




Online Assessment Tracking Database

Sam Houston State University (SHSU)
2014 - 2015

Computing Science BS

Goal	Specialized Competencies  To develop students' skills and knowledge in their concentration areas. The department offers three concentration areas: Computer Science, Information Systems, and Information Assurance.
Objective (L)	Specialized Skills  Students will develop and demonstrate skills and knowledge in their concentration areas. The department offers three concentration areas: Computer Science, Information Systems, and Information Assurance.
Indicator	Faculty Review   During department meetings faculty with expertise in the three concentration areas will discuss students' performances in their concentration areas. We expect that faculty in each concentration area will evaluate the students' performances across the 18 hours course sequence for each concentration.
Criterion	Specialized Skills Faculty Review Criterion  In last year's review the faculty assessed more than 70% of the students were performing at or above expected levels. As a result, the faculty set a higher expectation. We expect that the faculty will deem at least 72% or more of students' performances as acceptable.
Finding	Specialized Skills Faculty Review   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: <ul style="list-style-type: none"> • Student performance has show small but continuous improvements since 2013 accross the 11 Student Learning Objectives

identified by, and measured by the department.

- Four Student Learning Objectives have been identified as requiring the most attention; the ability to apply knowledge of computing and mathematics appropriate to the discipline, the ability to analyze a problem, and identify and define the computing requirements appropriate to its solution, the ability to analyze a problem, and identify and define the computing requirements appropriate to its solution, and the ability to use current techniques, skills, and tools necessary for computing practice.
- Performance on the program's four Learning Objectives have shown steady improvement since 2013.

Action

Specialized Skills Faculty Review 🔑

During fall 2015 the Departmental Undergraduate Curriculum Committee will explore mechanisms for improving performance in the four Student Learning Objectives identified as those with relatively weak student performance. Those mechanisms will be implemented in the assessment process in spring 2016.

Goal

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

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

Objective (L)

Acquisition Of Technical Skill, Management And Ethical Principles 🔑

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

Indicator

Capstone Project, Ethics Question, And TASO 🔑

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

Criterion

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

To perform a quantitative assessment, the following rubrics for the two courses are developed: (1) rubric for Project, (2) rubric for presentation evaluation, (3) rubric for group member evaluation, and (4) rubric for ethics topics. For COSC4319, faculty members observe students' project presentation and directly evaluate students' performance based upon the rubrics (1)-(3). On the other hand, for COSC4349, students' performance is indirectly evaluated through the exam questions that address rubric (4). Each category is rated with the following scale values: (1) 1.0 (below expectations or unacceptable), (2) 2.0 (evolving or developing), (3) proficient (or competent), and (4) outstanding (or exemplary). Student's performance on Student Outcomes is directly evaluated with each specific rubric, while the performance on objectives is indirectly measured by mapping between Student Outcomes and Program Objectives.

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

Finding

Students' Performance On Capstone Project, Ethics Questions And TASO

Student performance on the capstone project in COSC 4319 addresses 8 of the 11 ABET/CAC Student Outcomes. Fall 2013 and Spring 2014 results indicate somewhat improved performance in six of the eight student outcomes, with only one outcome (teamwork) showing no improvement.

The Ethics Test covers the three outcome that are not addressed by the Project assessment. One of the three student outcomes (Ethical responsibility) had a lower level than the previous academic year's level. The remaining outcomes (communication and evaluating local and global impacts) showed marked improvement.

Action

Acquisition Of Technical Skills And Management Skills

To improve confidence and significance of the analysis results, number of students, different weights for each outcome, and other factors should be considered. COSC4319 and COSC4349 do not have the same number of students, the difference in students' needs to be weighted properly. In particular, the UCC raised a concern on the number of students in each project, since it is difficult to measure each student's contribution, work, and learning. As a one solution, potential implementation of capstone

courses was discussed.

The level of attainment was evaluated by the CS UCC for each of the Student Outcomes (a)-(k) and the corresponding Program Education Objectives. Then, if needed, specific course contents have been revised to address the weaknesses. The TASO exam questions specifically on the topics of Software Engineering (Outcomes (i)-(k)) have been revised so as to more closely reflect the contents that are currently taught.

Previous Cycle's "Plan for Continuous Improvement"

As for periodic review and revision for continuous improvement of the program, the followings are planned for the next academic year:

- (1) Continuing documentation of the review and revision plan,
- (2) Continuing documentation of the utilization and revision of TASO exam as input into the continuous improvement process
- (3) Assessment of student outcomes specific to each concentration (i.e., each of CS, IS, and IA concentrations),
- (4) Continuing collection and analysis of the whole process and assessment of the implementation and effectiveness of the process.
- (5) Initiation of the assessment to the newly-approved programs (e.g., Software Engineering Technology and Electronics and Computer Engineering Technology)

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

Items identified in last year's plan for continuous improvement have been implemented with the exception of item 5 (Initiation of the assessment to the newly-approved programs (e.g., Software Engineering Technology and Electronics and Computer Engineering Technology). The Computer Software Engineering Technology program begins fall 2015. As a result it was not possible to collect any data, and the students are not expected to generate data for TASO or the Software Engineering project assessment until spring 2017.

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.

Plan for Continuous Improvement - Please detail your plan for improvement that you have developed based on what you learned from your 2014 - 2015 Cycle Findings.

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.
