

# **SCHOOL OF COMPUTING AND INFORMATION SCIENCES ASSESSMENT MECHANISMS AND PROCEDURES**

**of the**

**Bachelor of Science in Computer Science**

**(Revised November 16, 2010)**

## **I. INTRODUCTION**

The School of Computer and Information Sciences (SCIS) at Florida International University uses several mechanisms to assess the extent to which its undergraduate program outcomes and objectives are being met. Further, the School has defined procedures to evaluate the assessment results and to identify ways to improve its curriculum based on the assessment results, as deemed necessary and appropriate by its faculty.

SCIS currently uses four survey instruments:

1. Course Outcomes Survey by Students
2. Course Outcomes Survey by Instructors
3. Survey of Graduating Students
4. Survey of Alumni

Direct measure of attainment of the program outcomes is performed by assessment of student performance in the Senior Project course (Capstone course) taken in the students' final semester.

In addition to the data from the survey instruments and Senior Project assessment, SCIS seeks recommendations from other constituents of the BS in CS program, including the Industrial Advisory Board, Women in Engineering and Computer Science group, and the ACM student chapter.

## **II. ADMINISTRATIVE STRUCTURE**

To administer and evaluate these assessments, SCIS has created an administrative structure that includes:

- the Undergraduate Program Director (UPD),
- the Assessments Coordinator (AC),
- the Subject Area Coordinators (SACs)

The Undergraduate Program Director is appointed by Dean of the School.

The Assessments Coordinator and the Subject Area Coordinators are appointed by the Undergraduate Program Director.

Each course in the BS in Computer Science program falls under one of five subject areas, each with its own SAC: Programming, Software Engineering, Computer Systems, Foundations, and Communication & Ethics. Each Subject Area Coordinator is responsible for writing an annual report detailing recommendations for modifications pertaining to all courses in their respective subject area.

The Assessments Coordinator is responsible for writing an annual report summarizing the recommendations of the SACs, and recommendations received from the other program constituents. The AC's report is submitted to the SCIS Undergraduate Committee for consideration.

On consideration of the AC and SAC reports, the SCIS Undergraduate Committee may subsequently make recommendations to the full SCIS faculty. Recommendations adopted by the SCIS faculty are implemented via the normal academic procedures of the university.

The Undergraduate Program Director bears the overall responsibility for assessing the undergraduate programs of the School as well as ascertaining that defined procedures are followed in a timely fashion.

### **III. ASSESSMENT INSTRUMENTS AND PROCEDURES**

As indicated earlier, SCIS utilizes data from the survey instruments and Senior Project evaluation, and recommendations from its constituent groups, to assess whether the program outcomes and objectives of the BS in Computer Science program are being met. The details of these assessment mechanisms, and their application, are described below.

#### **A. SURVEY INSTRUMENTS:**

SCIS currently uses four survey instruments. All surveys are conducted online. The Associate Director for Computing Technologies is responsible for ensuring that meaningful statistics for each survey are available within a month after the semester concludes.

The student and instructor Course Outcomes Survey statistics are analyzed and reported in the annual reports of the Subject Area Coordinators.

The Graduating Students and Alumni survey statistics are analyzed and reported in the annual report of the Assessments Coordinator.

##### **1. Course Outcomes Survey by Students**

This survey is undertaken during the final two weeks of every semester.

Students of every class offered during the semester are asked to rate each course outcome from two perspectives by indicating the extent to which they agree or disagree with two assertions about that outcome:

- *I believe that this is a valuable outcome for this course*
- *The subject matter of this outcome was covered adequately in class*

Responses are given on a scale of 1 to 5 with 5 indicating strong agreement with the assertion, and 1 indicating strong disagreement. The students' responses from both perspectives, *value of outcome* and *adequacy of coverage*, are averaged across the class, individually for each outcome, and cumulatively for all outcomes

## 2. Course Outcomes Survey by Instructors

This survey is undertaken at the conclusion of every semester.

For each class offered during any semester, the instructor of the class completes a grid showing how course assignments and tests relate to the individual course outcomes. The instructor rates each course outcome from two perspectives:

- The *appropriateness* of the outcome is rated as one of *essential*, *appropriate*, or *inappropriate*.
- The in-class coverage of the outcome is rated as one of *extensively*, *adequately*, *not enough*, or *not at all*.

The instructor also provides ratings of the *relevance* and *student mastery* of the *course prerequisite outcomes*, and may choose to provide recommendations for additional prerequisite outcomes.

## 3. Survey of Graduating Students (Program Outcomes)

This survey is undertaken every semester, beginning during the final two weeks of the semester.

The graduating student is asked to rate each of the BS in Computer Science (curricular) Program Outcomes, *a* through *j*, from 2 perspectives.

- The graduating student indicates the extent to which they agree or disagree with the following assertion:
- *This program outcome has been met for me personally*
- The graduating student indicates how meaningful they consider the outcome to be:
- *How meaningful do you consider this outcome to be for you personally?*

Program outcomes *k* and *l* relate to the success of the graduating student in finding CS-related employment, and admission to graduate school respectively. For each of these 2 outcomes, *k* and *l*, the student indicates how successful they have been, and how their CS education has contributed to that success.

Responses to all questions are given on a scale of 0 through 5, with 0 being least favorable, and 5 being most favorable, and are averaged across all students completing the survey.

#### 4. Survey of Alumni (Program Objectives)

This survey is undertaken by graduates of the BS in Computer Science program, and is conducted every three years.

Alumni completing this survey are asked to provide ratings of the several facets of the BS in Computer Science Program Objectives under four broad areas:

- quality of Educational Experience (6 facets)
- quality of Faculty and Instruction (4 facets)
- quality of preparation in the Curricular Areas (4 facets)
- promotion of Diversity and Healthy Environment (4 facets)

Each facet is rated on a scale of 0 (Unsatisfactory) through 4 (Excellent). The ratings are averaged for each individual facet (18), for each area (4), and cumulatively across all facets.

#### **B. RECOMMENDATIONS:**

Periodically, we seek out recommendations for curricular changes from diverse bodies and interest groups. In all cases, curriculum modifications based on these recommendations will be included in the annual report submitted by the AC to the School's curriculum committee.

##### 1) Industry Advisory Board (IAB):

The IAB of the School is expected to meet once a year to discuss among other things, how we can prepare our students better to face the current challenges in the field. The Dean of the School, the UPD, and the AC will review these formal and informal recommendations of the Board.

##### 2) Women in Engineering and Computer Science (WIECS) group:

The WIECS women's forum meets occasionally throughout the year under the leadership of a faculty member of the School. The problems faced by women in science areas of endeavor are unique, and we take the recommendations of this group to address their concerns about our curriculum and how can we assist them to perform better and attract more women into our program. The AC and the UPD review the recommendations of the group on an annual basis.

##### 3) ACM Student Chapter:

The members of our ACM Student Chapter meet periodically throughout the year. Recommendations made by this group through their faculty advisor are reviewed by the AC and the UPD on an annual basis.

## **C. DIRECT MEASURES**

### **1. Senior Project Assessment**

For the purpose of assessing the BS in CS Program Outcomes via the Senior Project, the UPD, in consultation with the faculty, constitutes an evaluation team(s) of at least 3 persons to include

1. The Senior Project course coordinator/instructor (faculty),
2. A second faculty member not associated with the project,
3. A non-faculty representative from the SCIS Industry Advisory Board, or person with similar experience nominated by the Board.

Several such teams may be constituted, based on the number of student projects to be evaluated.

The evaluation team observes the students' oral presentations and/or demonstrations of their project. The evaluation team has access to all artifacts produced by the student team to satisfy the requirements of the Senior Project course.

The members of the evaluation team complete a suitable instrument to indicate their assessment of the extent to which the students' work demonstrates attainment of the BS in Computer Science Program Outcomes. The instrument includes rubrics to guide their evaluations. The instrument and included rubrics must be published.

The completed evaluation instruments, together with the project artifacts, become components of the annual assessment process, and must be maintained until at least the following ABET accreditation site visit.

### **2. Course-Embedded Assessment**

In addition to assessment via the Senior Project, the Undergraduate Program Director and Assessments Coordinator, in consultation with the relevant Subject Area Coordinators, may designate courses for sampling of student work (exams and/or projects), for the purpose of assessing attainment of Student Outcomes. The particular courses to be sampled may be determined from semester to semester. The Subject Area Coordinators will maintain suitable sampling mechanisms and rubrics for assessment of Student Outcomes via the courses in their areas.

## **IV. IMPLEMENTING CURRICULUM CHANGES:**

The Assessment Coordinator's annual written report is submitted to the SCIS Undergraduate Committee by the end of February of each year. The report includes recommended curriculum modifications based on all of the assessment mechanisms. The SCIS Undergraduate Committee completes all internal deliberations in the School by the end of the Spring semester so that the faculty approved changes in our curriculum can be submitted to the College Curriculum Committee's first meeting in the Fall semester. The University approved curriculum modifications are implemented no later than in the subsequent Fall semester.