. Faculty planned to assign additional problems so that students could practice invertibility of matrices.</p> <p>The Mathematics Department completed Academic Program Review in November of 2017. The External Review Report noted that “The department is willing to innovate with respect to its teaching mission. As an example, they recently carried out a redesign of the 1065 and 1050 courses. These redesigns should positively impact the critical DFW rates (grades of D, F and withdrawal)”.</p>

Program name	Multidisciplinary Studies (BS/BA and minors) – Classical Studies
Delivery mode	Face to Face
Outcome being summarized	Close reading of classical texts - Students can analyze and contextualize artistic, historical, literary, or philosophical texts, or artifacts of material culture.
Program level example	<p>Multidisciplinary Studies is a university-wide program administered by the Thomas Harriot College of Arts and Sciences. The goals of the program are to foster multidisciplinary study among various schools and departments, enable motivated students to pursue degrees in specialized or new fields, and encourage undergraduates to pursue research interests while working closely with faculty. Under the program, students can design an individual concentration in consultation with faculty in the appropriate discipline or complete one of the structured concentrations in Classical Studies, International Studies, Neuroscience, Religious Studies or Security Studies.</p> <p>Students in the Classical Studies concentration are assessed on their ability to analyze and contextualize artistic, historical, literary or philosophical texts or artifacts of material culture. In CLAS 2220 or 2230 students are assigned papers on literary or philosophical texts, which require them to analyze a theme or explicate a passage in the context of the larger work. The criterion for success is that 80% of students analyze the text persuasively. Persuasive analysis is defined as an argument that: makes use of textual evidence; can account for the entire text, especially unusual passages, and avoids opinion; employs a formal tone that respects the author without praise or blame; and respects the reader by the use of concise and logical connections between arguments, correct grammar, and a readable style.</p> <p>Results from 2016-17 were of the 20 students who completed the course, 17 (85%) wrote at least one persuasive analysis that properly analyzed a theme or explicated a passage. However, only 8 students (40%) were successful in extrapolating the larger meaning of the entire work from the theme or passage selected. Thus the criterion for success was not met.</p> <p>In order to help students situate and analyze historical, literary, and philosophical texts in their Classical contexts, in 2017-18 in CLAS 2230, faculty offered a broader option of authors and genres, and began with a unit on Roman letters and their intended audiences, which asked students to contrast the private political letters of Cicero in the Republic with the public letter of Seneca on philosophical problems, and of Pliny</p>

on daily life, nature and material culture in the empire. In papers, students were asked to look for themes across authors and genres, and to analyze them in their ancient contexts.

Results from 2017-18 show that the criterion was not met. Of the 26 students who completed the course, 19 (73%) correctly distinguished between genres of writing, the periods in which the texts were composed, and described the themes in a persuasive argument that used evidence from the text and good external sources where appropriate. After reviewing the results, faculty felt use of letters as a theme was very effective in humanizing the Romans for students, and thus in drawing their attention to the important themes in the texts. Students would have learned more from the writing assignments, however, if more specific guidance had been given about the need to employ a scholarly mode and refer persistently to the text as the basis of argument.

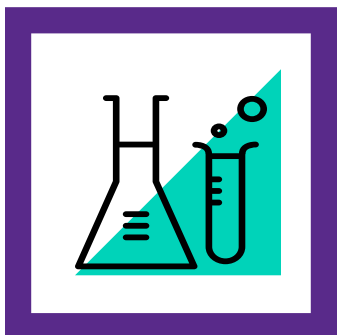
That plan for 2018-19 is for faculty to instruct students more carefully that any analysis must begin with an appreciation of: author, genre, and historical context; and that arguments must refer closely to the text in order to situate the themes under discussion effectively.

Program name	Psychology (BA)
Delivery mode	Face to Face
Outcome being summarized	Biological Basis of Behavior - Students will demonstrate knowledge of and competence in analyzing the biological basis of behavior including genetics, evolution, and the structure of the central nervous system.
Program level example	<p>The ECU undergraduate program in psychology provides students with both a broad exposure to the major areas within the behavioral sciences as well as a focused appreciation for statistics and research design as core competencies within the discipline. Program instruction serves equally well as preparation for a research or teaching career in psychology, or for entry into various professional fields that focus on behavior challenges.</p> <p>The Psychology BA program uses the Capstone Assessment Instrument (CAI) to assess how well students are performing on several learning outcomes. The CAI is an exam that was developed by the undergraduate program director and the undergraduate committee and is administered in the capstone courses. One learning outcome that uses the CAI is knowledge of the biological basis of behavior, which includes genetics, evolution, and the structure of the central nervous system. The criterion for success is that at least 70% of students receive a score of 70% or higher on this section of the exam.</p> <p>The percentage of students meeting the criterion for the past three reporting cycles are: 62% In 2015-16, 57% in 2016-17 and 51% in 2017-18. Actions that the program has implemented to try to improve student performance include developing a new educational module in 2016-17 that reinforces brain-related concepts in a course where faculty felt sufficient coverage was lacking and providing students with a study guide in 2017-18 which included links to relevant articles, videos and lectures.</p> <p>Program faculty noted that while the above actions had not been as effective as they hoped, they do plan to continue using them into 2018-19. Given the multiple years of not meeting the criterion for success, faculty will also revise other older educational modules to more closely align with the learning outcomes measured by the CAI. These modules will be available to students in all core courses to ensure students master the intended information, regardless of which course they choose to take in order to satisfy the Biological Basis requirement for the major.</p>

Thomas Harriot College of Arts and Sciences

Graduate Examples

Actions Taken to Improve Student Learning Based on Analysis of Results



Graduate

*Programs included:

- Biology (MS)
- English (MA)
- Geographic Science and Technology (Certificate)
- Professional Communication (Certificate)
- Public Administration (MPA)
- Rhetoric, Writing and Professional Communication (PhD)
- Security Studies (MS/Certificate)
- Sociology (MA)
- Statistics (Certificate/Minor)

Graduate Examples

- Offered opportunities to improve written and oral communication skills
- Introduced examples of original research to aid students in their own research ideas and plans
- Gave students exercises intended to improve their ability to acquire and manipulate data through use of interactive data sets
- Created a student chapter to offer opportunities for students to participate in activities and engage with professionals
- Modified readings and assignments to better fit topics/curriculum
- Involved advisors and faculty in creating proactive strategies to assist in research agendas and ideas
- Incorporated and applied theoretical content throughout early course work to create a foundation for higher level courses
- Increased focus on social statistics through article review, discussion and peer-review of each other's projects
- Assigned specific exercises to address problem areas

Program name	Biology (MS)
Delivery mode	Face to Face
Outcome being summarized	Written Communication - Graduates will be able to write scientific manuscripts that are ready, in terms of the writing, for journal submission.
Program level example	<p>The Master's in Biology provides curriculum and research training in in ecology, evolution, organismic biology, and cell biology. The program is designed to meet local, national, and global needs for professional biologists, and to prepare students for additional professional training in the biological sciences and related health fields.</p> <p>In AY 2015-16, the Biology MS program reviewed all of their student learning outcomes and how they were being assessed. They are currently assessing outcomes on content knowledge of the discipline, ethics/regulatory knowledge, written and oral communication, research study design, and data analysis and interpretation. Faculty use a certification exam and the students' thesis to assess student performance on the outcomes.</p> <p>Specific to the written communication outcome, students should demonstrate the ability to write scientific manuscripts that are ready for journal submission. Faculty assess this learning outcome by using a rubric to review each student's thesis. The criterion for success was that 80% of students score 80% or higher on the relevant sections of the rubric.</p> <p>As part of the review of their outcomes, faculty also reviewed the curriculum map and noted that written communication should be an integral component of the program of study. Therefore, beginning in 2016-17, faculty implemented a new large-scale assignment in BIOL 6880 (Introduction to Research) that provided preparation for a written research proposal.</p> <p>That year, all five of the students who completed a thesis met the criterion for success. Faculty reviewed the results and felt the new assignment was helping students with their written communication skills. The assignment was continued into the next academic year.</p> <p>In 2017-18, twelve students completed a thesis and eleven (91.7%) met the criterion for success. While the percentage of students meeting the criterion for success went down slightly from the previous year, faculty noted this could be due to the difference in sample size. Faculty will continue the writing assignment in BIOL 6880.</p>

Program name	English (MA)
Delivery mode	Face to Face and Online
Outcome being summarized	Original Research/Creative Activity - All students completing the MA in English will be able to conduct original research/creative activity.
Program level example	<p>The English MA program prepares students for professional careers in writing, editing, information design and related fields; for entry into PhD programs in English and other professional degree programs (such as law); and for teaching English in the two-year college and teaching English to speakers of other languages. The program also provides opportunities for public school teachers to acquire advanced degrees that focus on writing, literature, and English language skills.</p> <p>Students in the MA in English are required to complete either a thesis or Comprehensive Assessment Project (CAP), which includes writing samples and a presentation. Faculty use a rubric to evaluate the thesis and CAP. This means of assessment is used for the following student learning outcomes: oral communication, research/creative activity, composing effective documents, information synthesis, critical analysis and scholarly/theoretical perspectives. Specific to the research/creative activity outcome, the criterion for success is that 80% of students would “exceed expectations” on the rubric section related to this outcome.</p> <p>In 2015-16, 66% of students (n=35) exceeded expectations on the rubric. Thus, the criterion for success was not met.</p> <p>After review of the results, faculty decided to introduce examples of original research/creative activity in order for students to emulate the types of research possible in the areas within English. This was implemented in 2016-17, along with revising the CAP to make it more consistent across concentrations.</p> <p>In 2016-17, 69% (n=29) of students exceeded expectations on the rubric. While the criterion for success was not met, the scores were an improvement over the previous year. Faculty planned to help students focus on original research/creative activity in coursework projects and help them initiate research questions and topics that contribute to specific discourse communities.</p>

Program name	Geographic Information Science and Technology (Graduate Certificate)
Delivery mode	Face to Face
Outcome being summarized	Acquire, evaluate and manipulate spatial data - Students earning the certificate in Geographic Information Science and Technology will be able to acquire, evaluate, and manipulate spatial data.
Program level example	<p>The Geographic Information Science (GIS) and Technology Graduate Certificate provides students with opportunities to develop analytical, theoretical, and practical geospatial skills for both public and private sector careers. It assesses outcomes around acquiring, evaluating and manipulating spatial data, recognizing and relating spatial patterns and applying GIS project protocols. The program uses a class project to assess each outcome.</p> <p>In order to demonstrate the ability to acquire, evaluate and manipulate spatial data, students submit a project where they use analytical, theoretical and practical GIS skills. The project is assessed using a 5-point rubric. The criterion for success is that 80% of students will score an average of 4 or better on the project.</p> <p>In 2015-16, 100% of the students scored an average of four or better. While the criterion was met, faculty noted deficiencies in several student projects in the area of dataset usage.</p> <p>To address this deficiency, during the 2016-17 year faculty developed and implemented a new exercise where students used the EPA and WMO/WHO interactive datasets to compare and contrast air quality and to evaluate pollutant types and sources.</p> <p>2016-17 results show that again 100% of students met the criterion for success (score of 4 or better). Faculty noted that students had improved in the ability to acquire and manipulate air quality data and thus felt that the actions taken had been effective.</p>

Program name	Professional Communication (Graduate Certificate)
Delivery mode	Face to Face and DE
Outcome being summarized	Theoretical Principles - Students will be able to apply theoretical principles of technical and professional communication to address different practical communication problems and needs.
Program level example	<p>Communication professionals work in a rapidly changing environment that requires them to update their abilities throughout their working career. Both conceptual and technological issues underlie those changes. The Professional Communication graduate certificate program is designed to help those communicators remain competitive in the workplace. The program measures outcomes on communication tools and technologies, ability to incorporate sources, and application of theoretical principles.</p> <p>For this last outcome, students in the program should be able to apply theoretical principles of technical and professional communication to address different practical communication problems and needs. Faculty reviewed student portfolios with a rubric to assess performance on this student learning outcome. The criterion for success is that 80% of students will achieve a score of 4 (competent) or better on the “Relationship between theory and practice” section of the rubric.</p> <p>In 2015-16, faculty targeted a limited number of key theoretical principles, highlighting for students that theories are not simply abstractions but can be applied as tools or (in one instructor’s formulation) “heuristics for professional activity.” Although some courses are intrinsically more theory-driven than others, faculty adopted the perspective that it is helpful for students to pick up, test, apply, and exercise theoretical concepts even as part of productive or analytical work. For instance, one course introduced “leadership” as a key puzzle and pressed students to examine the components and ramifications of leadership in reference to their other work. Another course similarly posed “historicizing” as a key problem, using the disparate topics and insights of the course material as opportunities to theorize historical inquiry. That is: instead of treating history as merely a topic, the course emphasized that researchers’ and practitioners’ understanding of history (and its related tools and practices) could itself be examined and theorized, not just in the current class but in other contexts. Faculty proposed that this approach would in turn improve students' facility in identifying, learning, and applying other theoretical insights.</p>

That year, five of eight students (63%) met the criterion for success. After reviewing the results, faculty noted that there were several instances of capable integration of theoretical insights into student work, which may indicate that the actions taken had some positive impact upon the results. However, some students still hesitate to introduce theoretical concepts and instead revert to the perhaps safer territory of observations or perspectives.

To improve student performance on this outcome in 2016-17, faculty began making the more active, tool- or heuristic-oriented approach to theory and theorizing a more prominent feature of courses. In each course, faculty highlighted a limited number of theoretical concepts that can be used to organize students' uptake of course knowledge and practices. Even in practice-oriented courses, faculty pointed out theoretical underpinnings of the course content, and we introduced parts of those theories in these courses.

There was a slight improvement in the results in 2016-17 where 67% scored a 4 or higher on the rubric, but the overall criterion for success was not met.

In 2017-18, the program revised the way it was assessing this outcome. However, faculty continued to focus on the theoretical underpinnings of course content. They also had students reflect on theories used in other projects.

Program name	Public Administration (MPA)
Delivery mode	Face to Face, Online and Off-Campus Instructional Site
Outcome being summarized	Articulate and apply a public service perspective: Upon graduation, MPA students will be able to articulate and apply a public service perspective.
Program level example	<p>The purpose of the Master of Public Administration Program is to prepare professionals to meet the needs and challenges of public service; conduct scholarly and applied research in public administration and policy; and engage students and faculty in partnerships with governmental, non-profit, professional, and educational organizations. The program is accredited by the National Association of Schools of Public Affairs and Administration (NASPAA). Faculty assess students on the public policy process, public service perspective, critical thinking, lead/manage in public governance and communication. Outcomes are assessed with a group project, competency evaluation by faculty members, and most recently a pre-posttest.</p> <p>The public service perspective outcome is that students will be able to articulate and apply a public service perspective. Faculty complete a competency evaluation once the student has completed 18 hours of coursework and at the end of the program. The criterion for success is that 80% of students will score “well” or “very well” on the Articulate and Apply Public Policy Perspective section of the competency evaluation form.</p> <p>Results from 2013-14 showed that only 25% of the graduating students met the criterion for success. Students scored lowest on the evaluation sub-dimensions of “synthesizing the differing perspectives on public issues” and “articulate a public perspective in written and oral communication”.</p> <p>To enhance student abilities in these areas for 2014-15, the readings and assignments in PADM 6220 (Leadership and Ethics in the Public Sector) were modified to better address these topics. In addition, a student chapter of ICMA (International City/County Management Association) was formed. This created opportunities to student to participate in activities where they engaged with practitioners on a regular basis. That year, 91.7% of student met the criterion for success.</p> <p>In 2015-16, faculty continued to offer the modified readings and assignments. 87.5% of students met the criterion for success.</p>

Program name	Rhetoric, Writing and Professional Communication (PhD)
Delivery mode	Face to Face
Outcome being summarized	<p>Research Skills - Students will design and conduct an original long-term research project of substantial scope, synthesize information resulting from that project, and report the results of that project to other members of the academic community.</p>
Program level example	<p>The Rhetoric, Writing and Professional Communication PhD program offers students the opportunity to combine theory and practice in the study of rhetoric, writing, and professional communication. Focusing on public and community rhetorics across genres and media, the program provides future scholar-teachers with diverse, well-supported research and pedagogical experiences and fosters professional development within intellectual and professional communities.</p> <p>The program assesses students on the following areas: research skills, disciplinary connections, cultural rhetorics, professional identity and methods and theories. Outcomes are assessed using a variety of methods including exam questions, dissertation defense, a written paper and portfolio review.</p> <p>For the research skills outcome, students must be able to design and conduct an original long-term research project of substantial scope, synthesize information from the project, and report the results of the project to other members of the academic community. The program assesses students on this skill through their dissertation using a rubric. The criterion for success is that 100% of students will pass their dissertation defense by scoring an overall “acceptable” on both the presentation and written dissertation. A secondary criterion is that full-time students complete their dissertations within 5 academic years and part-time students within 7 academic year.</p> <p>In 2014-15, there were 4 students completing their dissertations and 100% scored an overall acceptable on both the presentation and written dissertation. Two of the four students completed their dissertations within the specified timeline.</p> <p>While the presentation and written dissertations were acceptable for these students, faculty working with these students expressed that some of these students and some past students have struggled with designing a dissertation project with an appropriate scope and articulating the project's relationship with the scholarly conversations occurring within the academic community. Learning the skills necessary to design and conduct a research project takes time, but too much time between coursework and comprehensive exams and between</p>

comprehensive exams and dissertation can impede learning and successful completion of research results.

In order to improve this outcome, students received feedback from their advisors & the Director of Graduate Studies on their research agendas and preliminary dissertation ideas. In addition, faculty instituted a Dissertation Prospectus Presentation in 2016-17, which asked students to present their dissertation plan as well as answer questions from their committee, other faculty, and students.

Results from 2016-17 showed that of the 6 students completing their dissertations, all received an overall acceptable score on both the presentation and written dissertation. All but one of the students completed their dissertation within the described time frame.

Program name	Security Studies (MS/Graduate Certificate)
Delivery mode	Face to Face and Online
Outcome being summarized	Knowledge of Security Studies Theories - Students will be able to explain and apply security studies theories.
Program level example	<p>The Security Studies program offers two options for students at the graduate level: a Master of Science in Security Studies and a graduate certificate in Security Studies. The purpose of the Master of Science in Security Studies is to provide students with knowledge related to international and homeland security issues and prepare them to compete in academic and career fields where cultural awareness, global understanding and analytical and writing skills are in high demand. The purpose of the Certificate in Security Studies is to expand student knowledge about international and homeland security issues and to strengthen their analytical and writing skills to improve their career competitiveness and global understanding. The required courses for the certificate are a subset of the courses required for the MS, thus the assessment of the two programs is combined into one reporting unit. Together they assess students' knowledge of security studies concepts, theories and policies, as well as writing, research and critical thinking skills. Outcomes are assessed using exam questions and portfolio review.</p> <p>The knowledge of security studies theories outcome is measured two ways: (1) by a 20-item timed test on security studies theories where the criterion for success is 80% of students score 80% or higher on the test; and (2) a rubric applied to the comprehensive exam where the criterion for success is 85% of students score 3.5 or higher on the knowledge of security studies theories section of the rubric. This example focuses on the results of the 20-item test as this is the means of assessment that applies to both the MS and certificate students.</p> <p>In 2016-17, 8 students completed the test and only 50% scored 80% or higher. Faculty reviewed the results and noted that the average score was 72.5%. The students had most problems with critical approaches to security studies: one question was answered correctly by only 25% and another one was not answered correctly by any student.</p> <p>In 2017-18, the program director met with the course instructor for SECS 6000 (Security Studies Foundations) which is a course students are encouraged to take at the beginning of the program. They discussed how to improve the students' understanding and application of relevant theories and agreed</p>

to have more theoretical content in SECS 6000, as well as other relevant courses such as SECS 6380 (The Art of Statecraft and International Security). Students were reminded of the three dominant schools of Security Studies and encouraged to apply these theoretical approaches in exercises and essays.

Results from 2017-18 show a slight decline in the results with 44% of students (N=16) scoring 80% or above. The average score was 73%. In the upcoming year, the program director will meet with new faculty and emphasize the importance of including theory in the core courses and to test the students' ability to apply theory in exams and course work. It is planned to hire a core course instructor, who has a strong background in theory, which will strengthen the exposure of students to theory. Students taking the comprehensive exam will be reminded to review key IR theories before they take the exam.

Program name	Sociology (MA)
Delivery mode	Face to Face
Outcome being summarized	Mastery of Social Statistics - Students will learn the principles and techniques of social statistics required to conduct graduate-level research in sociology
Program level example	<p>The Sociology MA program provides graduates with the tools to better understand and succeed within the social world, and to take on positions of leadership in the workplace, academia, and in the community. The program fosters awareness of the significance and consequences of broad social changes, and the processes that create them. In addition, the program seeks to promote social justice by cultivating among students an awareness of social inequalities, their impacts, and potential solutions.</p> <p>Students in the Sociology MA program are expected to demonstrate knowledge of sociological theory, research methods and social statistics. Progress on these student learning outcomes is measured by the master’s comprehensive exam administered at the end of the program. The goal is that 80% of students pass the social statistics section of the exam with at least a score of Low pass on the first attempt. There are four possible grades: Pass with distinction/High pass, Pass, Low Pass, Fail.</p> <p>In 2016-17, 100% of the students passed the social statistics part of the exam on their first attempt. Faculty noted, however, that students had trouble discussing p values and how p values relate to the certainty of regression estimates. Also, in answers to a question on causality, students were largely unquestioning of regression estimates despite potential problems related to temporal ordering.</p> <p>In 2017-18, as part of SOCI 6312 (Multivariate Techniques and Analysis), students presented research articles that used the statistical methods covered in class. At the end of each presentation, students are asked questions about the article. During the 2017-2018 academic year, following the actions planned in the 2016-2017 report, the questions emphasized having students think about issues related to causality and the uncertainty of regression estimates. Additionally, students completed peer reviews of each other’s research projects. During discussions of the peer reviews, students were asked to focus on issues related to temporal ordering and omitted variables.</p>

	<p>Again 100% of students passed the social statistics part of the exam. That year faculty noted students still struggled with explaining the uncertainty of regression estimates. They also noted that while student answers demonstrated a technical understanding of how to apply p values to test statistical significance, students struggled to offer a substantive interpretation of p values. The instructor will increase the emphasis on applying a technical understanding of statistical concepts to substantive interpretations of specific cases in 2018-19.</p>
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Program name	Statistics (Graduate Certificate and Graduate Minor)
Delivery mode	Face to Face
Outcome being summarized	Regression Mastery – Students demonstrate mastery of regression techniques.
Program level example	<p>The Statistics Graduate certificate and Graduate minor are assessed together because of the overlap in courses and student learning outcomes. The purpose of the Statistics Graduate Certificate is to train non-statisticians in the basic competencies of data analysis using standard statistical techniques. The primary purpose of the Graduate minor in Statistics is to give graduate students in other departments the basic training in statistics. The programs assess outcomes on regression and one-way ANOVA and ANCOVA techniques.</p> <p>For the regression outcome, students are expected to demonstrate mastery of regression techniques. This outcome is assessed by a multi-part question which incorporates regression techniques that is embedded on the final exam in MATH 5031 (Applied Statistical Analysis). The question is scored with a rubric that gives points for each part of the question that is answered correctly. The points are then categorized into a classification of low, medium, high and very high. The criterion for success is that 90% of students are rated as “high” or “very high”.</p> <p>In 2016-17, 73% of students (8 out of 11 students) scored “high” or “very high” on the exam question. Thus the criterion for success was not met. Faculty noted that one problem area was the degrees of freedom associated with an interaction model. In the past, students used to create interaction variables by hand, but now they utilize statistical packages that create the interaction terms internally with a simple click by the student. They planned to have students complete an additional assignment, with the added instruction of creating the interaction terms manually.</p> <p>During 2017-18, students were given an assignment out of the text regarding degrees of freedom associated with an interaction model. That year, 73% of students (11 out of 15 students) met the criterion for success. Further analysis showed that all of the students who scored “high” or “very high” correctly answered the degrees of freedom part of the question. The four students who did not meet the criterion, did not correctly answer the degrees of freedom question. Faculty planned to assign an additional problem that would give students more exposure to interaction terms and their associated degrees of freedom in the upcoming academic year.</p>