



Sam Houston
State University

2012-2013

College of Sciences

**Department of Agriculture
and Industrial Sciences**



Online Assessment Tracking Database

Sam Houston State University (SHSU)
2012 - 2013

Agriculture BS

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Goal Knowledge Of Key Concepts And Skills

Students will develop knowledge and skills relevant to agriculture.

Objective (L) Development Of Students' Knowledge And Skills

Students will be able to demonstrate competency in key areas of agriculture leadership.

Indicator AGRI 4388 Assignment Rubric

All students enrolled in the program must complete AGRI 4388 in their senior year. AGRI 4388 addresses key concepts and skills relevant to the field of agriculture and leadership. Each semester seven randomly selected student assignments from AGR 4388 will be reviewed by faculty members with expertise in the field of agriculture. Faculty members will score the assignments using a scale of 1 - 5 with 3 "meets expectations," 4 "exceeds expectations," and 5 "far exceeds expectations."

Criterion At Least 70% Rated As Meeting Expectations

Faculty in the Agriculture Department will assess the knowledge of agriculture from students enrolled in AGR 4388. At least 70% of the students will be expected to perform at an acceptable level (meets expectations) or higher. Specific focus will be in the areas of clarity and grammar.

Finding Student Achievement

Faculty randomly reviewed selected student assignments in AGRI 4388 with an average total score of 3.5. Over 70% of the students met the expectations of the assessed activity. Yet, students under achieved areas in grammar and writing skill, while, oral communication of the evaluated students exceeded expectations. As in previous evaluation periods students again excelled in professionalism and professional dress.

Action Performance Improvement

Grammatical errors and writing skills continue to be low achieving areas on the rubric and a concern for faculty. Writing skills and the use of the writing center will continue to be resource utilized in class.

Goal Develop Professional Skills

Students will learn the skills necessary to compete in the professional marketplace.

Objective (L) Development Of Marketplace Skills

Students completing the BS in Agriculture will demonstrate skills necessary to

compete in the professional marketplace.

Indicator

AGRI 4120 Assignment Rubric  

All students seeking a degree in Agriculture will be required to complete AGRI 4120 during their senior year. The course addresses essential skills necessary to compete in the marketplace for agriculture employment - resume preparation, interview skills, and employment opportunities. Faculty will review student assignments and assess student performance on selected assignments using a faculty-developed rubric.

Criterion

70% Of Students Rated As Meeting Expectations 

Faculty evaluations will indicate that at least 70% of the students enrolled in AGRI 4120 will perform at an acceptable level and score a 3 (meets expectations) or higher on a scale of 1-5. Grammar and content will continue to be a focus area.

Finding

Professional Writing Skills 

Students continue to make grammatical errors; however, the overall score for selected students exceeded minimal standards with an average score of 4.2. Grammar, organization, word selection continues to be areas of concern and improvement.

Action

Professionalism 

Though the overall score was slightly lower from the previous year, the students have met faculty expectations. Faculty will continue to emphasize writing skills in professional context and continue assessing student progress.

Previous Cycle's "Plan for Continuous Improvement"

Expectations were achieved; however, importance of professional presentation and grammatical accuracy will remain an emphasis to enhance marketability of students and increase their success after graduation.

Please detail the elements of your previous "Plan for Continuous Improvement" that were implemented. If elements were not implemented please explain why, along with any contextual challenges you may have faced that prevented their implementation.

No challenges were noted for this evaluation season.

Plan for Continuous Improvement - Please detail your plan for improvement that you have developed based on what you learned from your 2012 - 2013 Cycle Findings.

Faculty will emphasize professional writing skills in lower level courses to enhance their writing skills. Organization, grammar and wordiness will be emphasized across the discipline.

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Online Assessment Tracking Database


Sam Houston State University (SHSU)
2012 - 2013

Agriculture BS (Animal Science)



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Goal Knowledge Of Key Concepts And Skills 


Students will develop knowledge and understanding of key concepts and skills relevant to Animal Science.

Objective (L) Development Of Students' Knowledge And Skills 


Students will be able to demonstrate competency in key areas of animal science leadership.

Indicator Advanced Animal Production Assignment Rubric  


All students enrolled in the program must complete an advanced animal production course in their final year of enrollment. Advance animal production courses address key concepts and skills relevant to the field of agriculture. Each semester seven randomly selected student assignments from advanced production courses will be reviewed by faculty members with expertise in the field of agriculture. Faculty members will score the assignments using a scale of 1 - 5 with 3 "meets expectations," 4 "exceeds expectations," and 5 "far exceeds expectations."

Criterion At Least 70% Rated As Meeting Expectations 

There will be a general consensus among Animal Science Faculty members that at least 70% of the students enrolled in the advanced production course will perform at an acceptable level with a score of 3 (meets expectations) or higher, especially in the areas of scientific information and documentation as well as grammar, weakness that continues to be low. Although we averaged a 4.1 last year, and average includes those below that point although they still might "meet expectations." Thus, the standard will remain at 3 (meets expectations) for now.

Finding Subject Knowledge 

Over 70% of the students met the expectations from animal science faculty in subject knowledge and professional skills with an average score of 4.1 on the evaluation instrument. In general, weakness continue to include organization of thoughts and clarity of writing.

Action Animal Science Skill 

Students very effectively demonstrate essential animal science skills and techniques as demonstrated in labs or explained in practicums. However, explanation of skills via writing is an apparent weakness. Students have difficulty organizing their thoughts in a logical process on paper or presentations. Faculty will continue with their writing expectations with emphasized use of the writing center. STEM will be included in course objectives with emphasize in Math.

Goal Develop Professional Skills 

Students will learn the skills necessary to compete in the professional marketplace.

Objective (L)

Development Of Marketplace Skills

Students completing the BS in Animal Science will demonstrate skills necessary to compete in the professional marketplace.

Indicator

AGRI 4120 Assignment Rubric

All students seeking a degree in Animal Science will be required to complete AGRI 4120 during their senior year. The course addresses essential skills necessary to compete in the market place for agriculture employment - resume preparation, interview skills, and employment opportunities. Faculty will review student assignments and assess student performance on selected assignments using a faculty-developed rubric.

Criterion

70% Of Students Rated As Meeting Expectations

Faculty evaluations will indicate that at least 70% of the students enrolled in AGRI 4120 will perform at an acceptable level and score a 3 (meets expectations) or higher on a scale of 1-5. Organization, grammar and content were identified as areas needing improvement since 2010. We averaged 4.1 but will leave the standard at 3.0 for this assessment period.

Finding

Professional Writing Skills

Students continue to make grammatical errors on resumes and formal letters as provided in their portfolios; however, the overall score for selected students exceeded minimal standards with an average score of 4.0. Grammar, organization, word selection continues to be areas of concern and improvement.

Action

Professionalism

Though the overall score was slightly higher from the previous year and exceeded expectations the standards will remain the same with a continued emphasis on writing in professional context.

Previous Cycle's "Plan for Continuous Improvement"

Numerically on average the student outcomes exceeded the projected mark. Faculty will assess scientific writing assignments within the curriculum and review curriculum prerequisites of technical writing skills. The writing center will be included as an objective to utilize. To enhance marketing skills and professionalism, students will be encouraged to utilize the placement center and other professionals for assistance in business writing and resumes.

Please detail the elements of your previous "Plan for Continuous Improvement" that were implemented. If elements were not implemented please explain why, along with any contextual challenges you may have faced that prevented their implementation.

The Animal Science Faculty will review AGRI 4380 as being a course of assessment. Many students are taking other AnSc courses and 4380 is not longer a required capstone course for some students.

Plan for Continuous Improvement - Please detail your plan for improvement that you have developed based on what you learned from your 2012 - 2013 Cycle Findings.

Faculty will emphasize professional writing skills and Math in lower level courses to enhance their writing and STEM attributes. Organization of thoughts on paper is difficult for some students and math is a challenge.

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Online Assessment Tracking Database


Sam Houston State University (SHSU)
2012 - 2013

Agriculture BS (Horticulture And Crop Science)



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Goal **Knowledge Of Key Concepts And Skills**  


Students will be able to demonstrate competency develop knowledge and skills relevant to Horticulture and Crop Science.

Objective (L) **Development Of Students' Knowledge And Skills** 


Students will be able to demonstrate competency in key areas of Horticulture and Crop Science including plant science and properties of soil.

Indicator **Advanced Horticulture And Crop Science Assignment Rubric**  


All students enrolled in the program must complete the advanced horticultural course in their final year of enrollment. Advanced horticultural courses address key concepts and skills relevant to the field of agriculture. Each semester seven randomly selected student assignments from advanced horticultural courses will be reviewed by faculty members with expertise in the field of agriculture. Faculty members will score the assignments using a scale of 1 - 5 with 3 "meets expectations," 4 "exceeds expectations," and 5 "far exceeds expectations."

Criterion **At Least 70% Rated As Meeting Expectations** 

There will be a general consensus among Horticulture Faculty members that at least 70% of the students enrolled in the advanced horticulture/crops science/agronomy course will perform at an acceptable level with a score of 3 (meets expectations) or higher weakness in scientific knowledge and writing skills was identified.

Finding **Knowledge Of Horticulture** 


Students were more prepared during their oral presentations of scientific informaiton. Presentations were very professional and students were professionally dressed. A weakness noticed by evaluators was oral communication. The students lacked confidence and were very nervous. Score was 3.8 on the project assessments.

Action **Student Assessments** 

Students have improved thier accuracy in scientific knowledge, professionalism has remained strong; however, students lacked confidence in their oral presentation. Faculty will incorporate more group presentations across the curriculum.

Goal **Develop Professional Skills** 

Students will learn the skills necessary to compete in the professional marketplace.

Objective (L) **Development Of Marketplace Skills** 

Students completing the BS in Horticulture and Crop Science will

demonstrate skills necessary to compete in the professional marketplace.

Indicator

AGRI 4120 Assignment Rubric  

All students seeking a degree in Horticulture and Crop Science will be required to complete AGRI 4120 during their senior year. The course addresses essential skills necessary to compete in the market place for agriculture employment - resume preparation, interview skills, and employment opportunities. Faculty will review student assignments and assess student performance on selected assignments using a faculty-developed rubric.

Criterion

70% Of Students Rated As Meeting Expectations 

Faculty evaluations will indicate that at least 70% of the students enrolled in AGRI 4120 will perform at an acceptable level and score a 3.5 (meets expectations) or higher on a scale of 1-5, especially in clarity and organization which were areas assessed as weakness the previous year.

Finding

Scientific Knowledge 

Expectations were increased from a 3.0 to 3.5. The students professionalism was commended and the students demonstrated excellence. Job placement and interview skills have improved with this group of students. However, emphasis will continue to be placed on oral communication with emphasis on writing skills and grammar.

Action

Horticulture Knowledge And Presentation Skills 

Faculty will continue to emphasis previous objectives and maintain a focus on scientific knowledge, professionalism, oral and written communication. These objectives will be across the Horticulture curriculum.

Previous Cycle's "Plan for Continuous Improvement"

Weaknesses in the professional and scientific writing and information will be emphasized in subsequent years and courses. Use of the writing center and placement center university services will be emphasized for improvement.

Please detail the elements of your previous "Plan for Continuous Improvement" that were implemented. If elements were not implemented please explain why, along with any contextual challenges you may have faced that prevented their implementation.

No change in action occurred other than increased expectation for professional writing skills.

Plan for Continuous Improvement - Please detail your plan for improvement that you have developed based on what you learned from your 2012 - 2013 Cycle Findings.

Faculty will continue to emphasis previous objectives and maintain a focus on scientific knowledge, professionalism, oral and written communication. These objectives will be across the Horticulture curriculum.

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Online Assessment Tracking Database



Sam Houston State University (SHSU)
2012 - 2013


Industrial Technology BS (Construction Management)


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Goal **Develop Knowledge And Skills** 
 Students will develop knowledge skills relevant to Construction Management.


Objective (L) **Development Of Students' Knowledge And Skill** 
 Students will be able to demonstrate competency in key areas of Construction Management.

Indicator **Advanced Design And Development Assignment Rubric**  
 All students enrolled in the program must complete the Advanced Construction Management course in their final year of enrollment. The course addresses key concepts and skills relevant to the field of construction management. Each semester seven randomly selected student assignments from the Advanced Construction Management course will be reviewed by faculty members with expertise in the field of industrial technology. Faculty members will score the assignments using a scale of 1 - 5 with 3 "meets expectations," 4 "exceeds expectations," and 5 "far exceeds expectations."

Criterion **At Least 70% Meeting Expectations** 
 There will be a general consensus among I T Faculty members that at least 70% of the students enrolled in advanced I T course will perform at an acceptable level with a score of 3 (meets expectations) or higher. Identified weaknesses last year were organization and clarification and will be emphasized this evaluation period.

Finding **Professional Achievements** 
 Knowledge of content area and skill sets are strengths of students in advanced ITEC courses. However, writing skills, organization of thoughts, and clarity are shortfalls. Faculty will emphasize this skill requirements in other courses and across the curriculum to enhance students professionalism as they enter their capstone courses and final semesters.

 Assessment of documents exceed expectations with a 3.5 collective score.

Action **Enhancing Professional Skills** 
 Students in construction management are skill oriented and these attributes dominate their assessments, however, communications skills are important, as well. Faculty will emphasize this skill requirements in other courses and across the curriculum to enhance students professionalism as they enter their capstone courses and final semesters.

Goal **Develop Professional Skills** 
 Students will learn the skills necessary to compete in the professional marketplace.

Objective (L)

Demonstrate Professional Skills 🔑

Students completing the BS in Construction Management will demonstrate skills necessary to compete in the professional marketplace through an internship.

Indicator

ITEC 4391 Internship Evaluation 🔑

All students enrolled in the program must complete ITEC 4391 in their final year of enrollment. ITEC 4391 addresses key concepts and skills, as well as practical demonstrations of competency relevant to the field of construction management. Each semester interns will be evaluated by their internship supervisor and by their faculty supervisor on a faculty-developed rating scale.

Criterion

80% Meeting Expectations 🔑

There will be a general consensus among ITEC Faculty members who review both university and internship supervisor assessments that at least 70% of the students enrolled in ITEC 4391 demonstrated an above average level (4 or higher) of performance on the rating scales.

Finding

Student Internship Success 🔑

All students participating in their internships successfully completed the requirements. Skill requirements and job descriptions differed for most students, however, through personal interviews, employer and faculty assessments all students except 1 exceed the departments expectations of 4 or greater. The exception student was terminated during the last 2 weeks of the internship. The reason of termination was not skill or performance related but was due to having to be with his father during surgery and not able to work.

Several new companies have inquired about graduates and submitted position announcements for employment opportunities.

Over 90% of the students that graduated during this assessment period were employed in the industry and most were employed by their internship company.

Action

Internships 🔑

The department will continue to require internships in the construction industry for students. Faculty will continue to recruit new internship opportunities to expand the program and increase department and student exposure. 4.0 expectation will be maintained.

Previous Cycle's "Plan for Continuous Improvement"

Professionalism will be a major trait emphasized by faculty and will incorporate the career placement center professionals and HR representatives from various companies to assist at the ITEC Career Fair. Additionally, organization, writing skills, and professional presentation will be emphasized.

Please detail the elements of your previous "Plan for Continuous Improvement" that were implemented. If elements were not implemented please explain why, along with any contextual challenges you may have faced that prevented their implementation.

The department hosted 2 career fairs (fall and spring). Representatives from 15 Construction Companies were available along with HR representatives. Students were able to attend sessions with each company to discuss resumes, professionalism and expectations. The career fair was well received by both students and industry participants.

Plan for Continuous Improvement - Please detail your plan for improvement that you have developed based on what you learned from your 2012 - 2013 Cycle Findings.

Department Career Fair will be continued to expose students to prospective employers. Individual sessions will be utilized again so students and dialogue with HR representatives and recruiters. Faculty will continue to seek new companies and expand our outreach to the industry by making personal visits to new companies and representatives.

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**Department of Biological
Sciences**













Online Assessment Tracking Database

Sam Houston State University (SHSU)
2012 - 2013

Biology BA/BS

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Goal	Effectively Deliver A Core Curriculum  <p>Students will be presented well designed classes to facilitate mastering of the materials identified as a core foundation in biology – Botany, Zoology and Cell Biology</p>
Objective (L)	Mastery Of Core Curriculum  <p>Students will demonstrate a mastery of the core fields in biology: Botany, Zoology, Cell Biology, Microbiology, Genetics, Ecology and Evolution.</p>
Indicator	Assessment Exam For Core Classes  <p>All graduating seniors will take an exiting Biology Assessment Exam (BAE), written by the Biology Faculty. We will analyze the BAE scores from the following areas: botany, zoology, cell biology, microbiology, genetics, evolution & ecology to evaluate whether students have a significant level of understanding of each of these fields.</p>
Criterion	BAE Analysis For Core Classes  <p>All Biology majors will be expected to score significantly better than a failing grade in all core areas: botany, zoology, cell biology, microbiology, genetics, evolution and ecology.</p>
Finding	Exit Exam Core Results   <p>49% of all graduating seniors in Biology took the departmental exit exam. Based on this results from this exam, on average graduating seniors scored significantly higher than expected at random on all major core areas. This indicates students knowledge of core concepts in Biology increased during their training in the Department of Biological Sciences.</p> <p>See attachment for additional data and analyses</p>
Action	Increase Return Rate And Core Scores  <p>We will make a concerted effort to reach additional students so more in depth analyses can be conducted.</p> <p>We also will visit results as a faculty and try to develop a method to decrease the number of questions missed per section.</p>
Objective (L)	Understanding The Scientific Method And Develop Critical Thinking  <p>Students will demonstrate an understanding of the general nature of scientific knowledge and how scientific knowledge is gained (the scientific method). They also will be able to critically evaluate scientific data to draw informed conclusions.</p>
Indicator	BAE Analysis  <p>All graduating seniors will take the Biology Assessment Exam (BAE). We will use BAE exam scores from analytical questions to evaluate a student's understanding of the scientific method and critical thinking.</p>
Criterion	BAE Analysis 

All Biology majors will be expected to score significantly better than failing on analytical questions related to the scientific method and critical thinking.

Finding

Exit Exam Critical Thinking Results

On average student scored better (missed fewer questions) on questions that did not involve critical thinking. The number of questions missed was consistently greater for questions that involved critical thinking.

Students missed fewer questions that required graphical interpretation but missed more questions requiring analytical calculations.

See attachments for further data and analyses.

Action

Address Critical Thinking

We will work as a faculty to address lower scores in critical thinking questions and discuss adopting methodology for increasing those scores.

Specifically, faculty will be encouraged to address critical thinking and analytics in the classroom, and will be asked to increase the number of critical thinking and analytical questions in course tests and final exams.

Previous Cycle's "Plan for Continuous Improvement"

Biology was unable to address the objectives stated in this program because funding prevented the administration of costly exit exams.

Currently, the biology assessment committee is in the process of devising a new assessment tool, using an exam designed in house.

This is addressed in the 2012-13 goals and objectives.

Please detail the elements of your previous "Plan for Continuous Improvement" that were implemented. If elements were not implemented please explain why, along with any contextual challenges you may have faced that prevented their implementation.

The biology department implemented a new assessment exam. This exam was written and administered by biology faculty. Statistical tools were used to determine if exam results were significantly greater than failing. The strengths of this exam are that it is an in-house test that focuses on specific topics and content the biology faculty find important. A shortcoming of this exam is that it is not a national test, therefore our results can't be compared to national averages. However, we (biology faculty) felt this was a justifiable trade-off as national standards are often biased and not specific enough to be useful at the departmental level.

Plan for Continuous Improvement - Please detail your plan for improvement that you have developed based on what you learned from your 2012 - 2013 Cycle Findings.

We will develop a departmental assessment committee.

The goals of the committee this year will be:

1. establish sub-committees within each core area.
2. review questions within each core area
3. balance the number of factual knowledge questions and critical thinking questions.
4. create a broader range of question difficulties that will aid in analysis.
5. plan a mechanism to increase test turnout.

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Online Assessment Tracking Database

Sam Houston State University (SHSU)
2012 - 2013

Biology MS

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Goal **Increase Knowledge Of Profession** 🔑
 Students will gain knowledge of the profession by gaining experience in presenting at scientific conferences and through publication.

Objective (L) **Students Knowledge Of Publication Process** 🔑
 Students will be evaluated on their knowledge about the publication process. A test that examines the students knowledge of the profession will be administered when the student enters graduate school. After they take a course on professional aspects of biology, they will retake the exam. Student progress will be evaluated to exam knowledge of the publication process, etc.

Indicator **Exit Exam** 🔑
 Students will take an exit exam that asks specific questions about the publication process.

Criterion **Exit Exam - Publications** 🔑
 Scores will be compared to entrance exam. An increase in knowledge about the publication process will be an indicator of success.

Finding **Knowledge Of The Profession** 🔑
 An entrance exam (pretest) was given to all incoming MS students. The same exam was given following completion of a required course that surveys the profession of biology (Professional Aspects). The average score (8 students) for the pretest was 32.5% and the average score for the post-test was 86.5.

Indicator **Publication Rate** 🔑
 Each student's publication record will be tracked throughout the MS degree.

Criterion **Publication Rate** 🔑
 The number of papers published following the MS graduation will be compared to number published when admitted into the program. An increase in publications over this time will indicate the student has learned about the process through direct experience.

Finding **Quantification Of Publications** 🔑
 Our first census of MS publications was in January 2013. We have not completed an annual cycle to quantify a change in rate.

Action **Continue Collecting Data** 🔑
 We will continue administer and evaluating pre and post-test data. Additional data will allow across year comparisons and allow estimates of variation in learning across MS cohorts.

1. We will continue to collect publication rate data and report on findings in the 2013-2014 cycle.
2. We will track progress across years.
3. We will encourage successful submission of theses for publication prior to graduation. These data will be tracked.

Previous Cycle's "Plan for Continuous Improvement"

These data indicate that the biology department continues to meet targets by training MS students. The department will begin comparing pre and post knowledge based on the 2012-13 objectives.

Please detail the elements of your previous "Plan for Continuous Improvement" that were implemented. If elements were not implemented please explain why, along with any contextual challenges you may have faced that prevented their implementation.

The original plans for improvement were implemented by the previous chairs. However, many of these objectives were part of the graduation process for a MS in biology. Therefore, we successfully completed all of the objectives for ~10 graduate students that graduated in 2013.

Because of change in the biology chair, new goals were established for the MS program. These new goals will provide quantitative data on more specific objectives. We will streamline our data collection methodology to evaluate the effectiveness of our MS program and set improvement milestones that can be quantified and reached. See below.

Plan for Continuous Improvement - Please detail your plan for improvement that you have developed based on what you learned from your 2012 - 2013 Cycle Findings.

We learned that collecting and databasing information is critical for tracking students and evaluating goals. Since various faculty direct graduate students in independent research labs a better mechanism for tracking MS success in publications is needed.

To address this, we will:

1. develop a committee to plan and implement a data collecting system
2. we will begin compiling data from previous years.
3. we will analyze change in MS success (publication) over time.

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Department of Chemistry



Online Assessment Tracking Database

Sam Houston State University (SHSU)
2012 - 2013

Chemistry BS

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Goal**Deliver A Curriculum Appropriate For Understanding Fundamentals Of Chemistry**

The curriculum will address the discipline specific knowledge dictated by professional societies and/or professionals in the workforce.

Objective (L)**Demonstrate Understanding Of Fundamentals**

Chemistry is an intensely sequential discipline. Students must master the material at an average level of understanding in the first semester course (general chemistry I) before they are allowed to attempt the second semester course (general chemistry II). The same is true for each of the first five semester courses in the sequence (general chemistry I, general chemistry II, organic chemistry I, organic chemistry II and physical chemistry I).

The fundamental concepts covered in general chemistry I and II include: uncertainty in measurement, dimensional analysis, atomic and electronic structure, ionic and molecular formulas, nomenclature, stoichiometry, thermochemistry, bonding theories, valence shell electron pair repulsion theory, properties of gases, intermolecular forces, properties of solutions, kinetics, equilibrium, acid-base chemistry, oxidation-reduction chemistry, chemical thermodynamics and electrochemistry.

Indicator**American Chemical Society (ACS) General Chemistry Test**

All chemistry majors will be invited to take a nationally standardized test over general chemistry (written by the American Chemical Society Division of Chemical Education Examinations Institute) near their completion of general chemistry II. In order to encourage participation, the highest individual score is guaranteed scholarship money for a future semester, and additional scholarship monies will be scaled to percentile performance on the examination.

Criterion**ACS General Chemistry Examination Score**

Sixty percent of chemistry majors are expected to score within one standard deviation of the mean or higher than one standard deviation above the mean on the ACS standardized general chemistry examination. The major weakness in 2010-2011 was the low number of majors who took the exam. We are working to motivate more students to take the exam.


Finding**ACS General Chemistry Result**

Of the five students that took the exam (67 were invited to do so), four (80%) scored within one standard deviation of the mean or higher on the ACS standardized general chemistry examination. The criterion was met and exceeded overall. For chemistry majors (excluding forensic chemistry majors), two students took the exam (19 were invited to do) and one of them scored within one standard deviation of the mean or higher. Thus the criterion was not met for the chemistry majors. Overall, the participation rate for the academic year was $5/67 = 7\%$ (and $2/19 = 11\%$ for chemistry majors and $3/48 = 6\%$ for forensic chemistry majors). We need to keep working on ways to encourage and allow participation in this exam.


Action**Fundamental Knowledge**

We think sitting for the ACS General Chemistry exam for chemistry and forensic chemistry majors as they finish CHEM 1312 (General Chemistry II) is important. We think that the scholarship money is a good incentive but were surprised at the very low level of participation this year. We still want to have increased participation. We were so surprised at the low level of participation

that we emailed all of the students to find out why the participation was low (even though we had notified them more than once of the exam). The response to the email was poor, but a higher turnout might be achieved with an additional testing time. In an attempt to raise the level of participation, we will offer the exam twice in the fall. Depending upon the result, we will offer the exam two or more times in the spring.



Goal **Deliver A Curriculum Appropriate For Understanding Organic Chemistry** 

The curriculum will provide students with opportunities to develop the skills typically required of professionals in the area organic chemistry.


Objective (L) **Demonstrate Understanding Of Organic Chemistry** 

Organic chemistry is covered in the second year of a chemistry degree. It follows a year of general chemistry and precedes physical chemistry.



Students will demonstrate competent knowledge of the topics covered in organic chemistry I and II which include: hydrocarbons (alkanes, alkenes and alkynes), aromatic systems, functional group chemistry (including the chemistry of alkyl halides, ethers and various carbonyl compounds), stereochemistry, and carbohydrate chemistry.

Indicator **ACS Organic Chemistry Test**  


A nationally standardized test over organic chemistry (written by the American Chemical Society Division of Chemical Education Examinations Institute) will be given to all chemistry majors who take organic chemistry II at Sam Houston State University. This test is given as the final examination for the course.

Criterion **ACS Organic Chemistry Examination Score** 

Seventy-five percent of chemistry majors are expected to score within one standard deviation of the mean or higher than one standard deviation above the mean on the ACS standardized organic chemistry examination. We will closely follow the performance of forensic chemistry majors who scored slightly lower than chemistry majors in 2010-2011.

Finding **ACS Organic Chemistry Result**  

Eleven chemistry majors and 29 forensic chemistry majors took the exam during the academic year. Six of the chemistry majors ($6/11 = 55\%$) and 12 of the forensic chemistry majors ($12/29 = 41\%$) scored within one standard deviation of the mean or higher on the ACS standardized organic chemistry examination. Overall, the rate was $18/40 = 45\%$. The criterion was not met overall for these students, nor was it met for the either group. In examining the pattern of scores for the students, we note that the scores appear to be correlated to the instructor. That is, in some sections of the course the criterion is met for each group and it is met overall, yet in other sections very few students scored within one standard deviation of the mean or higher. While it might be tempting to attribute these results to differential teaching, the students are not randomized in the course sections. The sections that fill up the fastest during advance registration are the sections that have the lowest performance on this exam. Those students who did not meet the criterion will repeat CHEM 2325 (organic chemistry II) since this area was identified as needing improvement.

Action **Organic Chemistry** 

Compared to last year, some aspects have improved, but others are less

promising. However, the data is limited. This academic year there were five sections of CHEM 2325 (organic chemistry II) offered in the fall and spring semesters, and we have data for all of the sections, accomplishing last year's action in this area. As noted in the finding, those sections with the poorest performance were the sections that filled up the most quickly during advance registration. We will assess the students' performance on an ongoing basis and will pay particular attention to instructor correlations.

Goal**Deliver A Curriculum Appropriate For Understanding Instrumental Analytical Methods In Chemistry**

The curriculum will provide students with opportunities to develop the skills typically required of professionals in the area of instrumental analytical methods in chemistry.

Objective (L)**Demonstrate Understanding Of Instrumental Analytical Methods In Chemistry**

The modern analytical laboratory makes extensive use of electronic instrumentation for the analysis of chemical samples. Our Instrumental Analytical Chemistry course (CHM 4440) is designed to introduce students to and have them learn the importance and use of spectrophotometric, chromatographic, and mass spectrometric analytical instrumental methods and computers in analytical laboratories. The course's laboratory component includes a focus on complex technical writing and use of the scientific literature. Students must master this material to meet the objective. Dr. Thomas Chasteen has been the instructor for all sections of CHM 4440 for more than a decade. (Note--the course number has changed from 440 to 4440)

Indicator**Examinations In Instrumental Analytical Chemistry**

All students in Instrumental Analytical Chemistry (CHEM 4440) are required to master the electronic, sampling, schematic, and computational fundamentals of modern analytical instrumentation as evaluated by 80-minute written tests requiring essays, laboratory data evaluation, and calculator-based computation. There are three tests and a final examination in this course. The testing of this knowledge and its application is standardized within the department across all sections.

Criterion**80% Of Chemistry Majors Meeting Expectations**

Eighty percent of chemistry majors are expected to score within one standard deviation of the mean or higher than one standard deviation above the mean on the four examinations in this class. In 2010-2011, students tended to do slightly worse on the third exam which addressed complex reagent mixtures, HPLS schematics and nondispersive versus dispersive IR spectrometers. We are eager to determine whether the performance on the third exam requires intervention or is just statistical variability.

Finding**Performance On CHEM 4440 Exams**

On the first and final exam, 29 of the 34 students (85%) scored within one standard deviation of the mean or higher. On the second exam, 28 of the 34 students (82%) scored within one standard deviation of the mean or higher. On the third exam, 27 of the 34 students (79%) scored within one standard deviation of the mean or higher. Overall the criterion was met. The exam with the highest test average was again the third exam--clearly intervention is not needed.

Action**Monitor Instrumental Analysis Performance**

We will assess student performance in CHEM 4440 on an ongoing basis. Clearly we are seeing year to year variations in student performance, and this

is to be expected. We raised the criterion from 75% to 80% this year, and since our students met the criterion on all but one exam (and the exam where 79% scored within one standard deviation of the average or higher was the test with the highest average score), we will check the appropriateness of the criterion next year and perhaps raise it for the 2014-2015 academic year.

Goal **Deliver A Curriculum Appropriate For Mastery Of Advanced Chemistry Topics** 🔑

The curriculum will provide students with opportunities to develop the skills typically required of professionals in the area of advanced chemistry topics.

Objective (L) **Demonstrate Mastery Of Advanced Topics In Chemistry** 🔑

The material learned by the third year in the chemistry curriculum is refined and supported theoretically in Physical Chemistry I (CHEM 4448). The successful student will demonstrate a mastery of the advanced topics presented in this course. These topics include quantum theory, wave functions, the dipole approximation, electronic configuration, molecular structure, molecular orbital diagrams, symmetry, group theory, and the application of these topics to X-ray, ultraviolet, visible, infrared, Raman, and magnetic resonance spectroscopy. All sections of CHEM 4448 have been taught by Dr. Darren Williams since his arrival at SHSU in 2004. (Note--the course number has changed from 448 to 4448)

Indicator **CHM 4448 Final Examination** 🔑 🔑

CHEM 4448 is required of all chemistry majors. The final examination in Physical Chemistry I (CHEM 4448), written by Dr. Darren Williams, is recognized by the faculty of the Department of Chemistry as being comprehensive and covers all of the advanced topics listed in the objective statement. Dr. Williams is the sole instructor of CHEM 4448 at SHSU having taught all sections of CHEM 4448 since his arrival on campus in 2004. All students are required to complete the final examination. Examples of final exams are on file and secured within the Department of Chemistry and may be viewed by contacting Dr. Williams directly at williams@shsu.edu.

Criterion **75% Of Chemistry Majors Scoring At Least 60%** 🔑

Seventy-five percent of chemistry majors are expected to demonstrate a mastery of at least sixty percent of the material (score 60%) on the comprehensive final examination.

Finding **Physical Chemistry Final Exam Results** 🔑 🔑

Once again, more material was covered in CHEM 4448 than in previous years, and thus, there was more on the final exam. Of the 30 students who took the final, 93% of them made at least 60% on the final exam. The criterion was met.

Action **Physical Chemistry Action** 🔑

Since the data show, for example, on the molecular orbital theory examination that there is a wide variation in student performance from year to year (since 2007), yet the instructor's presentation and coverage of the material has changed to a lesser degree, it does not appear to be fruitful to focus on individual year variation in these numbers. This is true for other aspects of the course as well--that there is wider variation in student performance from year to year than instructor variation. We will assess student performance in this area on an ongoing basis.

Goal**Deliver A Curriculum With Appropriate Written And Oral Communication Skills Developed**

The curriculum will provide opportunities for mastery of written and oral skills..

Objective (L)**Demonstrate Adequate Written And Oral Communication**

Students will demonstrate the ability to present to an audience of their peers a talk (seminar) based on their own research or research that has been reported in the scientific literature.

Indicator**Chemistry Seminar Presentation**

All chemistry majors are required to take CHEM 4100 "Chemical Literature Seminar". Students typically do so in their senior year. One of the requirements of this course is giving an oral PowerPoint presentation over either their own research or research from the published chemical literature, to the other students in the class.

Criterion**Acceptable Peer-Review Rating**

All chemistry majors are required to receive an acceptable peer-rating on a required research presentation. Within the course, each student evaluates all other student presentations. The rubric is the last page of the syllabus. In 2010-2011 we found that peers tended to rate presenters rather highly. We hope to see more helpful feedback after providing additional instruction in constructive feedback.

Finding**Seminar Presentation**

CHEM 4100 used anonymous student evaluation forms for the first time in the fall of 2012 (19 students) and again in the spring of 2013 (12 students) in an effort to substantially improve the depth and quality of student comments. The instructor's form evaluating the student is signed. Attendance was taken on a separate, passed-around sheet.

All of the students received an acceptable peer-rating on their presentation.

The working hypothesis was that the process of providing written student comments required for each student's talk might be hindered by the fact that the comment authors were, heretofore, required to sign their comment forms. Expected improvements might be written comments that are more in-depth, thorough, or comprehensive with concrete suggestions of how the talk could be improved. These types of comments have appeared sporadically in the past and this effort was aimed at making the comment sheets more useful to the student speakers at semester's end when they picked up their packed of comments along with the course grade.

The results from fall 2012 and spring 2013 were unchanged from before. The hypothesis proved incorrect. Anonymity is not a major limitation of student commenting in CHEM 4100 seminar.

Action**Seminar Actions**

Changes proposed for the next academic year will be more time added at the course onset discussing the comment critiquing process. More specifically, an example student comment sheet with example comments/critiques will be distributed to the students and discussed. The expected improvements from an increased focus on the critiquing process might be written student comments that are more in-depth, thorough, or comprehensive with concrete suggestions of how the talk could be improved.

Previous Cycle's "Plan for Continuous Improvement"

This year presented a new challenge, and as the year comes to an end, another challenge has presented itself.

The challenge that came crashing in last summer and permeated the year was the move to BANNER and Degree Works (for advising). A very practical issue with the conversion to Banner is our ability to count and track majors. In the old Legacy system, it was easy to do a report of both official majors and unofficial majors (and minors too) on the 12th class day. Official majors were those that had signed a declaration of major form and unofficial majors were those that had not. The 12th class day is the official "census" day for the semester. In the Legacy system, a student could change their unofficial major online at any time.

With BANNER, students can indicate a possible major when they first apply to the University, but after that they cannot change it online. They must fill out a paper form. This particularly impacts forensic chemistry majors. As incoming freshmen, many of the students think that all forensic topics must reside in the College of Criminal Justice, so they indicate that they are CRIJ majors. This leads to a decrease in the apparent number of forensic chemistry majors especially at the freshman level.

In the fall semester of 2011, the reporting aspect of BANNER (COGNOS) wasn't in place by the 12th class day. In fact, it wasn't really in place at the end of the fall semester. This means that we do not have 12th class day figures for majors. When the report is run after the 12th class day, the current (at whatever point the report is run) data are used, so if a student changes their major from some type of chemistry major to something else, they would not be counted. Of course, if they change to a chemistry major, they would be counted. Typically, however, we have considerably more students changing from chemistry to something else.

For the past five fall semesters, number of majors in chemistry and forensic chemistry were: 2007, 80 chemists, 159 forensic chemists (239 total); 2008, 88 chemists, 169 forensic chemists (257 total); 2009, 102 chemists, 177 forensic chemists (279 total); 2010, 108 chemists, 214 forensic chemists (322 total); and 2011, 110 chemists, 154 forensic chemists (264 total). Is the drop from 2010 to 2011 real? The spring data helps (for the past 5 years as well): 2008, 79 chemists, 136 forensic chemists (215 total); 2009, 79 chemists, 141 forensic chemists (220 total); 2010, 95 chemists, 163 forensic chemists (258 total); 2011, 95 chemists, 188 forensic chemists (283 total); and 2012, 105 chemists, 201 forensic chemists (306 total). Thus we can tell that the apparent fall 2011 drop in majors is most likely a problem with when the data is collected--end of term versus 12th class day, and that, in general, our enrollments are still growing.

Not only is this difficulty related to the number of majors, it also relates to the identification of chemistry and forensic chemistry majors in our courses. This is an issue particularly for general chemistry and organic chemistry where our assessments target these majors.

Hopefully the COGNOS reporting for majors will no longer be a problem, and the fall 2011 major numbers are an aberration.

The conversion to BANNER also caused issues with course prerequisites and the enforcement of those prerequisites. The legacy system rosters would flag students who did not meet the prerequisites. The BANNER system does not, which makes it harder to check to make sure that students who do not meet the prerequisites are removed from the course.

The change that is looming large in the summer of 2012 is the revision of the core curriculum.

With the changes in databases in the past year, and the absence of data for some of the organic results, definite conclusions for the past year's data are hard to reach. The best thing for us to do is to assess the situation on an ongoing basis, and try to increase participation in the general chemistry ACS exam.

Please detail the elements of your previous "Plan for Continuous Improvement" that were implemented. If elements were not implemented please explain why, along with any contextual challenges you may have faced that prevented their implementation.

In regard to the general chemistry test, we contacted students multiple times about the exam which resulted in the lowest turnout yet (no one took the test in the fall). We followed up by asking students why and got an anecdotal response that more opportunities to take the exam would help.

We collected more complete data for the organic chemistry classes.

We raised the criterion from 75% to 80% for instrumental analysis.

We continue to assess the situation in physical chemistry.

We modified the student evaluation forms for seminar, making it possible for students to preserve their anonymity in making comments about others.

Plan for Continuous Improvement - Please detail your plan for improvement that you have developed based on what you learned from your 2012 - 2013 Cycle Findings.

In order to gather more data we will offer the ACS exam over general chemistry at two different times in the fall semester. Depending upon these results, we may do the same in the spring semester.

In the area of organic chemistry, we will monitor student performance on the standardized final and check instructor correlations. It may be appropriate to shift instructors.

In the area of instrumental analysis, we will monitor student performance through another cycle and see if raising the criterion is appropriate.

We will continue to monitor student progress in physical chemistry.

For the seminar, sample critiques and comments will be presented to students in hopes that more informative comments can be elicited.

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Online Assessment Tracking Database

Sam Houston State University (SHSU)
2012 - 2013

Chemistry MS

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Goal	Develop Presentation Skills 🔑
	The ability to communicate research and knowledge are fundamental presentation skills in chemistry.

Objective (L)	Demonstrate Presentation Skills 🔑
	Students completing CHM 5100 will, at least once during their tenure as graduate students, demonstrate the ability to make a research presentation.

Indicator	Acceptable Student Seminar Peer-Reviewed Presentation 🔑
	During their tenure as graduate students, all students will present at least one departmental seminar. The faculty, through the peer-review evaluation rubric, will determine the presentation's acceptability.

Criterion	At Least One Seminar Presentation 🔑 🔑
	All graduate students in chemistry are required to take CHM 5100 at least once during their tenure as graduate students. To pass CHM 5100, students are required to receive an acceptable peer-rating on a required research presentation. Within the course, each student evaluates all other student presentations. The rubric is the last page of the syllabus.

Finding	Seminar Credit 🔑 🔑
	CHEM 5100 used anonymous student evaluation forms for the first time in the fall of 2012 (11 students) and again in the spring of 2013 (9 students) in an effort to make the students' peer comments more meaningful (the instructor's form is signed). Poor student comments have not been as much of a problem in this graduate seminar as the undergraduate seminar (CHEM 4100).

Student comments improved somewhat in this evaluation period, but it's difficult to clearly attribute the differences to the use of the anonymous comment sheet. A number of experienced teaching assistants were in the seminar in this cycle and that might be more influential.

The 11 students enrolled in the fall of 2012 included all of our graduate students. The 9 students enrolled in the spring of 2013 did not include all of our graduate students. The total number of chemistry graduate students in the spring was 14. The 9 students enrolled in the spring included our 4 new graduate students. The 5 students who did enroll in the spring had already taken the seminar 3 times.

Action	Seminar Actions 🔑
	Changes proposed for the next academic year will be more time added at the course onset discussing the comment critiquing process. More specifically, an example, student comment sheet with example comments/critiques will be distributed to the students and discussed. The expected improvements from an increased focus on the critiquing process might be written student comments that are more in-depth, thorough, or comprehensive with concrete suggestions of how the talk could be improved.

Goal	Deliver A Curriculum With Appropriate Discipline Specific Knowledge 🔑
	The program will address the discipline specific knowledge dictated by professional

societies and/or professionals in the workforce.

Objective (L)

To Demonstrate Competence In Organometallic Chemistry And Self-confidence In The Understanding Of Technical Material

Modern organometallic chemistry is a subfield of inorganic chemistry that engages chemical principles and concepts of bonding, structure, and reactivity mastered throughout undergraduate and graduate curricula. The graduate-level Organometallic Chemistry course (CHEM 5385) is designed to review many of these principles and concepts in the first half of the semester in a classical lecture format. In the second half of the semester each graduate student is given a subject area covered in a text chapter. The student is tasked with preparing two or three lecture-discussion presentations that include use of PowerPoint, supported review of the chapter material, and white-board interactive discussion of one or more example problem exercises, as well as extemporaneous responses to class questions.

Indicator

Presentation Of Selected Topics In Organometallic Chemistry

All students in Organometallic Chemistry (CHEM 5385) are required to demonstrate their ability to be professionally conversant within the assigned topic, capable of preparing a professional presentation, and expected to maintain professional bearing while serving as discussion leader. Graduate student presentations are evaluated through peer-evaluation and professor evaluation using a summary, five-point Likert rating scale.

Criterion

68.2% Of Chemistry Graduate Students Will Meet Or Exceed Expectations

A super-majority of chemistry students (68.2%) are expected to have an average evaluation within one standard deviation of the mean or higher than one standard deviation above the mean on their presentation-discussion assignment.

Finding

Organometallic Chemistry Results

In the fall semester of 2013, the mean Likert evaluation score was 3.38 with a standard deviation of 0.48. Student performance for the fall of 2013 (77.8%) exceeded the evaluation criterion. Of the graduate students in Organometallic Chemistry (CHEM 5385), all but two individuals met or exceeded expectations. One of these individuals was very close to the minimum cut-off score (2.91) with a summary evaluation score of 2.89.

Action

Recommendations For The Next Offering Of Organometallic Chemistry

To improve on student performance, refined guidelines for the PowerPoint materials concerning relative numbers of slides and appropriate preparation of figures or tables should be provided.

Objective (L)

Demonstrate Understanding Of The Peer Review Process In Scientific Publications

The process of peer-review of manuscripts for the scientific literature is a fundamental part of science. Students in Analytical Spectroscopy (CHEM 5368, taught every 2 to 2.5 years) read and discuss published peer-reviewed literature articles throughout this course (there is no assigned textbook). One of the objectives of this course is for students to learn the nuts and bolts of the systematic process of scientific peer-review. Mastery of the requirements for modern high quality technical scientific publication is required to meet one of the primary objectives of this graduate course in chemistry.

Indicator Examination Of Student Understanding Of Scientific Peer Review

All students in the class are required to understand and correctly order the sequence of events, identify the players in the process (authors, editors, and reviewers), detail the feedback nature of the review process, and be able to critique both technical writing, figures, schematics, or imagery required in chemical publications.

Criterion 80% Of Graduate Students Meet Expectations

Eighty percent of graduate students taking the final exam in the class will score within one standard deviation of the mean or higher on a written question on the final designed to evaluate their mastery of the Indicator.

Finding Performance On CHEM 5368 Exam Question

In spring 2013, students scored substantially higher than the Criterion (85% scored within 1 standard deviation of mean or higher on the spring 2013's peer-review process question); however, there were common mistakes in understanding about the review feedback process.

Action Monitor Progress

Subsequent CHEM 5368 classes will be assessed on an ongoing basis for this Indicator. Examples of reviewer feedback from the instructor's own manuscript's anonymous peer reviews will be introduced to the class to provide examples of reviewer feedback to help students in mastering the reviewer feedback step of scientific peer-review. The criterion can be increased in subsequent years after more course-to-course variability has been measured.

Objective (L) Demonstrate Advanced Organic Chemistry Knowledge And Skills

Organic reaction mechanisms is a broad area of organic chemistry that requires an understanding of the basic structural-electronic properties of organic molecules. The graduate course CHEM 5362 is focused on the examination of alkylation, oxidation, reduction, substitution, elimination, rearrangement, and electrocyclic processes. As each topic is covered, in-class and out-of-class problems are assigned to give each graduate student ample practice and experience at applying the material. Since application is the central focus, all work involves open access to course materials.

Indicator Mastery Of Advanced Organic Chemistry Knowledge

All graduate students in this course will demonstrate their mastery of organic reaction mechanisms and their application to specific reactions through multiple applied problem sets and periodic examinations. Evaluation of the student's work is based on the appropriateness and acceptability of their answers based on current literature.

Criterion Final Exam Performance In CHEM 5362

All (100%) of the students will score within one standard deviation of the mean or higher and within two standard deviations of the high score on the final examination.

Finding CHEM 5362 Results

During the spring 2013 semester, 78% of the students scored one standard deviation of the mean or higher and 67% were within two standard deviations of the high for the class.

Action More Elaborate Description

The next time the course is offered, at the beginning of the semester the instructor will outline the requirements for the final examination. A topic-by-topic outline of what is expected from the student by the time the class reaches the final will be presented to the class. The instructor will emphasize the importance of fulfilling the mastery of the outline material from the beginning of the course.

Objective (L)**Demonstrate Advanced Symmetry And Spectroscopy Knowledge And Skills**

The field of spectroscopy extends into many industrial sectors such as optical communications, chemical analysis, and forensic science. There are too many individual spectroscopic techniques to cover in a single semester, but a focus on quantum mechanics and molecular symmetry unites them all. The graduate course CHEM 5385 – Symmetry and Spectroscopy – covers the quantum roots of spectroscopy, the power of symmetry to elucidate the interpretation of spectroscopic data, and the advanced topic of spectroscopic modeling. Handwritten assignments, short discussion topics, and extensive mathematical assignments in Excel are used to give each graduate student the experience of analyzing real problems in spectroscopy. These assignments push the student beyond a simple knowledge of the topic toward the higher-level skills of synthesis and evaluation as they compare their model results to experimental data.

Indicator**Mastery Of Advanced Symmetry And Spectroscopy Skills**

All graduate students in this course will demonstrate their mastery of symmetry-based spectroscopic modeling through multiple applied problem sets and periodic examinations. Evaluation of the student's work is based on the appropriateness and acceptability of their answers based on current literature and experimental data. A final summative modeling assignment will be used to indicate a student's ability to analyze, synthesize, and evaluate the ability of a spectroscopic model to fit experimental data.

Criterion**Advanced Modeling Assignment In CHEM 5385**

All (100%) of the students will score within one standard deviation of the mean or higher and within two standard deviations of the high score on the final modeling assignment.

Finding**CHEM 5385 Results**

This course was taught in the Fall 2012, and a 2-hour final exam was used to track student success toward the objective. The students satisfied the criterion, but the final exam was less comprehensive than it could have been due to the fact that it had to be completed in two hours.

Action**Prepare The Final Modeling Assignment**

The final modeling assignment and grading rubric will be prepared from the assignments delivered in previous semesters of this course. This final assignment will allow the student more time to synthesize their model, apply it to the data, and evaluate the strengths and weaknesses of the model using the skills gained in the course. This action will be implemented when this course is taught again in three years.

Goal**Provide Original Research Opportunities For Graduate Students**

Research is a significant part of graduate programs with mentoring and original research publication.

Objective (L)

Completion Of Master's Thesis 🔑

Each student will successfully prepare and defend a master's thesis on research performed under the direction of a chemistry faculty member.

Indicator

Thesis Defense 🔑

Students will orally present their master's thesis work to the public and will defend their work through questions from the public and additional questions about the research project from their thesis committee.

Criterion

Successful Thesis Defense 🔑

Each student is expected to pass the thesis defense as determined by a consensus of the student's thesis committee.

Finding

Successful Thesis Defense 🔑

Five graduate students successfully defended their master's theses, as judged by their respective thesis committees, one in the fall semester of 2012 and four during the summer semester of 2013.

Indicator

Thesis References/Bibliography 🔑

Each student is expected to complete a thesis describing the basis for the research, the experiments and results of those experiments, and a discussion of those results. The basis for the research and the discussion of the results must be supported by appropriate reference to the scientific literature. As part of the defense of the thesis, the thesis committee will evaluate the quality of scientific referencing in the manuscript.

Criterion

Thesis References/Bibliography Meets Expectations 🔑

At least 85% of theses presented to thesis committees will have the quality of scientific referencing evaluated as meeting expectations.

Finding

Evaluation Of Thesis References/Bibliography 🔑

Five students completed their master's thesis in the past calendar year (one in the fall 2012 term and four in the summer 2013 term). All five of the committees found that the scientific references in the final version of the theses were of acceptable quality.

Action

Discontinue "Completion Of Master's Thesis" As A Learning Objective 🔑

Of the five students that finished their M.S. degrees this past year, they came from 4 different research groups. The diversity of our program, in terms of areas of research in chemistry, makes it difficult to generalize. The completion of research, followed by the writing and defense of the thesis, is our program's ultimate achievement for our students. As such, we are loath to give up an Objective of Completion of the M.S. Thesis. However, as a learning objective that we must find fault with to indicate improvement of our program, it leaves something to be desired.

We will not use "Completion of Master's Thesis" as a learning objective next year.

Previous Cycle's "Plan for Continuous Improvement"

We have been rebuilding the number of graduate students in our program. In chemistry, virtually all of our graduate students are supported by graduate assistantships (and this is generally true all around the U.S.). Consequently, in order to "grow" our program, we need to have increasing numbers of assistantships. We were fortunate to have more assistantships this year, and we had 11 teaching assistantships in the fall and spring semesters. Of course, graduate school is a temporary place for students, and two of these students graduated at

the end of the spring term. Three more are expected to graduate at the end of this summer. One student had personal issues and left the program. Consequently, more than half of the 11 will not be with us in the coming fall semester--but new students are expected to replace them.

The two students that completed their degrees at the end of this spring semester are moving on to Ph.D. programs (at Rutgers and Auburn).

We expect our program to continue to be successful. We produce students who, for the most part, move on to Ph.D. programs and are successful there.

Please detail the elements of your previous "Plan for Continuous Improvement" that were implemented. If elements were not implemented please explain why, along with any contextual challenges you may have faced that prevented their implementation.

The student evaluation form for seminars was modified to make the comments anonymous.

We continue to carefully monitor and evaluate our students' progress as they complete their theses and defend them. We consider the quality of the defense, their ability to answer questions on wide ranging topics in chemistry and their ability to appropriately reference the scientific literature.

We were able to not only replace the students that finish, but we actually grew the number of students in the program. In the 2011-2012 year we had 11 active students (the 12th was on leave) in the program in the fall semester and 12 in the spring semester. Five of those graduated and one left the program. In the past year we had 11 students in the fall semester (with one graduating) and in the spring semester we had 14 students. During this past summer 4 students graduated and one left the program.

Plan for Continuous Improvement - Please detail your plan for improvement that you have developed based on what you learned from your 2012 - 2013 Cycle Findings.

For the seminar, sample critiques and comments will be provided at the beginning of the course.

The next time organometallic chemistry is offered, the instructor will provide refined guidelines for the powerpoint presentations.

The next time analytical spectroscopy is offered, examples of actual peer reviews will be provided.

The next time organic reaction methods is offered, the instructor will outline the requirements for the final examination at the beginning of the semester.

The next time advanced symmetry and spectroscopy is offered, a final modeling assignment will be created with a rubric that allows the students to evaluate the strengths and weaknesses of their model.

We will abandon "completion of master's thesis" as a learning objective next year.

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Department of Computer Science









Online Assessment Tracking Database

Sam Houston State University (SHSU)
2012 - 2013

Computing And Information Science MS

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Goal	Technical Competence  Graduates with a Master of Science in Computer Information Science will have a strong technical foundation in the computational sciences.
Objective (L)	Acquisition Of Theoretical, Technical And Project Management Skills  Students will develop and demonstrate knowledge of theoretical materials technical skills and project management relevant to computer information systems.
Indicator	Final Project Assessment  The final project in this degree program is a software engineering project that involves the students identifying a significant application development need for a selected client and the design and implementation of an appropriate software solution to that need. Each student is assigned to a member of the graduate faculty in computer science as project advisor together with two additional graduate faculty forming the student's committee. The department has established procedures for managing projects including 1. The presentation of project proposals within the first two weeks of the semester. The graduate faculty review and approve or disapprove each proposal. 2. Weekly progress meetings with the project advisor. 3. The evaluation by the complete graduate faculty of each student's progress at midterm. 4. The distribution of project activity to the remaining members of each committee. At the end of the project each student prepares and runs a formal presentation including a description of the project, detailed explanation of the solution used and a demonstration of the completed application.
Criterion	Final Project Assessment  Students graduating will have documented consensus of the graduate faculty that they meet professional standards of software engineering.
Finding	Final Project Assessment - Findings  16 computing and information science students presented their final projects in the 2012-2013 cycle, 8 in Fall and 8 in Spring. 15 of them successfully defended their projects (93.75%). For students who passed their final presentation defense, their supervisor and committee member all agreed that their project documentation have met professional standard in project design, documentation, implementation, and presentation. One of the 16 student was not able to clearly answer some of the questions raised by committee members, and was given a second chance to complete project and redo final presentation in Fall 2013.
Indicator	Written Comprehensive Examination  Each student is required to take and pass the written comprehensive examination (WCE) in the graduating semester. Passing grade is defined as

scoring 70 or above out of 100, and high pass grade is defined as scoring 85 or above out of 100. Graduate faculty who teach the current 5 core courses of computing and information science are responsible to design exam questions. Each student is given one hour on each of the 5 subjects:

1. Database Systems
2. Programming Languages
3. Data Structures
4. Operating Systems
5. Software Engineering

Faculty who gave the exam questions are responsible to grade and report grades of these exams.

Criterion

Written Comprehensive Exams - Criterion

Graduate faculty who gave the exam questions are responsible for grading and reporting the grades to graduate advisor. Each exam score should be numeric number between 0 and 100, so that a fail (69 or below), pass (70-84), or high pass (85-100) can be determined.

Finding

Written Comprehensive Exams - Findings

In Fall 2012, 11 students took WCE. All other students passed all subjects, except one student failed three subjects (also see report section for Spring 2013)), one failed three subjects and passed them all in retakes, and one failed in a single subject and passed in retake. In Spring 2013, 7 students took WCE. One of the seven was retaking exams and failed again in 3 areas and was terminated. Four students failed on a single subject and all passed in retakes. Another one student failed in two subjects and failed one again in retake. The GCC decided to give this student another chance in Fall 2013 by taking a special topic course on the failed subject and pass the exam in Fall 2013.

Action

Acquisition Of Theoretical, Technical And Project Management Skills - Actions

In general the Graduate Curriculum committee was satisfied with the results of the evaluation of students acquisition of theoretical computational and technical skills through the capstone assessment system in place. The graduate faculty has agreed that the last oral exams were given in Fall 2012 and starting Spring 2013 Written Comprehensive Exams are given. In general the Graduate Curriculum committee (GCC) was satisfied with the results of the evaluation of students acquisition of theoretical computational and technical skills through the capstone assessment system in place. The GCC consider that it is vitally important to emphasize the necessity and importance of WCE as they not only strengthen the technical background of the students, but also are very helpful in preparing students for job interviews and future career.

Previous Cycle's "Plan for Continuous Improvement"

The findings appear to indicate that the graduate program in Computing and Information Science is effectively transmitting the theoretical, technical, ethical and managerial skills to students as evidenced by the students' performance in the oral examinations and in their defense of their capstone projects. The GCC will review the potential for written comprehensive examinations to replace oral examinations.

Please detail the elements of your previous "Plan for Continuous Improvement" that were implemented. If elements were not implemented please explain why, along with any contextual challenges you may have faced that prevented their implementation.

The graduate faculty decided to start written comprehensive exams (WCE) in Fall 2012, replacing the oral exams

in previous semesters. This applies to all computing and information science students. Based on student feedbacks mainly in forms of conversations with professor regarding their experience in job hunting and at work, the WCE does help strengthen students' technical background and prepare them for interviewing and future career.

Plan for Continuous Improvement - Please detail your plan for improvement that you have developed based on what you learned from your 2012 - 2013 Cycle Findings.

Graduate Curriculum Committee has considered to emphasize the following in 2013-2014: master project proposal should be conducted with higher quality; for this reason, each student should develop full proposal and give full presentation (e.g. 30-60 minutes) in front of supervisor, committee members (open to all other faculty and students). Supervisor and committee should pass the proposal only when it is clear that the topic is well chosen, problem statement is well defined, project plan is reasonable, project is workable, and presentation is clear and logical.

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Online Assessment Tracking Database

Sam Houston State University (SHSU)
2012 - 2013

Computing Science BS

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Goal	Specialized Competencies  To develop students' skills and knowledge in their concentration areas. The department offers three concentration areas: Computer Science, Information Systems, and Information Assurance.
Objective (L)	Specialized Skills  Students will develop and demonstrate skills and knowledge in their concentration areas. The department offers three concentration areas: Computer Science, Information Systems, and Information Assurance.
Indicator	Faculty Review   During department meetings faculty with expertise in the three concentration areas will discuss students' performances in their concentration areas. We expect that faculty in each concentration area will evaluate student performance across the 18 hours course sequence for each concentration.
Criterion	Specialized Skills Faculty Review Criterion  In last year's review the faculty assessed more than 70% of the students were performing at or above expected levels. As a result the faculty set a higher expectation . We expect that the faculty will deem at least 72% or more of students' performances as acceptable.
Finding	Faculty Review  <p>For the formal assessment and evaluation of the performance of CS students, CS faculty developed tools and rubrics that can address the new ABET-CAC (Computing Accreditation Commission) criteria during the last academic year (2011-2012). Four Program Education Objectives (PEOs)(E01-E04) and eleven Student Outcomes (SOs) ((a)-(k)) were established and then the first self-study was conducted with the two capstone courses, COSC4319 (Software Engineering) and COSC4349 (Professionalism and Ethics) during the Spring 2012 semester.</p> <p>After checking the first assessment on PEOs and SOs, the CS Undergraduate Curriculum Committee (UCC) suggested to obtain more data before drawing conclusions on the first result and/or any changes to the assessment instruments. Accordingly, the adopted assessment instruments have been applied for both the Fall 2012 and the Spring 2013; the assessment results have been discussed; and a number of suggestions/revisions have been made for continuous improvement of the program.</p> <p>The UCC found that the primary assessment rubric for some SOs (except (e), (g), and (h)) was indirect and qualitative, while that for the remaining SOs (i.e., (e), (g) and (h)) was direct and quantitative. To address this, the UCC adopted an additional instrument, TASO (Test for Assessing Student Outcomes), for quantitative measurement of all the eleven SOs.</p> <p>The UCC discussed that PEOs were assessed with the mapping table from SOs to PEOs and thus the performance of PEOs was directly measured in terms of students' response to SOs. PEOs should be periodically reviewed and revised by the program's all constituencies to be consistent with their needs, not only with one component; thus the UCC planned to include reviews of both students and Industry Advisory Board.</p> <p>The ABET assessment team, which visited to the CS department in</p>

October 2012 for 2012-2013 Accreditation Cycle, pinpointed that Information System concentration received the minimal coverage of Computer Organization and Architecture, and might not receive adequate exposure to a variety of systems through required courses in the degree.

Action

Faculty Review

In order to provide accurate assessment and evaluation for students' performance, two more assessment results (under the instrument adopted Spring 2012) were collected and compared during the Fall 2012 and the Spring 2013. All the faculty members collaborated to perform the assessment, discussed the collected assessment results, and involved in improving the CS curriculum/program accordingly.

In particular, an additional instrument, TASO (Test for Assessing Student Outcomes), was implemented in Spring 2013 and the assessment result will be utilized for the program improvement in the next academic year (i.e., 2013-2014).

To address the finding by the ABET assessment team, COSC2329 was modified to include additional architecture and digital logic modules as a temporary solution; thus, the UCC will keep working on developing appropriate solution(s) on this issue, possibly rearranging course contents or/and revising curriculum.

The process of periodic review and revision of PEOs and SOs has been initiated with the rubrics and instruments through students' presentation (at COSC4319), students' response (at COSC4349), and TASO.

Goal

Ethical Principles, Technical Skills, And Management Skills (core)

To develop students' knowledge of ethical principles, technical skills, and management skills relevant to the field of computer science.

Objective (L)

Acquisition Of Technical Skill, Management And Ethical Principles

Students will develop and demonstrate knowledge of ethical principles, technical skills, and management skills relevant to the field of computer science.

Indicator

Capstone Project, Ethics Question, And TASO

All undergraduate CS students must complete COSC 4319 (Software Engineering) and COSC4349 (Professionalism and Ethics) prior to graduation. In addition, COSC4319, as a capstone course, covers the eight Student Outcomes (except the three outcomes (e), (g) and (h)) out of the eleven Student Outcomes and COSC4349 addresses the remaining three outcomes. Therefore, both the courses are selected for assessment. Additionally, TASO (Test for Assessing Student Outcomes) is implemented to quantitatively measure the eleven SOs. It is required for senior students to take it in senior-level Software Engineering course, prior to graduation regardless of their program concentration.

Criterion

Students' Performance On Capston Project, Ethics Question, And TASO

To perform a quantitative assessment, the following rubrics for the two courses are developed: (1) rubric for Project, (2) rubric for presentation evaluation, (3) rubric for group member evaluation, and (4) rubric for ethics topics. For COSC4319, faculty members observe students' project presentation and directly evaluated students' performance based upon the rubrics (1)-(3). On the other hand, for COSC4349, students'

performance is indirectly evaluated through the exam questions that address rubric (4). Each category is rated with the following scale values: (1) 1.0 (below expectations or unacceptable), (2) 2.0 (evolving or developing), (3) proficient (or competent), and (4) outstanding (or exemplary). Student's performance on Student Outcomes is directly evaluated with each specific rubric, while the performance on objectives is indirectly measured by mapping between Student Outcomes and Program Objectives.

Questions on TASO are based on topics from a number of required core courses (including COSC 1436, 1437, 2329, 3318, 3319, 4318, 4319, and 4349). Currently, it contains 26 multiple choice questions and 1 short answer question. Each multiple choice question has five choices, including the last choice of "I don't know". The percentage of students who select the correct answer to each given question will be computed and evaluated.

Finding

Capstone Project, Ethics Questions, And TASO

The assessment result of Student Outcomes (SOs) ranged (out of the maximum score of 4) as follows: 2.29 (std of 1.11) to 3.15 (std of 0.82), 2.38 (std of 0.9351) to 3.18 (std of 0.85), and 2.18 (std of 1.08) to 3.19 (std of 0.57) for Spring 2012, Fall 2012, and Spring 2013, respectively. To be more specific, the overall performance for Fall 2012 was consistent with that for Spring 2013; however three SOs ((a)-(c)) were relatively lower than the other SOs, which means the students for Spring 2012 and Fall 2012 did not aware well of design and analysis issues. The overall performance for Spring 2013 improved, however the two SOs ((e) and (g)) dropped from the previous two assessment periods.

The Program Education Objectives (PEOs) ranges (out of the maximum score of 4) as follows: 2.38 (std of 1.05) to 2.98 (std of 0.90), 2.50 (std of 0.93) to 2.80 (std of 0.91), and 2.82 (std of 0.81) to 3.17 (std of 0.84) for Spring 2012, Fall 2012, and Spring 2013, respectively. The overall performance on PEOs over the three assessment periods is consistent. In particular, students for Spring 2013 performed best with average score > 3 (out of 4).

The evaluation of SOs ((e), (g), and (h)) led to the observation that students almost universally resorted to utilitarianism as an ethical perspective when asked to apply a system of ethics to a given scenario. Therefore, it is more desirable to revise COSC4349 to ensure that students to apply other more effective ethical systems.

Action

Capstone Project, Ethics Question, And TASO

To improve confidence and significance of analysis results, number of students, different weights for each outcome, and other factors should be considered. For example, if a class has more than 20 (or 25) students, a random sample of 20 (or 25) students could be selected for assessment. Since COSC4319 and COSC4349 do not have the same number of students, the difference in students needs to be weighted properly. COSC4319 is assessed directly by CS faculty members during students project presentation based upon the prepared assessment rubrics, while COSC4349 is evaluated indirectly (but objectively) through test/exam questions. Therefore, to have the consistent assessment, the objective assessment with TASO was developed and was employed from Spring 2013.

Previous Cycle's "Plan for Continuous Improvement"

The first assessment scores on both Program Outcomes and Education Objectives for Spring 2012 is not enough to

draw conclusions and/or suggest specific changes to the current curriculum. Therefore, the CS department will obtain more data during Fall 2012 and Spring 2013. Then, based on the analysis result collected at least over two or three consecutive semesters, the current tools and the rubrics will be re-evaluated to customize the curriculum to improve students' performance as well as to meet the ABET-CAC criteria.

In the future, the Program Outcomes and Objectives will be collected with the all the six survey forms and the rubrics for more core CS courses, also including other course activities such as quizzes, assignments, presentations, and exams. Based on the result, the CS undergraduate curriculum committee will plan to share their findings and recommendations to the CS department. Furthermore, CS faculty will discuss those issues with the course instructor(s) for the consistent, repeatable assessment plan and the effective change of the CS curriculum accordingly.

Please detail the elements of your previous "Plan for Continuous Improvement" that were implemented. If elements were not implemented please explain why, along with any contextual challenges you may have faced that prevented their implementation.

The extended effort to formally assess students' learning performance has been performed during this academic year, through the previously adopted rubric and instrument (i.e., faculty members' evaluation on students' presentation in COSC4319, exam questions in COSC4349, and the newly established instrument, named TASO. As a result, two more assessment scores on both Program Education Objectives (PEOs) and Student Outcomes (SOs) were obtained during 2012-2013 academic year and were compared with the first one obtained Spring 2012.

Based on the assessment result of , the CS undergraduate curriculum committee (UCC) has shared their findings and recommendations to the CS department. Then, all the CS faculty members have discussed those issues with the course instructor(s) for the consistent, repeatable assessment plan, and initiated the change of the CS curriculum accordingly. For example, COSC2329 now includes additional architecture and digital logic modules and the UCC will possibly rearrange course contents or/and revise curriculum. In addition, the UCC suggested to develop explicit exam questions for COSC4319 to directly measure students' learning performance in the capston Software Engineering course, which will be applied from the next academic year.

The six survey forms were developed as initial assessment tools. After further discussion, the CS faculty determined to utilize the instruments of COSC4319 and COSC4349 as the major assessment tools. Based on the findings from the current assessment result, the survey forms will be revised accordingly and utilized from the next academic year, if needed as supplementary tools.

Following the original plan to assess PEOs and SOs with more complete set of resources, TASO was developed to cover the topics from the core courses, including COSC1436/1437/2329/3318/3319/4318/43419/4319) and the first test was performed in Spring 2013. The UCC didn't identify any action points from the result of TASO, however the result will be further analyzed and utilized from the next academic year as a process of continuous improvement.

Plan for Continuous Improvement - Please detail your plan for improvement that you have developed based on what you learned from your 2012 - 2013 Cycle Findings.

In the current (2012-2013) academic year, the department has focused on developing assessment instruments, which meet the new ABET CAC criteria, and also initiated the application of the developed instruments. However, as the ABET assessment team found, the PEOs (and/or SOs) had not been fully documented (or at least not documented) by all of the program's constituencies (i.e., the students and the Advisory Board). Therefore, students' exit survey and the Advisory Board review/survey will be documented and the results will be utilized into the continuous improvement process.

Accordingly, in the next academic year, the UCC will focus on the following items so as to demonstrate the continuous improvement effort with the periodic review and revision:

- (1) Documentation of the review and revision plan,
- (2) Documentation of full details of the TASO exam, its implementation, and its utilization as input into the continuous improvement process,
- (3) Further assessment of student outcomes and analysis of the extent to which they are attained,
- (4) Details of the utilization of the results and findings for program improvement, and
- (5) Continuing collection and analysis of the whole process and assessment of the implementation and effectiveness of the process.

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**Department of Geography
and Geology**



Online Assessment Tracking Database

Sam Houston State University (SHSU)
2012 - 2013

Geography BA

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Goal	<p>Training Geographically Informed Students 🔑</p> <p>Students completing core education in geography will be able to demonstrate foundational knowledge of geographic principles and concepts about the physical world.</p>
Objective (L)	<p>First-Year Foundational Geographical Principles And Concepts 🔑</p> <p>Students completing core curriculum education in geography will be able to demonstrate foundational knowledge of geographic concepts and principles, including critical thinking.</p>
Indicator	<p>Comprehensive Final Exam 🔑</p> <p>Common embedded questions on the comprehensive final exam will determine student knowledge regarding general geographic concepts.</p>
Criterion	<p>70% Accuracy 🔑</p> <p>The average scores will be 70% correct on the general geographic concept questions embedded in the comprehensive exam.</p>
Finding	<p>Performance On General Geographic Concept Questions 🔑</p> <p>Students enrolled in GEOG 1301 averaged 62% on a series of specific concept questions embedded in a comprehensive final exam. Students enrolled in GEOG 1321 averaged 71% on a separate, yet similar, series of concept questions. These scores were generally consistent with overall averages on the final exams as a whole, but did decline slightly from the previous year.</p>
Indicator	<p>Comprehensive Final Exam - Geographic Principles Portion 🔑</p> <p>The final faculty-developed comprehensive exam will indicate students' grasp of major geographic principles, including critical thinking.</p>
Criterion	<p>70% Principle Accuracy 🔑</p> <p>The average score will be 70% correct of the major geographic principles and critical thinking items embedded on the comprehensive exam.</p>
Finding	<p>Performance On Questions Pertaining To Major Geographic Concepts And Critical Thinking 🔑</p> <p>Students enrolled in GEOG 1301 averaged 66% on a series of questions focused on competency with major principles and critical thinking skills that were embedded in a comprehensive exam. Students enrolled in GEOG 1321 averaged 67% on similar series of questions. Students enrolled in both courses scored lower than expected on questions requiring the interpretation of graphs, but scores for GEOG 1321 represent a noticeable improvement from the previous year. Students enrolled GEOG 1301 averaged 53% on such questions, while students enrolled in GEOG 1321 averaged 62%.</p>
Action	<p>Improving Geographical Understanding Of Concepts And Principles 🔑</p> <p>Students enrolled in GEOG 1321 exhibited a satisfactory level of competency in regards to basic geographical concepts, while students enrolled in GEOG 1301 continue to exhibit a degree of competency slightly below that level. In both cases, students generally scored as high on questions pertaining to these</p>

concepts as they did on the exams as a whole. Students enrolled in those two courses scored below a satisfactory level on questions focused upon major geographical concepts and critical thinking. However, average scores for students enrolled in GEOG 1321 suggest that this year's students were more competent with these major concepts than were students from the previous academic year. Despite modest improvement, there remains a need to significantly enhance student knowledge of such concepts. This is especially true in regards to critical thinking, particularly for those students enrolled in GEOG 1301. The higher scores exhibited in this area (major geographic concepts and critical thinking) among students enrolled in GEOG 1321 probably represent the smaller class sizes associated with this particular class. The higher scores for this class probably also reflect a more focused attempt to emphasize these concept. In comparison to GEOG 1321, there are multiple sections of GEOG 1301 (Weather & Climate) enroll larger numbers of students and are offered in large lecture halls. These sections are also taught by a variety of faculty members. With this in mind, we plan to continue more strongly incorporating the demonstration of major concepts and critical thinking skills in smaller laboratory sections (GEOG 1101; Weather & Climate Lab). We will also attempt to identify methodologies found to be effective in GEOG 1321 and consider replicating them in other geography courses.

Objective (L)

Demonstrate Knowledge Of Foundational Concepts Of Physical Geography

Students completing the core education in geography will demonstrate knowledge of physical geography including the world in spatial terms, places and regions, and physical systems.

Indicator

Physical Geography Concepts

Students will correctly answer the embedded questions on exams throughout the semester that address physical geography. The areas of emphasis include the world in spatial terms, places and regions, and physical systems.

Criterion

70% Accuracy On Physical Concepts

Students will score 70% correct on those questions pertaining to each of the three areas of emphasis concerning physical geographical concepts.

Finding

Student Results Concerning Physical Geography Concepts


Students enrolled in GEOG 1321 scored an average of 72% on those questions pertaining to the world in spatial terms. Students enrolled in GEOG 1301 scored an average of 66% on questions assessing this concept. Students enrolled in GEOG 1321 scored an average of 66 % on those questions pertaining to the concepts of places and regions, while students enrolled in GEOG 1301 scored an average of 63% on questions pertaining to these two concepts. In these two areas (world in spatial terms; places and regions), students generally performed as well as they did on the overall exams as a whole. However, the scores for students in both classes declined somewhat from the previous year. Students enrolled in both courses scored an average of 63% on questions pertaining to physical systems, which is below the average scores on exams as a whole.


Action


Improving Understanding Of Physical Concepts In Geography


There remains considerable room for improvement in the delivery of basic concepts of physical geography. On a positive note, results of this assessment suggest that students completing geography courses generally possess an adequate ability to utilize maps and other graphical tools. They also slightly increased their ability to demonstrate knowledge specific to physical systems. Students performed slightly below a satisfactory level on questions focused on "places and regions." Scores from this year's assessment suggest that students performed less well in this area than was the case in previous years.


This very well could reflect the fact that such questions were posed to students enrolled in different classes with varied foci than in earlier years. Perhaps more directly, the courses that were assessed are not directly focused on that dimension of geography. We fully expect to enhance student knowledge in this area by offering a new course on Environmental Geography, a course that will be offered for the first time in Spring 2014. We also plan to expand our assessment approach to include additional courses that more directly focus on "places and regions" (GEOG 2355 and 2356).


Goal	Demonstrate Knowledge Of Cultural Concepts In Geography 
	Students completing the core courses required for a Geography degree will demonstrate knowledge of cultural geography including both human systems and the interaction between the environment and society.

Objective (L)	Demonstrate Knowledge Of Cultural Concepts In Geography 
	Students completing the core courses required for a Geography degree will demonstrate knowledge of cultural geography including both human systems and the interaction between the environment and society.

Indicator	Cultural Geography Concepts 
	Students will correctly answer the embedded questions on exams during the semester that address cultural geography. The areas of emphasis include human systems and the environment and society.

Criterion	70% Accuracy On Cultural Concepts 
	Students will score 70% correct on those questions pertaining to each of the two areas of emphasis associated with cultural geography concepts.

Finding	Student Learning Outcomes Concerning Cultural Concepts 
	Students enrolled in GEOG 3350 and GEOG 1321 scored an average of 73% on a set of questions focused upon human systems. Those same students scored an average of 62% on questions concerning the interaction of the environment and society.

Action	Improving Knowledge Of Cultural Aspects Of Geography 
	Results of this assessment suggest that geography students continue to possess adequate knowledge of various aspects of cultural geography, including the knowledge of characteristics, distributions, organizations and movement of human, economic and cultural related phenomena. Student scores on relevant questions assessing these concepts were slightly lower than was the case in the previous academic year, but continue to suggest that the delivery of cultural geography remains a strength of our program. However, students do continue to exhibit less than satisfactory knowledge of interactions between the environment and society. Student learning in this area of cultural geography will be significantly enhanced once the new Environmental Geography is offered. The future addition of other courses that focus on physical and environmental geography should also enhance the delivery of this subject matter.

Previous Cycle's "Plan for Continuous Improvement"

Some of the program weaknesses identified by this assessment will be mitigated by the offering of a new course; Environmental Geography. This new course will directly focus upon material pertaining to the awareness of physical systems and the relationships between the environment and human society. Certain other learning gaps

identified by the assessment may simply reflect weaknesses with the assessment itself. For example, we offer a few courses that focus on regional geography (World Regional Geography, Regional Geography of U.S. and Canada), that would naturally focus more directly on "places and regions" than would the courses incorporated in this assessment. In the future we will embed assessment questions within the comprehensive finals associated with these regional courses. The most critical weaknesses identified from this assessment remain in the areas of learning major geographic principles and critical thinking, although student performance in these areas improved considerably from the previous year. We plan to continue to experiment with ways to enhance critical thinking in both lab and lecture formats, and will make concerted efforts to incorporate assignments and methods found to be successful in GEOG 1321 at generating positive learning outcomes.

Please detail the elements of your previous "Plan for Continuous Improvement" that were implemented. If elements were not implemented please explain why, along with any contextual challenges you may have faced that prevented their implementation.

As we endeavored to address the weaknesses identified by the previous year's assessment we implemented the following changes. First, GEOG 1321 was redeveloped as part of the effort to propose the course for inclusion into the new Core Curriculum scheduled for implementation in 2014. Considerable effort was made to ensure that the course addresses critical thinking and that it focuses on basic geographic principles. At the same, assignments and methods found to be successful at generating positive learning outcomes in the past were given even more attention. Second, a new faculty member was hired whose responsibilities will include offering new courses that will directly strengthen the Environmental Geography concentration. These new courses will offer considerable potential to increase student knowledge of physical geography and other concepts related to physical systems. Finally, both World Regional Geography courses (GEOG 2355 and 2356) were also redeveloped for inclusion into the new Core Curriculum. The redevelopment of these courses made it difficult to generate consistent assessment measures during the course of the academic year. Now that the courses are fully developed, both of them will be incorporated in future assessments.

Plan for Continuous Improvement - Please detail your plan for improvement that you have developed based on what you learned from your 2012 - 2013 Cycle Findings.

Some of the program weaknesses identified by this assessment will be mitigated by the offering of a new course; Environmental Geography. This new course will directly focus upon material pertaining to the awareness of physical systems and the relationships between the environment and human society. The addition of new faculty member will also enable us to strengthen our concentration in Environmental Geography via the offering of new courses focused on this subject matter. Certain other learning gaps identified by the assessment may simply reflect weaknesses with the assessment itself. For example, we offer a few courses that focus on regional geography (World Regional Geography, Regional Geography of U.S. and Canada), that would naturally focus more directly on "places and regions" than would the courses incorporated in this assessment. In the future we will embed assessment questions within the comprehensive finals associated with these regional courses. The most critical weaknesses identified from this assessment remain in the areas of learning major geographic principles and critical thinking. The scores from students enrolled in one course (GEOG 1321) did improve for these areas, We plan to continue to experiment with ways to enhance critical thinking in both lab and lecture formats, and will make concerted efforts to incorporate assignments and methods found to be successful in GEOG 1321 at generating positive learning outcomes.

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Online Assessment Tracking Database

Sam Houston State University (SHSU)
2012 - 2013


Geology BS

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Goal	Sufficient Knowledge Of Geology To Qualify For A Bachelor Of Science  Students will acquire a comprehensive knowledge of the discipline that encompasses both theoretical and field-based practical skills.
Objective (L)	Successful Completion Of An Externally Evaluated Geology Field Camp  All SHSU Geology majors must attend a six credit, <u>externally evaluated</u> capstone Field Camp as a required component of their degree program. Such field camps are typically open to suitably qualified upper level students from geology programs situated anywhere in the country. They are conventionally evaluated using a letter grade system which the Department of Geography and Geology converted to a ranking system. SHSU Geology students must be nationally competitive at this capstone task as indicated by at least 60% of our participants achieving at least a Limited Mastery ranking.
Indicator	Successful Completion Of Field Camp  All students must attend a six credit hour Field Camp that is externally evaluated on the following basis: Mastery, Limited Master, Adequate Comprehension, Limited Comprehension, and Very Low Comprehension. Students are free to choose from a very wide range of applicable courses, each of which offers slightly different emphases in terms of geographical location and course structure. ALL courses offer a capstone-like review with Mastery reflecting mastery of taught and examined modules as well as high levels of precision in final field review stand-alone projects. A ranking of Limited Mastery reflects mastery of one or more modules but with some imprecision; a ranking of Adequate Comprehension reflects broad comprehension but demonstrates a lack of sophistication in the use of basic course material; rankings of Low Comprehension and Very Low Comprehension reflect low levels of understanding and effort and indicate inappropriate general preparation prior to field camp participation.
Criterion	60% Of Students Will Achieve At Least A Limited Mastery Ranking By The External Evaluator Of The Field Camp  60% of students will achieve at least a limited mastery ranking or better by the external evaluator of the Field Camp.
Finding	Field Camp Results From External Evaluator  We requested the University of Missouri Field Camp Director to provide feedback concerning strengths and weaknesses of our students because six of our students attended that camp. Her comments were very positive. Most summers we only have two or three students attend each camp, so it is not much of a population to work with. 100% of the students achieved limited mastery. Two of the students achieved Mastery. One student had the highest average on group projects in the entire class of 43 students. The primary difficulty for our students was the Regional Geology Exam.
Action	Response To External Evaluation Based On Field Camp Performance  Dr. Joseph Hill will continue to work to improve student abilities in the area of geologic field studies, especially in the new Field Methods course. Dr. Hill will have the students do a number of various field exercises on a number of field trips in the Field Methods course Fall 2013. The details are still being developed.

Dr. Hill took the students to Arkansas to have them perform a field mapping exercise. That seems to have improved our student's ability to do field mapping during this year's field camp. We will be returning to that same site this year.


We will all have to work on the student's regional geology abilities.

Goal **Deliver Core Curriculum Education Appropriate To The Geology Discipline** 


The Department of Geography and Geology provides discipline-specific offerings to the Core Curriculum.

Objective (L) **Apply Basic Components Of Geology** 


Students completing the core curriculum courses will demonstrate an understanding of the basic components of a geological perspective and will recognize geological themes.

Indicator **Core Curriculum Geology Comprehensive Exam** 


All students enrolled in core curriculum geology classes complete a final comprehensive exam related to the foundations of geology.

Criterion **Average Of At Least 75% Accuracy** 


The average score of core curriculum geology students will be at least 75% on the final comprehensive exam.

Finding **Geology Exam** 

The average score was approximately 62%, with a range from 57% to 69% from section to section. Only 77% of students answered the factual knowledge questions correctly, 89% answered the tentative nature of science questions correctly, and 66% appear to understand that nature is governed by physical laws. 66% answered the logical constructs based on factual knowledge questions correctly compared to 43% last year. Only 71% showed an understanding of the logic of science. Only 42% answered the graph interpretation and inference/reasoning questions correctly.

Action **Geology Exam** 

Four areas showed improvement. Understanding that nature is governed by physical laws went from 60% to 69% (compared to 55% the first year). Appreciating the tentative nature of science went from 74% to 89%. An understanding of the logic of science remained at 71%. The ability to form logical constructs based on factual knowledge went from 43% to 66%. This was an area that we worked on this year. We will also continue to work on graph interpretation skills, since that score went from 60% down to 42%.

Goal **Development Of A Geologic Knowledge Base** 

Each student is required to have developed a level of knowledge in various areas of geology prior to attending the capstone geology field course.

Objective (L) **Mineral Recognition** 

After completing Geology 3404, students will be able to recognize minerals.

Every geology student must take Geology 3404, Mineralogy. One of the objectives of this course is to be able to recognize minerals, which is a skill that will be needed when they take the capstone geology field course.

Indicator

Final Mineral Practical Exam

Students completing Geology 3404, Mineralogy, must take a final practical exam that requires the recognition of minerals.

Criterion

Student Scores

60 percent of the students will be able to recognize 15 or more of the 30 minerals presented to them on the final mineral practical.

Finding

Mineral Practical Scores

57% of the students were able to recognize 15 or more of the 30 minerals presented to them on the final mineral practical (down from 74% last year, but still better than the 13% the previous year).

Action

Mineral Practical Performance

The instructor spent more time working with students on the fundamentals of mineral recognition. The instructor visited with the students to discuss different strategies that could be used to improve mineral recognition skills. A flow chart method that we used last year was modified for this mineralogy class. We will continue with a Friday afternoon help session for the Physical Geology lab (GEOL 1103) to improve student's ability to recognize minerals at the freshman level.

Previous Cycle's "Plan for Continuous Improvement"

Many of the field studies weaknesses that were identified last year seemed to have been resolved. The field camp director seems quite pleased with the training students received at SHSU. It is the Geology Program's intention to continue achieving the same level of student preparation. Actually, we are hoping to improve on it by adding a field methods course in 2013-2014. The Form B for the course is making its way through the current curriculum cycle. The general core curriculum courses are undergoing changes in response to the core curriculum revision slated for Fall, 2014. This year we made some headway in some areas, but slid backwards in another area. Therefore, we will be working on improving performance and perhaps expanding the evaluation instrument. Mineral recognition seems to be improving, but we will still be trying some different methods aimed at long term retention.

Please detail the elements of your previous "Plan for Continuous Improvement" that were implemented. If elements were not implemented please explain why, along with any contextual challenges you may have faced that prevented their implementation.

Our students did show the same level of preparation for field camp as last year's students. The field methods course was approved and will be offered for the first time Fall 2013. We are making adjustments to general core curriculum courses in preparation for Fall, 2014. Progress was taking place in terms of mineral recognition, but there were some student dishonesty issues that clouded the results on the final mineral practical.

Plan for Continuous Improvement - Please detail your plan for improvement that you have developed based on what you learned from your 2012 - 2013 Cycle Findings.

Field Methods will be offered for the first time during Fall, 2013. This course and a review of regional geology concepts for students attending field camp next summer will hopefully improve student performance in field camp and improve their abilities for their future endeavours. A number of core curriculum revision measures (required by Fall, 2014) will be tested in our general core curriculum courses. Mineral recognition will once again be a priority, but will be challenging this year because the class is very large.

**Department of Mathematics
and Statistics**



Online Assessment Tracking Database








Sam Houston State University (SHSU)
2012 - 2013

Mathematics BA

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Goal	Deliver A Lower-Level Curriculum With Appropriate Discipline Specific Skill Sets
	The curriculum will provide freshman and sophomore students with opportunities to develop the skills typically required of professionals in the area of study.
Objective (L)	Foundation Areas - Calculus I Mth142 (Calculus I): Students will demonstrate the following knowledge and skills: differentiation of standard mathematical functions, apply the Fundamental Theorem of Calculus to evaluate integrals, and use calculus techniques to solve optimization problems.
Indicator	Course Assessment - Math1420 All students in the program are required to complete Math1420. Students will be administered a final exam containing some common questions developed and approved by the faculty teaching Math1420. The exam will require the students to demonstrate the knowledge and skills mentioned in the objective.
Criterion	Differentiation Of Mathematical Functions On the final exam, 70% of the students will provide the correct derivative for a given mathematical function.
Finding	Performance On Final Exam In Spring 2013 Of the 83 students reported, 62 (or 75%) successfully produced a correct solution to a particular problem regarding differentiation of a single-variable function. This is sufficient, although we would like to see at least an 80% success rate.
Criterion	Optimization Using Calculus Techniques On the final exam, 70% of the students will use the appropriate calculus techniques to solve an optimization problem.
Finding	Performance On Final In Spring 2013 Of the 83 students reported, only 28 (or 34%) successfully produced a correct solution to a particular problem regarding optimization of a single-variable function. This is insufficient. Upon inspection, it was not students' calculus skills that kept them from submitting a correct solution, but rather their skills in creating the correct function to optimize. It is hoped that our new precalculus course, MATH 1410, will contribute to students' increased ability for modeling phenomena with single-variable functions.
Criterion	Fundamental Theorem Of Calculus On the final exam, 70% of the students will correctly evaluate a definite integral using the Fundamental Theorem of Calculus
Finding	Spring 2013 Final Exam Of the 83 students reported, 63 (or 76%) successfully produced a correct solution to a particular problem regarding integration and the Fundamental Theorem of Calculus. This is sufficient, although we would like to see at least an 80% success rate.
Action	Monitor Success Of Students Completing New MATH 1410 Course

We will compare the performance of students in MATH 1420 (Calculus I) that have taken our new precalculus course, MATH 1410, with the performance of students that either complete precalculus prerequisites in high school, at community colleges, or by other means.

Goal	Deliver An Upper-Level Curriculum With Appropriate Discipline Specific Knowledge 
	The curriculum will address the discipline specific knowledge dictated by professional societies and/or professionals in the workforce for upper-level instruction in mathematics.
Objective (L)	Advanced Areas For Majors 
	Students preparing to graduate will demonstrate advanced mathematics knowledge and skills.
Indicator	Euclidean Geometry Project - Math3363  
	Students will complete a project requiring them to use technology to create conjectures and then provide a proof of their conjecture.
Criterion	Project Assessment  
	At the end of the semester, 85% of the students submitting their project will receive a rating of 8 out of 10 or better according to the attached rubric.
Action	Postpone Activity Until Spring 2014 
	This course was taught by a new faculty member, and the department chose not to burden our colleague with such a request. The activity will resume in Spring 2014.

Previous Cycle's "Plan for Continuous Improvement"

Last year, we indicated we would try to address our lack of success in calculus by having companies provide the department with demonstrations of on-line homework software. Because of scheduling problems, these demonstrations did not take place until the spring. We also had two professors try teaching calculus in a way that required more student interaction and a great deal more written explanation from students. While we did not expect too much of an impact on the skill objectives of differentiation and integration, we did hope there would be some benefit with the applied problem. Sadly, this was not the case - in either the traditional classes or the experimental ones. At this point, we are not sure how we plan to proceed, although we will be meeting with publishers to determine possible alternatives.

As for our upper division classes, assessment over the past two years shows we seem to be meeting our objective - at least for one or two upper-division classes. It is probably time to turn our attention to some of the other upper division classes.

Please detail the elements of your previous "Plan for Continuous Improvement" that were implemented. If elements were not implemented please explain why, along with any contextual challenges you may have faced that prevented their implementation.

We are doing well with teaching the "nuts and bolts" of calculus, but can do better having students apply knowledge learned in prerequisite courses to the material presented in calculus. This is a challenge, considering we have no control over the material presented elsewhere, but with a new placement exam, we can at least identify those students that are deficient.

Plan for Continuous Improvement - Please detail your plan for improvement that you have developed based on what you learned from your 2012 - 2013 Cycle Findings.

We will implement a new placement exam for MATH 1420/1410.

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Online Assessment Tracking Database


Sam Houston State University (SHSU)
2012 - 2013



Mathematics MA


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Goal	Deliver A Curriculum With Appropriate Discipline Specific Knowledge 
	The curriculum will address the discipline specific knowledge dictated by professional societies and/or professionals in the workforce.


Objective (L)	Understanding Mathematical Structures 
	Students will prove theorems or solve problems or explain concepts in the following core areas <ul style="list-style-type: none"> • abstract algebra structures such as groups, rings, fields, functions, homomorphisms, and isomorphisms. • differential and integral calculus • probability and statistics, particularly inferential statistics, and • transformational geometry to include isometrics and non-isometric transformations such as circles of inversion.


Indicator	MA Comprehensive Oral Examination 
	Students in the MA program will take an oral examination over the four areas covered in the objective. The oral examination will be scored by a committee of faculty using a rubric developed and approved by department faculty.


Criterion	Successful Completion Of Comprehensive Exam.  
	100% of the MA students will receive a grade of "Pass" or "High Pass" on each of the four areas according to the attached rubric.

Finding	2012-13 Oral Examination Results 
	Four MA students were administered an oral exam in 2012-13. Of those 4, all received either "Pass" or "High pass" in their four areas. One of the four students received a "High Pass" in all four areas. MA Instructors did implement more student presentations in thier coursework. In all but one case, this had a positive effect. One of the MA students, however, had some difficulty. However, we attribute this to the fact that Eglish was not her first langage.

Action	Comprehensive Oral Examination 
	Graduate faculty will continue to administer oral comprehensive examinations and strive for a 100% pass or high-pass rate.

Goal	Develop Research Skills 
	Students will develop research skills commensurate with graduate student status.

Objective (L)	Demonstrate Research Skills 
	Students completing the MA in Mathematics will demonstrate research skills.

Indicator	Research Project Rubric 
	MA students complete an independent research project. A rubric is used to score the project.

Criterion

80% Or Better On Project Rubric 🔑

Students will be rated at least 80% on the project rubric.

Finding

Research Projects, 2012-13 🔑

Three of the four students received a rating of better than 90%. One student received a rating between 80% and 90%. In this latter case, the student omitted some proofs and explanations that did not make her project as strong as it could have been.

While all four MA projects were successful, one student did struggle. We believe it was the combination of taking 2 classes during the summer, making time management an issue.

Action

Research Project Actions 🔑

The graduate faculty that mentor research projects in Mathematics Education will continue to strive for a rubric score of at least 80% for each MA student.

Previous Cycle's "Plan for Continuous Improvement"

In the past, we've created MA cohorts and offered a set program of courses over a two year period. We have not had as much success with this in recent years. This may be due to the increasing popularity of on-line MA programs. A couple of faculty members will be experimenting with a hybrid option for our MA offerings. We hope to have more information about that next year.

Before our students attempt the oral comprehensive oral exam, they need additional presentation time during classes to polish the presentations of their proofs. One area for us to work on related to the research projects is writing skills. We can incorporate the Writing Center for this endeavor.

Please detail the elements of your previous "Plan for Continuous Improvement" that were implemented. If elements were not implemented please explain why, along with any contextual challenges you may have faced that prevented their implementation.

One hybrid MA course was offered and was successful. No other such course was offered. As noted already, MA instructors did require more student presentations, which appear to be beneficial.

Plan for Continuous Improvement - Please detail your plan for improvement that you have developed based on what you learned from your 2012 - 2013 Cycle Findings.

We plan to add two new courses to the MA core and continue to experiment with additional hybrid online courses.

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Online Assessment Tracking Database

Sam Houston State University (SHSU)
2012 - 2013

Statistics MS

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Goal	<p>Deliver A Curriculum With Appropriate Discipline Specific Skill Sets 🔑</p> <p>The curriculum will provide students with opportunities to develop the skills typically required of professionals in the area of study.</p>
Objective (L)	<p>Foundation Areas In Probability And Statistics 🔑</p> <p>Students will have a working knowledge of the foundational topics including regression analysis, design of experiments, multivariate analysis, and mathematical statistics (Bayesian analysis, biostatistics, quality control, nonparametric statistics, sampling theory, and statistical computing).</p>
Indicator	<p>Comprehensive Oral Examination 🔑 🔑</p> <p>A comprehensive oral examination, given by a committee of three faculty members, will be administered to candidates for the degree of M.S. in Statistics which will examine the candidate's knowledge of the primary areas of concentration within the program, as well as the candidates own communication abilities. The committee will then judge the candidates' knowledge of the material according to a previously agreed upon rubric with three levels of comparison: High Pass, Pass, and Fail.</p>
Criterion	<p>Multivariate Analysis 🔑</p> <p>All candidates will receive a mark of either "High Pass" or "Pass" for the Multivariate Analysis component of the comprehensive oral exam. The rubric used is the same one shown in the "Mathematical Statistics" criterion.</p>
Finding	<p>Multivariate Analysis 🔑</p> <p>Six students took the comprehensive exam. Three high passes, two-passes and one of students had to take it for the second time and passed it at the second time.</p> <p>The student who took it twice is an international student and the statistics faculty understood that it is mainly due to issues with her English speaking ability.</p>
Criterion	<p>Regression Analysis 🔑</p> <p>All candidates will receive a mark of either "High Pass" or "Pass" for the Regression Analysis component of the comprehensive oral exam. The rubric used is the same one shown in the "Mathematical Statistics" criterion.</p>
Finding	<p>Regression Analysis 🔑</p> <p>Six students took the comprehensive exam. All six students passed the test. Four high pass, two-pass.</p>
Criterion	<p>Mathematical Statistics 🔑 🔑</p> <p>All candidates will receive a mark of either "High Pass" or "Pass" for the Mathematical Statistics component of the comprehensive oral exam.</p>
Finding	<p>Mathematical Statistics 🔑</p> <p>Six students took the comprehensive exam. Three high passes, two-passes and one of students had to take it for the second time and passed it at the second time.</p>

The student who took it twice is an international student and the statistics faculty understood that it is mainly due to issues with her English speaking ability.

Criterion

Design Of Experiments 🔑

All candidates will receive a mark of either "High Pass" or "Pass" for the Design of Experiments component of the comprehensive oral exam. The rubric used is the same one shown in the "Mathematical Statistics" criterion.

Finding

Design Of Experiments 🔑

Six students took the comprehensive exam. Three high passes, two-passes and one of students had to take it for the second time and passed it at the second time.

The student who took it twice is an international student and the statistics faculty understood that it is mainly due to issues with her English speaking ability.

Action

Comprehensive Oral Examination 🔑

Statistics faculty decided to observe students closely and help with the non-English speaking students throughout the program. Statistics faculty also decided to offer two more core courses (Regression and Design of Experiments) every year instead of every other year. This will allow students to get the basics of the subject in their first year of the program.

Goal

Deliver A Curriculum That Emphasizes Communication Skills 🔑

The curriculum will provide students with opportunities to develop the appropriate speaking and writing skills to function as a professional in the area.

Objective (L)

Communicating Mathematical Ideas - Oral 🔑

Students will be able to prepare and deliver oral presentations of mathematical material based on a statistics practicum. Students will develop the ability to critique problems, and provide their own solutions based on statistical analysis.

Indicator

Statistics Practicum 🔑

A statistics practicum, under the guidance of one of the faculty members, and assessed by a committee of four faculty members, will be administered to candidates for the degree of M.S. in Statistics which will examine the candidate's knowledge of the primary areas of concentration within the program, as well as the candidates own communicative abilities. The committee will then judge the candidates' ability to effectively communicate mathematical ideas according to a previously agreed upon rubric with three levels of comparison: High Pass, Pass, and Fail.

Criterion

Practicum Assessment 🔑

All candidates will receive a letter grade by the members of the examining committee during the practicum assessment according to the attached rubric.

There are no actions for this objective.

Previous Cycle's "Plan for Continuous Improvement"

Last year's summary was:

The main goals of the MS program in statistics are to make sure our students have the appropriate knowledge to design statistical experiments and analyze the results and put them in their proper context. This has to be done while using appropriate statistical tools (software) as well as with the ability to explain what has been done. The statistics faculty believes the MS program's emphasis on communication skills and discipline-specific knowledge provides the students with ample opportunity to demonstrate their competencies. At the moment, the four broad areas of discipline-specific skills are designed to prepare students for jobs in industry or to advance to graduate school. What skill sets may be needed in the future may become a topic for discussion.

The statistics faculty still believe this applies this year. They are constantly examining their program to make sure it reflects current trends and needs in their area. At this time, the only changes that have been made have been in the suggested MS Stat minor requirements. Students with a graduate minor in statistics are required to take two foundational courses in the theory of probability and statistics, followed by options related to regression, multivariate statistics, and experimental design. This aligns the coursework more closely with the MS Stat majors and should make our students more marketable.

Finally, we will more intensely work with students in the areas of regression and multivariate statistics so that their minor mistakes will be corrected.

Please detail the elements of your previous "Plan for Continuous Improvement" that were implemented. If elements were not implemented please explain why, along with any contextual challenges you may have faced that prevented their implementation.

All the students who planned to graduate successfully finished last year. There was one student who had to take the comprehensive exam twice. The student who took it twice is an international student and the statistics faculty understood that it is mainly due to issues with her English speaking ability. Implementing statistics minor is little slower. This is mainly due to shortage of faculty. Statistics faculty asked for two more faculty members.

Plan for Continuous Improvement - Please detail your plan for improvement that you have developed based on what you learned from your 2012 - 2013 Cycle Findings.

The statistics faculty still believe this applies this year. They are constantly examining their program to make sure it reflects current trends and needs in their area. Statistics faculty decided to observe closely and help with the non-English speaking students throughout the program. Statistics faculty also decided to offer two more core courses (Regression and Design of Experiments) every year instead of every other year. This will allow students to get the basics of the subject in their first year of the program. Improving physical facilities such as lab spaces and office spaces for graduate students is also a key area that should be addressed.

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Department of Nursing



Online Assessment Tracking Database

Sam Houston State University (SHSU)
2012 - 2013

Nursing BSN

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Goal **Mastery Of Curriculum Content**

Curriculum content must be mastered to be licensed.

Objective (L) **Specialty**
 Nursing students will achieve mastery of a specialty content area (med-surg, pediatrics, obstetrics, psych-mental health, community, fundamentals, health assessment) by the end of each of their specialty courses.

Indicator **Standardized HESI Specialty Examinations**
 Health Education Systems, Inc. (HESI) is a software-based testing company that produces standardized and customized tests for nursing students. Each student is administered the chosen specialty exam.

Criterion **Score Of 850 By At Least 85%**
 85% will achieve set score of 850 or more.

Finding **HESI Scores**
 Attached table indicates the specialty area, cohort number, number of students enrolled in cohort, the number of students achieving a score of 850 or more, and percent of students achieving a score of 850 or more. Percentages ranged from 12.5% to 76.19%. Students did not achieve 850 or more in any specialty. Thus, the goal was not achieved.

Action **Change Standardized Exam And Criterion**
 We voted to changed from HESI to ATI in summer of 2013. ATI has better interpretation of tests in many ways. They break the test analysis down into the same parts as are tested on NCLEX. They also correlate the obtained scores with the chances of passing NCLEX. Therefore, we will be able to get a better handle on where our students are at. Also, the score of 850 on the HESI was a national mean, which indicates that approximately 50% of the national nursing students scored better than 50%. Our goal was 85%, which was probably unrealistic. The goal should have been more like 60-70%.

Goal **Mastery Of Curriculum Content**

Master of the basic curriculum is required for licensure.

Objective (L) **Mastery By Graduation**
 Nursing students will achieve mastery of all nursing content just prior to graduation.

Indicator **Standardized HESI Exit Examination**
 The HESI Exit Exam is a standardized test that nursing students may be required to pass before graduating. It is a comprehensive nurse exam that tests the student' overall knowledge in key areas of the nursing curriculum. In many ways, the HESI Exit Exam is similar to the National Council of Licensing Examination for the Registered Nurse (NCLEX-RN) and, therefore, performance on the HESI Exit Exam is considered to be a good predictor of a

student's readiness for the licensing exam. <http://voices.yahoo.com/the-hesi-test-prepare-it-3299226.html>

Criterion

Score Of At Least 850 By 85% Students

85% will achieve set score of 850 or more.

Finding

Table Of HESI Exit Scores For Cohort 1 And 2

The attached table shows that cohort 1 had 57.14% of students scoring greater than 850 and cohort 2 had 72.72% scoring greater than 850. Thus, neither cohort met the goal of 85% scoring greater than 850.

Goal not met

Action

Changing Instrument And Criterion

Changing to ATI as ATI has more to offer in a package form and the HESI and ATI specialty and exit tests are similar in the literature.

We are also changing the criterion to a lower level than 85% above the mean. If the mean is close to the median, which it most likely is in a normed sample, then 50% of the nation's nurses are scoring above 850, not 85. 85% was a high criterion and probably unrealistic. The criterion should be closer to 70%. Obtaining an 850 does not necessarily correlate with passing the NCLEX. The ATI has better score interpretations in terms of the NCLEX.

Previous Cycle's "Plan for Continuous Improvement"

The new director is at the helm and already reorganizing the program to promote quality graduates. 2012-2013 will be our first year to function as our own separate department.

Please detail the elements of your previous "Plan for Continuous Improvement" that were implemented. If elements were not implemented please explain why, along with any contextual challenges you may have faced that prevented their implementation.

No update has been added to this level.

Plan for Continuous Improvement - Please detail your plan for improvement that you have developed based on what you learned from your 2012 - 2013 Cycle Findings.

On both of these objectives, we had unrealistic goals. We also have decided to change from the HESI to ATI in the 2013-14 academic year. They have a better way of interpreting their scores in terms of probability of passing the NCLEX. We will have to set new goal for 2013-14.

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Department of Physics





Online Assessment Tracking Database


Sam Houston State University (SHSU)
2012 - 2013


Physics BS


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Goal **Deliver Core Curriculum Education Appropriate To The Physics Discipline** 
 The Department of Physics provides discipline-specific offerings to the Core Curriculum


Objective (L) **Apply Foundational Concepts** 
 Students who complete the core curriculum course in Physics will be able to apply foundational concepts, particularly in the areas of (1) proofs and derivations, and (2) translation of written problems into mathematical equations.


Indicator **Comprehensive Exam** 
 Students will complete a faculty-developed comprehensive exam in Physics 1411 assessing the common foundational concepts in Physics.



Criterion **80% Score 70% Or Higher** 
 Eighty percent of students completing the exam will score 70% or higher on the comprehensive exam.

Finding **Exam Results DRAFT** 
 The comprehensive exam was given to the 1411 class at the beginning and end of the spring semester 2013. The initial average score was 16 out of 100 and the final score was 23 out of 100. The test consisted of 35 multiple choice questions with a penalty of 1/4 for a wrong answer. (The minimum score was therefore -25.). There was an error in administering the test in that 1/2 of the class only received 1/2 of the questions. The scores of students receiving 1/2 the test were rescaled to 100.

Action **Better Testing And Statistics DRAFT** 
 It was difficult to assess the results due to testing error and due to the small number of students (10) who took physics boot camp (physics 1401) in the fall of 2012. The testing will be repeated so a valid assessment can be made. Note in the fall of 2013 there are 40 students in physics 1401.

Goal **Competence For Bachelor Of Science** 
 Seniors studying Physics will demonstrate competence to graduate with a Bachelor of Science in Physics

Objective (L) **Mastery Of Fundamental Principles In Physics** 
 Students preparing to graduate with a BS in Physics will demonstrate comprehension of fundamental principles and the ability to apply these principles in solving problems.

Indicator **Previous GRE Subject Test In Physics**  
 Students will complete a common earlier version of the Graduate Record Subject Exam in Physics related to PHY 4370 (Classical Mechanics) under GRE standardized conditions. Faculty will have classified the questions into domains specific to the major principles in this area.

Criterion**Above 50th Percentile** 

Students will score above the 50th percentile determined as a result of the graduating seniors' scores from the common exam. A raw score of 50% is in the 74th percentile for the Physics GRE with a $\frac{1}{4}$ penalty for wrong answers.

Finding**Exam Results For Physics 4370 DRAFT** 

An exam consisting of physics GRE questions relevant to classical mechanics was administered at the beginning and the end of the spring semester 2013. The initial exam consisted of 17 questions and was taken by 16 students. The final exam had 18 questions and was taken by 13 students. The exams were compiled from different versions of the GRE tests so the questions were not the same on the initial and final exams. The students scored on average 14/100 on the beginning exam and 7/100 on final exam. The minimum score on each exam was -25 due to a penalty of $\frac{1}{4}$ for incorrect answers.

Action**Repeat The Assessment** 

Due to the small number of students the reliability of the result is open to question. The same assessment will be repeated to see if the same surprising result is obtained.

Previous Cycle's "Plan for Continuous Improvement"

In response to our dismal results in the foundations class, we have proposed a Physics Boot Camp course to improve problem solving skills of incoming freshmen. After the success of the mock-GRE exam for thermal and statistical physics, we will be expanding the mock-GRE concept other areas of physics.

Please detail the elements of your previous "Plan for Continuous Improvement" that were implemented. If elements were not implemented please explain why, along with any contextual challenges you may have faced that prevented their implementation.

The previous plan was implemented. In the fall of 2012 10 students took Physics Boot Camp. The mock-GRE was expanded to classical mechanics.

Plan for Continuous Improvement - Please detail your plan for improvement that you have developed based on what you learned from your 2012 - 2013 Cycle Findings.

We will repeat the assessment for Physics 1411 and Physics 4370. Improved statistics are needed for a valid assessment.

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