Sam Houston State University

2015-2016

College of Sciences

Department of Agricultural Sciences and Engineering Technology

Assessment Plan Summary
Department: Agricultural Business BS

Sam Houston State University

President, Office of

Academic Affairs, Division of

Sciences, College of

Agricultural Sciences and Engineering Technology, Department of

Agricultural Business BS

Develop Professional Skills

Goal Description
Students earning a BS in Agribusiness will learn the skills necessary for seeking job placement and technical writing in the work place.

Related Items/Elements
Development of Marketplace Skills

Learning Objective Description
Students completing the BS in Agribusiness will demonstrate skills necessary to compete in the professional marketplace.

AGRI 4120- Professional Employment Portfolio

Indicator Description
All students seeking a degree in Agribusiness are required to complete AGRI 4120 in their senior year. The course addresses essential skills necessary for job placement in the work force for agriculture employment - resume preparation, interview skills, technical writing skills and employment opportunities. Faculty will review student assignments and assess student performance on a portfolio of artifacts using a faculty-developed rubric.

AGRI 4120 Portfolio Rubric Matrix

Criterion Description
Faculty evaluations will indicate that at least 70% of the Agribusiness 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. Technical writing skills were concerns from previous evaluations and continue to be an area addressed.

Findings Description
On average, 82% of Agribusiness students in the class scored 3 or higher on the professional portfolio submission, while 70% scored a 4 or higher. The portfolio

included a cover letter, resume, reference page, letters of recommendation and an application. This is an indication that students are taking this assignment seriously as they prepare to exit the university and enter their chosen career field.

Development of Marketplace Skills

Action Description
Students are exceeding expectations based on the criterion description. This is a positive outcome. Based on these findings, we will continue monitoring student performance on an annual basis. We must be diligent in continuous assessment of this learning objective to ensure that our students are prepared to enter the marketplace. We may consider moving the criterion description standard to 70% of Agribusiness students enrolled in the course scoring a 4 or higher, rather than a 3 or higher, but we believe it is too early to make this change at this point in time.

Knowledge of Key Concepts and Skills

Goal Description
Students will develop knowledge and skills relevant to Agribusiness.

Related Items/Elements

Development of Students' Knowledge and Skills

Learning Objective Description
Students will be able to demonstrate competency in key areas of agribusiness including strategic management and an analysis of an existing company to include financial and strategic analysis.

AGRI 4375- Agribusiness Capstone, Concepts and Skills Assessment

Indicator Description
All students enrolled in the agribusiness program must complete AGBU 4375 in their senior year. AGBU 4375 addresses key concepts and skills relevant to the field of agribusiness and strategic management. Five randomly selected student assignments from AGBU 4375 will be reviewed by faculty members with expertise in the field of agribusiness. Faculty members will score the assignments using a scale of 1 - 5 with 3 "meets expectations," 4 "exceeds expectations," and 5 "far exceeds expectations."

AGBU 4375 Assessment Rubric

Criterion Description

Agribusiness faculty agree that at least 70% of the students enrolled in AGBU 4375 will perform at a level of 3, "meets expectations" or higher on the assessed assignments, especially in the area of technical writing skill, a specific weakness that was identified in previous assessment periods.

Findings Description
There were 18 students enrolled in AGBU 4375 in Spring 2016. Students were divided into five teams. The teams developed write-ups for parts of the project in class. The instructor made edits and provided suggestions on these write-ups (iterative process). Students addressed the comments and submitted external, internal, financial, and strategic analyses. The instructor provided comments and instructions for improvement of these reports. The teams addressed the comments and compiled the reports into the final project report. The final project report was evaluated using the rubric.

Most of the initial write-ups developed in class had considerable issues related to both content and technical writing. Only 50% of these write-ups scored 3 or greater. Technical writing and style were the areas that required significant improvements. However, students responded to coaching and all final reports (100%) scored 3 or more on average, with 80% scoring greater than a 4. The most problematic area in the final report was style, especially references. More emphasis will be placed on this section in the future.

Development of Students' Knowledge and Skills

Action Description
Only 50% of initial write-ups scored 3 or greater on our rubric. Technical writing and writing style were the areas that required significant improvements. Yet, students responded to recommendations/coaching made by the course instructor and improved their overall reports. All final reports (100%) scored a 3 or greater on average, with 80% scoring greater than a 4. The most problematic area in the final report was style, especially references. More emphasis will be placed on this section in the future.

Update to Previous Cycle's Plan for Continuous Improvement

Previous Cycle's Plan For Continuous Improvement (Do Not Modify)
Though improvements in technical writing skills were achieved and exceeded the goal, faculty will continue to emphasis technical writing skills across the AGBU curriculum enabling success in the capstone courses.

Update of Progress to the Previous Cycle's PCI
As noted in another section of this report, only 50% of initial write-ups scored 3 or greater on our rubric. Technical writing and writing style were the areas that required significant improvements. Yet, students responded to recommendations/coaching made by the course instructor and improved their overall reports. All final reports (100%) scored a 3 or greater on average, with 80% scoring

greater than a 4. The most problematic area in the final report was style, especially references. More emphasis will be placed on this section in the future.

Monitoring Marketplace Skills and Content Communication

Closing Summary

We must be diligent in continuous assessment of the learning objective, "Development of Marketplace Skills" to ensure that our students are prepared to enter the marketplace. We may consider moving the criterion description standard to 70% of Agribusiness students enrolled in the course scoring a 4 or higher, rather than a 3 or higher, but we believe it is too early to make this change at this point in time.

As it relates to content mastery among students in our capstone course, most students know the content, but had difficulty communicating it in a professional manner. With coaching from the faculty member, improvement occurred. However, style, especially references continued to be an issue. Therefore, more emphasis will be placed on this section in future semesters.

Assessment Plan Summary
Department: Agriculture BS

Sam Houston State University

President, Office of

Academic Affairs, Division of

Sciences, College of

Agricultural Sciences and Engineering Technology, Department of

Agriculture BS

Develop Professional Skills

Goal Description
Students earning a BS in Agriculture will learn the skills necessary for seeking job placement and technical writing in the work place.

Related Items/Elements
Development of Marketplace Skills

Learning Objective Description
Students completing the BS in Agriculture will demonstrate skills necessary to compete in the professional marketplace.

AGRI 4120- Professional Employment Portfolio

Indicator Description
All students seeking a degree in Agriculture are required to complete AGRI 4120 in their senior year. The course addresses essential skills necessary for job placement in the work force for agriculture employment - resume preparation, interview skills, technical writing skills and employment opportunities. Faculty will review student assignments and assess student performance on a portfolio of artifacts using a faculty-developed rubric.

AGRI 4120 Portfolio Rubric Matrix

Criterion Description
Faculty evaluations will indicate that at least 70% of the Agriculture 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. Technical writing skills and proper grammar were concerns from previous evaluation and continues to an area addressed.

Findings Description
On average, 100% of Agriculture students in the class scored 3 or higher on the professional portfolio submission, while we were very pleased to see that 80%

scored a 5. The portfolio included a cover letter, resume, reference page, letters of recommendation and an application. This is an indication that students are taking this assignment seriously as they prepare to exit the university.

Development of Marketplace Skills

Action Description
Students are exceeding expectations based on the criterion description. This is a positive outcome. Based on these findings, we will continue monitoring student performance on an annual basis. We must be diligent in continuous assessment of this learning objective to ensure that our students are prepared to enter the marketplace. We may consider moving the criterion description standard to 70% of Agriculture enrolled in the course scoring a 4 or higher, rather than a 3 or higher, but we believe it is too early to make this change at this point in time.

Knowledge of Key Concepts and Skills

Goal Description
Students will develop knowledge and skills relevant to agriculture.

Related Items/Elements

Development of Students' Knowledge and Skills

Learning Objective Description
Students will be able to demonstrate competency in key areas of professional communication skills through electronic presentations of technical agriculture content. Content knowledge along with writing and oral communications will be important skills assessed.

ACOM 3360- Student Knowledge and Skills Development

Indicator Description
All students enrolled in the program must complete ACOM 3360. ACOM 3360 addresses key presentation concepts via electronic media and communication and writing skills of technical content in agriculture. Five presentations of students majoring in Agriculture will be reviewed by faculty members with expertise in the field of agriculture. Faculty members will score the assignments using a scale ranging from 1-10 for specific aspects of the presentation and oral skills with categories of no evidence of achievement, inadequate evidence, adequate, and outstanding (see attached rubric).

ACOM 3360 Presentation Rubric

Criterion Description

Faculty in Agricultural Sciences will assess students' agricultural knowledge enrolled in ACOM 3360 via oral and electronic presentation of technical topics relevant to agriculture. At least 80% of the students will be expected to perform at a level equivalent to adequate evidence or higher as noted on the rubric. Specific focus will be in the areas of clarity, ag/content knowledge and grammar will skills of emphasis as noted from previous review.

Findings Description
One of three students met the 80% goal. Thus, only 33% of the students met the desired learning outcomes to: 1) create an effective, technically correct presentation aid; and 2) demonstrate effective presentation skills.

The “Content and Elaboration During Oral Presentation” section of the rubric revealed the greatest need for improvement. Therefore, more focus will be placed on helping students clearly understand what is correct regarding how a presentation aid should be used. Formatting of the Presentation Aid received too low of a score also, so much more attention will be given to ensuring adherence to details and requirements of the development presentation aid.

Development of Students' Knowledge and Skills

Action Description
Students failed to perform at the expected level. The “Content and Elaboration During Oral Presentation” section of the rubric revealed the greatest need for improvement. Therefore, more focus will be placed on helping students clearly understand what is correct regarding how a presentation aid should be used. Formatting of the Presentation Aid received too low of a score also, so much more attention will be given to ensuring adherence to details and requirements of the development presentation aid.

Update to Previous Cycle's Plan for Continuous Improvement

Previous Cycle's Plan For Continuous Improvement (Do Not Modify)
We must be diligent in continuous assessment of the learning objective, "Development of Marketplace Skills" to ensure that our students are prepared to enter the marketplace. We may consider moving the criterion description standard to 70% of Agriculture students enrolled in the course scoring a 4 or higher, rather than a 3 or higher, but we believe it is too early to make this change at this point in time.

Students failed to perform at the expected level in content and skills. The “Content and Elaboration During Oral Presentation” section of the rubric revealed the greatest need for improvement. Therefore, more focus will be placed on helping students clearly understand what is correct regarding how a presentation aid should be used. Formatting of the Presentation Aid received too low of a score also, so much more attention will be given to ensuring adherence to details and requirements of the development presentation aid.

Update to Previous Cycle's Plan for Continuous Improvement

Previous Cycle's Plan For Continuous Improvement (Do Not Modify)

Focus will be directed to ensuring students understand appropriate voice quality, enthusiasm, mannerisms, and body movement while making oral presentations.

Update of Progress to the Previous Cycle's PCI

The “Content and Elaboration During Oral Presentation” section of the rubric revealed the greatest need for improvement. Therefore, more focus will be placed on helping students clearly understand what is correct regarding how a presentation aid should be used. Formatting of the Presentation Aid received too low of a score also, so much more attention will be given to ensuring adherence to details and requirements of the development presentation aid.

Marketplace Skills and Content Knowledge

Closing Summary

We must be diligent in continuous assessment of the learning objective, "Development of Marketplace Skills" to ensure that our students are prepared to enter the marketplace. We may consider moving the criterion description standard to 70% of Agriculture students enrolled in the course scoring a 4 or higher, rather than a 3 or higher, but we believe it is too early to make this change at this point in time.

Students failed to perform at the expected level in content and skills. The “Content and Elaboration During Oral Presentation” section of the rubric revealed the greatest need for improvement. Therefore, more focus will be placed on helping students clearly understand what is correct regarding how a presentation aid should be used. Formatting of the Presentation Aid received too low of a score also, so much more attention will be given to ensuring adherence to details and requirements of the development presentation aid.

Assessment Plan Summary
Department: Animal Science BS

Sam Houston State University

President, Office of

Academic Affairs, Division of

Sciences, College of

Agricultural Sciences and Engineering Technology, Department of

Animal Science BS

Develop Professional Skills

Goal Description
Students earning a BS in Animal Science will learn the skills necessary for seeking job placement and technical writing in the work place.

Related Items/Elements
Development of Marketplace Skills

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

AGRI 4120- Professional Employment Portfolio

Indicator Description
All students seeking a degree in Animal Science are required to complete AGRI 4120 in their senior year. The course addresses essential skills necessary for job placement in the work force for agriculture employment - resume preparation, interview skills, technical writing skills and employment opportunities. Faculty will review student assignments and assess student performance on a portfolio of artifacts using a faculty-developed rubric.

AGRI 4120 Portfolio Rubric Matrix

Criterion Description
Faculty evaluations will indicate that at least 70% of the Animal Science 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. Technical writing skills were a concern from previous evaluations and continue to be an area addressed.

Findings Description
On average, 81% of Animal Science students in the class scored 3 or higher on the professional portfolio submission, while we were very pleased to see that

72% scored a 4 or higher. The portfolio included a cover letter, resume, reference page, letters of recommendation and an application. This is an indication that students are taking this assignment seriously as they prepare to exit the university.

Development of Marketplace Skills

Action Description
Students are exceeding expectations based on the criterion description. This is a positive outcome. Based on these findings, we will continue monitoring student performance on an annual basis. We must be diligent in continuous assessment of this learning objective to ensure that our students are prepared to enter the marketplace. We may consider moving the criterion description standard to 70% of Animal Science students enrolled in the course scoring a 4 or higher, rather than a 3 or higher, but we believe it is too early to make this change at this point in time.

Knowledge Of Key Animal Science Concepts

Goal Description
Students will develop knowledge and understanding of key concepts relevant to Animal Science and animal production.

Related Items/Elements

Development of Student Knowledge in Animal Science

Learning Objective Description
Students will develop factual and fundamental knowledge relative to the science of farm animals. Upon completion of the course, students will be able to apply the gained factual and fundamental knowledge relative to animal science and apply the information regarding animal nutrition and management.

ANSC 3373- Advanced Animal Science Knowledge

Indicator Description
All students enrolled in the Animal Science program must complete an advanced animal science course. The course for assessment (ANSC 3373) addresses key concepts relevant to nutrition and management relative to the field of animal science and knowledge expected for animal science graduates. During the fall semester, 15 relative questions were developed for each exam of 4 exams. Questions were classified as factual knowledge, fundamental knowledge and application of both factual and fundamental knowledge. All students were assessed for each category of questions across all exams. Student scores were then categorized on a scale of 1 - 5 with 3 "meets expectations," 4 "exceeds expectations," and 5 "far exceeds expectations."

Criterion Description
There will be a general consensus among Animal Science Faculty members that at least 70% of the students enrolled in the advanced course will perform at an acceptable level with a score of 3 (meets expectations) or higher, in all three categories (factual, fundamental and application). Weaknesses to be observed: application of knowledge.

Findings Description
On average, 76% of the students in the class scored 3 or higher on the the three categories of embedded questions. Of the 4 exams, carbohydrates had the lowest average score, yet, it still met the goal of "meets expectations". The protein exam (Exam II) and lipid exam (Exam IV) had the highest achievement scores. Though the students scored the highest on factual knowledge of the Gastrointestinal tract they scored the lowest on application of the knowledge. More supplemental information and enriched lectures with practical scenarios will be embedded to the lectures to enrich the application of factual and fundamental knowledge of GI tract topics. Application of information of carbohydrates was equally low, faculty will spend more time on metabolism how it is affected by the diet.

Development of Student Knowledge in Animal Science

Action Description
Though 76% of the students in the class scored 3 or higher on the the three categories of embedded questions, there is room for improvement. Students scored the highest on factual knowledge of the gastrointestinal tract, but failed to translate this knowledge into application at the level expected. More supplemental information and enriched lectures with practical scenarios will be embedded to the lectures to enrich the application of factual and fundamental knowledge of GI tract topics. Application of information of carbohydrates was equally low, faculty will spend more time on metabolism how it is affected by the diet.

Update to Previous Cycle's Plan for Continuous Improvement

Previous Cycle's Plan For Continuous Improvement (Do Not Modify)
Lecture outlines and supplemental materials will be provide in courses to assist in students gaining knowledge and understanding key concepts. Materials will be available on Bb for students to access to enrich the lectures for students to be better prepared for applying fundamental and factual knowledge learn in ANSC 3373

Update of Progress to the Previous Cycle's PCI
Students have demonstrated the ability to memorize factual knowledge and they have exhibited an acceptable level of fundamental animal science content; however, their ability to apply the information to a higher level of expectations for an advanced course the students are less successful. Faculty in the animal sciences will continue to strive to bridge the students ability to apply information from their core animal sciences into practical scenarios. This will be achieved by discussion, homework, case studies, etc.

Marketplace Skills and Content Knowledge

Closing Summary

Students are exceeding expectations based on the criterion description. This is a positive outcome. Based on these findings, we will continue monitoring student performance on an annual basis. We must be diligent in continuous assessment of this learning objective to ensure that our students are prepared to enter the marketplace. We may consider moving the criterion description standard to 70% of Animal Science students enrolled in the course scoring a 4 or higher, rather than a 3 or higher, but we believe it is too early to make this change at this point in time.

Though 76% of the students in the class scored 3 or higher on the the three categories of embedded questions in the common animal science course, there is room for improvement. Students scored the highest on factual knowledge of the gastrointestinal tract, but failed to translate this knowledge into application at the level expected. More supplemental information and enriched lectures with practical scenarios will be embedded to the lectures to enrich the application of factual and fundamental knowledge of GI tract topics. Application of information of carbohydrates was equally low, faculty will spend more time on metabolism how it is affected by the diet.

Assessment Plan Summary
Department: Construction Management BS

Sam Houston State University

President, Office of

Academic Affairs, Division of

Sciences, College of

Agricultural Sciences and Engineering Technology, Department of

Construction Management BS

Demonstrate Construction Management Knowledge and Skills

Goal Description
Students will demonstrate knowledge and skills relevant to Construction Management.

Related Items/Elements
Development Of Students' Knowledge And Skill

Learning Objective Description
Students will be able to demonstrate competency in key areas of Construction Management by successfully displaying skills in an Estimation Course. The Estimation Course serves as a capstone requirement with required skills in construction math, material pricing, bid tabulation, and project scheduling.

ETEC 4369 Cost Estimation- Knowledge and Skills

Indicator Description
All students enrolled in the program must complete an estimation class, ETEC 4369. The course addresses key concepts and skills relevant to project cost estimation relative to the field of Construction Management. Students are expected to achieve a 2 or higher on a scale of 0-4, with 0=incompetent, 1=marginal competency, 2=proficient, 3=accomplished, 4=mastered. We expect 80% of the students evaluated will score a 2 or higher.

Criterion Description
There is consensus among the ETEC faculty that at least 80% of the students will score 2 or higher on the assessment rubric.

Findings Description
ETEC 4369 – ABC Estimating Competition was used as a substitute for ETCM 4368 – Cost Estimating of Construction Materials this year. The course provided students with the opportunity to apply their estimating knowledge to a real-world project. The course had 15 students of which 12 students were construction management majors. From those 15 students, a random sample of 5 students was obtained. An evaluation was made based on their comprehensive final examination grading. The final exam had 4 sections to assess the students' knowledge: basic construction math, pricing, bid tabulation, and project scheduling.

Exam Section				Exam	Random
I	II	III	IV	Score	Grade	Number
.625	1	.667	1	3.29	A	1
.625	1	.667	1	3.29	B	2
.625	1	.500	1	3.13	B	5
.8125	1	1	1	3.81	A	13
.8125	1	1	1	3.81	A	14

Section

I	Basic construction math
II	Pricing including material and work take-off
III	Bid tabulation
IV	Project schedule

An evaluation was made based on the Assessment Rubric for each of the students exams and their ranking is shown below.

	Rubric objectives					
Student	A	B	C	D	E	F
1	p	a	a	a	m	m
2	p	a	a	a	m	m
5	p	a	a	p	m	m
13	a	m	a	a	m	m
14	a	m	a	a	m	m

		Counts of Scores					
Key	Description	A	B	C	D	E	F
m	Mastered		2			5	5
a	Accomplished	2	3	5	4		
p	Proficient	3			1		
g	Marginal						
i	Incompetent						

Evaluation of the objective are as follows:

- Objective “A” had 2 students that were accomplished and 3 as proficient.
- Objective “B” had all 5 students that were accomplished or better.
- Objective “C” had all 5 students that were ranked accomplished.
- Objective “D” had all 1 student ranking as proficient with 4 students ranking as accomplished.
- Objective “E” had all 5 students ranking as mastered.

Objective “F” had all 5 students ranking as mastered.

Development Of Students' Knowledge And Skill

Action Description
The randomly assessed five of the 15 students enrolled in the ETEC 4369 (Cost Estimating of Construction Materials) met the criterion based on a series of course assessment tools. It is expected that future students will achieve at a similar level. We may consider moving the criterion description of 80% of students enrolled in this course scoring a three or higher on the assessment rubric.

Develop Professional Skills

Goal Description
Students will gain necessary work force experience to compete in the construction field.

Related Items/Elements
Demonstrate Professional Skills

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

ETEC 4391 Internship Evaluation

Indicator Description
All students enrolled in the program must complete ETEC 4391 in their final year of enrollment. ETEC 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 Description
It is expected that at least 80% of the students enrolled in ETEC 4391 will

achieve above average standard (4 or higher) of performance on the supervisor rating scale.

Findings Description
Three students pursuing the BS in Construction Management were enrolled in ETEC 4391 in Spring 2016, the semester of assessment. All three students completed the assigned weekly reports with a score of 5 on a 5-point scale.

Demonstrate Professional Skills

Action Description
Students are exceeding the expectations based on the Criterion Description. We will continue monitoring student performance on an annual basis and be diligent in continuous assessment of this learning objective to ensure that our students are well prepared for the dynamic demands of the marketplace. We consider the current criterion description of 80% of Construction Management students enrolled in the course scoring a 4 or higher appropriate, and will continue the effort to meet and exceed it.

Update to Previous Cycle's Plan for Continuous Improvement

Previous Cycle's Plan For Continuous Improvement (Do Not Modify)
Software issues are resolved and faculty is being identified to teach Surveying.

Update of Progress to the Previous Cycle's PCI
Though great progress has been made toward improving student achievement to the mastery and accomplished levels, our goal for the future is to move all students above the proficiency level into these two categories.

Monitoring market place, skills, and content knowledge

Closing Summary
We must be diligent in continuous assessment of the learning objective, "Development of Professional Skills" to ensure that our students are well prepared for the dynamic demands of the marketplace. We will continue to meet and exceed the standard description of 80% students scoring above average standard (four or higher).

The randomly assessed five of the 15 students enrolled in the ETEC 4369 (Cost Estimating of Construction Materials) met the criterion description based on a series of course assessment tools. It is expected that future students will achieve at a similar level. We will also discuss the appropriateness to increase the criterion description of 80% of students enrolled in this course from currently scoring two to a three or higher on the assessment rubric.

Department of Biological Sciences

Assessment Plan Summary
Department: Biology BA/BS

Sam Houston State University

President, Office of

Academic Affairs, Division of

Sciences, College of

Biological Sciences, Department of

Biology BA/BS

Effectively Deliver A Core Curriculum

Goal Description
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

Related Items/Elements

Mastery Of Core Curriculum

Learning Objective Description
Students will demonstrate a mastery of the core fields in biology: Botany, Zoology, Cell Biology, Microbiology, Genetics, Ecology and Evolution.

Assessment Exam For Core Classes

Indicator Description
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.

Criterion Description
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.

Findings Description
A departmental curriculum assessment committee has been established. This committee will map the departmental curriculum for undergraduates and develop a new curriculum assessement exam. This exam will be administered Spring 2017.

Administer the BAE

Action Description
The department of Biological Sciences concluded that our annual assessment exam was out of date. We decided a new exam could provide better assessment of our students' knowledge base. To do so, a committee will be developed that will review the departmental core curriculum and will develop new sets of questions that are adequate for gauging student success in these core topics.

Understanding The Scientific Method And Develop Critical Thinking

Learning Objective Description
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.

BAE Analysis

Indicator Description
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.

Criterion Description
The percentage of correct responses on the embedded exam questions should equal 70 percent or more.

Findings Description
A departmental curriculum assessment committee has been established. This committee will map the departmental curriculum for undergraduates and develop a new curriculum assessement exam. This exam will be administered Spring 2017.

Administer the BAE

Action Description
The department of Biological Sciences concluded that our annual assessment exam was out of date. We decided a new exam could provide better assessment of our students' knowledge base. To do so, a committee will be developed that will review the departmental core curriculum and will develop new sets of questions that are adequate for gauging student success in these core topics.

Update to Previous Cycle's Plan for Continuous Improvement

Previous Cycle's Plan For Continuous Improvement (Do Not Modify)

The departmental will continue to evaluate:
1. expections in 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.

Update of Progress to the Previous Cycle's PCI

A departmental curriculum assessment committee has been established. This committee will map the departmental curriculum for undergraduates and develop a new curriculum assessement exam. This exam will be administered Spring 2017.

Evaluating and Promoting Student Success

Closing Summary

After the new exit exam is developed, it will be administed to graduating seniors. We will review the results of this exam each year and we will identify weaknesses in content areas. We will then convene as a faculty to review these weaknesses and implement strategies for improving success in these areas. This may include changes to curriculum, instructional methods, etc.

Assessment Plan Summary
Department: Biology MS

Sam Houston State University

President, Office of

Academic Affairs, Division of

Sciences, College of

Biological Sciences, Department of

Biology MS

Increase Knowledge Of Profession

Goal Description
Students will gain knowledge of the profession by gaining experience in presenting at scientific conferences and through publication.

Related Items/Elements

Students Knowledge Of Publication Process

Learning Objective Description
Students will be evaluated on their knowledge about the publication process.
A test that examines the students knowledge of the profession will be admistered 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 examin knowledge of the publication process, etc.

Exit Exam

Indicator Description
Students will take an exit exam that asks specific questions about the publication process.

Criterion Description
Scores will be compared to entrance exam. An increase in knowledge about the publication process will be an indicator of success.

Findings Description
A committee has been established to create and administer this exam. The exam will be administered in SP17.

MS assessment committee

Action Description
A committee has been developed and is currently working on the implementation of assessement of graduate students.

Publication Rate

Indicator Description
Each student's publication record will be tracked throughout the MS degree.

Criterion Description
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.

Findings Description
A cohort has not completed a cycle since the implementation of this initiative.

MS assessment committee

Action Description
A committee has been developed and is currently working on the implementation of assessement of graduate students.

Update to Previous Cycle's Plan for Continuous Improvement

Previous Cycle's Plan For Continuous Improvement (Do Not Modify)
The biology department conducted an external review of the graduate program. The results of that review are being analyzed by the graduate committee in biology and addressing targeted areas of concern. This include: time to completion, funding, teaching load, course load, and course offerings.

Update of Progress to the Previous Cycle's PCI
A committee has been established to create and administer this exam. The exam will be administered in SP17.

Evaluating and Enhaning Graduate Student Success

Closing Summary
The Department of Biological Sciences offers a course 'professional aspects' that introduces students to various professional aspects of the field, and faculty mentors are responsible for promoting the publication rates of students. The knowledge of the profession and the publication rate of each graduate student cohort will be tracked over time. Student weaknesses will be identified from this exam and brought to the graduate committee. Changes to the professional aspects course will be made to help address student weaknesses, and strategies will devised to promote publication success of our graduate students.

Department of Chemistry

Assessment Plan Summary
Department: Chemistry BS

Sam Houston State University

President, Office of

Academic Affairs, Division of

Sciences, College of

Chemistry, Department of

Chemistry BS

(1) Deliver A Curriculum Appropriate For Understanding Fundamentals Of Chemistry

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

Related Items/Elements
Demonstrate Understanding Of Fundamentals

Learning Objective Description
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.

American Chemical Society (ACS) General Chemistry Test

Indicator Description
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 Description
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 continue to work to motivate more students to take the exam.

Findings Description
In the fall semester, I did not contact the chemistry and forensic chemistry majors who were enrolled in general chemistry II. The ACS test was not given to these students. The reason why is that I forgot. We were conducting two faculty searches at that time and this completely slipped my mind.

For the spring semester, of the 11 students that took the exam (41 were invited to do so), 8 (73%) 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), 4 students took the exam (13 were invited to do so) and all 4 of them (100%) scored within one standard deviation of the mean or higher. Thus the criterion was met for the chemistry majors. Overall the participation rate for the spring semester was 11/41 = 27% (and 4/14 = 31% for chemistry majors and 7/28 = 25% for forensic chemistry majors). This is up slightly from last year (25%). We need to keep working on the ways to encourage and allow participation in this exam.

ACSGeneralExam16

Fundamental Knowledge

Action Description
We think that sitting for the ACS General Chemistry exam for chemistry and forensic chemistry majors as they finish CHEM 1412 (General Chemistry II) is important. We think that the scholarship money is a good incentive. This year participation is up for the spring semester but was non-existent for the fall semester (because the test was not offered). We will make sure to offer the exam in the fall, and we will ask all of the CHEM 1412 instructors to encourage the chemistry and forensic chemistry majors in their class to participate.

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(2) Deliver A Curriculum Appropriate For Understanding Organic Chemistry

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

Related Items/Elements
Demonstrate Understanding Of Organic Chemistry

Learning Objective Description
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.

ACS Organic Chemistry Test

Indicator Description
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 Description
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.

Findings Description
In the fall semester, six chemistry majors and eight forensic chemistry majors took the exam. Four of the six chemistry majors (4/6 = 67%) and one of the eight forensic chemistry majors (1/8 = 12%), for a total of five of fourteen (36%) overall scored within one standard deviation from the mean or higher for the exam. In the spring semester, nine chemistry majors and twenty-five forensic chemistry majors took the exam. Six of the chemistry majors (6/9 = 67%) and sixteen of the forensic chemistry majors (16/25 = 64%) for a total of 22 of 34 (65%) scored within 1 standard deviation from the mean or higher than one standard deviation above the mean. In total, for these students 10/15 = 67% of the chemistry majors and 17/33 = 52% of the forensic chemistry majors, or 27/48 = 56% overall, met the criterion.

The criterion was not met for either group.

It is worth noting that 8 students that failed to score high enough in the fall semester repeated in the spring semester, and 5 (2 chemistry and 3 forensic chemistry majors) of these 8 students successfully scored within one standard deviation from the mean or higher. Three (two chemistry and one forensic chemistry majors) did not, and will need to repeat the course yet again or change majors.

If the students who are double counted are only counted for the spring, the results are 9/12 = 75% for the chemistry majors and 17/28 = 61% for the forensic chemistry majors. Thus, the chemistry majors meet the criterion while the forensic chemistry majors do not.

ACSOrganicExam16

Organic Chemistry

Action Description
For the fourth year in a row, we have data for all of the sections of CHEM 2325 (organic chemistry II) that were taught, and again the biggest correlation with low performance on the standardized exam is the section that fills most quickly when there are multiple sections. This continues to suggest that some degree of student self-selection--perhaps they are choosing instructors that they perceive to be "easiest" or perhaps it is a time of day issue--is a factor, and we have no way to modify that factor. We will continue to monitor the situation. All of the students who fail to meet the criterion either repeat the course (and subsequently meet the criterion) or they change their majors. We will continue to assess student's performance.

By the way, one of the instructors is using a flipped classroom approach. So far there is no observable difference in student performance on the standardized exam.

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(3) Deliver A Curriculum Appropriate For Mastery Of Advanced Chemistry Topics

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

Related Items/Elements

Demonstrate Mastery Of Advanced Topics In Chemistry

Learning Objective Description
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.

CHEM 4448 Final Examination

Indicator Description
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 Description
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.

Findings Description
The criterion was met in 2016 with 86% of chemistry majors scoring at least 60% on the comprehensive final exam. The full statistics for all semesters sing 2004 are attached as well as a box plot of the performance.

CHEM 4448 Performance 2004-2016

FinalExamGradeTrends

Physical Chemistry Action

Action Description
The previous action item (of continuing the 10-pages of hand-written work per week) was appreciated by two of the six student commenters who addressed homework. Many of the negative comments were about the amount of pages. The positive comments were related to the educational purpose of the homework, namely to keep the student engaged with the material between exams. Therefore, this practice will be continued.

New action for 2016

Issue: There are many negative comments related to the laboratory work, and this will be addressed in the coming year through the creation of a Physical Chemistry Laboratory Manual. From 2004 to 2007, the professor gave a lecture at the beginning of lab. From 2008 to 2015, the TA's were delivering the lab lecture and preparatory information.

Action: It is time to further codify the preparatory information in the form of a laboratory manual. It is predicted that this will improve the course experience and learning outcomes because of a better understanding of the laboratory exercises.

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(4) Deliver A Curriculum Appropriate For Understanding Instrumental Analytical Methods In Chemistry

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

Related Items/Elements

Demonstrate Understanding Of Instrumental Analytical Methods In Chemistry

Learning Objective Description
The modern analytical laboratory makes extensive use of electronic instrumentation for the analysis of chemical samples. Our Instrumental Analytical Chemistry course (CHEM 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 CHEM 4440 for more than a decade.

Examinations In Instrumental Analytical Chemistry

Indicator Description
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 Description
Eighty two and one half 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. We expect statistical variability from test to test and from year to year.

Findings Description
On the first exam, 28 of the the 35 students (80%) scored within one standard deviation of the mean or higher. On the second exam, 30 of the 35 students (86%) scored within one standard deviation of the mean or higher. On the third exam, 31 of the 35 students (89%) scored within one standard deviation of the mean or higher. On the final exam, 32 of the 35 students (91%) scored within one standard deviation of the mean or higher. The criterion was met for each exam except the first (which was 2.5% or 1 student short). Clearly intervention is not needed.

CHEM4440 F2015 SACS data

Monitor Instrumental Analysis Performance

Action Description
There will be a major change in this course. Dr. Thomas Chasteen will be on a medical leave of absence this coming fall semester (and this is a

fall-only course), and he is retiring at the end of the coming year. Consequently, Dr. David Thompson will be teaching the course this fall.

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(5) Deliver A Curriculum With Appropriate Written And Oral Communication Skills Developed

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

Related Items/Elements
Demonstrate Adequate Written And Oral Communication

Learning Objective Description
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.

Chemistry Seminar Presentation

Indicator Description
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 Description
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. Over the years, we have found that peers tended to rate presenters rather highly. We hope to see more helpful feedback after providing additional instruction in constructive feedback.

4100.01

Findings Description
No significant change in CHEM 4100 student comments were observed this past year despite the increased in depth emphasis on constructive student comments.

Seminar Action

Action Description
The instructor that has been in charge of CHEM 4100 for more than the past decade will be taking a leave of absence in the fall semester of 2016, and will be retiring at the end of the next academic year. Consequently, a new individual will be in charge. We will monitor the situation.

Update to Previous Cycle's Plan for Continuous Improvement

Previous Cycle's Plan For Continuous Improvement (Do Not Modify)

As stated previously, we assess the same courses year after year for our B.S. programs because the courses, the material, and the requirements of the American Chemical Society do not change. This means that our plans from year to year end up being remarkably similar.

This past year we offered students two opportunities in the fall and in the spring for qualified students to take ACS exam over general chemistry, but participation rates fell compared to last year. This coming year we will again offer two opportunities to take the exam each semester, but we will endeavor to better advertise it to the students through multiple emails and instructor announcement(s).

In the area of organic chemistry, we will continue to monitor student performance on the standardized final and check instructor and time correlations. This may be a consequence of the registration process--more senior students register first which means that students who did poorly and are repeating the class register first and they may show up disproportionately in the class that fills fastest. This coming year we will pay more attention to the academic history of the students taking the exam.

In the area of physical chemistry, Dr. Williams will continue to stress issues related to time management through required homework assignments.

In the area of instrumental analysis, we will raise the criterion this year.

For the seminar, there will be an increased emphasis on constructive student comments.

Update of Progress to the Previous Cycle's PCI

While we normally offer students two opportunities in the fall and spring to take the ACS exam over general chemistry, this year we didn't offer it in the fall.

Plan for Continuous Improvement

Closing Summary

As stated previously, we assess the same courses year after year for our B.S. programs because the courses, the material, and the requirements of the American Chemical Society do not change. This means that our plans from year to year end up being remarkably similar.

This coming year we will again offer two opportunities to take the ACS exam over general chemistry each semester, but we will endeavor to better advertise it to the students through multiple emails and instructor announcement(s).

In the area of organic chemistry, we will continue to monitor student performance on the standardized final and check instructor and time correlations. This may be a consequence of the registration process--more senior students register first which means that students who did poorly and are repeating the class register first and they may show up disproportionately in the class that fills fastest. As mentioned above, in tracking students who failed to meet the criteria, they do better on repetition. However, not all of them rose to the challenge, and will either have to repeat the course once more, or they will change their major.

In the area of physical chemistry, Dr. Williams will continue to stress issues related to time management through required homework assignments. Difficulties in the laboratory will be

addressed through the creation of a Physical Chemistry Laboratory Manual.

In the area of instrumental analysis, there will be a major change in the coming year since the long-time instructor for the course will be taking a medical leave of absence.

For the seminar, there will also be a change in the coming year since the long-time instructor for the course will be taking a medical leave of absence.

I will address one last point. In the meta assessment for this past year, it was implied that the Chemistry Department should set some goal--"to be the best Chemistry Department in some specific area of student performance". The curriculum is set by an outside agency. B.S. chemistry majors have exactly one elective course in chemistry. The department is so resource limited that we cannot create and offer new courses. In this environment, we do an incredibly good job at producing students who get jobs in their field or go on to graduate school.

Assessment Plan Summary
Department: Chemistry MS

Sam Houston State University

President, Office of

Academic Affairs, Division of

Sciences, College of

Chemistry, Department of

Chemistry MS

Deliver A Curriculum With Appropriate Discipline Specific Knowledge

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

Related Items/Elements
Demonstrate Advanced Chemical Thermodynamics Knowledge and Skills

Learning Objective Description
CHEM 5381 (Advanced Physical Chemistry: Thermodynamics). Each student will demonstrate molecular, computational, and statistical viewpoints and explanations of thermodynamic phenomena in chemistry.

Mastery Of Advanced Thermodynamics Knowledge

Indicator Description
All graduate students will demonstrate a mastery of the course material through long problem sets, computational chemistry assignments, Excel modeling assignments, and in-class examinations.

Criterion Description
100% Pass the Comprehensive Final Exam with at least a 60% score.

Findings Description
Of the 19 graduate students taking the course, 18 successfully met the criterion. One student fell short with a 59% score on the exam. This particular student had a protracted period of absences due to surgery in the middle of the semester. Their performance was compensated by extra effort on the homework assignments, leading to their successful completion of the course.

Development of Tutorial Material

Action Description
Prepare material for remedial and tutorial use for those students who are struggling with the material or who fall behind.

Demonstrate Knowledge of Advanced Topics in Polymer Chemistry

Learning Objective Description
Polymer chemistry is a multidisciplinary subfield of chemistry. This graduate level course is organic-chemistry-based although it includes aspects of analytical, biological, inorganic, materials and physical chemistry. The first 60% of the course involved polymer synthesis and the next 30% covered polymer characterization, both presented in lecture format. The final 10% of the class was reserved for student presentations on an advanced topic related to polymer chemistry.

Examination of Student Understanding of Advanced Topics in Polymer Chemistry

Indicator Description
All students in the class are evaluated by written examination. In the past, the third exam in the course was based primarily on the key points from the student presentations on advanced topics. Due to the lower enrollment in the spring 2016 the third exam also contained material from the instructor's lecture and was more comprehensive then the previous time the course was offered.

Criterion Description
All students will score above one standard deviation below the mean on the third exam.

Findings Description
During the Spring 2016 semester, 7 out of 8 students scored higher than one standard deviation below the mean.

Add Peer Evaluations and Presentation Summaries

Action Description
The action remains the same the next time this course is offered; students will be required to evaluate and summarize the key points of their peers' advanced topic presentations. These evaluations and summaries will be posted anonymously for the whole class to view. In this way, the students will be more engaged in the presentations and the key points will be more apparent to all students.

Demonstrate Knowledge of the Electronic Structure of Metal Complexes

Learning Objective Description
CHEM 5374 "Chemistry of Coordination Compounds" is a course about transition metal complexes. An understanding of the nature of the metal-ligand bond is essential for students to address the rest of the material in the course.

Mastery of the MO Diagram for Octahedral Metal Complexes

Indicator Description
Graduate students in this course will demonstrate their mastery of the sigma only

molecular orbital energy diagram for an octahedral metal complex by constructing such a diagram on an examination given the group theory character tables and the appropriate symmetries of the ligand orbitals.

Criterion Description
Over 90% of the students will score over 3 on a 5 point scale on the question "Draw a full molecular orbital energy diagram for $M(NH_3)_6^{n+}$ where M^{n+} is a transition metal. The symmetries of the lone pairs of ammonia are a_{1g}, e_g and t_{1u}."

Findings Description
Eight students scored 5 on this question. One scored 4.5. Four scored 4. Two scored 3 and 1 scored 1. Thus 10/13 = 77% scored above a 3 and 12/13 = 92% scored a 3 or above. Thus the criterion was not met.

Monitor Student Preparation and Progress

Action Description
With the most recent offering of CHEM 5374, the criterion was not met. It turns out that the MO background of the three students who scored 3 or under was relatively weak. In the next offering of the course, an attempt will be made to assess students' background in this area and to provide supplemental materials to those whose background is weak.

Demonstrate Understanding Drug Development and Drug Antagonism

Learning Objective Description
CHEM 5373 "Drug and Toxin Biochemistry" discusses biologically active molecules (mechanism of their action in the body, receptor theory, biotransformation, pharmacokinetics and antagonism) through the extrapolation of the state of the art in drug antidotal therapy that employs the addition of exogenous metabolizing enzymes to destroy toxic molecules in the body. As examples for the worst toxic molecules, the course also discusses chemical warfare agents (historical application, mode of action, and antidotal approaches). The phases of drug development process are also covered following the approach of “Molecules from the Research Labs to the Hands of Doctors to Treat Diseases and Chemical Intoxications”.

Examination of Student's Understanding of Elements of Industrial Biochemistry

Indicator Description
All students in the class are evaluated by a final written comprehensive examination.

Criterion Description
80% of the students taking the final exam will score within one standard deviation of the mean or higher on the comprehensive final exam.

Findings Description
During the spring 2016 semester, 25 students (MS and PhD) from different

departments took the course: (17 MS Chemistry; 3 MS Forensic; 4 PhD Forensic; 1 MS Agri. Sci & Eng. Tech.). The teaching material was adjusted to the requirements of the diversity of the class, with more emphasis on chemical and biological warfare agents. Originally this topic was planned for a course for the Forensic Science PhD program. Out of the 25 students 23 (92%) met the above criterion. The two students who did not meet the criterion were from Chemistry MS program.

Recommendations for the next Drug and Toxin Biochemistry course

Action Description
The next time the course is offered, students' progress will be monitored by offering more than just the final exam, and their oral presentations and their participation in the presentations (asking questions, sharing their critiques) will be included in the final grade. In the syllabus the grading criteria will be clearly described.

Develop Presentation Skills

Goal Description
The ability to communicate research and knowledge are fundamental presentation skills in chemistry.

Related Items/Elements
Demonstrate Presentation Skills

Learning Objective Description
Students completing CHEM 5100 will, at least once during their tenure as graduate students, demonstrate the ability to make a research presentation.

Acceptable Student Seminar Peer-Reviewed Presentation

Indicator Description
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 Description
All graduate students in chemistry are required to take CHEM 5100 at least once during their tenure as graduate students. To pass CHEM 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.

5100 syllabus haines S2016

Findings Description
The addition of a required 5 minute time period for student's to write comments

at the end of each presentation was established, but after four presentations it was clear that it was having the undesirable side effect that students were left bored after writing comments, which did improve slightly in level of detail as observed by the professor. After those presentations, the professor decided that the benefit was outweighed by the negative effects on student in-class dynamics and the method was discarded (after the professor made the class promise to keep writing more detailed comments or it would return). In the spring semester, some professor-moderated in-class discussion of specific aspects of presentations occurred after each presentation (the professor asked questions of the class about presentation form and slide design decisions), and this was found to be very beneficial to productive feedback. All (100% of 17 in Fall 2015, 100% of 6 in Spring 2016) presentations were deemed suitable by the student peer evaluators (as determined by a median score of at least 21 out of 30 points) and by the course professor (assigned score of at least 70 out of 100). Once again, the student comments were found to be almost entirely positive and helpful, but at times still overly brief. There was a small observed improvement, however.

Graded seminar critiques

Action Description
The professor will continue and increase the post-presentation discussion, and will try a new method in which a fraction of the course grade is assigned to their written critiques. This will require the critique-writing students' names to be added to the feedback form, but the professor can cut the tops of the forms off before giving them to the presenting students.

Update to Previous Cycle's Plan for Continuous Improvement

Previous Cycle's Plan For Continuous Improvement (Do Not Modify)
As pointed out previously, the master's program is different that our undergraduate programs in a variety of ways. Most importantly for assessment purposes, with the exception of our seminar class (CHEM 5100), graduate research (CHEM 6398) and thesis (CHEM 6099), our courses are not offered every year. They aren't necessarily offered every other year--the frequency varies based on the instructors' other demands and the needs of the students in the program.

For the seminar, the instructor plans on providing a set time period at the end of the presentation to give the students enough time to provide thoughtful critiques.

For CHEM 5372 "Advanced Biochemistry I", the next time the course is offered, the instructor will provide additional material about spectroscopic methods used in enzymatic studies, and the criterion will be raised.

For Nanoscience and Nanosensing, the next time the course is offered, there will be more student exercises exploring problems with calibration and validation, as well as more supporting problems from the primary literature.

The next time analytical spectroscopy is offered the criterion may be raised even further.

The next time organic reaction mechanisms is offered the instructor intends to increase the number of small problem sets required of the students.

Update of Progress to the Previous Cycle's PCI
As pointed out previously, the master's program is different that our undergraduate programs in a variety of ways. Most importantly for assessment purposes, with the exception of our seminar class (CHEM 5100), graduate research (CHEM 6398) and thesis (CHEM 6099), our courses are not offered every year. They aren't necessarily offered every other year--the frequency varies based on the instructors' other demands and the needs of the students in the program.

As a consequence of this, the graduate courses mentioned in the previous cycle were not offered this year, so there is nothing to update.

Plan for Continuous Improvement

Closing Summary
As pointed out previously, the master's program is different that our undergraduate programs in a variety of ways. Most importantly for assessment purposes, with the exception of our seminar class (CHEM 5100), graduate research (CHEM 6398) and thesis (CHEM 6099), our courses are not offered every year. They aren't necessarily offered every other year--the frequency varies based on the instructors' other demands and the needs of the students in the program.

For the seminar, providing a set time period at the end of the presentation to give the students enough time to provide thoughtful critiques proved to be a problem. The instructor added post-presentation discussion and plans to expand it. He will also make critique-writing a portion of the students' grade.

For CHEM 5381 "Advanced Physical Chemistry: Thermodynamics", the next time the course is offered, the instructor will provide additional tutorial material for students who are struggling with the material or who fall behind. about spectroscopic methods used in enzymatic studies, and the criterion will be raised.

For CHEM 5374 "Chemistry of Coordination Compounds", in the next offering of the course an attempt will be made to assess students' background in this area and will provide supplemental materials for those with weak backgrounds.

For CHEM 5373 "Drug and Toxin Biochemistry" additional graded exercises will be offered.

The next time polymer chemistry is offered the students will be required to evaluate and summarize the key points of their peers' presentations.

Department of Computer Science

Assessment Plan Summary
Department: Computer Software Engineering Technology BS

Sam Houston State University

President, Office of

Academic Affairs, Division of

Sciences, College of

Computer Science, Department of

Computer Software Engineering Technology BS

Ethical Principles And Management Skills

Goal Description
To develop students' knowledge of ethical principles, technical skills, and management skills relevant to the field of computer software Engineering Technology.

Related Items/Elements
Ethical Principles And Management Skills

Learning Objective Description
Students will develop and demonstrate an understanding of the ethic considerations and management principles relevant to the field of Computer Software Engineering Technology.

Capstone Project And TASO

Indicator Description
All undergraduate Computer Software Engineering Technology 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 Student Outcomes.

output-S16

TASO-assessment_S16

Criterion Description
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 evaluate students' performance based upon the rubrics (1)-(3). One 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.

Findings Description
Spring 2016 was the first assessment point for TASO, as the first student cohort containing juniors were in COSC 4349 Ethics. The only data points were for the three Student Learning Objectives associated with assessment in that class. The results will serves as the first baseline point for future assessment.

Assessment

Action Description
The Curriculum Committee will review assessment procedures from the Computing Science program to ensure alignment with the assessment requirements for the Computer Software Engineering Technology program.

Curriculum Planning

Action Description
The Curriculum Committee will review the Computer Software Engineering Technology program with respect to aligning with ABET Engineering Technology program requirements.

TASO

Indicator Description
All undergraduate Computer Software Engineering Technology students must complete COSC4349 (Professionalism and Ethics) prior to graduation. COSC4349 addresses three of the eleven identified student outcomes. . Additionally, TASO (Test for Assessing Student Outcomes) is implemented to quantitatively measure these Student Outcomes.

Criterion Description
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 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.

Findings Description
Spring 2016 was the first assessment point for TASO, as the first student cohort

containing juniors were in COSC 4349 Ethics. The only data points were for the three Student Learning Objectives associated with assessment in that class. The results will serves as the first baseline point for future assessment.

Assessment

Action Description
The Curriculum Committee will review assessment procedures from the Computing Science program to ensure alignment with the assessment requirements for the Computer Software Engineering Technology program.

Curriculum Planning

Action Description
The Curriculum Committee will review the Computer Software Engineering Technology program with respect to aligning with ABET Engineering Technology program requirements.

Technical Competence

Learning Objective Description
Students will develop and demonstrate knowledge of technical skills, relevant to the field of computer software engieering technology.

Capstone Project And TASO

Indicator Description
All undergraduate Computer Software Engineering Technology 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 Student Outcomes.

output-S16

TASO-assessment_S16

Criterion Description
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 evaluate students' performance based upon the rubrics (1)-(3). One 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.

Findings Description
Spring 2016 was the first assessment point for TASO, as the first student cohort containing juniors were in COSC 4349 Ethics. The only data points were for the three Student Learning Objectives associated with assessment in that class. The results will serves as the first baseline point for future assessment.

Assessment

Action Description
The Curriculum Committee will review assessment procedures from the Computing Science program to ensure alignment with the assessment requirements for the Computer Software Engineering Technology program.

Curriculum Planning

Action Description
The Curriculum Committee will review the Computer Software Engineering Technology program with respect to aligning with ABET Engineering Technology program requirements.

Technical Competence

Goal Description
Students will have a strong technical foundation, i.e., students will develop and demonstrate knowledge of theoretical materials, and computational and technical skills in the areas of Computer Software Engineering Technology.

Related Items/Elements
Technical Competence

Learning Objective Description
Students will develop and demonstrate knowledge of technical skills, relevant to the field of computer software engieering technology.

Capstone Project And TASO

Indicator Description
All undergraduate Computer Software Engineering Technology 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 Student Outcomes.

output-S16

TASO-assessment_S16

Criterion Description
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 evaluate students' performance based upon the rubrics (1)-(3). One 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.

Findings Description
Spring 2016 was the first assessment point for TASO, as the first student cohort containing juniors were in COSC 4349 Ethics. The only data points were for the three Student Learning Objectives associated with assessment in that class. The results will serves as the first baseline point for future assessment.

Assessment

Action Description
The Curriculum Committee will review assessment procedures from the Computing Science program to ensure alignment with the assessment requirements for the Computer Software Engineering Technology program.

Curriculum Planning

Action Description
The Curriculum Committee will review the Computer Software Engineering Technology program with respect to aligning with ABET Engineering Technology program requirements.

Update to Previous Cycle's Plan for Continuous Improvement

Previous Cycle's Plan For Continuous Improvement (Do Not Modify)
There is no plan for continuous improvement for this assessment cycle. The degree program is scheduled to start in the 2015/16 cycle.

Update of Progress to the Previous Cycle's PCI
The initial assessment data for SLO's E,G and H (descriptions attached in the findings) has been recorded and will be used as a baseline for future assessment cycles.

Assessment

Closing Summary

The primary area of concern is ensuring the accreditability of the Computer Software Engineering Technology program. This has two components:

- alignment with ABET Body of Knowledge for Engineering Technology programs
- assessment alignment to satisfy ABET requirements and existing assessment in the Computing Science program.

The Undergraduate Curriculum Committee will work on these two issues in the 2016/17 cycle.

Assessment Plan Summary
Department: Computing Science BS

Sam Houston State University

President, Office of

Academic Affairs, Division of

Sciences, College of

Computer Science, Department of

Computing Science BS

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

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

Related Items/Elements
Acquisition Of Technical Skill, Management And Ethical Principles

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

Capstone Project, Ethics Question, And TASO

Indicator Description
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 Description
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 evaluate students' performance based upon the rubrics (1)-(3). One 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.

Findings Description

Student performance on the capstone project in COSC 4319 addresses 8 of the 11 ABET/CAC Student Outcomes.

The Ethics Test covers the three outcome that are not addressed by the Project assessment.

Fall 2014 to 2015 results showed an improvement in all Student Learning Outcomes (SLO's) with the exception of outcome G; An ability to analyze the global impact of computing on individuals, organizations and society.

Spring 2015 to Spring 2016 showed mixed results with little overall year on year change, and those changes well within one standard deviation. One exception was outcome H; Recognition of the need for, and an ability to engage in continuing professional development. This outcome showed a significant (more than one standard deviation) improvement,

One of the four Educational Objectives, all showed slight (< one standard deviation) improvement from fall 2014 to fall 2015, and three of the four showing improvement from Spring 2015 to Spring 2016. The exception being EO3, Graduates will exhibit the professional skills necessary to be effective and succeed in the modern workforce including the ability to function in teams, the ability to communicate effectively, and high standard of ethics and professionalism.

Reviewing the individual student responses in the TASO, as submitted in supporting documentation, it is clear that retention of conceptual material varies significantly across courses, with COSC 3318 Database Management Systems, and COSC 4319 Software Engineering producing high quality responses. There is concern that the COSC 1436, 1437, and 3319 sequence produces less consistent results.

Student learning outcomes and Program Educational Objectives.docx

TASO-assessment_S16

Curriculum Review

Action Description
The department will continue to review curriculum in the Computing Science program to ensure compatibility with ABET accreditation standards.

Specialized Competencies

Goal Description
To develop students' skills and knowledge in their concentration areas. The department offers three concentration areas: Computer Science, Information Systems, and Information Assurance.

Related Items/Elements
Specialized Skills

Learning Objective Description
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.

Faculty Review

Indicator Description
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 the students' performances across the 18 hours course sequence for each concentration.

Criterion Description
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.

Findings Description
During the academic year (2011-2012), Computer Science (CS) faculty developed indirect program assessment tools and rubrics to address the new ABET-CAC (Computing Accreditation Commission) criteria, which includes eleven Student Outcomes (SOs) ((a)-(k)). In particular, CS Department set up four Program Education Objectives (PEOs) (E01-E04). For the quantitative assessment and continuous improvement of the program, the tools and rubrics have been continuously used since the 2011-2012 academic year. The students in two courses, COSC4319 (Software Engineering) and COSC4349

(Professionalism and Ethics) participated in this indirect assessment every fall and spring semester since Spring 2012. In addition, another assessment tool, TASO (Test for Assessing Student Outcomes), was implemented for the direct assessment of the students' outcomes. This direct assessment was first performed in Spring 2013 and is also applied for this academic year as well.

The TASO results can be summarized as follows:

- Student performance has show small but continuous improvements since 2013 accros the 11 Student Learming Objectives identified by, and measured by the department.
- Four Student Learning Objectives have been identified as requiring the most attention; 1) the ability to apply knowledge of computing and mathematics appropriate to the discipline, 2) the ability to analyze a problem, and identify and define the computing requirements appropriate to its solution, 3) the ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs, and 9) the ability to use current techniques, skills, and tools necessary for computing practice. (SLO's 1,2,3, and 9)
- Performance on the program's four Learning Objectives had shown steady improvement since 2013. In particular SLO's 1, 2, and 3 show marked improvement from the previous assessment period.

Update to Previous Cycle's Plan for Continuous Improvement

Previous Cycle's Plan For Continuous Improvement (Do Not Modify)
The Undergraduate Curriculum Committee will investigate a weighting mechanism to adjust TASO for difference in student numbers in the Software Engineering and Ethics courses to better represent their influence in the summary statistics.

The Undergraduate Curriculum Committee will review TASO and the Capstone project Assessment Mechanism to all differentiation and comparison between outcomes for Computing Science and for Computer Software Engineering Technology students.

Update of Progress to the Previous Cycle's PCI
In general, the program appears to be addressing the stated Student Learning Objectives and Program Educational Outcomes in a quality manner. However, the Undergraduate Curriculum Committee should continue it's work in developing a weighting mechanism for the TASO questions in order to emphasize the most critical SLO's.

In addition, the Undergraduate Curriculum Committee will perform a comprehensive review of the content and sequencing of material in the COSC 1436, 1437, 3319 sequence to address inconsistent student responses in the TASO.

Curriculum and Assessment

Closing Summary
The Curriculum Committee has expressed some concerns over content coverage in COSC 1436/1437/3319. This should be reviewed in the upcoming cycle. The Curriculum Committee is concerned about aligning assessment between Computing Science and Software Engineering Technology. This also should be reviewed with recommendations for implementation in the next cycle.

Assessment Plan Summary
Department: Information Assurance and Security MS

Sam Houston State University

President, Office of

Academic Affairs, Division of

Sciences, College of

Computer Science, Department of

Information Assurance and Security MS

Technical Competence - To Develop And Demonstrate Knowledge Of Theoretical Materials, And Computational And Technical Skills

Goal Description
Graduates with a master degree in information assurance and security will have a strong technical foundation, that is, to develop and demonstrate knowledge of theoretical materials, and computational and technical skills in the areas of information assurance and information security.

Related Items/Elements
Understand The Body Of Knowledge Of Information Assurance And Security

Learning Objective Description
Students will develop and demonstrate knowledge of theoretical materials, technical skills and project management relevant to information assurance and information security.

Written Comprehensive Examination

Indicator Description
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 information assurance and security are responsible to design exam questions. Each student is given one hour on each of the 5 subjects:

1. Principle and Policy in Information Assurance
2. Database Security
3. Organization System Security
4. Operating System Security
5. Business Continuity Management

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

Criterion Description
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.

Findings Description
Seven students took comprehensive examinations in the 2015/16 academic cycle. The pass rate was 100% with 2 students (28%) receiving a high pass.

Copy of Comp-Exams
Copy of Comp-Exams

Assessment

Action Description
Graduate programs in the department of Computer Science do not have formal assessment procedures comparable with those in undergraduate programs. The Graduate Curriculum Committee has concentrated on improving curriculum. It's attention now needs to be turned to developing quantitative rather than qualitative assessment tools.

Professional development

Action Description
Graduate programs in the department of Computer Science do not currently have systems in place to tack alumni professional performance. The Graduate Curriculum Committee needs to develop procedures for tracking employment data on alumni to measure the effectiveness of the Information Assurance and Security program in providing the skills necessary for professional employment and development.

Apply Knowledge And Skills In Projects And Real Work Environments

Performance Objective Description
Students will practice and demonstrate their capabilities and skills relevant to information assurance and security in projects similating real world tasks.

Final Capstone Project Assessment

KPI Description
The final project in this degree program is a capstone project that involves the students identifying a significant application development need for a selected client and the design and implementation of an appropriate solution to that need.

Each student is assigned to a member of the graduate faculty among graduate faculty 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.

Results Description
The Graduate Advisor manages and monitors the administrative aspects of project management including:

1. scheduling proposal presentations
2. receiving reports from committee chairs
3. Scheduling project defenses

Eight students successfully defended their capstone projects. There were no unsuccessful defenses.

Copy of Project Defense Assessment Data

Assessment

Action Description
Graduate programs in the department of Computer Science do not have formal assessment procedures comparable with those in undergraduate programs. The Graduate Curriculum Committee has concentrated on improving curriculum. It's attention now needs to be turned to developing quantitative rather than qualitative assessment tools.

Professional development

Action Description
Graduate programs in the department of Computer Science do not currently have systems in place to tack alumni professional performance. The Graduate Curriculum Committee needs to develop procedures for tracking employment data on alumni to measure the effectiveness of the Information Assurance and Security program in providing the skills necessary for professional employment and development.

Update to Previous Cycle's Plan for Continuous Improvement

Previous Cycle's Plan For Continuous Improvement (Do Not Modify)
The department has only one year's worth of data reflecting the changes to the comprehensive examinations and the capstone project assessment. The department takes the position that multiple years of data are required to determine the effectiveness of the changes.

Update of Progress to the Previous Cycle's PCI
Currently, assessment of the graduate program is conducted within the graduate curriculum committee and the project/thesis committees.

The graduate curriculum committee will plan additional assessment mechanisms to include exit interviews with graduating students and third party program and performance assessment.

To enhance the research capability of student the graduate curriculum committee will explore the benefits associated with non-credit mandatory rotation based research studies for every student in their second semester of the program.

Program Assessment Planning

Closing Summary
Graduate programs in the department of Computer Science do not currently have systems in place to track alumni professional performance. This is an issue that needs to be addressed in all three existing graduate programs. The Graduate Curriculum Committee will develop the following in the 2016/17 cycle:

1. A rubric to provide a quantitative measure of student performance on comprehensive examinations.
2. A rubric to provide quantitative and qualitative data on student performance in final projects/theses.
3. Tools to provide comparisons of performance on comprehensive examinations, final projects/theses, and course grades.
4. Tools to track alumni career growth over the long term.

Department of Geography and Geology

Assessment Plan Summary
Department: Geography BA

Sam Houston State University

President, Office of

Academic Affairs, Division of

Sciences, College of

Geography and Geology, Department of

Geography BA

Demonstrate Knowledge Of Cultural Concepts In Geography

Goal Description
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.

Related Items/Elements
Demonstrate Knowledge Of Cultural Concepts In Geography

Learning Objective Description
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.

Cultural Geography Concepts

Indicator Description
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 Description
Students will score 70% correct on those questions pertaining to each of the two areas of emphasis associated with cultural geography concepts.

Findings Description
FINDING: Student Learning Outcomes Concerning Cultural Concepts

Students enrolled in GEOG 3350 scored an average of 70% on a set of questions focused upon human systems. Students enrolled in GEOG 1321 and GEOG 2301 scored an average of 67% and 72% on those same questions. These scores were slightly higher than scores generated from the previous assessment. Students enrolled in GEOG 3350 scored 64% on questions concerning the interaction of the environment and society, while students enrolled in GEOG 1321 scored an average of 63% on these questions. The scores on these questions

were below expectation for both courses, and did decrease slightly from the previous year. Students enrolled in GEOG 2301 scored on average of 71%, a lower score than recognized from the previous assessment, yet still slightly above expectation.

Addition of New Course on Sustainable Development

Action Description
ACTION: The most identifiable student weakness relevant to cultural geography pertained to the identification of connections between human society and the environment. Yet it did appear that students performed well on this subject when enrolled in one particular course (GEOG 2301) that more directly focuses on this subject matter. Based on this recognition, in Fall 2016 we will be offering another new course that also straddles the study of both human systems and the environment; Sustainable Development.

Training Geographically Informed Students

Goal Description
Students completing core education in geography will be able to demonstrate foundational knowledge of geographic principles and concepts about the physical world.

Related Items/Elements
Demonstrate Knowledge Of Foundational Concepts Of Physical Geography

Learning Objective Description
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.

Physical Geography Concepts

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

Findings Description
FINDINGS: Student Results Concerning Physical Geography Concepts

Students enrolled in GEOG 1321 scored on average 64% on those questions pertaining to the world in spatial terms. This score is slightly lower than the score found the previous year, and slightly lower than expected. Students enrolled in GEOG 1401 scored on average 63% on questions assessing this concept, less than expected although higher than that of evident from the previous year. Students enrolled in GEOG 2301 scored on average 75% on these questions, a score higher than expected. Students performed as well on this assessment area as they did on the exams as a whole.

Students enrolled in both GEOG 1321 and GEOG 2301 scored on average 72% and 74%, respectively, on questions pertaining to concepts of places and regions. Both scores are slightly higher than was found the previous year, and both scores meet expectations. Students enrolled in GEOG 1401 scored on average 59% on such questions, a lower score than realized previously, and one that did not meet expectations. In those this assessment area students generally performed as well as they did on exams as a whole.

Students enrolled in GEOG 1321 scored 62% on questions pertaining to physical systems, while students enrolled in GEOG 1401 scored 64% on such questions. Both scores decreased slightly from that of the previous year. Students enrolled in GEOG 2301 scored on average a 77% on these questions, a score that represents and improvement when compared to the previous assessment cycle.

Addition of New Courses Focused on Physical Geography

Action Description
Student performance on content and concepts pertaining to physical geography has been a weakness of our students for some time. The most significant action we will make to improve this weakness will be the offering of new courses that will fall within this sub-field (ex. Introduction to physical geography, hydrology, and environmental sustainability). Providing students these additional course options will significantly increase their exposure to subject areas where they need improvement.

First-Year Foundational Geographical Principles And Concepts

Learning Objective Description
Students completing core curriculum education in geography will be able to demonstrate foundational knowledge of geographic concepts and principles, including critical thinking.

Comprehensive Final Exam

Indicator Description
Common embedded questions on the comprehensive final exam will determine student knowledge regarding general geographic concepts.

Criterion Description
The average scores will be 70% correct on the general geographic concept questions embedded in the comprehensive exam.

Findings Description
FINDINGS: **Performance On General Geographic Concept Questions**

Students enrolled in GEOG 1401 averaged 61% on a series of specific concept questions embedded in a comprehensive final exam. Students enrolled in GEOG 1321 averaged 72% on a separate, yet very similar, series of concept questions. As was the case in the previous assessment cycle, scores for GEOG 1401 students were consistent with overall overage scores on the respective final exams, while scores for GEOG 1321 students were significantly higher that final exam averages. The scores among students enrolled in GEOG 1401 were slightly higher than those from the previous year. The scores for students enrolled in GEOG 1321, while slightly lower than the previous year, did still meet the 70% criterion.

Enhancing exposure to charts/graphs/maps

Action Description
One clearly identified component of a geographic education that students seems to struggle with is the familiarity with and comprehension of charts, graphs and diagrams used to demonstrate geographic phenomena. A weakness in this area is especially noticeable among students registered in GEOG 1401. Moving forward, we plan to increase the use of graphs/charts in lab sections of GEOG 1401, with the assumption being that students may more effectively learn these skills when exposed to such devices in a more intimate setting (as opposed to being exposed to them in a large lecture-based environment).

Comprehensive Final Exam - Geographic Principles Portion

Indicator Description
The final faculty-developed comprehensive exam will indicate students' grasp of major geographic principles, including critical thinking.

Criterion Description
The average score will be 70% correct of the major geographic principles and critical thinking items embedded on the comprehensive exam.

Findings Description
FINDING: Performance On Questions Pertaining To Major Geographic

Concepts And Critical Thinking

Students enrolled in GEOG 1401 averaged 63% 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 74% on a similar series of questions. In both cohorts of students this represents an improvement from results found from the previous assessment cycle. Students also improved in both courses on questions requiring the interpretation of graphs and charts, although students enrolled in GEOG 1401 still performed below the identified 70% criterion. Students enrolled in GEOG 1401 averaged 58% on such questions, while students enrolled in GEOG 1321 averaged 70%. Students enrolled in both courses once scored significantly lower than expected on questions requiring the interpretation of basic statistics, although scores for both sets of students improved slightly from the previous year. Students enrolled in GEOG 1401 averaged 53% on such questions, while those enrolled in GEOG 1321 averaged 60% on them.

Enhancing exposure to charts/graphs/maps

Action Description

One clearly identified component of a geographic education that students seems to struggle with is the familiarity with and comprehension of charts, graphs and diagrams used to demonstrate geographic phenomena. A weakness in this area is especially noticeable among students registered in GEOG 1401. Moving forward, we plan to increase the use of graphs/charts in lab sections of GEOG 1401, with the assumption being that students may more effectively learn these skills when exposed to such devices in a more intimate setting (as opposed to being exposed to them in a large lecture-based environment).

Update to Previous Cycle's Plan for Continuous Improvement

Previous Cycle's Plan For Continuous Improvement (Do Not Modify)

Based on the assessment of 2014-2015, it would appear that we have improved somewhat in the teaching of both basic and major geographical concepts, but only among students completing one of our introductory courses (GEOG 1321) assessed. Students enrolled in GEOG 1401 demonstrate scores that are persistently below the acceptable level. As identified earlier in earlier assessments, the dichotomy in regards to learning outcomes between the two courses is almost certainly due to the fact that the various sections of GEOG 1401 offered included rather large classes (over 80 students). These larger sections of GEOG 1401 (Weather & Climate) also enroll a cross-section of studies from across the university, as opposed to a disproportionately higher number of majors (which is the case with GEOG 1321). For this reason we plan to continue to more assertively implement methodologies that seem to work in GEOG 1321 into the smaller “lab” sections of GEOG 1401. The inclusion of a new course within the curriculum (GEOG 2301) seem to enhance the learning of physical systems among our students, an effect that seemed to prevail across all courses. For this reason, we plan to use the results of this assessment to explore the potential addition of more new courses that could prove valuable in increasing the learning of “niche” content critical to the realization of a geographic education (maybe an in-house statistics course

designed specifically for geography majors?). Our most immediate plans call for the inclusion of two more of introductory courses in assessment efforts (GEOG 2355 & 2356). Given that these courses are designed to focus explicitly on subject matter pertaining to "world regions," a major learning goal of geography majors, we feel the incorporation of them in assessment efforts will help provide a clearer picture of what our students are learning and what they are not learning.

Update of Progress to the Previous Cycle's PCI
UPDATE TO PLAN FOR CONTINUOUS IMPROVEMENT

Closing Update:

Based on the assessment of 2015-2016, it would appear that we have slightly improved our teaching of both basic and major geographical concepts, but only in certain areas and/or only among students completing a select number of our courses (for example, students in GEOG 1321, 2301 and 3350 generally perform better than students enrolled in GEOG 1401). This dichotomy is almost certainly due to the varied nature of the courses assessed. Weather & Climate (GEOG 1401), a course where students perform less well, is a core curriculum course enrolling large numbers of students from across campus (over 80 students per section). The other courses assessed (GEOG 1321, 2301 and 3350) enroll smaller numbers of students (30 or less), with many of the students enrolled being geography majors. For this reason we plan to continue our efforts to more assertively implement methodologies that seem to work in GEOG 1321 into the smaller "lab" sections of GEOG 1401. It must be noted that this can be a challenge when the lab TAs are undergraduates themselves. That said, students enrolled in 1401 did improve their performance in areas pertaining to both "world in spatial terms" and "interpretation of charts & graphs." Pedagogical methodologies previously utilized in other geography courses (1321 & 2301) to teach these two subject areas were newly implemented in GEOG 1401 labs during this last year. In short, our efforts towards improving the delivery of important concepts in 1401 through the incorporation of methods proven successful in other courses have already proven somewhat successful.

The offering of Environmental Geography (GEOG 2301) has enabled us to effectively teach concepts related to physical systems among our students, a finding overwhelmingly supported by the results of this assessment. Partially due to this recognition, we have arranged to offer a new course specifically focused on Physical Geography. The new course has been approved and will be offered for the first time in Fall 2016 and will be required of all geography majors. The new course will be taught by a newly appointed environmental geography, who in time will offer a number of courses in the sub-area of physical geography. We expect to incorporate the new physical geography course in future assessments, which should enable us to more accurately gage how effective we are at delivering content relate to physical systems.

Our plans to include two additional introductory "regional geography" courses in assessment efforts (GEOG 2355 & 2356) had to be put on hold this past year. The reason for this was that both courses had to be partially redesigned to meet the needs of a host of education majors, many of which are now required to enroll in them in order to complete their degrees. Now that this transition has been made we will be assessing student performances in these courses, specifically when it comes to focusing on the learning pertaining to "world regions." The inclusion of these two courses in assessment efforts will provide a clearer picture of now effective we are at teaching a critical aspect of a geographic education.

Based on previous recognition that students were not performing all that well when it came to basic statistical procedures, we implemented a requirement that all geography majors complete an introductory statistical course. However, as of yet this change has only applied to a few of our new majors. It is our prediction that the impact of this change will not really show up for a few years. This past assessment demonstrated that some of our students improved their performance in this subject area, but not all. Depending on the outcomes of future assessment, there may be a possibility that we deem it necessary to develop our own "in-house statistics course specifically designed for geography majors.

Plan for Continuous Improvement

Closing Summary

Based on the assessment of 2015-2016, it would appear that we have slightly improved our teaching of both basic and major geographical concepts, but only in certain areas and/or only among students completing a select number of our courses (for example, students in GEOG 1321, 2301 and 3350 generally perform better than students enrolled in GEOG 1401). This dichotomy is almost certainly due to the varied nature of the courses assessed. Weather & Climate (GEOG 1401), a course where students perform less well, is a core curriculum course enrolling large numbers of students from across campus (over 80 students per section). The other courses assessed (GEOG 1321, 2301 and 3350) enroll smaller numbers of students (30 or less), with many of the students enrolled being geography majors. For this reason we plan to continue our efforts to more assertively implement methodologies that seem to work in GEOG 1321 into the smaller "lab" sections of GEOG 1401. It must be noted that this can be a challenge when the lab TAs are undergraduates themselves. That said, students enrolled in 1401 did improve their performance in areas pertaining to both "world in spatial terms" and "interpretation of charts & graphs." Pedagogical methodologies previously utilized in other geography courses (1321 & 2301) to teach these two subject areas were newly implemented in GEOG 1401 labs during this last year. In short, our efforts towards improving the delivery of important concepts in 1401 through the incorporation of methods proven successful in other courses have already proven somewhat successful.

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Based on previous recognition that students were not performing all that well when it came to basic statistical procedures, we implemented a requirement that all geography majors complete an introductory statistical course. However, as of yet this change has only applied to a few of our new majors. It is our prediction that the impact of this change will not really show up for a few years. This past assessment demonstrated that some of our students improved their performance in this subject area, but not all. Depending on the outcomes of future assessment, there may be a possibility that we deem it necessary to develop our own "in-house statistics course specifically designed for geography majors.

Assessment Plan Summary
Department: Geography BS

Sam Houston State University

President, Office of

Academic Affairs, Division of

Sciences, College of

Geography and Geology, Department of

Geography BS

Training Geographically Informed Students

Goal Description
Students completing core education in geography will be able to demonstrate foundational knowledge of geographic principles and concepts about the physical world.

Related Items/Elements
Demonstrate Knowledge Of Foundational Concepts Of Physical Geography

Learning Objective Description
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.

Physical Geography Concepts

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

Findings Description
Finding: Student Results Concerning Physical Geography Concepts

Students enrolled in GEOG 1321 scored on average 64% on those questions pertaining to the
world in spatial terms. This score is slightly lower than the score found the

previous year, and slightly lower than expected. Students enrolled in GEOG 1401 scored on average 63% on questions assessing this concept, less than expected and although higher than that of the previous year. Students enrolled in GEOG 2301 scored on average 75 % on these questions, a score higher than expected. Students enrolled in both GEOG 1321 and GEOG 2301 scored on averaged 72% and 74%, respectively, on questions pertaining to concepts of places and regions. Both scores are slightly higher than was found the previous year, and both scores meet expectations. Students enrolled in GEOG 1401 scored on average 59% on such questions, a lower score than realized previously, and one that did not meet expectations. In those two assessment areas, students generally performed as well as they did on exams as a whole. Students enrolled in GEOG 1321 scored 62% on questions pertaining to physical systems, while students enrolled in GEOG 1401 scored 64% on such questions. Both scores were slightly decreased from that of the previous year. Students enrolled in GEOG 2301 scored on average a 77% on these questions.

Acting on Assessment

Action Description

The offering of Environmental Geography (GEOG 2301) has enabled us to effectively teach concepts related to physical systems among our students, a finding overwhelmingly supported by the results of this assessment. Partially due to this recognition, we have arranged to offer a new course specifically focused on Physical Geography. The new course has been approved and will be offered for the first time in Fall 2016 and will be required of all geography majors. The new course will be taught by a newly appointed environmental geography, who in time will offer a number of courses in the sub-area of physical geography. We expect to incorporate the new physical geography course in future assessments, which should enable us to more accurately gage how effective we are at delivering content relate to physical systems.

Our plans to include two additional introductory “regional geography” courses in assessment efforts (GEOG 2355 & 2356) had to be put on hold this past year. The reason for this was that both courses had to be partially redesigned to meet the needs of a host of education majors, many of which are now required to enroll in them in order to complete their degrees. Now that this transition has been made we will be assessing student performances in these courses, specifically when it comes to focusing on the learning pertaining to “world regions.” The inclusion of these two courses in assessment efforts will provide a clearer picture of now effective we are at teaching a critical aspect of a geographic education.

Based on previous recognition that students were not performing all that

well when it came to basic statistical procedures, we implemented a requirement that all geography majors complete an introductory statistical course. However, as of yet this change has only applied to a few of our new majors. It is our prediction that the impact of this change will not really show up for a few years. This past assessment demonstrated that some of our students improved their performance in this subject area, but not all. Depending on the outcomes of future assessment, there may be a possibility that we deem it necessary to develop our own “in-house statistics course specifically designed for geography majors.

First-Year Foundational Geographical Principles And Concepts

Learning Objective Description
Students completing core curriculum education in geography will be able to demonstrate foundational knowledge of geographic concepts and principles, including critical thinking.

Comprehensive Final Exam

Indicator Description
Common embedded questions on the comprehensive final exam will determine student knowledge regarding general geographic concepts.

Criterion Description
The average scores will be 70% correct on the general geographic concept questions embedded in the comprehensive exam.

Findings Description
FINDING: Performance On General Geographic Concept Questions

Students enrolled in GEOG 1401 averaged 61% on a series of specific concept questions embedded in a comprehensive final exam. Students enrolled in GEOG 1321 averaged 72% on a separate, yet very similar, series of concept questions. As was the case in the previous assessment cycle, scores for GEOG 1401 students were consistent with overall overage scores on the respective final exams, while scores for GEOG 1321 students were significantly higher that final exam averages. The scores among students enrolled in GEOG 1401 were slightly higher than those from the previous year. The scores for students enrolled in GEOG 1321, while slightly lower than the previous year, did still meet the 70% criterion.

Acting on Assessment

Action Description
The offering of Environmental Geography (GEOG 2301) has enabled us to effectively teach concepts related to physical systems among our students, a finding overwhelmingly supported by the results of this assessment. Partially due to this recognition, we have arranged to offer a

new course specifically focused on Physical Geography. The new course has been approved and will be offered for the first time in Fall 2016 and will be required of all geography majors. The new course will be taught by a newly appointed environmental geography, who in time will offer a number of courses in the sub-area of physical geography. We expect to incorporate the new physical geography course in future assessments, which should enable us to more accurately gage how effective we are at delivering content relate to physical systems.

Our plans to include two additional introductory “regional geography” courses in assessment efforts (GEOG 2355 & 2356) had to be put on hold this past year. The reason for this was that both courses had to be partially redesigned to meet the needs of a host of education majors, many of which are now required to enroll in them in order to complete their degrees. Now that this transition has been made we will be assessing student performances in these courses, specifically when it comes to focusing on the learning pertaining to “world regions.” The inclusion of these two courses in assessment efforts will provide a clearer picture of now effective we are at teaching a critical aspect of a geographic education.

Based on previous recognition that students were not performing all that well when it came to basic statistical procedures, we implemented a requirement that all geography majors complete an introductory statistical course. However, as of yet this change has only applied to a few of our new majors. It is our prediction that the impact of this change will not really show up for a few years. This past assessment demonstrated that some of our students improved their performance in this subject area, but not all. Depending on the outcomes of future assessment, there may be a possibility that we deem it necessary to develop our own “in-house statistics course specifically designed for geography majors.

Comprehensive Final Exam - Geographic Principles Portion

Indicator Description
The final faculty-developed comprehensive exam will indicate students' grasp of major geographic principles, including critical thinking.

Criterion Description
The average score will be 70% correct of the major geographic principles and critical thinking items embedded on the comprehensive exam.

Findings Description
FINDINGS: **Performance On Questions Pertaining To Major Geographic Concepts And Critical Thinking**

Students enrolled in GEOG 1401 averaged 63% 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 74% on a similar series of questions. In both cohorts of students this represents

an improvement from results found from the previous assessment cycle. Students also improved in both courses on questions requiring the interpretation of graphs and charts, although students enrolled in GEOG 1401 still performed below the identified 70% criterion. Students enrolled in GEOG 1401 averaged 58% on such questions, while students enrolled in GEOG 1321 averaged 70%. Students enrolled in both courses once scored significantly lower than expected on questions requiring the interpretation of basic statistics, although scores for both sets of students improved slightly from the previous year. Students enrolled in GEOG 1401 averaged 53% on such questions, while those enrolled in GEOG 1321 averaged 60% on them.

Acting on Assessment

Action Description

The offering of Environmental Geography (GEOG 2301) has enabled us to effectively teach concepts related to physical systems among our students, a finding overwhelmingly supported by the results of this assessment. Partially due to this recognition, we have arranged to offer a new course specifically focused on Physical Geography. The new course has been approved and will be offered for the first time in Fall 2016 and will be required of all geography majors. The new course will be taught by a newly appointed environmental geography, who in time will offer a number of courses in the sub-area of physical geography. We expect to incorporate the new physical geography course in future assessments, which should enable us to more accurately gage how effective we are at delivering content relate to physical systems.

Our plans to include two additional introductory “regional geography” courses in assessment efforts (GEOG 2355 & 2356) had to be put on hold this past year. The reason for this was that both courses had to be partially redesigned to meet the needs of a host of education majors, many of which are now required to enroll in them in order to complete their degrees. Now that this transition has been made we will be assessing student performances in these courses, specifically when it comes to focusing on the learning pertaining to “world regions.” The inclusion of these two courses in assessment efforts will provide a clearer picture of now effective we are at teaching a critical aspect of a geographic education.

Based on previous recognition that students were not performing all that well when it came to basic statistical procedures, we implemented a requirement that all geography majors complete an introductory statistical course. However, as of yet this change has only applied to a few of our new majors. It is our prediction that the impact of this change will not really show up for a few years. This past assessment demonstrated that some of our students improved their performance in this subject area, but not all. Depending on the outcomes of future assessment, there may be a possibility that we deem it necessary to develop our own “in-house statistics course specifically designed for geography majors.

Training Geographically Informed Students - Cultural Aspects

Goal Description
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.

Related Items/Elements

Demonstrate Knowledge Of Cultural Concepts In Geography

Learning Objective Description
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.

Cultural Geography Concepts

Indicator Description
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 Description
Students will score 70% correct on those questions pertaining to each of the two areas of emphasis associated with cultural geography concepts.

Findings Description
FINDING: Student Learning Outcomes Concerning Cultural Concepts

Students enrolled in GEOG 3350 scored an average of 70% on a set of questions focused upon human systems. Students enrolled in GEOG 1321 and GEOG 2301 scored an average of 67% and 72% on those same questions. These scores were slightly higher than scores generated from the previous assessment. Students enrolled in GEOG 3350 scored 64% on questions concerning the interaction of the environment and society, while students enrolled in GEOG 1321 scored an average of 63% on these questions. The scores on these questions were below expectation for both courses, and did decrease slightly from the previous year. Students enrolled in GEOG 2301 scored on average of 71%, a lower score than recognized from the previous assessment, yet still slightly above expectation

Acting on Assessment

Action Description
The offering of Environmental Geography (GEOG 2301) has enabled us to effectively teach concepts related to physical systems among our students, a finding overwhelmingly supported by the results of this assessment. Partially due to this recognition, we have arranged to offer a new course specifically focused on Physical Geography. The new course has been approved and will be offered for the first time in Fall 2016 and

will be required of all geography majors. The new course will be taught by a newly appointed environmental geography, who in time will offer a number of courses in the sub-area of physical geography. We expect to incorporate the new physical geography course in future assessments, which should enable us to more accurately gage how effective we are at delivering content relate to physical systems.

Our plans to include two additional introductory “regional geography” courses in assessment efforts (GEOG 2355 & 2356) had to be put on hold this past year. The reason for this was that both courses had to be partially redesigned to meet the needs of a host of education majors, many of which are now required to enroll in them in order to complete their degrees. Now that this transition has been made we will be assessing student performances in these courses, specifically when it comes to focusing on the learning pertaining to “world regions.” The inclusion of these two courses in assessment efforts will provide a clearer picture of now effective we are at teaching a critical aspect of a geographic education.

Based on previous recognition that students were not performing all that well when it came to basic statistical procedures, we implemented a requirement that all geography majors complete an introductory statistical course. However, as of yet this change has only applied to a few of our new majors. It is our prediction that the impact of this change will not really show up for a few years. This past assessment demonstrated that some of our students improved their performance in this subject area, but not all. Depending on the outcomes of future assessment, there may be a possibility that we deem it necessary to develop our own “in-house statistics course specifically designed for geography majors.

Update to Previous Cycle's Plan for Continuous Improvement

Previous Cycle's Plan For Continuous Improvement (Do Not Modify)
Based on the assessment of 2014-2015, it would appear that we have improved somewhat in the teaching of both basic and major geographical concepts, but only among students completing one of our introductory courses (GEOG 1321) assessed. Students enrolled in GEOG 1401 demonstrate scores that are persistently below the acceptable level. As identified earlier in earlier assessments, the dichotomy in regards to learning outcomes between the two courses is almost certainly due to the fact that the various sections of GEOG 1401 offered included rather large classes (over 80 students). These larger sections of GEOG 1401 (Weather & Climate) also enroll a cross-section of studies from across the university, as opposed to a disproportionately higher number of majors (which is the case with GEOG 1321). For this reason we plan to continue to more assertively implement methodologies that seem to work in GEOG 1321 into the smaller “lab” sections of GEOG 1401. The inclusion of a new course within the curriculum (GEOG 2301) seem to enhance the learning of physical systems among our students, an effect that seemed to prevail across all courses. For this reason, we plan to use the results of this assessment to explore the potential addition of more new courses that could prove valuable in increasing the learning of “niche” content critical to the realization of a geographic education (maybe an in-house statistics course designed specifically for geography majors?). Our most immediate plans call for the inclusion of two more of introductory courses in assessment efforts (GEOG 2355 & 2356). Given that these courses are designed to focus explicitly on subject matter pertaining to “world regions,” a major

learning goal of geography majors, we feel the incorporation of them in assessment efforts will help provide a clearer picture of what our students are learning and what they are not learning.

Update of Progress to the Previous Cycle's PCI
UPDATE TO PLAN FOR CONTINUOUS IMPROVEMENT

Based on the assessment of 2015-2016, it would appear that we have slightly improved our teaching of both basic and major geographical concepts, but only in certain areas and/or only among students completing a select number of our courses (for example, students in GEOG 1321, 2301 and 3350 generally perform better than students enrolled in GEOG 1401). This dichotomy is almost certainly due to the varied nature of the courses assessed. Weather & Climate (GEOG 1401), a course where students perform less well, is a core curriculum course enrolling large numbers of students from across campus (over 80 students per section). The other courses assessed (GEOG 1321, 2301 and 3350) enroll smaller numbers of students (30 or less), with many of the students enrolled being geography majors. For this reason we plan to continue our efforts to more assertively implement methodologies that seem to work in GEOG 1321 into the smaller "lab" sections of GEOG 1401. It must be noted that this can be a challenge when the lab TAs are undergraduates themselves. That said, students enrolled in 1401 did improve their performance in areas pertaining to both "world in spatial terms" and "interpretation of charts & graphs." Pedagogical methodologies previously utilized in other geography courses (1321 & 2301) to teach these two subject areas were newly implemented in GEOG 1401 labs during this last year. In short, our efforts towards improving the delivery of important concepts in 1401 through the incorporation of methods proven successful in other courses have already proven somewhat successful.

The offering of Environmental Geography (GEOG 2301) has enabled us to effectively teach concepts related to physical systems among our students, a finding overwhelmingly supported by the results of this assessment. Partially due to this recognition, we have arranged to offer a new course specifically focused on Physical Geography. The new course has been approved and will be offered for the first time in Fall 2016 and will be required of all geography majors. The new course will be taught by a newly appointed environmental geography, who in time will offer a number of courses in the sub-area of physical geography. We expect to incorporate the new physical geography course in future assessments, which should enable us to more accurately gage how effective we are at delivering content relate to physical systems.

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This past assessment demonstrated that some of our students improved their performance in this subject area, but not all. Depending on the outcomes of future assessment, there may be a possibility that we deem it necessary to develop our own "in-house statistics course specifically designed for geography majors.

Plan for Continuous Improvement

Closing Summary

Based on the assessment of 2015-2016, it would appear that we have slightly improved our teaching of both basic and major geographical concepts, but only in certain areas and/or only among students completing a select number of our courses (for example, students in GEOG 1321, 2301 and 3350 generally perform better than students enrolled in GEOG 1401). This dichotomy is almost certainly due to the varied nature of the courses assessed. Weather & Climate (GEOG 1401), a course where students perform less well, is a core curriculum course enrolling large numbers of students from across campus (over 80 students per section). The other courses assessed (GEOG 1321, 2301 and 3350) enroll smaller numbers of students (30 or less), with many of the students enrolled being geography majors. For this reason we plan to continue our efforts to more assertively implement methodologies that seem to work in GEOG 1321 into the smaller "lab" sections of GEOG 1401. It must be noted that this can be a challenge when the lab TAs are undergraduates themselves. That said, students enrolled in 1401 did improve their performance in areas pertaining to both "world in spatial terms" and "interpretation of charts & graphs." Pedagogical methodologies previously utilized in other geography courses (1321 & 2301) to teach these two subject areas were newly implemented in GEOG 1401 labs during this last year. In short, our efforts towards improving the delivery of important concepts in 1401 through the incorporation of methods proven successful in other courses have already proven somewhat successful.

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Based on previous recognition that students were not performing all that well when it came to basic statistical procedures, we implemented a requirement that all geography majors complete an introductory statistical course. However, as of yet this change has only applied to a few of our new majors. It is our prediction that the impact of this change will not really show up for a few years. This past assessment demonstrated that some of our students improved their performance in this subject area, but not all. Depending on the outcomes of future assessment, there may be a possibility that we deem it necessary to develop our own “in-house statistics course specifically designed for geography majors.

Department of Mathematics and Statistics

Assessment Plan Summary
Department: Mathematics MS

Sam Houston State University

President, Office of

Academic Affairs, Division of

Sciences, College of

Mathematics and Statistics, Department of

Mathematics MS

Develop Consistent & Stable Cohort Size

Goal Description
A fall cohort of ten supported graduate students allows us to maintain a healthy program with consistent class sizes, class schedules and graduation rates above 7 students per year.

Related Items/Elements

Focus On Fall Cohorts

Learning Objective Description
We will focus on strong Fall term cohorts of 10 students. We will rarely allow students to enter during the Spring term. Students will not be allowed to enter in the Summer term.

Support Ten New Students Each Year

Performance Objective Description
We will support ten new graduate students each year, as many as twenty in the two years of our program. Support should be such that full time students are supported by at least $10,000 more than the cost of tuition and fees.

During 2016, we brought in nine new graduate students, just one short of our goal.

Expand size of program

KPI Description
We'd like to be able to accept 10 new students each year.... this would allow us to offer several different 2nd year elective courses for MS-Math students: some for applied mathematicians, something for pure mathematicians.

Results Description
With the phase-out of PEERS (which funded 3-4 TA positions each year) this goal has proven difficult to meet. We struggle to find 7 new graduate students each Fall semester.

Improving and Updating the MS-Math program

Action Description
A new MS-Math coordinator will result in a fresh perspective in growing our MS program. Attracting more domestic students will result in fewer students who have a higher financial burden on international students who are required to pay for health insurance (these costs increase dramatically each year).

Develop Research Skills

Goal Description
Students who choose to complete a thesis will develop research skills

Related Items/Elements

Demonstrate Graduate-Level Research Skills

Learning Objective Description
Students completing the MS with a thesis will demonstrate skills in completing original research.

Thesis Defense Rubric

Indicator Description
The attached rubric will be used to rate student research during the thesis defense.

Criterion Description
MS students choosing to complete a thesis will score either a "fail", "pass" or "high pass" on their thesis based on the given rubric.

Findings Description
Unfortunately, no MS-Math students have chosen to complete the thesis option since 2014. When a student completes a thesis, we will evaluate the performance of our grading rubric.

Participation In Colloquia

Learning Objective Description
Faculty will hold a regular colloquium series and graduate students will be encouraged to participate in that series.

Consistent Colloquium Series

Indicator Description
The Faculty Colloquium series will have 3 or more meetings per month. One or more talks during the school year in the colloquium series will be given by graduate students. At least half of the graduate students will attend that colloquium on a regular basis.

Findings Description
Our department colloquium is currently held every other week during the Fall and Spring semesters, and typically one of those talks is a presentation by a current graduate student. All of our graduate TAs are now required to attend all of these colloquia.

Emphasize Written Communication Skills

Goal Description
The curriculum will provide students with opportunities to develop the skills typically required of professionals in the area of study.

Related Items/Elements

Communicating Mathematical Ideas-Written

Learning Objective Description
Students will be able to write rigorous proofs of mathematical statements, read mathematical research manuscripts, write formal mathematical papers, and use critical thinking skills to solve research problems.

Comprehensive Examination

Indicator Description
Students in the MS program will take a written comprehensive examination in the areas of abstract algebra and analysis. The examination will be scored by a committee of faculty.

Criterion Description
At least two-thirds of our students will pass their comprehensive examinations on their first attempt.

Findings Description
At the end of the 2015-16 academic year, 80% of our graduate students that completed our core sequences in algebra and analysis and attempted the comprehensive examinations for these areas were able to successfully pass both exams on their first attempt.

Conversation On Teaching

Learning Objective Description
Graduate faculty and graduate students will regularly discuss the teaching profession.

Teaching Seminar

Indicator Description
Graduate faculty will lead a teaching seminar with participation from graduate students. This seminar will meet at least monthly.

Findings Description
The graduate teaching seminar was initiated during the Fall 2014 semester and continues to meet once per month during the Fall and Spring semesters.

Students Will Be Proficient At LaTeX

Learning Objective Description
Graduate students will become proficient in the use of LaTeX for mathematical writing.

LaTeX Intensive Courses

Indicator Description
At least one course per semester in our MS-Math program will require LaTeX to be used in the submission of homework assignments. Whenever possible, these submissions will be accepted online using Blackboard.

Criterion Description
LaTeX is important for mathematicians to know. Being proficient in this programming language can be difficult to learn, but using class assignments can be used as an effective LaTeX teaching tool.

Findings Description
All students were required to turn in homework assignments in the core graduate course Real Analysis I and II. This guaranteed proficiency in LaTeX.

Improve Graduate Student Environment

Goal Description
We will increase and improve the graduate student environment, including office space and quality of office space, desks, tutoring area.

Related Items/Elements
Increased Office Space

Performance Objective Description
We will increase office space to comfortably handle 20 MS-Math students, each with their own desk and access to personal file cabinets.

Our current office space can currently handle 18 MS-Math students, each with their own desk and personal file cabinet.

More office space

KPI Description
We need more office space for TAs and adjunct instructors.

Results Description
We took an office on the first floor of LDB, and added three desks for three TAs.

We remodeled the TA office to increase capacity by more than 5 TAs. This is allowing us to house all graduate teaching assistants comfortably, and hope something else comes available by the time we grow beyond this space capacity.

Improving and Updating the MS-Math program

Action Description
A new MS-Math coordinator will result in a fresh perspective in growing our MS program. Attracting more domestic students will result in fewer students who have a higher financial burden on international students who are required to pay for health insurance (these costs increase dramatically each year).

Improve Graduate Student Support

Goal Description
We will increase graduate student support so that our program attacts good students who can study fulltime.

Related Items/Elements
Graduate Assistants Should Not Need A Second (Outside) Job

Performance Objective Description
We will increase graduate student support so that students in the program, including international students, can earn $1000/mo over tuition and fees. This will eliminate the need for our teaching assistant grad students to take a second outside job. (A second job + TA + 3 classes is difficult for domestic students and is illegal for international students.)

Improve Instruction By TAs

Goal Description
We will improve our instructional support for TA instruction in 1000-level classrooms.

Related Items/Elements
Conversation On Teaching

Learning Objective Description
Graduate faculty and graduate students will regularly discuss the teaching profession.

Teaching Seminar

Indicator Description
Graduate faculty will lead a teaching seminar with participation from graduate students. This seminar will meet at least monthly.

Findings Description
The graduate teaching seminar was initiated during the Fall 2014 semester and continues to meet once per month during the Fall and Spring semesters.

Participation In Colloquia

Learning Objective Description
Faculty will hold a regular colloquium series and graduate students will be encouraged to participate in that series.

Consistent Colloquium Series

Indicator Description
The Faculty Colloquium series will have 3 or more meetings per month. One or more talks during the school year in the colloquium series will be given by graduate students. At least half of the graduate students will attend that colloquium on a regular basis.

Findings Description
Our department colloquium is currently held every other week during the Fall and Spring semesters, and typically one of those talks is a presentation by a current graduate student. All of our graduate TAs are now required to attend all of these colloquia.

Mentoring Of 1000-level Instructors

Performance Objective Description
We will actively mentor graduate students teaching 1000-level classes.

Each graduate student that teaches a 1000-level course is now paired with a tenured faculty member who either is teaching the same course or has recently taught that course. This faculty member serves as a teaching mentor for the student throughout the semester.

Stable teaching load

KPI Description
We have standardized our workload for new TAs.... Their first year is spent helping with developmental courses, plus grading or being a teaching assistant for a faculty member. The second year is spent teaching at least one credit-bearing course with a faculty mentor offering assistance and advice.

Results Description
Teaching load is now standardized.

Stable Teaching Program

Performance Objective Description
We will develop a consistent and stable teaching schedule and program for TAs teaching 1000 level classes.

We are currently assigning each TA who has earned at least 18 hours of graduate credit a teaching assignment of one 1000 level course per semester.

Stable teaching load

KPI Description
We have standardized our workload for new TAs.... Their first year is spent helping with developmental courses, plus grading or being a teaching assistant for a faculty member. The second year is spent teaching at least one credit-bearing course with a faculty mentor offering assistance and advice.

Results Description
Teaching load is now standardized.

Update to Previous Cycle's Plan for Continuous Improvement

Previous Cycle's Plan For Continuous Improvement (Do Not Modify)
Current stipends and assistantships mean that many international applicants (approx 20/year) do not enter the program and some that come do not stay. International students are poorly supported by the campus. Meanwhile many domestic applicants have poor math preparation and struggle in the program.
(3 of 9 Fall 2015 grad new assistants either did not arrive in August or left shortly after classes began.)

We need to increase domestic recruiting of local students (Houston, SHSU) and see if we can build a domestic cohort while still recruiting a few students from pipeline countries like Sri Lanka.

We need the university to implement a tuition waiver for high quality, personally recruited minority students.

We need to begin a Bachelors+Masters 5 year program that will move some of our good math undergraduates into our program in a seamless manner.

Update of Progress to the Previous Cycle's PCI
Since stipends for our graduate teaching assistants have not increased, this year we continued to lose many high quality applicants (especially international students) to other graduate programs in Texas. Moreover, one applicant that accepted our offer did not actually arrive for the Fall semester.

Our new cohort of graduate students does include more domestic students that recently graduated from nearby universities than in previous years and we hope to continue this trend by actively recruiting from campuses like those they came from. We continue to have strong applicants from countries like Sri Lanka and Nigeria.

We were able to use the PEERS scholarship to recruit a minority student from a local Historically Black College, but since this program expires at the end of the current year it will be essential to find a new source of scholarship money in order to continue our success in this area.

Finally, a committee has assembled a preliminary plan for a 5 year BS+MS program that will be proposed.

Changing leadership in MS-Math

Closing Summary

We are happy with the growth we've seen in the MS-Math program. We have 7 new students each year (5 are needed to sustain a program) but would like 10. We have made sure our students get enough research experience and LaTeX exposure. We need to rely less on international students and less on external (federal) funding.

Assessment Plan Summary
Department: Statistics MS

Sam Houston State University

President, Office of

Academic Affairs, Division of

Sciences, College of

Mathematics and Statistics, Department of

Statistics MS

Consistent Cohort Of Graduate Students Each Year

Goal Description
A cohort of ten supported graduate students each year allows us to maintain a healthy program with consistent class sizes and class schedules.

Related Items/Elements
|Support Ten New Students Each Year

Learning Objective Description
We will support ten new graduate students each year, as many as twenty in the two years of our program. Support should be such that fulltime students are supported by at least $10,000 more than the cost of tuition

and fees.

Deliver A Curriculum That Emphasizes Communication Skills

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

Related Items/Elements
|Communicating Mathematical Ideas - Oral

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

Statistics Practicum

Indicator Description
A statistics practicum should be completed by the students under the guidance of

one of the faculty members (practicum supervisor). A letter grade is assigned for the practicum by the supervising faculty based on performance throughout the research project.

Criterion Description
All candidates will receive a letter grade by his/her supervising faculty.

Findings Description

All five students completed the practicum with B or better grades.

Continued success of MS program

Action Description
In both research and teaching, our MS program is excelling. An extraordinary amount of attention by faculty is given to each graduate student, as they struggle through their research and the coursework. Several hours are spent with each student, ensuring they pass their oral examination. We will continue to devote this attention to our MS students.

Deliver A Curriculum With Appropriate Discipline Specific Skill Sets

Goal Description
The curriculum will provide students with opportunities to develop the skills typically required of professionals in the area of study.

Related Items/Elements
Foundation Areas In Probability And Statistics

Learning Objective Description
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, Time Series Analysis, and statistical computing).

Comprehensive Oral Examination

Indicator Description
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.

Criterion Description

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.

Findings Description

Only one student passed two subjects at his second attempt and the other two subjects at the first attempt. All the other students passed all the subjects at the first attempt.

Continued success of MS program

Action Description
In both research and teaching, our MS program is excelling. An extraordinary amount of attention by faculty is given to each graduate student, as they struggle through their research and the coursework. Several hours are spent with each student, ensuring they pass their oral examination. We will continue to devote this attention to our MS students.

Improve Instruction By TAs

Goal Description
We will improve our instructional support for TA instruction in our elementary Statistics courses.

Related Items/Elements

Encourage And Train Teaching Assistants For Teaching

Learning Objective Description

Will encourage and assign teaching assistants in elementary statistics courses as instructors.

Evaluation TA

Indicator Description
Teaching evaluations and classroom visits by faculty

Findings Description

We have a designated course coordinator to coordinate graduate TA teaching.

This faculty member closely monitor their teaching. Everything went as planned.

Course coordinators

Action Description
Our TAs work with either STAT 1369 or 3379 courses. We have a coordinator for each of these courses who ensure enough TAs are available and computer labs are available to house the tutoring sessions.

Update to Previous Cycle's Plan for Continuous Improvement

Previous Cycle's Plan For Continuous Improvement (Do Not Modify)
We need more TA positions to have a healthy cohort of students. And also current TA stipend is not adequate. Our students are struggling financially due to low stipend and we are planning to communicate this to the university administration. The environment even harder for the international students due to the same reason. Need at least one more faculty member. We need more office space for students. A computer lab is required designated for graduate students in the department.

Update of Progress to the Previous Cycle's PCI
We have had success in increasing office space for TAs. The office of graduate studies has offered more scholarships for graduate students, but this has barely offset the increase in health insurance for non-domestic students. Our graduate students (particularly non-citizens) continue to struggle with financial difficulties.

Plan for Continuous Improvement

Closing Summary
We plan on submitting an application for STAT 1369 to be included in the university core. If approved, we could see a dramatic increase in enrollment in the course as early as Fall 2017. Therefore, a reliance on graduate students to teach this course is inevitable, and we should be prepared for the challenges of training these inexperienced TAs for the classroom. In addition, the preparation of entering students in this course (as opposed to first another core math course such as MATH 1314) will be significantly less than in previous semesters. We therefore will rely on our STAT TAs to provide more tutoring and academic support to underprepared students in the larger (and larger in number) statistics course.

Department of Physics

Assessment Plan Summary
Department: Physics BS

Sam Houston State University

President, Office of

Academic Affairs, Division of

Sciences, College of

Physics, Department of

Physics BS

Competence For Bachelor Of Science

Goal Description
Seniors studying Physics will demonstrate competence to graduate with a Bachelor of Science in Physics

Related Items/Elements
Mastery Of Fundamental Principles In Physics

Learning Objective Description
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.

Previous GRE Subject Test In Physics

Indicator Description
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 Description
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 ¼ penalty for wrong answers.

Findings Description
At the first day of class (spring semester 2016) of physics 4370, classical mechanics, a test consisting of 17 multiple choice questions was administered. Each question had five possible responses and the students were given 30 minutes to complete the exam. The test questions were taken from the physics graduate record exam (GRE) which many physics graduate schools use as an admission criteria. The questions were filtered to only reflect the course content, i.e. classical mechanics. As well as being a useful assessment tool, by giving the

physics GRE, the students gain valuable test taking practice which will help them gain admission to graduate schools. To induce the students to take the test more seriously, the student who made the highest score on the exam was given a free lunch with the faculty at Old Main Market, the campus cafeteria. A secondary goal was to have the students meet the faculty, one previous "winner" commented that going to lunch with the faculty was not as boring as they expected! Each correct answer was worth 1 point with a penalty of -.2 for incorrect answers. In the real GRE there is a penalty of -.25. A penalty of -.2 was chosen to encourage intuitive thinking. Pure guessing would give score of .68. On the actual physics GRE there are 100 questions for 170 minutes. To systematically work out a problem on the physics GRE takes from 5 to 15 minutes, assuming a good understanding of how to work the problem. Hence, informed guessing is very important to get a good score - a raw score of 50 is in the 59% percentile. 18 students took the exam. The mean score was 1.8 and the standard deviation was 2.2. A measure of the error is plus or minus .5 from the mean. A larger group of students would be helpful to draw meaningful conclusions. This would entail averaging over multiple years. A post test will be given to the 4370 class in the spring of 2017. The same test will be administered at the end of the semester. By giving the pretest and post tests in different semesters, the same test can be given, avoiding problems, of "teaching to the test" and varying difficulties of different versions of the GRE.

Previous GRE Exams

Action Description
GRE Physics tests will provide a standardized assessment, which is normalized to national expectations for graduating seniors with the physics degree.

Provide The Necessary Basic Skills For Beginning Students In Physics, The Physics/engineering Dual Degree And Pre Engineering Programs

Goal Description
The Department of Physics provides discipline-specific offerings for beginning students in physics, the dual degree in physics/engineering and pre engineering

Related Items/Elements

Apply Foundational Concepts

Learning Objective Description
Students who complete the second course in calculus based 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.

Comprehensive Exam

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

Criterion Description
Eighty percent of students completing the exam will score 70% or higher on the comprehensive exam.

Findings Description
Near the beginning of the spring semester of 2016, a faculty developed exam assessing foundational concepts in physics was administered to twenty physics 1411 students. Physics 1411 is the first semester in the calculus based physics sequence; the course is an introduction to Newtonian mechanics.

The assessment exam is therefore restricted to Newtonian mechanics. The test consisted of 20 multiple choice questions with 5 possible answers, no calculators were allowed. A full hour was allowed to take the test and there was no penalty for wrong answers. The student with the highest score on the exam won a free lunch with the physics faculty to Old Main Market, the university cafeteria. This was done to encourage the students to take the test seriously. The mean score was 5.9 with a standard deviation of 3.1. Therefore an estimate for the error in the mean is .7. A follow up exam will be given in the spring of 2017 near the end of the class to the physics 1411 students (different students). By giving the same exam to different groups of students the problems of teaching to the test and different difficulty levels of different versions of tests are avoided.

Comprehensive Exam

Action Description
The department will implement comprehensive examination of required skills at the completion of each upper-division required course.

Update to Previous Cycle's Plan for Continuous Improvement

Previous Cycle's Plan For Continuous Improvement (Do Not Modify)
More data collection is necessary before any meaningful conclusion can be reached.

Update of Progress to the Previous Cycle's PCI
More data was taken, but not enough to draw meaningful conclusions.

Only the initial assessment instrument was given for physics 1411 and physics 4370. This was done to avoid having the students take the same test at the beginning and the end of the semester or taking different tests of possibly different difficulties. The final assessment will be given to a different set of students in the upcoming year. A positive development is that physics 1411 and 4370 have been larger classes. There were roughly 35 in physics 1411 and 20 in physics 4370.

Plan for Continuous Improvement

Closing Summary
The department will use nationally standardized assessment tools for quantification of mastery and retention of essential skills.