KNIGHT FOUNDATION SCHOOL OF COMPUTING AND INFORMATION SCIENCES
ASSESSMENT MECHANISMS AND PROCEDURES
of the
Bachelor of Science in Computer Science Program

I. INTRODUCTION

The Knight Foundation School of Computer and Information Sciences (KFSCIS) 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.

KFSCIS currently uses five survey instruments:
1. Course Outcomes Survey by Students
2. Course Outcomes Survey by Instructors
3. Survey of Graduating Students
4. Survey of Alumni
5. Survey of IAB members and Employers

Direct measure of attainment of the Program Educational Objectives 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, KFSCIS seeks recommendations from other constituents of the BS in CS program, including the Industrial Advisory Board, Women in Engineering and Computer Science group, Students in Technology, Academia, Research, and Service group, and the ACM student chapter.

II. ADMINISTRATIVE STRUCTURE

To administer and evaluate these assessments, KFSCIS 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 Director 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 eight subject areas, each with its own SAC: Applications, Computer Organization, Computer Systems, Foundations, Professional Development, Programming, Software Engineering, and Project. Each Subject Area

Coordinator is responsible for writing a biennial report detailing recommendations for modifications pertaining to all courses in their respective subject area.

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

On consideration of the AC and SAC reports, the KFSCIS Undergraduate Committee may subsequently make recommendations to the full KFSCIS faculty. Recommendations adopted by the KFSCIS 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, KFSCIS 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:

KFSCIS currently uses five survey instruments. All surveys are conducted online. The KFSCIS Director for IT and Business Relations is responsible for ensuring that meaningful statistics for each survey are available within a month after the survey period concludes.

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

The Graduating Students and Alumni survey statistics are analyzed and reported in the biennial 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 (Student Outcomes)

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

The graduating student is asked to rate each of the BS in Computer Science (curricular) Student Outcomes *a* through k, from two 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 Educational Objectives *i and j* 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, *i* and *j*, 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 Educational Objectives)

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

Alumni completing this survey are asked to provide ratings of the several facets of the BS in Computer Science Program Educational 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.

5. Survey of Employers (Program Educational Objectives)

This survey is undertaken by employers of students who received their BS in CS degree from our School. It is conducted once every two years.

Employers completing this survey are asked to provide ratings of our students' performance and abilities that are included in the Program Educational Objectives. These are:
- mastery of the fundamental computer science concepts and problem solving using them
- ability to communicate verbally
- ability to communicate in written form
- ability to work cooperatively in a team
- understanding of social and ethical concerns of a practicing computer scientist
- ability to learn emerging and new concepts and technologies

Each aspect is rated on a scale of 0 (Poor) through 4 (Excellent). Average ratings are used for assessment purposes.

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 biennial 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 twice a year to discuss among other things, how we can prepare our students better to face the current challenges in the field. The Director 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 a biennial 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 a biennial basis.

4) Students in Technology, Academia, Research, and Service (STARS) group:

The members of STARS meet periodically throughout the year. Recommendations made by this group through their faculty advisor are reviewed by the AC and the UPD on a biennial basis.

5) Upsilon Pi Epsilon:

The members of UPE meet periodically throughout the year. Recommendations made by this group through their faculty advisor are reviewed by the AC and the UPD on a biennial basis.

6) Programming Team:

The members of Programming Team meet periodically throughout the year. Recommendations made by this group through their faculty advisor are reviewed by the AC and the UPD on a biennial basis.

7) Google Developers Student Club:

This is a new Student Club that began operating during 2019-2021 Assessment Period. The members of GDSC meet periodically throughout the year. Recommendations made by this group through their faculty advisor are reviewed by the AC and the UPD on a biennial basis.

C. DIRECT MEASURES

1. Senior Project Assessment

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

1. The Senior Project course coordinator/instructor (faculty), and
2. A second faculty member not associated with the project.

A third member may be added for this assessment from time-to-time depending on the subject matter of the project. This person is typically, a non-faculty representative from the KFSCIS 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 Educational Objectives. 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 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 the 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 the assessment of Student Outcomes via the courses in their areas.

IV. IMPLEMENTING CURRICULUM CHANGES:

The Assessment Coordinator's biennial written report is submitted to the KFSCIS Undergraduate Committee by the end of the Fall term of every odd year. The report includes recommended curriculum modifications based on all of the assessment mechanisms. The KFSCIS Undergraduate Committee completes all internal deliberations in the School by the end of February of every even year. The KFSCIS faculty considers these recommendations by the end of the Spring term of every even year if practical. In the worst case, the faculty considers them in early Fall term of every even year. The faculty-approved changes in our curriculum are submitted to the College Curriculum Committee at the earliest possibility. The University approved curriculum modifications are implemented no later than in the subsequent Fall semester.

Revised: February 19, 2015 [Recommendations and Senior Project Assessment sections are modified to include the changes occurred as well as practice observed.]

Note that the School's name has been updated from School of Computing and Information Sciences (SCIS) to Knight Foundation School of Computing and Information Sciences (KFSCIS) to reflect the changes made in February 2021.