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APPENDIX A-1: BS in CY Program Educational Objectives

<https://abet.cs.fiu.edu/cyassessment/bs-cy-program-objectives-outcomes/>

Program Educational Objectives for the BS in CY Program

1. To provide our graduates with a broad-based education that will form the basis for personal growth and life-long learning.
2. To provide our graduates with a quality technical education that will equip them for productive careers in the field of Cybersecurity.
3. To provide our graduates with the communication skills and social and ethical awareness requisite for the effective and responsible practice of their professions.
4. To maintain a diverse student population and actively promote an environment in which students from all groups, including the traditionally under-represented, may successfully pursue the study of Cybersecurity.
5. To maintain a qualified and dedicated faculty who actively pursue excellence in teaching.
6. To provide our graduates experience with updated security protocols and procedures.

APPENDIX A-2: BS in CY *Student Outcomes*

<https://abet.cs.fiu.edu/cyassessment/bs-cy-program-objectives-outcomes/>

KFSCIS Student Outcomes for the BS in CY Program

To complete the program of study for the BS in Cybersecurity, every student will:

- a) Demonstrate practical proficiency in security risk analysis.
- b) Demonstrate practical proficiency in auditing, mitigation strategies, and controls.
- c) Demonstrate general understanding of at least one field where Cybersecurity plays a central role
- d) Demonstrate understanding of the social and ethical concerns of the practice of Cybersecurity.
- e) Demonstrate the ability to work cooperatively in teams.
- f) Demonstrate effective communication skills.
- g) Demonstrate familiarity with fundamental ideas and issues in the arts, humanities and social sciences.

ABET Student Outcomes for BS in CY

Graduates of the BS in Cybersecurity, will have an ability to:

1. Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.
2. Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.
3. Communicate effectively in a variety of professional contexts.
4. Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.
5. Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.
6. Apply security principles and practices to maintain operations in the presence of risks and threats.

Mapping from KFSCIS Student Outcomes to ABET Student Outcomes

| KFSCIS CY Student Outcomes | ABET CY Student Outcomes | | | | | | ABET Student Outcomes |
|---|--------------------------|-----------|-----------|-----------|-----------|-----------|---|
| | Outcome 1 | Outcome 2 | Outcome 3 | Outcome 4 | Outcome 5 | Outcome 6 | |
| a) Demonstrate practical proficiency in security risk analysis. | | | | | | X | 1. Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions. |
| b) Demonstrate practical proficiency in auditing, mitigation strategies, and controls. | X | | | | | X | 2. Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline. |
| c) Demonstrate general understanding of at least one field where Cybersecurity plays a central role | X | X | | | | | 3. Communicate effectively in a variety of professional contexts. |
| d) Demonstrate understanding of the social and ethical concerns of the practice of Cybersecurity. | | | | X | | | 4. Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles. |
| e) Demonstrate the ability to work cooperatively in teams. | | | | | X | | 5. Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline. |
| f) Demonstrate effective communication skills. | | | X | | | | 6. Apply security principles and practices to maintain operations in the presence of risks and threats. |
| g) Demonstrate familiarity with fundamental ideas and issues in the arts, humanities and social sciences. | | | | | | | |

APPENDIX B-1: BS in CY *Assessment Plan*

KNIGHT FOUNDATION SCHOOL OF COMPUTING AND INFORMATION SCIENCES ASSESSMENT PLAN of the Bachelor of Science in Cybersecurity Program

I. INTRODUCTION

IMPORTANT NOTE: This document for the BS in CY Program is based on the similar document for the BS in CS Program. The last version of that document was approved by the KFSCIS faculty in Spring 2015. The first formal Assessment for the BS in CY Program is written in Fall 2021 covering the two semesters from Fall 2020 to Spring 2021.

The document, Assessment Mechanisms and Procedures, of the Knight Foundation School of Computing and Information Sciences (KFSCIS), describes the means by which the school conducts the biennial assessment of its BS in Cybersecurity program. The instruments employed for assessment, and the KFSCIS administrative structure for performing the assessment are described in that document. These means include:

- 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

- Recommendations from constituents
 1. Industry Advisory Board (IAB)
 2. Women in Engineering and Computer Science (WIECS)
 3. ACM Student Chapter
 4. Students in Technology, Academia, Research, and Service Group (STARS)
 5. Upsilon Pi Epsilon (UPE)
 6. Programming Team
 7. Google Developers Students Club

- Direct Measures
 1. Course-Embedded Assessment

The administrative structure for conducting the assessment comprises

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

The assessment procedures are performed by the KFSCIS Subject Area Coordinators and the KFSCIS Assessments Coordinator. Their findings are reported to the KFSCIS Undergraduate Committee for evaluation, resulting in a set of recommendations to the KFSCIS faculty.

This document, the KFSCIS Assessment Plan, defines the implementation of the entire assessment cycle. It specifies the roles of all participants in the process and sets out a timetable for execution of those roles.

II. PARTICIPANTS

1) The Undergraduate Program Director (UPD)

The Undergraduate Program Director is appointed by the Director of KFSCIS. The UPD bears overall responsibility for the administration of all KFSCIS undergraduate programs.

The role of the UPD relevant to the assessment process is

- To designate the chair of the KFSCIS Undergraduate Committee (below)
- To ensure that the assessment timetable is followed and that the procedures are otherwise executed as set forth in this document and in the Assessments Mechanisms and Procedures Document
- To document and implement program adjustments arising from the biennial assessment process that are approved by the KFSCIS faculty and, if necessary, College and University Curriculum Committees.

2) The Subject Area Coordinators (SACs)

The Subject Area Coordinators may be appointed by the UPD or elected by the KFSCIS faculty. Each SAC bears responsibility for a group of courses in the BS in Cybersecurity curriculum:

Application Developments Subject Area courses:

- CEN-3721, COP-4005, COP-4655, COP-4813, COP-4814.

Database Subject Area courses:

- CGS-1540, COP-4703, COP-4751, CTS-4408.

Foundations Subject Area course:

- COT-3100.

Network Subject Area courses:

- CGS-3767, CGS-4285, CNT-4504, CNT-4513.

Professional Development Subject Area courses:

- CGS-1920, CGS-3095, ENC-3249.

Programming Subject Area courses:

- CGS-4854, COP-2250, COP-2270, COP-3804.

Project Subject Area courses:

- IDS-4918.

Security Subject Area courses:

- CIS-4365, CNT-4182, CNT-4403.

Systems Subject Area courses:

- CIS-4431, CNT-4603, CTS-4348, CTS-4743.

The above lists will be modified as and when needed to reflect the changing requirements of the Program or the addition of new area-specific courses. The UPD and SACs will be responsible for suggesting these area-specific modifications.

The role of a Subject Area Coordinator is:

- To maintain a common syllabus for each KFSCIS course in their area.

- To maintain the instruments and rubrics for course-embedded assessment in their area
- To liaise with the academic unit teaching a non-KFSCIS course that is a required or elective course in the BS in CY program.
- To interpret the data from the Student and Instructor Course Outcomes surveys for each course in their area.
- To prepare a biennial report presenting the course surveys' findings and making recommendations based on these findings.

3) The Assessments Coordinator (AC)

The KFSCIS Director appoints the Assessments Coordinator. The role of the AC is:

- To interpret the data from the Survey of Graduating Students, Senior Project assessment, and Alumni survey.
- To prepare the KFSCIS biennial assessment report every odd year (2021-22). The report presents the data from these assessment mechanisms and resulting findings and recommendations and summarizes the recommendations from SAC reports.
- To monitor the BS in CY program for compliance with the ABET accreditation criteria.
- To prepare the ABET accreditation self-study report and program documentation as may be required by ABET.

The Assessments Coordinator should not simultaneously be a Subject Area Coordinator.

4) The Undergraduate Program Committee (UPC)

The Undergraduate Program Committee may be appointed by the KFSCIS Director or elected by the KFSCIS faculty. The UPC Chair convenes and conducts all UPC meetings as necessary. The Undergraduate Program Director and Assessments Coordinator are ex-officio members of the Undergraduate Committee.

The UPC is responsible for considering proposed changes to the existing KFSCIS undergraduate courses and programs and making recommendations, based on these considerations, to the entire KFSCIS faculty.

The UPC evaluates each AC or SAC recommendation contained in the biennial report. The role of the UPC in the assessment process specifically is to consider the AC's biennial assessment report. Where helpful, the UPC may require further input or clarification from the author (AC or SAC) of a recommendation. After their deliberations, the UPC chair prepares a summary of recommendations for presentation to the KFSCIS faculty. In summary:

- The UPC may endorse an AC or SAC recommendation for adoption by the KFSCIS faculty.
- The UPC may endorse an AC or SAC recommendation and propose to the KFSCIS faculty a means of enacting the recommendation.
- The UPC may decline to act on a recommendation, setting forth reasons for its decision.
- The UPC may author its own recommendations to the KFSCIS faculty.

5) The KFSCIS Faculty

The KFSCIS faculty approves or rejects any recommendations for adjustments to the BS in Cybersecurity program. Adoption of KFSCIS approved program adjustments may be subject to final approval of College and University Curriculum Committees.

III. SCHEDULE

1) Surveys

The schedule for administering Course Outcomes, Graduating Students, and Alumni surveys are set out in the KFSCIS Director for IT and Business Relations has the responsibility of ensuring that the data from any survey is available within one month of the conclusion of the survey.

2) Direct Measures Assessment

Data from the course-embedded assessments are prepared by the AC and are made available by the start of the next semester.

3) Subject Area Coordinator Biennial Reports

The SAC biennial reports cover the Summer, Fall, and Spring semesters of two previous years. These reports are made available to the Assessments Coordinator by the end of September of every odd year.

4) Recommendations from Constituents

Recommendations from IAB, WIECS, ACM Chapter, or other constituent groups are provided to the assessments Coordinator no later than the end of September of every odd year.

5) Assessment Coordinator Biennial Report

The AC biennial report incorporates data and recommendations from all sources listed above. The report covers two years (six semesters) and is made available to the Undergraduate Committee by the end of the Fall term of every odd year.

6) Undergraduate Program Committee Summary of Recommendations

UPC meetings to consider the biennial assessment report are conducted during the first two months of the Spring term of every even year. UPC concludes all deliberations, and the UPC summary of recommendations is made available to the KFSCIS faculty by the end of February of every even year.

The UPC chair should prioritize recommendations for adjustments to the BS in CY program that require further approval by the College Curriculum Committee. The KFSCIS Director and/or UPD should expedite KFSCIS faculty consideration of such recommendations, bearing in mind the deadlines of the College Curriculum Committee, and with a view to implementation at the start of the next academic year.

7) KFSCIS Faculty Assessment Meeting

The KFSCIS Director convenes a meeting of the KFSCIS faculty to consider the UPC recommendations before the end of the Spring semester of every even year, if practical, but no sooner than one week following receipt of the UPC summary of recommendations. Should matters be left over from this meeting, such issues should be addressed during the first meeting of the entire KFSCIS faculty in the following Fall semester.

IV. ENACTMENT

- UPC recommendations not requiring faculty approval must be considered by the responsible entity, SAC or UPD, immediately and reported to the next meeting of the entire KFSCIS faculty. The Director or the Associate Director of the School may veto such recommendations if they are deemed to be impractical to implement.
- UPC recommendations approved by the KFSCIS faculty, and not requiring further approval by the College, must be enacted by the UPD as soon as practicable, and by the start of the following Summer semester if at all possible.
- Recommendations for BS in CY program adjustments approved by the KFSCIS faculty, and subsequently approved by the College and/or University Committees, must be enacted at the earliest possible date following approval by the highest Committee.

The Undergraduate Program Director has overall responsibility for enacting all program adjustments resulting from the assessment process. The UPD is charged with documentation and publication of program adjustments.

FALL 2021

APPENDIX B-2: BS in CY *Assessment Mechanisms & Procedures*

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

I. INTRODUCTION

IMPORTANT NOTE: This document for the BS in CY Program is based on the similar document for the BS in CS Program. The last version of that document was approved by the KFSCIS faculty in Spring 2015. The first formal Assessment for the BS in CY Program is written in Fall 2021 covering the two semesters from Fall 2020 to Spring 2021.

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

SCIS 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

In addition to the data from the survey instruments, KFSCIS seeks recommendations from other constituents of the BS in CY 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 Director of the School appoints the Undergraduate Program Director.

The Undergraduate Program Director appoints the Assessments Coordinator and the Subject Area Coordinators.

Each course in the BS in Cybersecurity program falls under one of nine subject areas. Each has its own SAC: Application Developments, Database, Foundations, Network, Professional Development, Programming,

Project, Security, and Systems. 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 recommendations from its constituent groups to assess whether the program outcomes and objectives of the BS in Cybersecurity 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 Cybersecurity (curricular) Student Outcomes *a* through *f*, 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 Outcomes *b* and *c* relate to the success of the graduating student in finding CY-related employment, and admission to graduate school respectively. For each of these 2 outcomes, *b* and *c*, the student indicates how successful they have been, and how their CY 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 Cybersecurity program and is conducted every three years.

Alumni completing this survey are asked to provide ratings of the several facets of the BS in Cybersecurity 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 as well as IT and CY degrees from our School. It is conducted once every three to four years.

Employers completing this survey are asked to provide ratings of our students' performance and abilities that are included in the CS 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. We will revise these survey questions to include IT and CY Program Objectives and the student's degree (CS/IT/CY).

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 problems faced by women in science areas of endeavor are unique. The WIECS women's forum meets occasionally throughout the year under the leadership of a School faculty member. We take the recommendations of this group to address their concerns about our curriculum and how we can assist them in performing better and attracting 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. The AC and the UPD review recommendations made by this group through their faculty advisor on a biennial basis.

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

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

5) Upsilon Pi Epsilon:

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

6) Programming Team:

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

7) Google Developers Student Club:

This new Student Club began operating during the 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. Course-Embedded Assessment

In consultation with the relevant Subject Area Coordinators, the Undergraduate Program Director and Assessments Coordinator may designate courses for the sampling of student work (exams and/or projects) to assess the 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 assessing 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.

FALL 2021

APPENDIX C: Subject Area Coordinator Reports

Application Development: Subject Area Coordinator Report

Antonio Hernandez

October 16, 2021

Introduction:

The Application Development area consists of the following five courses with syllabi links:

[CEN-3721](#) Introduction to Human-Computer Interaction

[COP-4005](#) Windows Programming for IT

[COP-4655](#) Mobile Application Development

[COP-4813](#) Web Application Programming

[COP-4814](#) Component-Based Software Development

The assessment report given below for these courses is based on student responses about the course outcomes and the faculty course appraisals.

1. CEN-3721 Introduction to Human-Computer Interaction

The following table shows a summary of the course assessment evaluations:

| | <u>No. of Student</u> <u>Responses</u> | <u>Value of</u> <u>Outcome</u> | <u>Coverage</u> <u>Adequacy</u> | <u>Usernames of</u> <u>Instructors</u> |
|-------------|---|-----------------------------------|------------------------------------|---|
| Summer 2019 | 6 | 4.43 | 4.34 | dledavis |
| Fall 2019 | 3 | 2.62 | 2.50 | dledavis, mcdwells |
| Spring 2020 | 6 | 4.65 | 4.17 | gmuradre, dledavis, tsolis |
| Summer 2020 | 1 | 4.00 | 3.62 | dledavis |
| Fall 2020 | 2 | 4.88 | 4.44 | gmuradre, tsolis |
| Spring 2021 | 8 | 4.56 | 4.48 | gmuradre, dledavis, tsolis |
| | ===== | ===== | ===== | |
| Total | 26 | 4.33 | 4.11 | Weighted Avg |

For the period under consideration, the weighted mean of the answers to the question of “I believe that this is a valuable outcome for this course” was 4.33/5, i.e. more than 80%, and the weighted mean of the answers to the question of “The subject matter of this outcome was covered adequately in class” was 4.11/5, also more than 80%. No significant concerns are inferred from the Student Suggestions sections. Concerning faculty appraisals, an instructor recommended a 2nd HCI course for either IT students or CS students, but that view was not expressed by others.

Recommendation: No change is needed on the course outcomes or syllabus.

2. COP-4005 Windows Programming for IT

The following table shows a summary of the course assessment evaluations:

| | <u>No. of Student</u> <u>Responses</u> | <u>Value of</u> <u>Outcome</u> | <u>Coverage</u> <u>Adequacy</u> | <u>Usernames of</u> <u>Instructors</u> |
|-------------|---|-----------------------------------|------------------------------------|---|
| Summer 2019 | 3 | 4.91 | 4.92 | rbalm001, mstewart |
| Fall 2019 | 1 | 2.75 | 3.00 | mcdwells |
| Spring 2020 | 1 | 3.88 | 3.88 | mcdwells |
| Summer 2020 | 2 | 4.69 | 4.50 | mstewart |
| Fall 2020 | 0 | 0.00 | 0.00 | |
| Spring 2021 | 3 | 4.92 | 4.96 | mcdwells |
| | ===== | ===== | ===== | |
| Total | 10 | 4.55 | 4.55 | Weighted Avg |

For the period under consideration, the weighted mean of the answers to the question of “I believe that this is a valuable outcome for this course” was 4.55/5, i.e. more than 80%, and the weighted mean of the answers to the question of “The subject matter of this outcome was covered adequately in class” was 4.55/5, also more than 80%. No significant concerns are inferred from the Student Suggestions sections. Concerning faculty appraisals, it was mentioned that students have limited programming skills.

Recommendation: Evaluation at the department level might be necessary to determine whether previous courses develop in students the programming skills required by this course.

3. COP-4655 Mobile Application Development

The following table shows a summary of the course assessment evaluations:

| | <u>No. of Student</u> <u>Responses</u> | <u>Value of</u> <u>Outcome</u> | <u>Coverage</u> <u>Adequacy</u> | <u>Usernames of</u> <u>Instructors</u> |
|-------------|---|-----------------------------------|------------------------------------|---|
| Summer 2019 | 1 | 3.00 | 3.40 | luiss |
| Fall 2019 | 1 | 5.00 | 4.20 | luiss |
| Spring 2020 | 1 | 2.20 | 2.20 | luiss |
| Summer 2020 | 2 | 5.00 | 4.30 | luiss |
| Fall 2020 | 0 | 0.00 | 0.00 | |
| Spring 2021 | 0 | 0.00 | 0.00 | |
| | ===== | ===== | ===== | |
| Total | 5 | 4.04 | 3.68 | Weighted Avg |

For the period under consideration, the weighted mean of the answers to the question of “I believe that this is a valuable outcome for this course” was 4.04/5, i.e. more than 80%, and the weighted mean of the answers to

the question of “The subject matter of this outcome was covered adequately in class” was 3.68/5, i.e. 74%. While the second statistic seems somewhat low, student participation in the survey was very low and hence it is difficult to use this statistic to assess whether this is an area of potential improvement. A student mentioned “the class itself felt as if we needed a previous class (say, Swift 1) that covered Swift's basics”, which could be used as a hint of what to be looking for. Concerning faculty appraisals, it was mentioned that students have poor OO development skills.

Recommendation: Evaluation at the department level might be necessary to determine whether previous courses develop in students the programming skills required by this course.

4. COP-4813 Web Application Programming

The following table shows a summary of the course assessment evaluations:

| | <u>No. of Student Responses</u> | <u>Value of Outcome</u> | <u>Coverage Adequacy</u> | <u>Username of Instructors</u> |
|-------------|---------------------------------|-------------------------|--------------------------|--------------------------------|
| Summer 2019 | 0 | 0.00 | 0.00 | |
| Fall 2019 | 3 | 3.93 | 3.78 | olivero |
| Spring 2020 | 1 | 5.00 | 3.78 | olivero |
| Summer 2020 | 0 | 0.00 | 0.00 | |
| Fall 2020 | 2 | 3.39 | 3.44 | gmuradre |
| Spring 2021 | 4 | 4.86 | 4.69 | gmuradre |
| | ===== | ===== | ===== | |
| Total | 10 | 4.30 | 4.08 | Weighted Avg |

For the period under consideration, the weighted mean of the answers to the question of “I believe that this is a valuable outcome for this course” was 4.30/5, i.e. more than 80%, and the weighted mean of the answers to the question of “The subject matter of this outcome was covered adequately in class” was 4.08/5, also more than 80%. No significant concerns are inferred from the Student Suggestions sections. Concerning faculty appraisals, it was mentioned by an instructor that skills in Web site development were deficient; these are acquired in a prereq course.

Recommendation: Consider inclusion of review lecture/materials on Web site development.

5. COP-4814 Component-Based Software Development

The following table shows a summary of the course assessment evaluations:

| | <u>No. of Student</u> <u>Responses</u> | <u>Value of</u> <u>Outcome</u> | <u>Coverage</u> <u>Adequacy</u> | <u>Username</u> <u>of Instructors</u> |
|-------------|---|-----------------------------------|------------------------------------|--|
| Summer 2019 | 2 | 5.00 | 3.50 | gmuradre, crahn |
| Fall 2019 | 1 | 5.00 | 5.00 | gmuradre |
| Spring 2020 | 0 | 0.00 | 0.00 | |
| Summer 2020 | 0 | 0.00 | 0.00 | |
| Fall 2020 | 4 | 3.88 | 3.92 | gmuradre, crahn |
| Spring 2021 | 13 | 4.50 | 3.76 | crahn, gmuradre |
| | ===== | ===== | ===== | |
| Total | 20 | 4.45 | 3.83 | Weighted Avg |

For the period under consideration, the weighted mean of the answers to the question of “I believe that this is a valuable outcome for this course” was 4.45/5, i.e. more than 80%, and the weighted mean of the answers to the question of “The subject matter of this outcome was covered adequately in class” was 3.83/5, i.e. 77%. While the second statistic appears somewhat low, student comments in the survey do not seem significant to determine coverage adequacy is an area of potential improvement. No significant concerns are inferred from faculty appraisals.

Recommendation: It is essential that all assignments and tests provide students with the list of objectives being evaluated or approached. Students then can effectively assess the completion of the course objectives.

Overall observation: Student participation in the course evaluation system since Summer 2019 is consistently low. In one course for example, only 5 students in total participated in the university survey in four semesters. Discussing in class about the importance of this tool in curriculum assessment can go a long way in incrementing these numbers.

Database: Subject Area Coordinator Report

Antonio L Bajuelos

October 7, 2021

Introduction:

The **Database area** consists of the following **four courses** with syllabi links:

[COP-4703](#) **Information Retrieval Concepts**

[COP-4751](#) **Advanced Database Management**

[CTS-4408](#) **Database Administration**

[CGS-1540](#) **Introduction to Databases for All**

The assessment report given below for all other courses is based on student responses about the course outcomes and the faculty course appraisals.

1. COP-4703 Information Retrieval Concepts

The following table shows a summary of the course assessment evaluations:

| | <u>No. of Student</u> <u>Responses</u> | <u>Value of</u> <u>Outcome</u> | <u>Coverage</u> <u>Adequacy</u> | <u>Usernames of</u> <u>Instructors</u> |
|-------------|---|-----------------------------------|------------------------------------|---|
| Summer 2019 | 7 | 4.09 | 4.20 | aleroque, rbalm001 |
| Fall 2019 | 3 | 4.80 | 4.80 | rbalm001, vish, antherna |
| Spring 2020 | 4 | 3.95 | 3.75 | gfgomez, crahn |
| Summer 2020 | 0 | 0.00 | 0.00 | |
| Fall 2020 | 1 | 5.00 | 4.80 | rbalm001 |
| Spring 2021 | 7 | 4.55 | 4.11 | caralons, crahn |
| | ===== | ===== | ===== | |
| Total | 22 | 4.35 | 4.20 | Weighted Avg |

For all five outcomes of the course, most of the students (80%) agree either strongly or moderately. Students suggested the inclusion of more practical hands-on applications of the theory covered in class.

Recommendations:

- One instructor consistently indicated that other prerequisite outcomes that might help students to be better prepared for this class: Basic understanding of Client/Server model.

2. COP-4751 Advanced Database Management

The following table shows a summary of the course assessment evaluations:

| | <u>No. of Student Responses</u> | <u>Value of Outcome</u> | <u>Coverage Adequacy</u> | <u>Usernames of Instructors</u> |
|-------------|-------------------------------------|-----------------------------|------------------------------|-------------------------------------|
| Summer 2019 | 0 | 0.00 | 0.00 | |
| Fall 2019 | 0 | 0.00 | 0.00 | |
| Spring 2020 | 0 | 0.00 | 0.00 | |
| Summer 2020 | 0 | 0.00 | 0.00 | |
| Fall 2020 | 0 | 0.00 | 0.00 | |
| Spring 2021 | 7 | 4.36 | 4.43 | prabakar, abajuelo |
| | ===== | ===== | ===== | |
| Total | 7 | 4.36 | 4.43 | Weighted Avg |

For all eight outcomes of the course, most of the students (more than 80%) agree either strongly or moderately. There is no significant concern expressed by the students or faculty.

3. CTS-4408 Database Administration

The following table shows a summary of the course assessment evaluations:

| | <u>No. of Student Responses</u> | <u>Value of Outcome</u> | <u>Coverage Adequacy</u> | <u>Usernames of Instructors</u> |
|-------------|-------------------------------------|-----------------------------|------------------------------|-------------------------------------|
| Summer 2019 | 0 | 0.00 | 0.00 | |
| Fall 2019 | 3 | 4.67 | 4.67 | vish, nmonfort |
| Spring 2020 | 1 | 3.86 | 5.00 | vish |
| Summer 2020 | 2 | 4.36 | 4.43 | nmonfort |
| Fall 2020 | 2 | 4.36 | 4.36 | vish |
| Spring 2021 | 4 | 4.43 | 4.29 | vish |
| | ===== | ===== | ===== | |
| Total | 12 | 4.42 | 4.48 | Weighted Avg |

For all eight outcomes of the course, most of the students (more than 80%) agree either strongly or moderately. There is no significant concern expressed by the students or faculty.

Recommendations:

- No change is suggested on the course outcomes or syllabus.
- One instructor indicated that will be helpful if students are familiar with SQL and database principles and COP - 4703 will be very relevant (Prerequisite Outcome Suggestion/Recommendation)

4. CGS-1540 Introduction to Databases for All

The following table shows a summary of the course assessment evaluations:

| | <u>No. of Student</u> <u>Responses</u> | <u>Value of</u> <u>Outcome</u> | <u>Coverage</u> <u>Adequacy</u> | <u>Usernames of</u> <u>Instructors</u> |
|-------------|---|-----------------------------------|------------------------------------|---|
| Summer 2019 | 0 | 0.00 | 0.00 | |
| Fall 2019 | 0 | 0.00 | 0.00 | |
| Spring 2020 | 0 | 0.00 | 0.00 | |
| Summer 2020 | 0 | 0.00 | 0.00 | |
| Fall 2020 | 0 | 0.00 | 0.00 | |
| Spring 2021 | 2 | 5.00 | 5.00 | spisano |
| | ===== | ===== | ===== | |
| Total | 2 | 5.00 | 5.00 | Weighted Avg |

For all five outcomes of the course, most of the students (80%) agree either strongly or moderately. There is no significant concern expressed by the students or faculty.

Overall observation:

Student participation in the course evaluation system is consistently low. This may be due to the migration of the evaluation process to fully online mode after Spring 2018. Perhaps students who complete course evaluation before the final exam week, may be given preference in advising, student workshop registrations, etc.

Foundations: Subject Area Coordinator Report

Hadi Amini
October, 2021

Introduction:

The Foundations area consists of the following course relevant to the BS in CY program with syllabi link:
[COT-3100](#) Discrete Structures

1. COT-3100: Discrete Structures

The following table shows a summary of the course assessment evaluations:

| | <u>No. of Student</u> <u>Responses</u> | <u>Value of</u> <u>Outcome</u> | <u>Coverage</u> <u>Adequacy</u> | <u>Username of</u> <u>Instructors</u> |
|-------------|---|-----------------------------------|------------------------------------|--|
| Summer 2019 | 6 | 4.69 | 4.69 | rwhittak,kgholami |
| Fall 2019 | 6 | 4.93 | 4.84 | moamini,rwhittak |
| Spring 2020 | 8 | 4.38 | 3.91 | abajuelo,rwhittak |
| Summer 2020 | 4 | 4.64 | 4.18 | abajuelo,rwhittak |
| Fall 2020 | 5 | 4.69 | 4.61 | abajuelo,rwhittak |
| Spring 2021 | 63 | 4.82 | 3.86 | rwhittak |
| | ===== | ===== | ===== | |
| Total | 92 | 4.77 | 4.04 | Weighted Avg |

For all seven outcomes of the course, most of the students (more than 80%) agree either strongly or moderately. There is no significant concern expressed by the students or faculty, except for one of the online sessions that students asked for more time for the exams. Zybooks lends itself as a valuable resource. Some instructors raised the concern for deficient skills in MAC-1105, COP-2210, and/or COP-2250 during the first week of the semester. Instructors are encouraged to evaluate the students' understanding of the prerequisite materials during the first week of semester and provide additional resources to student who have lack of required knowledge.

Recommendation: No change is needed on the course outcomes or syllabus.

As some instructors raised the concern for deficient skills in MAC-1105, COP-2210, and/or COP-2250 during the first week of the semester; Instructors are encouraged to evaluate the students' understanding of the prerequisite materials during the first week of semester and provide additional resources to student who have lack of required knowledge.

Overall observation: Given the high registration for this course, student participation in the course evaluation system since 2019 is consistently low. Perhaps students who complete course evaluation before the final exam week, may be given preference or receive incentives to encourage them for participating in evaluation.

Networking: Subject Area Coordinator Report

Deng Pan
October 14, 2021

Introduction:

The Networking area consists of the following four courses with syllabi links:

- [CGS-3767](#) Computer Operating Systems
- [CGS-4285](#) Applied Computer Networking
- [CNT-4513](#) Data Communications
- [CNT-4504](#) Advanced Network Management

1. CGS-3767: Computer Operating Systems

The following table shows a summary of the course assessment evaluations:

| | <u>No. of</u> <u>Student</u> <u>Responses</u> | <u>Value of</u> <u>Outcome</u> | <u>Coverage</u> <u>Adequacy</u> | <u>Username of</u> <u>Instructors</u> |
|-------------|---|-----------------------------------|------------------------------------|--|
| 2019 Summer | 4 | 3.22 | 3.21 | crahn, mrobi002 |
| 2019 Fall | 1 | 4.43 | 3.43 | crahn, mrobi002 |
| 2020 Spring | 14 | 4.48 | 3.33 | crahn, mrobi002, rbalm001 |
| 2020 Summer | 2 | 4.70 | 3.64 | |
| 2020 Fall | 2 | 2.15 | 2.21 | tsolis, mrobi002 |
| 2021 Spring | 7 | 4.35 | 4.18 | tsolis, rbalm001 |
| | ===== | ===== | ===== | |
| Total | 30 | 4.14 | 3.46 | |

Out of the seven outcomes of the course, 33% or more students think that the following outcomes are inadequately covered:

- Be familiar with the use of text editors.
- Master basic command line functions.
- Master simple shell programming

Students complained that the course materials based on Windows 7 were outdated, and asked for more hands-on projects.

Instruction recommendations included more programming preparation for students and tutoring resources.

Recommendation:

- Update the textbook with the state-of-the-art OSs.
- Add coverage for use of text editors, basic command line functions, and shell programming.
- Add more hands-on projects.

2. CGS-4285: Applied Computer Networking

The following table shows a summary of the course assessment evaluations:

| | <u>No. of Student Responses</u> | <u>Value of Outcome</u> | <u>Coverage Adequacy</u> | <u>Username of Instructors</u> |
|-------------|-------------------------------------|-----------------------------|------------------------------|------------------------------------|
| 2019 Summer | 4 | 4.30 | 3.97 | millej, esj |
| 2019 Fall | 3 | 4.97 | 4.66 | millej, vgandhi |
| 2020 Spring | 1 | 2.18 | 2.73 | millej, esj |
| 2020 Summer | 2 | 4.41 | 4.43 | |
| 2020 Fall | 1 | 5.00 | 5.00 | |
| 2021 Spring | 7 | 4.53 | 3.40 | vgandhi, pand |
| | ===== | ===== | ===== | |
| Total | 18 | 4.44 | 3.90 | |

For all eleven outcomes of the course, most of the students (more than 80%) agree either strongly or moderately.

Students requested more hands-on projects, especially group projects, and complained that the course was too difficult for a summer semester with only six weeks.

An instructor indicated that some course outcomes were inappropriate.

Recommendation:

- Add more hands-on practice.
- Avoid scheduling the course for a mini semester with six weeks.
- The course outcomes should be reviewed and updated.

3. CNT-4513: Data Communications

The following table shows a summary of the course assessment evaluations:

| | <u>No. of Student Responses</u> | <u>Value of Outcome</u> | <u>Coverage Adequacy</u> | <u>Username of Instructors</u> |
|-------------|-------------------------------------|-----------------------------|------------------------------|------------------------------------|
| 2019 Summer | 0 | 0.00 | 0.00 | vgandhi |
| 2019 Fall | 3 | 4.85 | 4.78 | vgandhi, caralons |
| 2020 Spring | 1 | 4.78 | 4.78 | kiahme, caralons |
| 2020 Summer | 0 | 0.00 | 0.00 | |
| 2020 Fall | 1 | 4.00 | 4.00 | |
| 2021 Spring | 43 | 4.57 | 4.52 | rblazek |
| | ===== | ===== | ===== | |
| Total | 48 | 4.58 | 4.53 | |

Out of the nine outcomes of the course, most of the students (more than 80%) agree either strongly or moderately.

Multiple students requested more hands-on projects, especially Wireshark labs.

An instructor suggested more focus on web programming.

Recommendation:

- Add more hands-on projects, especially Wireshark labs.
- The course outcomes should be reviewed and updated. Some outcomes, such as the ATM protocols is outdated and should be removed.

4. CNT-4504: Advanced Network Management

The following table shows a summary of the course assessment evaluations:

| | <u>No. of</u> <u>Student</u> <u>Responses</u> | <u>Value of</u> <u>Outcome</u> | <u>Coverage</u> <u>Adequacy</u> | <u>Usernames</u> <u>of</u> <u>Instructors</u> |
|-------------|---|-----------------------------------|------------------------------------|---|
| 2019 Summer | 1 | 5.00 | 5.00 | vince |
| 2019 Fall | 1 | 5.00 | 5.00 | esj, vince |
| 2020 Spring | 0 | 0.00 | 0.00 | vince |
| 2019 Summer | 0 | 0.00 | 0.00 | |
| 2019 Fall | 0 | 0.00 | 0.00 | |
| 2020 Spring | 5 | 4.76 | 4.80 | vince |
| | ===== | ===== | ===== | |
| Total | 7 | 4.83 | 4.86 | |

For all nine outcomes of the course, most of the students (more than 80%) agree either strongly or moderately. There is no significant concern expressed by the students or faculty.

Recommendation: n/a

Overall observation:

- In general, students request more hands-on practice opportunities.
- The learning outcomes of some courses should be reviewed and updated.

Professional Development: Subject Area Coordinator Report

Richard Whittaker

October 10, 2021

Subject Area: Professional Development

CGS-1920: Introduction to Computing

CGS-3095: Technology in the Global Arena

ENC-3249: Professional and Technical Writing for Computing

The following report was generated by utilizing data from the Course Appraisal and Course Evaluation Systems and covers the time period from Summer 2019 to Spring 2021.

1. CGS-1920: Introduction to Computing

| | <u>No. of Student</u> <u>Responses</u> | <u>Value of</u> <u>Outcome</u> | <u>Coverage</u> <u>Adequacy</u> | <u>Usernames of</u> <u>Instructors</u> |
|-------------|---|-----------------------------------|------------------------------------|---|
| Summer 2019 | 2 | 4.36 | 4.57 | |
| Fall 2019 | 6 | 4.89 | 4.59 | Juanc, tsolis |
| Spring 2020 | 3 | 4.71 | 4.57 | Juanc, tsolis |
| Summer 2020 | 0 | 0.00 | 0.00 | Juanc, tsolis, mlangen |
| Fall 2020 | 4 | 4.97 | 4.68 | Juanc, tsolis |
| Spring 2021 | 8 | 4.85 | 4.74 | Juanc, tsolis, mlangen |
| | ===== | ===== | ===== | |
| Total | 23 | 4.82 | 4.66 | Weighted Avg |

The faculty that have taught this course have discussed changing the title of this course to "Intro to the Field of Computing". In the past, it has been brought up to change the title to "Seminar in Computing" to clarify that it is not a programming course. Currently, the faculty believes that "Intro to the Field of Computing" would be a better choice.

Recommendation: No changes are recommended.

2. CGS-3095: Technology in the Global Arena

| | <u>No. of Student</u> <u>Responses</u> | <u>Value of</u> <u>Outcome</u> | <u>Coverage</u> <u>Adequacy</u> | <u>Username</u> <u>of Instructors</u> |
|-------------|---|-----------------------------------|------------------------------------|--|
| Summer 2019 | 12 | 4.79 | 4.42 | mlangen, ivarodri, crahn |
| Fall 2019 | 2 | 3.86 | 4.31 | ivarodri, crahn |
| Spring 2020 | 7 | 4.39 | 4.29 | mlangen, mcdwells, rcahn |
| Summer 2020 | 1 | 5.00 | 5.00 | crahn |
| Fall 2020 | 4 | 4.78 | 4.81 | crahn |
| Spring 2021 | 46 | 4.78 | 4.77 | spisano , mcdwells, rcahn |
| | ===== | ===== | ===== | |
| Total | 72 | 4.72 | 4.66 | Weighted Avg |

The majority of students found the course material beneficial and adequate for understanding key computing related issues. In addition, a few students commented that the textbook was not helpful for the course.

Recommendation: No changes are recommended.

3. ENC-3249: Professional and Technical Writing for Computing

The Course Appraisal and Course Evaluation Systems did not provide data regarding this course. Reason being this course is taught by the English Department. Using the CGS 3095 course which has writing assignments as a proxy, students' writing skills were found to range from deficient to adequate.

Recommendation: No changes are recommended.

Computer Programming: Subject Area Coordinator Report

Maria Cristina Charters

October 2, 2021

Introduction:

The Computer Programming area consists of the following four courses with syllabi links:

[CGS-4854](#) Website Construction Management

[COP-2250](#) Programming in Java

[COP-2270](#) C For Engineers

[COP-3804](#) Intermediate Java

1. CGS-4854: Website Construction Management

The following table shows a summary of the course assessment evaluations:

| CGS 4854 | Website Construction Management | | | |
|-------------|---------------------------------|-------------------------|--------------------------|--------------------------------|
| | <u>No. of Student Responses</u> | <u>Value of Outcome</u> | <u>Coverage Adequacy</u> | <u>Username of Instructors</u> |
| Summer 2019 | 3 | 3.62 | 3.71 | Batista |
| Fall 2019 | 4 | 4.14 | 3.38 | Batista, Robinson |
| Spring 2020 | 1 | 1.00 | 1.00 | Robinson |
| Summer 2020 | 0 | 0.00 | 0.00 | |
| Fall 2020 | 0 | 0.00 | 0.00 | |
| Spring 2021 | 8 | 4.09 | 4.06 | Balmaseda |
| | ===== | ===== | ===== | |
| Total | 16 | 3.82 | 3.63 | Weighted Avg |

For all five outcomes of the course, most of the students (75%) agree moderately. There was a concern expressed by several students in the Students Suggestions section, requesting that the course be updated to include current topics.

Recommendation: Evaluate and select a more modern textbook to aid in providing more current topics. Consider an interactive textbook such as zyBooks that may enable improved student learning. Also consider creating 2 courses out of this one, where one course is dedicated to an overview of full-stack development, specializing in front-end development tools, and the other course is dedicated to back-end development.

2. COP-2250: Programming in Java

The following table shows a summary of the course assessment evaluations:

| COP 2250 | Programming in Java | | | |
|-------------|---------------------------------|-------------------------|--------------------------|---------------------------------|
| | <u>No. of Student Responses</u> | <u>Value of Outcome</u> | <u>Coverage Adequacy</u> | <u>Usernames of Instructors</u> |
| Summer 2019 | 3 | 4.13 | 3.70 | Charters |
| Fall 2019 | 4 | 4.45 | 3.98 | Smith, Pissano |
| Spring 2020 | 0 | 0.00 | 0.00 | |
| Summer 2020 | 2 | 3.70 | 3.80 | Charters |
| Fall 2020 | 3 | 4.70 | 3.93 | Charters, Pissano |
| Spring 2021 | 6 | 4.40 | 4.44 | Charters, Smith, Pissano |
| | ===== | ===== | ===== | |
| Total | 18 | 4.34 | 4.06 | Weighted Avg |

For all five outcomes of the course, most of the students (more than 80%) agree either strongly or moderately. Students expressed concern about the amount and speed of topics covered.

Recommendation: Provide students with additional lab time where students can have more hands-on practice and support from the instructor and peer learning assistants.

3. COP-2270: C For Engineers

The following table shows a summary of the course assessment evaluations:

| COP 2270 | C for Engineers | | | |
|-------------|---------------------------------|-------------------------|--------------------------|---------------------------------|
| | <u>No. of Student Responses</u> | <u>Value of Outcome</u> | <u>Coverage Adequacy</u> | <u>Usernames of Instructors</u> |
| Summer 2019 | 0 | 0.00 | 0.00 | |
| Fall 2019 | 0 | 0.00 | 0.00 | |
| Spring 2020 | 0 | 0.00 | 0.00 | |
| Summer 2020 | 0 | 0.00 | 0.00 | |
| Fall 2020 | 0 | 0.00 | 0.00 | |
| Spring 2021 | 0 | 0.00 | 0.00 | |
| | ===== | ===== | ===== | |
| Total | 0 | | | Weighted Avg |

This class has been taught very infrequently in the past 3 years. No student feedback is available.

Recommendation: COP-2270 currently appears as an optional pre-requisite to CNT-4403 (Computing and Network Security) in the Cybersecurity major. It is not required and may be overlooked by students taking alternate pre-requisite courses of COP-3337 or COP-3804. Investigate if COP-2270 should be eliminated in the Cybersecurity major. COP-4338 exists in the CS major and also covers similar topics of programming in C.

4. **COP-3804: Intermediate Java**

The following table shows a summary of the course assessment evaluations:

| COP 3804 | Intermediate Java | | | |
|-----------------|--------------------------|-----------------|-----------------|--------------------|
| | <u>No. of</u> | <u>Value of</u> | <u>Coverage</u> | <u>Username of</u> |
| | <u>Student</u> | <u>Outcome</u> | <u>Adequacy</u> | <u>Instructors</u> |
| | <u>Responses</u> | | | |
| Summer 2019 | 0 | 0.00 | 0.00 | |
| Fall 2019 | 4 | 4.72 | 3.83 | Felipe, Charters |
| Spring 2020 | 4 | 4.25 | 3.88 | Charters, Rahn |
| Summer 2020 | 0 | 0.00 | 0.00 | |
| Fall 2020 | 5 | 4.60 | 4.55 | Charters, Felipe |
| Spring 2021 | 6 | 4.48 | 3.23 | Charters, Smith |
| | ===== | ===== | ===== | |
| Total | 19 | 4.51 | 3.84 | Weighted Avg |

For all five outcomes of the course, most of the students (more than 80%) agree either strongly or moderately. The main concern expressed by students was the selection of the textbook by the instructor and the lack of additional support from peer learning assistants.

Recommendation: A specific textbook should be used by all instructors of COP-3804, with preference given to an interactive textbook such as zyBooks that provides students with more hands-on practice. Also, additional lab time should be provided to students so they can have more hands-on practice with support from the instructor and peer learning assistants.

Overall observation: Student participation in the course evaluation system since Summer 2018 is consistently low. This may be due to the migration of the evaluation process to fully online mode after Spring 2018. Perhaps students who complete course evaluation before the final exam week, may be given a reward such as a few extra credit points in the class, preference in advising, student workshop registrations, etc.

Capstone and Senior Project: Subject Area Coordinator Report

Masoud Sadjadi
October 15, 2021

Introduction:

The Capstone, Senior Project, and VIP area consists of the following four courses with syllabi links:

[CIS-3950](#) Capstone I

[CIS-4951](#) Capstone II

[CIS-4911](#) Senior Project (substitutional course for IDS 4918 when low enrollment)

[IDS-4918](#) Vertically Integrated Projects - C

CIS-3950 and CIS-4951 are new courses to replace CIS-4911 over time; we will continue offering CIS-4911 until students who started the program with CIS-4911 have sufficient time to graduate taking CIS-4911 during their last semester if they chose so. The assessment report given below for all other courses is based on student responses about the course outcomes and the faculty course appraisals.

1. CIS-4911: Senior Project

CIS-4911 is going to be phased out and eventually replaced by Capstone I & II. The following table shows a summary of the course assessment evaluations:

| | <u>No. of Student</u> <u>Responses</u> | <u>Value of</u> <u>Outcome</u> | <u>Coverage</u> <u>Adequacy</u> | <u>Professor</u> |
|-------------|---|-----------------------------------|------------------------------------|------------------|
| Summer 2019 | 5 | 4.65 | 4.60 | |
| Fall 2019 | 9 | 4.70 | 3.98 | sadjadi |
| Spring 2020 | 3 | 4.27 | 3.94 | sadjadi |
| Summer 2020 | 2 | 5.00 | 5.00 | sadjadi |
| Fall 2020 | 3 | 4.42 | 3.75 | sadjadi |
| Spring 2021 | 14 | 4.60 | 4.22 | sadjadi |
| | ===== | ===== | ===== | |
| Total | 36 | 4.61 | 4.19 | |

For all the eleven outcomes of the course, most of the students (more than 83%) agree either strongly or moderately. In summary, there have been eight main concerns raised by students.

- Inadequate tools forced to be used for communications, meetings, announcements, assignment submissions, etc.
- Unclear role of Capstone I, II, and Senior Project students working together in one project.
- Lack of sufficient communications delay is responding to the students by the instructor (raised by two students).
- Large group sizes.
- Grades to be better communicated throughout the semester.

- Project list should be given earlier.
- No end of semester surprise for the final deliverables.
- Provide virtual computers.

Recommendation: This is a three-credit course, and it must be taken during the last semester before graduation by our Computer Science students. There are plenty to be learned and performed during one semester and that is why we are replacing it with Capstone I and II that are being taken by our students in two semesters consequently or even with some semesters skipped in between. We have continued offering this course along with Capstone I & II to accommodate those students who were not aware of Capstone I & II when they joined our program and would need to graduate within the next semester. However, we are hoping that over time, this course is phased out and fully replaced by Capstone I & II. Having said the above, based on the comments/feedback by the instructor and the students, here are some recommendations.

- Allow students to pick the tools for communications among themselves so that they can easily conduct their meetings and do online/offline communications.
- The role of the Capstone I, Capstone II, and Senior Project students assigned to the same project should be clearly communicated to the students.
- The instructor must be consistent in responding to all students on time. It appears that only two students (out of hundreds who have taken this course) complained about lack/delayed responses by the instructor.
- The instructor should seek different ways to attract more project proposals so that the group sizes are more manageable.
- The instructor must make sure that the grades are being communicated to the students throughout the semester (only one student complained).
- The instructor should project the list of available projects during the first week of the semester.
- The expectations of the end of the semester final deliverable should be communicated better at the beginning of the semester to avoid any surprises.
- The instructor should ask the school to provide students with virtual computers if they need one or more for their projects. In the past, the instructor has been arranged for all students to receive a virtual machine at the beginning of the semester, but as a very few students used such pre-assigned virtual machines, it turned out to be a big waste of resources. So, it was decided to do the assignments on a need basis. The instructor should clearly communicate to all students that they can request for one or more virtual machines for their projects at the beginning of the semester.

2. IDS-4918: Vertically Integrated Projects - C

IDS-4918 was not offered in this period. The following table shows a summary of the course assessment evaluations:

| | <u>No. of Student</u> | <u>Value of</u> | <u>Coverage</u> | <u>Username of</u> |
|-------------|-----------------------|-----------------|-----------------|--------------------|
| | <u>Responses</u> | <u>Outcome</u> | <u>Adequacy</u> | <u>Instructors</u> |
| Summer 2017 | | | | |
| Fall 2017 | | | | |
| Spring 2018 | | | | |
| Summer 2018 | | | | |
| Fall 2018 | | | | |
| Spring 2019 | | | | |

Total ===== ===== =====

There is no data as this course was not offered during this period.

Recommendation: There is no data as this course was not offered during this period.

Overall observation: There is no data as this course was not offered during this period.

Security: Subject Area Coordinator Report

Amin Kharraz
November 2, 2021

Introduction:

The Security area consists of the following three courses with syllabi links:

[CIS-4365](#) Enterprise Cybersecurity Policies and Practices

[CNT-4182](#) Mobile and IoT Cybersecurity Policies and Practices

[CNT-4403](#) Computing and Network Security

The assessment report given below for all other courses is based on student responses about the course outcomes and the faculty course appraisals.

1. CIS-4365 Enterprise Cybersecurity Policies and Practices

The following table shows a summary of the course assessment evaluations:

Student contribution to the report was not significant. However, those who took part in the survey were satisfied with the teaching style and teaching quality.

| CIS-4365 | Enterprise Cybersecurity Policies and Practices | | | |
|-----------------|---|-----------------|-----------------|---------------------|
| | <u>No. of Student</u> | <u>Value of</u> | <u>Coverage</u> | <u>Usernames of</u> |
| | <u>Responses</u> | <u>Outcome</u> | <u>Adequacy</u> | <u>Instructors</u> |
| Summer 2019 | 3 | 5.00 | 4.67 | simo001 |
| Fall 2019 | 3 | 4.58 | 4.13 | caralons |
| Spring 2019 | 2 | 4.69 | 3.81 | caralons |
| Summer 2020 | | | | |
| Fall 2020 | 1 | 5.00 | 5.00 | caralons |
| Spring 2020 | 1 | 4.38 | 4.38 | caralons |
| | | | | |
| Total | 10 | 4.75 | 4.34 | Weighted Avg |
| CIS-4365 | Enterprise Cybersecurity Policies and Practices | | | |

Student contribution to the report was not significant. However, those who took part in the survey were satisfied with the teaching style and teaching quality.

Recommendation: Continue to use topics such as cloud security, threat modeling in different context in the enterprise setting (e.g., software, cloud environment, physical security). I would also add topics such as data breaches (i.e., case studies, root causes), password management at the enterprise level.

2. CNT-4182: Mobile and IoT Cybersecurity Policies and Practices

The following table shows a summary of the course assessment evaluations:

Student contribution to the report was not significant. There is also no significant concern expressed by the students.

| CNT-4182 | Mobile and IoT Cybersecurity Policies and Practices | | | |
|--------------------------|---|-------------------------|--------------------------|---------------------------------|
| | <u>No. of Student Responses</u> | <u>Value of Outcome</u> | <u>Coverage Adequacy</u> | <u>Usernames of Instructors</u> |
| Summer 2019 | 4 | 5.00 | 4.75 | mcdwells |
| Fall 2019 | 4 | 4.89 | 4.81 | mcdwells |
| Spring 2019 | | | | |
| Summer 2020 | 3 | 5.00 | 5.00 | mcdwells |
| Fall 2020 | 1 | 5.00 | 5.00 | mcdwells |
| Spring 2020 | | | | |
| Total | 12 | 4.96 | 4.85 | Weighted Avg |
| CNT-4182 | Mobile and IoT Cybersecurity Policies and Practices | | | |

Recommendation: It is not clear to me how successful the group projects are as the number of the number participants in the survey is small. If the number of students in the class is low, some solo projects would be good. Also, it would be good to expose students to the notion of malicious code, evasion, and malware (e.g., Mirai botnet) in IoT and Mobile ecosystem.

3. CNT-4403 Computing and Network Security

The following table shows a summary of the course assessment evaluations:

The course has been taught by several instructors. Students feedback was mainly on the quality of delivered materials during COVID.

| CNT-4403 | Computing and Network Security | | | |
|--------------------------|---------------------------------|-------------------------|--------------------------|---------------------------------|
| | <u>No. of Student Responses</u> | <u>Value of Outcome</u> | <u>Coverage Adequacy</u> | <u>Usernames of Instructors</u> |
| Summer 2019 | 1 | 4.00 | 3.78 | Isimo001 |
| Fall 2019 | 4 | 4.70 | 4.75 | Emonte02,rblazek |
| Spring 2019 | 3 | 4.67 | 4.63 | Emonte02,isimo001 |
| Summer 2020 | 1 | 4.00 | 3.78 | Isimo001 |
| Fall 2020 | 2 | 4.45 | 4.50 | rblazek |
| Spring 2020 | | | | |
| | | | | |
| Total | 11 | 4.52 | 4.50 | Weighted Avg |
| CNT-4403 | Computing and Network Security | | | |

Recommendation: The course is offered by multiple instructors. I do not have any updates on the course syllabus as it looks good. I highly encourage the instructors to follow the syllabus and make sure they will deliver the materials promised to students. Moving forward, as we invest more hybrid modality, I encourage the instructors to make use of all the available resources and assist students.

Systems: Subject Area Coordinator Report

Kianoush Gholamiboroujeni

October 15, 2021

Introduction:

The Systems area consists of the following five courses with syllabi links:

[CIS-4431](#) IT Automation

[CTS-4348](#) Unix System Administration

[CTS-4743](#) Enterprise IT Troubleshooting

[CNT-4603](#) Windows System Administration

I did not find any section for CNT-4603 from Summer 2019 to Spring 2021 in ICA or CES websites.

1. CIS-4431 IT Automation

The following table shows a summary of the course assessment evaluations:

| | <u>No. of Student</u> | <u>Value of</u> | <u>Coverage</u> | <u>Username of</u> |
|-------------|-----------------------|-----------------|-----------------|--------------------|
| | <u>Responses</u> | <u>Outcome</u> | <u>Adequacy</u> | <u>Instructors</u> |
| Summer 2019 | 2 | 4.75 | 4.83 | lsimo001 |
| Fall 2019 | 6 | 4.49 | 4.44 | lsimo, szaid001 |
| Spring 2020 | 0 | 0.00 | 0.00 | |
| Summer 2020 | 0 | 0.00 | 0.00 | |
| Fall 2020 | 2 | 2.50 | 2.50 | lsimo001 |
| Spring 2021 | 9 | 4.63 | 4.61 | lsimo001 |
| | ===== | ===== | ===== | |
| Total | 19 | 4.37 | 4.36 | Weighted Avg |

For all six outcomes of the course, most of the students (80%) agree either strongly or moderately in every semester with the exception of Fall 2020. Since the number of students' responses in Fall 2020 is very low (2), the result is not statistically significant. There is no significant concern expressed in the Students Suggestions section.

Recommendation: Student participation in the course evaluation system since Summer 2019, especially in 2020, is very low. Perhaps students who complete course evaluation before the final exam week, may be given some sort of incentives like preference in advising, student workshop registrations, etc.

2. CTS-4348 Unix System Administration

The following table shows a summary of the course assessment evaluations:

| | <u>No. of Student</u> <u>Responses</u> | <u>Value of</u> <u>Outcome</u> | <u>Coverage</u> <u>Adequacy</u> | <u>Usersnames of</u> <u>Instructors</u> |
|-------------|---|-----------------------------------|------------------------------------|--|
| Summer 2019 | 1 | 5.00 | 4.12 | gfgomez |
| Fall 2019 | 0 | 0.00 | 0.00 | osorioj, gfgomez |
| Spring 2020 | 0 | 0.00 | 0.00 | osorioj, gfgomez |
| Summer 2020 | 1 | 2.62 | 1.12 | gfgomez |
| Fall 2020 | 1 | 5.00 | 5.00 | gfgomez |
| Spring 2021 | 4 | 4.66 | 4.31 | gfgomez |
| | ===== | ===== | ===== | |
| Total | 7 | 4.47 | 3.93 | Weighted Avg |

For all eight outcomes of the course, most of the students (80%) agree either strongly or moderately in every semester with the exception of Summer 2020. Since the number of students' responses in Summer 2020 is very low (1), the result is not statistically significant. There is no significant concern expressed in the Students Suggestions section. The instructor (gfgomez) suggested that students need more exposure to Linux and hands on experience.

Recommendation: It would be great if students get exposure to Linux and hands-on experience either before this class or the syllabus of this course includes some introduction to Linux file system, bash terminal etc. at the first few weeks of this class. Student participation in the course evaluation system since Summer 2019, especially in 2020, is very low. Perhaps students who complete course evaluation before the final exam week, may be given some sort of incentives like preference in advising, student workshop registrations, etc.

3. CTS-4743 Enterprise IT Troubleshooting

The following table shows a summary of the course assessment evaluations:

| | <u>No. of Student</u> <u>Responses</u> | <u>Value of</u> <u>Outcome</u> | <u>Coverage</u> <u>Adequacy</u> | <u>Usersnames of</u> <u>Instructors</u> |
|-------------|---|-----------------------------------|------------------------------------|--|
| Summer 2019 | 0 | 0.00 | 0.00 | |
| Fall 2019 | 0 | 0.00 | 0.00 | |
| Spring 2020 | 0 | 0.00 | 0.00 | nmonfort |
| Summer 2020 | 0 | 0.00 | 0.00 | |
| Fall 2020 | 0 | 0.00 | 0.00 | nmonfort |
| Spring 2021 | 17 | 4.91 | 4.88 | nmonfort |
| | ===== | ===== | ===== | |
| Total | 17 | 4.91 | 4.88 | Weighted Avg |

For all eight outcomes of the course, most of the students (more than 80%) agree either strongly or moderately. There is no significant concern expressed by the students or faculty.

Recommendation: No change is needed on the course outcomes or syllabus.

4. CNT-4603 Windows System Administration

The following table shows a summary of the course assessment evaluations:

| | <u>No. of Student</u> <u>Responses</u> | <u>Value of</u> <u>Outcome</u> | <u>Coverage</u> <u>Adequacy</u> | <u>Usernames of</u> <u>Instructors</u> |
|-------------|---|-----------------------------------|------------------------------------|---|
| Summer 2019 | 0 | 0.00 | 0.00 | |
| Fall 2019 | 0 | 0.00 | 0.00 | |
| Spring 2020 | 0 | 0.00 | 0.00 | |
| Summer 2020 | 0 | 0.00 | 0.00 | |
| Fall 2020 | 0 | 0.00 | 0.00 | |
| Spring 2021 | 0 | 0.00 | 0.00 | |
| | ===== | ===== | ===== | |
| Total | 0 | 0.00 | 0.00 | Weighted Avg |

No results found since the course was not offered during this two-year cycle.

Recommendation: No recommendation.

Overall observation: no observation.

APPENDIX D-1: Exit (Graduating Student) Survey

Raw Data and Statistics for Individual Semesters

The statistics calculated from raw data of the survey by Graduating Students (EXIT Survey) for individual semesters in this Assessment Period are presented here. The aggregate statistical results for all semesters from Fall 2020 to Spring 2021 are also included below. The rating for the outcome “Demonstrate familiarity with arts, humanities and social sciences” is not assessed in the survey since students take interdisciplinary courses (9 credits) from diverse disciplines in the university.

As the BS in CY program began in Fall 2020, there was no student graduated in Fall 2020 and Spring 2021 terms (as part of this assessment cycle Summer 2019 – Spring 2021).

FALL 2020 GRADUATING STUDENT (EXIT) SURVEY

No Exit Survey data is available for this term

SPRING 2021 GRADUATING STUDENT (EXIT) SURVEY

No Exit Survey data is available for this term

APPENDIX D-2: Exit (Graduating Student) Survey

SUMMARY OF STATISTICAL RESULTS - FALL 2020 TO SPRING 2021
TOTAL RESPONSES → 0

Since the BS in CY program began in Fall 2020, there was no student graduated in Fall 2020 and Spring 2021 terms. Hence, no summary of statistical results for the exit survey in this assessment cycle.

APPENDIX E-1: Alumni Survey - Raw Data and Statistics

The Alumni Survey data for this cycle was collected between May 2021 and November 2021. It is presented below along with statistical results.

| PROGRAM EDUCATIONAL OBJECTIVE | SCORES - # OF STUDENTS RESPONDING | | | | | TOTAL | NUMBER OF | AVERAGE | |
|---|-----------------------------------|------|--------------|------|----------------|----------------|-----------|---------|------------|
| | Excellent | Good | Satisfactory | Poor | Unsatisfactory | WEIGHTED SCORE | RESPONSES | SCORE | PERCENTAGE |
| | 4 | 3 | 2 | 1 | 0 | | | | |
| EDUCATIONAL EXPERIENCE | | | | | | | | | |
| Capacity for Personal growth | 39 | 24 | 8 | 1 | 1 | 245 | 73 | 3.36 | 83.90 |
| Capacity for Lifelong learning | 44 | 22 | 5 | 2 | 0 | 254 | 73 | 3.48 | 86.99 |
| Development of Communication Skills | 28 | 30 | 13 | 2 | 0 | 230 | 73 | 3.15 | 78.77 |
| Awareness of Social & Ethical Responsibility | 26 | 25 | 15 | 3 | 1 | 212 | 70 | 3.03 | 75.71 |
| Preparation for career in CS | 28 | 26 | 15 | 3 | 1 | 223 | 73 | 3.05 | 76.37 |
| Preparation for Graduate Study | 28 | 27 | 15 | 2 | 0 | 225 | 72 | 3.13 | 78.13 |
| | | | | | | | | | |
| PREPARATION UPON GRADUATION | | | | | | | | | |
| Quality of Preparation - Computer programming | 29 | 19 | 17 | 1 | 1 | 208 | 67 | 3.10 | 77.61 |
| Quality of Preparation - Systems Development | 18 | 24 | 18 | 5 | 1 | 185 | 66 | 2.80 | 70.08 |
| Quality of Preparation - Data Structures & Algo. | 32 | 19 | 14 | 2 | 0 | 215 | 67 | 3.21 | 80.22 |
| Quality of Preparation - Comp. Architecture & Org. | 23 | 21 | 18 | 4 | 1 | 195 | 67 | 2.91 | 72.76 |
| | | | | | | | | | |
| FACULTY AND INSTRUCTION | | | | | | | | | |
| Dedication of Faculty to UG Teaching | 31 | 29 | 9 | 3 | 1 | 232 | 73 | 3.18 | 79.45 |
| Expertise of Faculty in Subject Areas | 37 | 21 | 11 | 1 | 0 | 234 | 70 | 3.34 | 83.57 |
| Mentorship provided by Faculty | 21 | 18 | 22 | 6 | 3 | 188 | 70 | 2.69 | 67.14 |
| Overall Instructional Capability of Faculty | 25 | 25 | 19 | 1 | 0 | 214 | 70 | 3.06 | 76.43 |
| | | | | | | | | | |
| DIVERSITY PROMOTION AND ENVIRONMENT | | | | | | | | | |
| Effectiveness in maintaining diverse student body | 34 | 19 | 11 | 1 | 0 | 216 | 65 | 3.32 | 83.08 |
| Diversity as agent for personal growth | 32 | 18 | 16 | 5 | 1 | 219 | 72 | 3.04 | 76.04 |
| Diversity as agent for awareness of social concerns | 20 | 27 | 14 | 3 | 1 | 192 | 65 | 2.95 | 73.85 |
| Extent to which healthy learning env. Is promoted | 23 | 24 | 17 | 1 | 0 | 199 | 65 | 3.06 | 76.54 |
| | | | | | | | | | |
| OVERALL RATING OF EDUCATIONAL EXPERIENCE | 193 | 154 | 71 | 13 | 3 | 1389 | 434 | 3.20 | 80.01 |
| OVERALL RATING OF PREPARATION UPON GRADUATION | 102 | 83 | 67 | 12 | 3 | 803 | 267 | 3.01 | 75.19 |
| OVERALL RATING OF FACULTY & INSTRUCTION | 114 | 93 | 61 | 11 | 4 | 868 | 283 | 3.07 | 76.68 |
| OVERALL RATING OF DIVERSITY PROMOTION & ENV. | 109 | 88 | 58 | 10 | 2 | 826 | 267 | 3.09 | 77.34 |
| | | | | | | | | | |
| OVERALL SATISFACTION WITH BS-CS PROG. OBJECTIVE | 518 | 418 | 257 | 46 | 12 | 3886 | 1251 | 3.11 | 77.66 |

We will revise the curriculum-specific areas under “PREPARATION UPON GRADUATION” section to include IT and CY program areas and the alumnus’s degree (CS/IT/CY).

APPENDIX E-2: Employer Survey Instrument
FLORIDA INTERNATIONAL UNIVERSITY
SCHOOL OF COMPUTER SCIENCE
(CONFIDENTIAL) EMPLOYER EVALUATION

To: The Evaluator

The School of Computer Science at Florida International University seeks your confidential opinion about our graduates and your employees, with the goal of using this information to help us assess the effectiveness of our program in preparing our students to enter the work-place. Please rest assured that your opinions will be used only to strengthen our programs and not for any other purpose. We urge you to complete this survey based on the performance of all, or most of our graduates employed by your company. Thank you for your participation.

Part-A:

Your Name:

Your Position:

Company Name:

Office Address:

Office Phone:

E-mail:

Part-B:

Please rate the following skills of our graduates: {Choices: Outstanding, Excellent, Good, Fair, Poor, Unable to Comment}

- 1) Ability to communicate orally
 - 2) Ability to communicate in written form
 - 3) Ability to work cooperatively in a team
 - 4) Understanding of the social and ethical concerns of practicing computer scientist
 - 5) Mastery of the fundamental computer science concepts and ability to solve computing problems using them
 - 6) Ability to learn emerging and new concepts and technologies
-

Part-C:

Based on your satisfaction with our graduates, will you consider our future graduates for employment in your company?

YES

NO

Part-D: Additional comments, suggestions, and observations:

APPENDIX E-3: Employer Survey Raw Data and Statistics

The Employer Survey data for this cycle was collected between May 2021 and November 2021. It is presented below, along with statistical results.

TOTAL RESPONSES → 50 (No more than 28 for any question)

| | | EMPLOYER SURVEY 2019-2021 | | | | | | | |
|----------------------|---|---------------------------|-----------|------|------|------|-------|----------------|------------|
| | | EMPLOYER RESPONSES | | | | | | | |
| SCIS Prog. Objective | Question about our Graduates | Excellent | Very Good | Good | Fair | Poor | Total | Weighted Score | Percentage |
| | Response Score --> | 4 | 3 | 2 | 1 | 0 | | Max. = 4 | |
| 2.1 | Mastery of CS concepts & ability to solve problems | 11 | 10 | 4 | 1 | 0 | 26 | 3.19 | 79.81 |
| 2.2 | Ability to Communicate Verbally | 12 | 13 | 3 | 0 | 0 | 28 | 3.32 | 83.04 |
| 2.2 | Ability to Communicate in Written Form | 12 | 8 | 4 | 1 | 0 | 25 | 3.24 | 81.00 |
| 2.2 | Ability to work cooperatively in a team | 15 | 9 | 3 | 1 | 0 | 28 | 3.36 | 83.93 |
| 2.3 | Understanding of Social and Ethical Concerns | 7 | 12 | 2 | 0 | 1 | 22 | 3.09 | 77.27 |
| 2.4 | Ability to learn Emerging Concepts and Technologies | 15 | 7 | 3 | 0 | 0 | 25 | 3.48 | 87.00 |
| 1 | Will you consider employing our graduates in future | Yes = 28 | No = 0 | | | | 154 | | |
| | OVERALL SCORE OF OUR GRADUATES | 3.29 | | | | | | | |
| | Percentage | 82.14 | | | | | | | |

The above employer survey questions were based on the CS program objectives. We will revise these questions to include IT and CY program objectives and the employee's degree (CS/IT/CY).

APPENDIX F: Course-Embedded Assessment Summaries

DIRECT ASSESSMENT SUMMARY OF CY COURSES

Embedded assessment for this assessment cycle (Summer 2019 – Spring 2021) was not planned for the BS in CY program. However, for the next assessment cycle (Summer 2021 – Spring 2023), embedded assessments for the following CY courses are being conducted:

| | |
|----------|------------------------------------|
| CEN 3721 | Human Computer Interaction |
| CGS 3767 | Computer Operating Systems |
| CGS 4285 | Applied Computer Networking |
| CGS 4854 | Website Construction Management |
| CIS 4365 | Enterprise Cybersecurity |
| COP 2250 | Programming in Java |
| COP 2270 | Secure C Programming for Engineers |
| COP 3804 | Intermediate Java |
| COP 4703 | Information Storage & Retrieval |
| CNT 4182 | Mobile & IoT Security |
| CNT 4403 | Computing & Network Security |
| COT 3100 | Discrete Structures |
| IDS 4918 | Capstone VIP Project |

APPENDIX G: Student Organization Reports

2019-2021 ACM Report

The Association for Computer Machinery (ACM) at Florida International University (FIU) in Miami, Florida, has the mission to support our students' professional and technical advancement through university studies and beyond. We have been recognized locally and nationally for our Outstanding Chapter activities by ACM National.

Through our five programs: ACM Build, ACM Learn, ACM Grow, ACM Reach, & ACM Scale, we provide students the opportunity to gain experience at our software and hardware workshops, participate in our professional development sessions, have access to industry professionals, give back to the community, and create a semester-long project in a team-based environment taught by mentors who have gone on to do internships at Google, Facebook, PlayStation, and more!

We welcome students from all majors and skill levels to join our organization and become a part of our university tech community!

Activities from Summer 2019 to Spring 2021

ACM Fall 2019

- GitHub and GitLab Workshop – Sponsored by WiCS – Presented by Fernando Serrano
- CEC Student Organization Leadership Meeting - Led by Julie Vallejos
- 10 ACM E-board Meetings (08/22/2019; 8/28/2019; 09/11/2019; 9/25/2019; 10/03/2019; 10/09/2019; 10/23/2019; 11/06/2019; 11/13/2019; 11/20/2019)
- 2 General Board Meetings (First and Final)
- Robotics Workshop Series (10/10/2019; 10/11/2019; 10/18/2019)
- Build: intro to Python (10/18/2019)

ACM Spring 2020

- Intro to Android Workshop (02/14/2020) – Led by Andrea Vieira
- 7 ACM E-Board Meetings (11/21/2020; 01/27/2020; 02/03/2020; 02/10/2020; 02/17/2020; 03/02/2020; 09/02/2020)
- GitHub Workshop (02/07/2020)
- 1 General Body Meeting (01/31/2020)

ACM Fall 2020

- 1 Emergency meeting (08/23/2020)
- First General Meeting (08/28/2020)

ACM Spring 2021

- General Body Meeting 04/02/2021

Google Developer Student Clubs @ Florida International University

2020 - 2021 Activity Report

Introduction

Google Developer Student Clubs (GDSC), otherwise known as Developer Student Clubs @Florida International University (DSC @ FIU), was founded in Fall 2020 to help students meet people with similar interests, learn about a wide range of technology, and apply their new learnings and connections to support the local community. DSC @ FIU is part of Google Developer's GDSC initiative - creating university-based community groups powered by Google for students interested in Google Developer technology.

Our mission statement is to connect the bridge between theory and practice. Students absorb theory from the classroom setting, but have little opportunities to practice the application of such theories within the classroom. Our organization aims to assist students in the practical application of theories taught within academia by creating programs integrating both theories and technology commonly used in the workforce today. To achieve this mission, we also seek to introduce Google Developer technology and its capabilities to the student body, though other technologies are also discussed.

Starting a GDSC chapter in Florida International University allows students to participate in Google Developer's annual Solution Challenge. This is an international competition taking place from January to August where students around the globe work with Google technology to address a problem statement. Previous statements include solving a problem in the participants' local community or tackling one of the United Nations 17 Sustainable Development Goals. One requirement to participate in this challenge is to be in an active Developer Student Club chapter. By creating a chapter within FIU, the student body can now officially partake in this opportunity to make an impact and improve their own skills.

2020 - 2021 Activities

Upon starting in the Fall 2020 semester, we hosted technical development workshops and lectures. In addition to this, we also hosted social events for our members to socialize and network within the organization. Some examples of events we've hosted are as follows:

- Cloud Hero Workshop
- ShellHacks Intro to Python Workshop
- Game Night

We also began Developer Communities - groups within the organization aimed to introduce members to specific fields and find peers interested in the same field to collaborate and learn with. We initially started with Artificial Intelligence and Machine Learning, Mobile Development, and Competitive Programming. Communities were encouraged to communicate outside of weekly designated meetings to learn a specific aspect about their tech or talk about ongoing projects. Communities met weekly to help beginners get started on topics and applications, but some meetings were also dedicated to a free-talk forum for participants to discuss the technology and their own projects. The following semesters, we added Developer Communities for Web Development and Game Development.

In the following Spring 2021 semester, we shifted gears to help interested members participate in the 2021 Google Solution Challenge. Workshops and Developer Communities were still key components of club activities. Workshops began to shift gears towards project management topics. We also began to host professional development events. Some example of workshops hosted in this time period include the following:

- Resume Roast
- Computer Vision with Deep Learning
- Github Workshop
- Testing your Application Workshop

Our Competitive Programming Developer Community also hosted their first Binary Search Competition. Participants were seeded according to their LeetCode experience and competed against each other in solving 3 LeetCode questions the fastest.

Over the span of Summer 2021, we focused on professional development workshops like *How to Network*. This current semester, Fall 2021, we continued the trend from Spring 2021, mixing together professional and technical development alongside now biweekly Developer Communities. Activities include:

- ShellHacks TensorFlow Workshop
- Tech Internship Panel
- Intro to Python Series ft. AEMB

Throughout these events, our attendance averaged around 10 people, with some events achieving over 50 people.

Future Plans

In the upcoming Spring 2022 semester, we currently have plans to focus on guiding students through the 2022 Google Solution Challenge, starting in January with an official date to be announced later. This will come in the form of workshops primarily focusing on project planning, development, and testing. Some technology workshops will also be present, but the priority will be making sure all participants are pacing themselves to finish a minimum viable product by the deadline, typically late March to early April. Some anticipated topics include the following:

- Google Cloud Hero Workshop ft. Google Developers
- Database Modelling
- API Modelling
- MVP - What is it?
- Agile Methodology

It should be stressed that these are tentative plans and are in the planning phase at the moment. These events are subject to change, but offer a rough idea of how we anticipate our Spring 2022 semester will be structured.

Additionally, we are exploring the possibility of hosting another Programming tournament as we had done last year. Further exploration is required to host the event, including deciding if there is a physical component, and if so, how it will be managed with virtual participants.

FIU's Programming Team

With support from and the organizational support of the Academy for CS Education, the FIU programming team has continued to flourish. The teams have received scholarships, weekly tutorials, training sessions, weekly mock competitions, travel to attend coaching camps and retreats, and master classes by visiting expert coaches. Most programming team member have served an internship at Ultimate Software, Google, Apple, Uber, and more. Many have since become full time employees at their interning companies. Other team members have enrolled in graduate studies.

Programming Team training was paused for the first half of 2020 due to the pandemic. Since Fall 2020, the Google Developers Student Club (DSC) has been assisting with the training of the Programming Team. The DSC organizes 3 meetings every week – one for beginner programmers, one for intermediate programmers, and the last one for advanced algorithmic problem solving. These meetings are now live-streamed over a YouTube Channel and a larger audience is being reached in the process.

During the 2019-20 year, no scholarships were awarded to programming team members. During the 2020-21 year, \$11,250 were awarded in scholarships to team members.

Starting from 2017, FIU has been a site for the **ACM Regional Programming Competition**. The competition is organized by the Academy for CS Education with FIU undergraduate and graduate student volunteers. The competition brings about 20-30 teams from across S. Florida to FIU's campus from across the southeastern states. The competition was successfully held in Fall 2019. FIU's teams placed 17, 19 and 25th in Division 1. Due to the pandemic, FIU was not a site in 2020-21. It was held virtually and both Divisions were merged into one large division, making the competition much more fierce than ever before. FIU's teams placed 37, 55, 57 and 64th.

In Spring, the Academy hosts the Annual **FIU High School Programming Competition**, attended by about 40 teams from Florida high schools, the largest competition of its kind in South Florida. The **High School Programming Competitions** as well as the **Robotics Competitions** were canceled for 2019-20 and 2020-21 due to pandemic.

STARS Activities Report: Summer 2019 – Spring 2021

Overview: STARS now focuses all of its resources on being a service organization, offering high quality one-on-one peer tutoring for all CS/IT students. Our goal is to be available to students whenever they need assistance.

2019-2020:

- **Peer tutoring available to all KFSCIS students covering multiple CS and IT courses.** All tutoring is now fully online, using WhatsApp chat groups for each course. We averaged coverage for 20 different courses. We have tutors online seven days per week, with coverage ranging from 9 Am to midnight on most days.
- **STARS tutors are available in every semester** including summer terms
- **We have excellence retention, with many tutors returning for multiple semesters of service.** Returning tutors assist in the interviewing of new applicants and the hiring decisions each semester.
- **On average, 90 to 150 students per semester register for access to one or more course support chat groups.**

2020-2021:

- **Peer tutoring available to all KFSCIS students covering multiple CS and IT courses.** All tutoring is now fully online, using WhatsApp chat groups for each course. We averaged coverage for 25 different courses each semester. We have tutors online seven days per week, with coverage ranging from 9 AM to midnight on most days.
- **STARS tutors are available in every semester** including summer terms
- **We have excellence retention, with many tutors returning for multiple semesters of service.** Returning tutors assist in the interviewing of new applicants and the hiring decisions each semester.
- **On average, 90 to 150 students per semester register for access to one or more course support chat groups.**

Upsilon Pi Epsilon (UPE) Report 2019 to 2021

The Florida International University chapter of Upsilon Pi Epsilon (UPE) has had an incredibly successful two years, establishing itself as the premier organization for students majoring in the computing and information disciplines (<https://upe.cs.fiu.edu/>). UPE currently resides in the Knight Foundation School of Computing and Information Sciences (KFSCIS). As the only honor society in these fields of study, UPE's mission is to provide these students with a community that recognizes their academic achievements and promotes career development. The organization accomplishes this mission by offering various programs and activities through which students can gain knowledge, develop their skills, and kick-start their professional careers.

Under the leadership of Chapter Presidents Matt Taylor (2019-2020) and Adriana Sandino (2020-2021), UPE has remained home to the largest and most active group of students in the KFSCIS. To this end, in the 2019-2021 academic years, UPE had an active membership of over 700+ students and inducted over 140 new members to the national UPE society. In addition, the FIU UPE chapter hosted the UPE National Convention in March 2020 and April 2021 and won the UPE Outstanding National Chapter Award 2020 and the Continuing Excellence national Chapter Award in 2021. UPE members continue to win the FIU Worlds Ahead Award, with members Shelia Alemonay, Alexandria Segovia, Julian Alarcon winning in 2019, and Christopher Rodriguez winning in 2020.

In the past two years, UPE hosted information sessions, technical workshops, social events, and outreach events, among other events. These events were organized by the nine (9) programs coordinated by the chapter. The main objective of each project is listed below, along with some of their signature events.

- **Code:** Teaches software development skills to students. Events - Software Development Workshop, Game Dev Workshop, Coding Cupid, and Python Scripting Workshop.
- **Make:** Teaches hardware development skills to students. Events - Raspberry Pi Workshop and 3D Printing Workshop
- **InfoTech:** Teaches information technology skills to students. Events - Linux Workshop, Google Cloud Platform, Hacking & Cybersecurity Workshop
- **Advance:** Prepare students for a career in the tech industry. Events - Launching Your Tech Career, MITRE Super Day, Mount Sinai Info Session, Advance Interview Prep, REVATURE Info Session, Advance Certifications, and Advance Resume Reviews. This program resulted in students receiving more than 40 internships between 2019 and 2021.
- **CS First (Ignite):** Promote computer science in the community. Events - Hosted coding sessions at Miami-Dade Schools and assisted with coordinating the Miami Makerfaire and CodeFest Miami events.
- **SparkDev:** Develop meaningful projects in a risk-free environment. Events - SparkDev Game Night, Machine Learning with Google, and SparkDev Demo Day. Various teams participated in the development of projects culminating in the Demo Day presentations. Teams worked in the areas of AI, Robotics, VR Games, Mobile Apps, Web Apps, Cybersecurity, DevOps, IT with FIU, Social Good and Disabilities.
- **MentorFIU:** Help new students transition to college life and provide current students with industry mentors. Events - MentorFIU Game Night, Our Journey Into Tech (Coding Sisters), MentorFIU Professional Panel, MentorFIU Navigating Your College Career, and MentorFIU Virtual Lunch.
- **Hackers:** Get students involved in hackathons. Events - ShellHacks, Global Game Jam, and Hack Night

Through these workshops and events, hundreds of students were exposed to new technologies and used them to develop their projects. These projects served as resume experience for internship and job applications.

The Mu chapter of UPE also hosted professional development activities to help students grow professionally and advance their careers through company information sessions, resume reviews, interview skills workshops,

and more. These events happen every couple of weeks and are hosted by industry, faculty, and senior students. These events have connected our members with many companies, which have extended internships and job opportunities to the students.

UPE joined with the Google IgniteCS program to promote computer science to our community by teaching grade school students about coding. Over the past two years, students in the program visited on average 15 elementary and middle schools in Miami-Dade County every week, teaching about 500 students. Together, they work on a curriculum that includes logic, binary, algorithms, block coding, and more. At the end of the year, all grade school students are invited to attend CodeFest Miami - a hackathon where they can show off the skills they've learned through the program. This program has evolved into CS First and now Ignite, and in 2020 State Farm gave UPE a grant of \$25K to continue promoting computer science to elementary and middle schools in Miami-Dade County.

In September 2019 and 2020, UPE hosted ShellHacks, which brought together over 1000 students each year from around Florida and other parts of the world. The ShellHacks events were sponsored by over 50 top companies, including JP Morgan Chase, Microsoft, Amazon, AutoNation, Twitter, Citrix, State Farm, and MITRE. UPE also hosted other signature events such as the Gaming Tournaments, Town Hall Meetings, and Induction Ceremonies in the Fall and Spring semesters. The organization also participated in major campus events such as MangoHacks, Relay for Life, Engineering Expo, and CodeFest Miami.

Using the resources obtained through the ShellHacks sponsorship, UPE acquired its own makerspace (La Villa) on the MMC campus in PG6 Tech Station, room 130A. Having a maker space for UPE on campus is once again a significant achievement. UPE will use this space to store all the artifacts used for the various workshops and items used for ShellHacks. This space is also shared with other student organizations that collaborate with UPE on various projects. Lastly, in 2019 and 2020, the Mu chapter of UPE won Tech Fee grants to outfit their makerspace with equipment to support the many workshops and activities hosted by UPE. The makerspace and acquired equipment allow UPE to continue its mission to provide all students at FIU with the opportunities they need to grow technically and professionally.

WICS Student Chapter Report

Fall 2015:

Info Sessions:

LaunchCode@Fiu Info Session
State Farm Ice Cream Social, Sept 15, 2015
American Express, September 9, 2015
Lockheed Martin/Tech Talk, September 30, 2015
Hilton Software

Events:

Programming Team Qualifier, Oct 3, 2015 (Programming Team Events)
Ada Lovelace Day, October 13, 2015
MLH Hackday, October 10, 2015
Programming Team Meetings: Mondays, Tuesdays and Thursdays
High Tea
Gym with Geeticka (VP)
Github Lectures with ACM
Game Dev Workshop
Web Dev Workshop
Google Made with Code
CodeFest

Workshops:

Soldering Workshop, Sept 28, 2015
PLUG Arduino Workshop, Oct 1, 2015
Web Dev

Fall 2016:

Movie Night - Sept 16, 2016
Programming Team Tryouts - Sept 9, 2016
Afternoon Tea - Feb 12, 2016

Workshops:

Soldering Workshop, Feb 19, 2016

Socials:

Bowling Night

Fall 2017:

- Fall Kickoff Week
- CSO Club Fair
- First General Body Meeting
- SCIS Week of Welcome
- Microsoft Meet the Company + How to get a job in Tech workshop
- ShellHacks Breaking the Glass Ceiling Challenge
- Second General Body Meeting
- Grace Hopper Celebration Panel
- SCIS x COB Student Presentations and Panel on Entrepreneurship
- Virtual Reality Workshop
- CodeFest Big Sisters Mentorship

- WICS Retreat - Universal Orlando
- Super Smash Bros Gaming Tournament co-hosted with UPE
- Final General Body Meeting

Spring 2018:

- CSO Club Fair
- First General Body Meeting
- WICS Wednesdays: On Wednesday we write code
- MangoHacks Ladies Storm Hackathons
- Hacking with Amazon Alexa workshop
- FIU Engineering Expo
- WICS Game Night
- College of Engineering Club Fair
- Google G-Suite workshop
- Second General Body Meeting
- Soldering workshop
- UPE x FIU Mentorship Program
- Miami Maker Faire
- ASI Study Night
- LinkedIn Workshop
- Microsoft College Code Competition
- Final General Body Meeting + MLH Hack the Tech Interview: Algorithms Practice workshop
- Tech Summer Camp workshop

Summer 2018:

- Girls Who Code Panel
- FIU KFSCIS TweetChat

Fall 2018:

- Fall Kickoff Week
- CSO Club Fair
- Professional Headshots and Resume Review
- First General Body Meeting
- Intern Networking
- ShellHacks Diversity and Inclusion Challenge
- Second General Body Meeting
- Grace Hopper Celebration Mingle
- CodeFest Big Sisters Mentorship
- Final General Body Meeting

Spring 2019:

- Spring Kickoff Week
- First General Body Meeting
- WICS Crushing Your Interview workshop
- Resume Jam
- FIU Engineering Expo
- Soldering workshop
- Second General Body Meeting
- Miami Maker Faire
- WICSCON: "This is what a programmer looks like" conference
- Final General Body Meeting

Summer 2020, Fall 2020, Spring 2021

Women in CS July 2020 to June 2021 Activities

- WICSCON: Celebrating Women in CS
- Thrive in CS Panels
- Keynote with Microsoft Program Manager
- Landing a Job in Tech
- Overcoming Imposter Syndrome
- Finding Your Voice
- Antonella's Journey in Tech
- Discovering different tech roles: Product Management Edition
- Karol's Journey in Tech
- Finding Your Career Path
- Resume Jam
- 1:1 Industry Professional Sessions with Program Managers and Software Engineers from Microsoft, SnapChat, Visa, Adobe, Bank of America, Disney, AllState, ServiceNow, Deloitte, Geico and JP Morgan Chase.
- Hosted Kaseya internship information session
- Hosted Dell Day
- Roundtable Discussion - Talk with a Technology Professional
- How to be a Technology Rock Star
- Don't UndereSTEMiate your Potential
- Information session
- Hosted Hardware at Facebook: Facebook Reality Labs, Facebook Connectivity and Infrastructure Hardware
- Hosted Facebook Virtual Mock Interviews
- AlumniFIU program launch with alumni from Microsoft, Citrix, Google, Facebook, Apple, Snap and Test.ai to provide mock interviews
- Collaborated with CodePath to bring Android programming course to FIU
- Hosted Tesla Information Session
- Collaborated with Microsoft for Microsoft Mentorship Program to develop individual and collaborative strategies to help navigate challenges that can arise across personal, academic and workspaces.
- Hosted Lockheed Martin RMS Virtual Hiring Event
- Hosted AllState Women in Technology Association
- Hosted MITRE Cybersecurity Futures Program
- Collaborated with Microsoft to promote Microsoft Philanthropies TEALS program
- Hosted Splunk Information Session
- HoppersFIU scholarship and meetings
- Develop meetings
- Internship Networking Panel
- General Body Meetings
- TechPrep weekly sessions
- Google Made with Code mentorship meetings

Appendix-H: Minutes of KFSCIS Industrial Advisory Board Meetings

**INDUSTRY ADVISORY BOARD
Florida International University
Knight Foundation School of Computing and Information Sciences**

Board Meeting Actions and Summary (DRAFT)

**December 6th, 2019
Florida International University
Miami, FL**

Board Member Attendance:

- Pete Martinez, IAB Chair, Chairman and CEO, Game Changer Tec, LLC
- Juan Caraballo, Director, Global University Programs IBM Corp. (Retired)
- Chris Fleck, VP Emerging Technologies, Citrix
- Jaime Borrás, Chief Technology Officer, GeoToll
- Bert Sylvestre, Vice President Business Development, Pro Logic Systems

FIU Representation:

- Dr. Ram Iyengar, Director and Ryder Professor, FIU KFSCIS
- Dr. Nagarajan Prabakar, Assoc. Professor, FIU KFSCIS
- Dr. Alex Afanasyev, Assistant Professor, FIU KFSCIS
- Steven Luis, Executive Director of Technology and Industry Relations, FIU CEC

Board Meeting Summary

1. Mr. Martinez begins the meeting at 5:12 pm.
2. Mr. Martinez starts the meeting by welcoming Board members.
 - a. Mr. Martinez makes his opening remarks. He states this is a hot time for CS talent. AI ML is everywhere and there is not enough talent available. Proper training for jobs in this area is not easy – there are many who claim to be knowledgeable but are not.
 - b. He further states that the industry needs professionals with more exposure to application (domain) areas not theoretic. He states there is great opportunity to patent AI technologies in these application areas.
 - c. He states that healthcare industry is generating huge amounts of data – CT, MRT and other imaging data are great datasets to use for AI/ML. Other areas like genomics can require 2TB of storage to study just one case.
 - d. He also states we will see more AI/ML used in devices via instrumentation. Further, IoT is generating streams of real-time data these instruments must analyze instantly. He closes by stating there is incredible opportunities for our faculty and students in these areas.
3. Dr. Iyengar presents his report to the Board (see materials.)
 - a. He thanks board members for attending the meeting. He acknowledges what Mr. Martinez shared, that AI/ML technology is taking over.
 - b. Dr. Iyengar shares the schools points of pride, including degree awards to Hispanics, leading the state in graduating computing talent, our degree programs and how our students are finding jobs in both the top companies but also the best companies in South Florida.
 - c. He shares examples of some of the ranks the school has achieved from Best Online Schools and Guide to online schools.
 - d. He shares numerous awards and recognitions achieved by our faculty and students.
 - e. He shares numerous school metrics for both research and instruction. Further noting the challenges of teaching with increased class sizes and improvement made like reducing the course pre-req. length.
 - f. Dr. Iyengar noted that the school's faculty to student ratio is above what is offered at top 50 schools.
 - g. Board members spend time discussing the implications of the metrics. The improved graduation rate and mitigations are discussed. Dr. Iyengar notes that students sometimes have hard decisions to make when looking at internship employment vs. graduating on time.
 - h. Mr. Borrás stated that the school should consider an entrepreneurial path in our program. Dr. Iyengar mentioned how some of our students participate in StartUp FIU which provides mentoring and education for entrepreneurship.
 - i. Mr. Fleck suggested that the FIU track graduation outcomes closely to better understand local employment trends.
 - j. Mr. Caraballo states that offering a good coverage of classes in summer will help some students catch up.
 - k. Mr. Caraballo encourages Dr. Iyengar to help faculty with resources to grow patent submissions. This is a great time ramp up IP generation.
 - l. Board members discuss the overall growth of the School. Board members question if the resources given to the school are enough to address the challenges.
 - m. Mr. Caraballo states that in his opinion the school is already in the top 50 but resources, like instructors are needed to address the metrics. Other board members concur.
 - n. Board members feel that further discussion with the Dean about resources is needed and suggests inviting him to the next meeting.
 - o. Dr. Iyengar discussed other activities of the school such as the distinguished lecture series, collaborative research, and student innovation like Hackathons. The school's women in computing club has accomplished many outreach activities.

- p. The school conducted a graduate research day and Information Assurance-Artificial Intelligence Workshop.
 - q. Mr. Luis explained completed renovations to several CASE 2nd floor research labs.
4. Dr. Afanasyev presents his research activities. (See materials)
- a. He provides an overview of his research into next generation internet solutions.
 - b. He speaks about giving network intelligence so that you can ask for what you want.
 - c. Providing names for data and enhancing security.
 - d. Board members discuss the potential for his research. They point out that companies like Uber will need these technologies along with 5G networks to fully realize capabilities, including self-driving vehicles.
 - e. Board members suggest working with UM and the supercomputer capabilities they have added.
5. Senior Project/VIP Highlight Presentations (see vip.fiu.edu)
- a. Students provide details about their projects and receive feedback from board member:
 - i. Marcel Riera Cardoso, "Crowd-Sourcing Parking";
 - ii. Jorge Luis Euceda, "CREST EnvoScholar";
 - iii. Cristina Elizabeth Villarroel, 'Smartphones for Vision Impaired Users'.
6. Mr. Martinez asks Board members for their feedback.
- a. Mr. Sylvestre acknowledges the fast pace the school is growing and the shrinking resources. He points out that this is not a bad position, and the school should be able to make its case for more resources.
 - b. He further states that the programs are growing well, they will need help to sustain.
 - c. Mr. Caraballo says the board is here to help. He further states that there are a lot of cutting-edge activities happening, and students need to be aware of these accomplishments. Dr. Iyengar responded that we will work with the board for assistance.
 - d. Mr. Packert stated that he would like to see our graduates stay in Florida. Dr. Iyengar responded that showing examples of our students finding good jobs in Florida is a way to keep them here.
 - e. Mr. Borrás stated that he is happy to see the research direction and technology being developed at the school. The school is moving in the right direction. However, 70:1 student teacher ratio is not right and needs to be addressed.
 - f. Mr. Fleck expressed his interest in Dr. Afanasyev's research and felt it was very relevant. He stated that we need a path to solve the IP problem. He felt the collaboration with Addigy (used worldwide) and the student projects developed with them are great examples to share with students, especially those that have an entrepreneurial interest.
 - g. Mr. Caraballo states it was really great to see the depth and breadth of what the school has accomplished. He asks how many other depts. have done the same? Board members discuss school accomplishment and compliment Dr. Iyengar.
7. Mr. Luis discusses potential dates with Board members for the next meeting. The tentative date set is Friday, April 17th.
8. Mr. Martinez thanks Board Members for their participation and closes the meeting at 7:27pm.

INDUSTRY ADVISORY BOARD
Florida International University
Knight Foundation School of Computing and Information Sciences

Board Meeting Actions and Summary (DRAFT)

September 11th, 2020

Florida International University

Miami, FL

Board Member Attendance:

- Pete Martinez, IAB Chair, CEO, SIVOTEC
- Dr. Roy Gerber, IAB Vice Chair and Chief Technology Officer, Candidate.Guru
- Jaime Borrás, Chief Technology Officer, GeoToll
- Juan Caraballo, Director, Global University Programs IBM Corp. (Retired)
- Chris Fleck, Vice President, Emerging Solutions Citrix
- David Martinez, Laboratory Fellow, MIT Lincoln Labs
- Thomas Packert, CTO, Xendoo
- Bert Sylvestre, Vice President Business Development, Pro Logic Systems

FIU Representation:

- Dr. Ram Iyengar, FIU KFSCIS Director and Ryder Professor
- Steven Luis, Executive Director of Technology, FIU CEC

Board Meeting Summary

1. Mr. Martinez begins the meeting at 5:03 pm via Zoom.
2. Mr. Luis pointed out that the agenda today was reduced due to the special announcement and the showcase is in December, but the Dec. meeting would return to the regular format.
3. Mr. Martinez welcomes the board members and thanks them for joining the special meeting of the Board. He passes the floor to Dr. Iyengar as he has a special announcement to make.
4. Dr. Iyengar presents his report to the Board (see materials.)
 - a. Dr. Iyengar welcomed the Board and hoped that all the Board was doing well and their families during the COVID crisis.
 - b. Dr. Iyengar begin his remarks by stating that he recently informed the Board that he was stepping down as Director of the school in the coming week and that Dr. Chen would also be stepping down as Assoc. Director.
 - c. He stated that the effort to identify an interim director is in process and would be announced by the Dean soon.
 - d. He thanked the Board members for their years of support and personal consultations, availability, engagement, and passion for our school.
 - e. Dr. Iyengar continued by speaking about how COVID has impacted FIU and School. He noted we had to cancel our April meeting but had hopes that future meetings would happen on campus again.
 - f. He spoke about how faculty and students switched to remote teaching very quickly and that modality is being used for Fall classes.
 - g. He shared about the many precautions the university made to help student and faculty remain safe during the crisis. FIU Dashboard, P3 App, and communications via townhalls to educate people of precautions.
 - h. Our school had gone virtual, said Dr. Iyengar. Our advising team meets students online and our main office has a virtual zoom office. We have setup chat services via website.
 - i. FIU has also provided many support services for students like oncampus COVID testing, equipment loaning, and special hardship financial aid.
 - j. He shared with the board that the university has been instructed to hold up to 5% of its budget to address potential state revenue shortfalls.
 - k. This budget reduction may impact our hiring.
 - l. Dr. Iyengar spoke about the school's efforts to pursue the University 2025 strategic goals. This included efforts to increase research funding, expenditures, and student graduate rates.
 - m. He shared examples of the school's current rankings and faculty awards and reputation.
 - n. He highlighted student achievements.
 - o. Dr. Iyengar discusses the schools research metrics with board members.
 - p. Dr. Iyengar reviews a list of research grants and patents awarded to the school's faculty.
 - q. Dr. Iyengar shares the current enrollment and 4 year graduation success goals of the school.
 - r. He reminds the Board that the school launched the BS in cybersecurity program in Fall. He shared stats that show employer demand for graduates and how we are marketing the program.
 - s. He provided the board information about the new assistant professor hire: Amni Kharraz.
 - t. He informed the board of upcoming events of the School and encouraged them to participate where interested.
 - u. Dr. Iyengar thanked the Board for making the time to meet today. He asked their support for the new interim director when that is determined.
5. Mr. Martinez and other board members express their gratitude for Dr. Iyengar's commitment to the school and the accomplishments achieved under his leadership.
6. Mr. Luis suggests a date of for the next tentative Board of Dec. 4th which is the same date of the college wide senior design showcase.

7. Mr. Martinez, thanks Board Member for their participation and closes the meeting at Mr. Luis pointed out that the agenda today was reduced due to the special announcement, but the Dec. meeting would return to the regular format.
8. Mr. Martinez adjourns the meeting at 6:12pm.

INDUSTRY ADVISORY BOARD
Florida International University
Knight Foundation School of Computing and Information Sciences

Board Meeting Actions and Summary (DRAFT)

December 4th, 2020

Florida International University
Miami, FL

Board Member Attendance:

- Pete Martinez, IAB Chair, CEO, SIVOTEC
- Juan Caraballo, Director, Global University Programs IBM Corp. (Retired)
- David Martinez, Laboratory Fellow, MIT Lincoln Labs
- Bert Sylvestre, Vice President Business Development, Pro Logic Systems
- Chris Fleck, Vice President, Emerging Solutions Citrix
- Thomas Packert, CTO, Xendoo

FIU Representation:

- Dr. Jason Liu, Interim Director & Eminent Scholar Chaired Professor, FIU KFSCIS
- Steven Luis, Executive Director of Technology, FIU CEC

Board Meeting Summary

1. Mr. Martinez begins the meeting at 5:03 pm via Zoom.
2. Mr. Martinez starts his opening remarks by welcoming and thanking board members for attending the meeting. He states FIU has great positioning in the South Florida community. He states the university has lots of visibility, especially in tech communities. He points out that working on large grants we can engage many entities on and off campus. He feels that now is a great time for such projects.
3. Dr. Liu presents his report to the Board (see materials).
 - a. Dr. Liu thanks Board members for attending the meeting.
 - b. He reviews the agenda.
 - c. He thanks Dr. Iyengar and Dr. Chen for their leadership and contributions to the school.
 - d. He provides Board members with information regarding the ranking process. He covers BOG metrics and those monitored by US News and World report.
 - e. He provides evidence of the school's rankings and the improvements made in the last couple of years.
 - f. He reviews methods for improving the rankings and points out for CS a lot depends on reputation which does not change quickly.
 - g. He shared academic analytics data which covers scholarly pursuits like publications and citations. The school's ranking in this area makes us a leaders in the state and competitive in the nation.
 - h. Dr. Liu shares how the university is increasing the visibility of our authors via scholars @FIU. This system leverages many databases to show the impact/reach of a researcher.
 - i. Dr. Liu shares the research production of the school in relation to other state universities.
 - j. He provides data on awards and lists some of the award highlights.
 - k. Dr. Liu shares enrollment info for the school's degree programs, including headcounts.
 - l. Dr. Liu discusses the immediate priorities. Faculty hiring, large collaborative funding efforts, PhD production, and increased graduation rate.
 - m. He provides several slides of details showing the schools current performance and the 2025 goals established by the university.
 - n. He speaks to the Board for their support to help the school reach these goals. He presents the Board charter to affirm the Board members feedback.
 - o. Board members discuss the charter and strategic alignment of goals. The areas of discussion are Reputation, Research Funding, Student Employment, Student graduation success, and stewardship.
4. Capstone Presentations
 - a. Students provide details about their projects and receive feedback from board member.
5. Mr. Luis presents detailed information regarding Strategic goals of the University and how these goals represent an opportunity for industry engagement.
6. Mr. Martinez asks members of the Board to provide feedback.
 - a. Board members discuss approaches to achieve strategic goals.
 - b. Mr. Martinez proposes to create Board committees to organize the efforts and work on some of the strategic goals. These committees include:
 - i. Membership: Identify executives at companies that hire from FIU who can fulfill initiatives of the board. Mr. Caraballo agreed to lead this effort.
 - ii. Broadening Participation Committee: Identify funding programs and develop partnerships to obtain large scale grant awards and philanthropic donations to increase diversity in academic endeavors. Mr. Sylvestre and Borrás agreed to participate in this effort.
 - iii. Solutions Hub Committee — Develop relationships with large organizations that build a wide range of new tech solutions, and look for opportunities for the school to provide expert consulting and student projects in the area of AI, Cyber, HPC. Mr. Packert volunteered to work in this area.

- iv. Marketing Committee — Work with College to develop strategic direction for marketing campaigns focused on attracting industry engagement with School. Mr. Martinez volunteered to lead this effort.
- 7. Mr. Luis provides the next date for the Spring Board meeting. He suggests Apr. 16th which is the expected date of the senior project showcase.
- 8. Mr. Martinez thanks the Board members for their participation and time. He closes the meeting at 6:57pm.

INDUSTRY ADVISORY BOARD
Florida International University
Knight Foundation School of Computing and Information Sciences

Board Meeting Actions and Summary (DRAFT)

April 16th, 2021

Florida International University
Miami, FL

Board Member Attendance:

- Pete Martinez, IAB Chair, CEO, SIVOTEC
- Dr. Roy Gerber, IAB Vice Chair and Chief Technology Officer, Candidate.Guru
- Juan Caraballo, Director, Global University Programs IBM Corp. (Retired)
- Bert Sylvestre, Vice President Business Development, Pro Logic Systems
- Chris Fleck, Vice President, Emerging Solutions Citrix
- Jaime Borrás, Chief Technology Officer, GeoToll
- Thomas Packert, CTO, Xendoo
- Joseph Russo, CEO, South Florida Tech Hub (Ex Officio member)

FIU Representation:

- Dr. Jason Liu, Interim Director & Eminent Scholar Chaired Professor, FIU KFSCIS
- Dr. Giri Narasimhan, Professor, FIU KFSCIS
- Dr. Gregory Murad Reis, Asst. Teaching Professor
- Steven Luis, Executive Director of Technology, FIU CEC

Board Meeting Summary

1. Mr. Martinez begins the meeting at 5:05 pm via Zoom.
2. Mr. Martinez welcomes the board members. He notes that the scale of the school has grown significantly over the last few years. That the growth mirrors the transformation happening in many industries like healthcare. He states that the school's grant growth will also increase because there are many opportunities. He acknowledges the hard work of the school. He further states that this is an important time for the Board to become more active in these activities to show the support of industry on grants and other talent development pursuits.
3. Dr. Giri presents his report to the Board (see materials.)
 - a. Dr. Giri introduces the AI, DS, ML or ADaM Collaborative.
 - b. Vision is to bring all researchers who are working in this area under one umbrella.
 - c. He notes that there are already 12 faculty within the school that is applying these research techniques and three times that amount when looking at the College, and in other colleges.
 - d. He reports that given this core of faculty they collectively have been awarded 18 grants for a total of \$9.4 million.
 - e. In addition to bringing visibility to these efforts he notes that these faculty could work on Badges to help students throughout the university to obtain these skills. Currently there is an AI and data literacy badge available for students to take.
 - f. Dr. Giri states he is looking to create an advisory board for the Data Science program. Mr. Caraballo and Borrás expressed interest.
 - g. Mr. Caraballo stated that this was a great effort.
 - h. Mr. Sylvestre and Dr. Giri discuss what are some of the short-term successes the group could pursue.
4. Dr. Reis presents his report to the Board (see materials.)
 - a. Dr. Reis discusses his work to improve environmental resilience by collecting data using robotic submarine equipment.
 - b. He states that models are being developed to predict when changes will harm the environment.
 - c. His effort is part of the underwater IOT. Bots that collect samples of water that are analyzed and geolocated and recorded.
 - d. A discussion with board members occurs around the current water problems and fish kills in Biscayne Bay. Board members ask about the robots abilities and the methods to analyze the water samples.
 - e. Mr. Borrás and Dr. Reis discuss oxygen levels as a predictor of fish kills.
 - f. Mr. Russo suggest that Dr. Reis meet with a local entrepreneur who is developing an app to track fish migration.
5. Capstone Presentations
 - a. Students provide details about their projects and receive feedback from board member.
 - b. Samara Ruiz, Sandoval Aranzol, Capstone II, Mitigating the Impacts of COVID-19.
 - i. Mr. Borrás states how relevant this project is and ask the student for more details about search algorithms.
 - c. Vanessa Rivero-Serret, Capstone II, Pediatric Emergency Medicine APP
 - i. Mr. Martinez states that this is a very relevant project. Capturing all data elements can be used for predication later on.
 - ii. Dr. Gerber suggests using ML or other classifier to address ontology issues.
 - iii. Mr. Caraballo gave suggestions regarding system development best practices.
 - iv. Mr. Borrás discussed the challenges of using system like React Native, and their use on mobile platforms.
6. Dr. Liu presents his report to the Board (see materials).
 - a. Dr. Liu shared with Board members the details of the Knight Foundation \$10M gift and the Universities \$106M commitment to invest in CS program.
 - b. He outlines faculty hires, areas of interest, and student growth.

- c. Further that the CS program is expected to be ranked in the top 50 of the US news and world report because of these investments.
 - d. Dr. Lui provides an analysis of faculty size and their impact at other ranked university.
 - e. Dr. Liu reviews the expected new faculty hires for Fall 2021.
 - f. Dr. Liu shares the priorities of the school such as student graduation success, PhD enrollment and production, and the need for research collaboration within the university and large center proposals.
 - g. Dr. Liu provides details on our research strengths and awards.
 - h. Dr. Liu provides undergraduate and graduate enrollment information.
 - i. Mr. Luis discusses Industry Engagement. Support letters from Board members on the NSF S-STEM proposal.
 - j. Mr. Luis discusses engagement with Hackerrank and the student interview workshop they provided.
7. Mr. Martinez asks members of the Board to provide feedback.
 - a. Mr. Caraballo expresses how impressed by the efforts of the school. He feels that hiring cannot be underestimated.
 - b. Dr. Liu and board members discuss challenges with hire new faculty and how industry can help.
 - c. Mr. Sylvestre expressed concern that with the additional staff will the school have enough space. Dr. Liu pointed out the new building being built will provide additional space for the school.
 - d. Board members continue to discuss challenges of the growth in the school.
 8. Mr. Luis discusses potential dates with Board members for the next meeting. The next meeting will align with the next College-Wide Senior Design Showcase that is in early Dec. The tentative date is Friday Dec. 3rd.
 9. Mr. Martinez, thanks Board Member for their participation and closes the meeting at 7:10pm.

APPENDIX I: Example of Learning Outcomes

CTS 4743 Enterprise IT Troubleshooting

Course Outcomes

1. Understand and execute enterprise IT troubleshooting best practices
2. Demonstrate mastery of fundamental IT troubleshooting tools
3. Define enterprise IT organization & disciplines
4. Classify and describe enterprise IT infrastructure components
5. Identify and explain application architecture patterns
6. Recognize and explain infrastructure component dependencies for each application architecture pattern
7. List and state ITIL and ITSM concepts
8. Understand and use cloud computing and infrastructure automation

Learning Outcomes

Learning Outcomes: (Familiarity Usage Assessment)

Pervasive Themes in IT:

1. Explain how the components of an IT system interrelate. [Assessment]
2. Explain how and why complexity occurs in IT. [Familiarity]
3. Solve for complexity in an information technology environment by applying best practices and using appropriate technologies and methodologies. [Familiarity]

Security Mechanisms (Countermeasures):

1. Explain the three key factors involved in authentication and how they are used to verify identity and. [Assessment]
2. Explain the differences between symmetric and asymmetric cryptosystems, e.g., number of keys required, the types of algorithms used, etc. [Assessment]
3. Explain how public key infrastructure (PKI) works. [Familiarity]

Managing the Database Environment:

1. Explain the concept of database security. [Familiarity]
2. Describe client-server database architecture. [Assessment]
3. Describe n-tier database architecture. [Assessment]
4. Explain the role of ODBC, JDBC and XML in the implementation of an n-tier database architecture. [Familiarity]
5. Describe the concept of web services and the role of SOAP. [Assessment]

Intersystem Communications:

1. Describe and contrast the different types of architectures for integrating systems. [Assessment]
2. Describe the role of socket programming in communicating between systems and contrast the protocols and uses of TCP/IP sockets and Datagram sockets. [Assessment]
3. Describe the purpose of message and queuing services and how they work and list the protocol used by one messaging service (e.g. JMS) [Familiarity]

Foundations of Networking:

1. Compare and contrast the OSI and Internet models as they apply to contemporary communication protocols. [Assessment]
2. Analyze and compare the characteristics of various communication protocols and how they support application requirements. [Usage]
3. Demonstrate the ability to solve basic problems and perform basic troubleshooting operations on LANs and connected devices. [Usage]

Operating Systems:

1. Distinguish between server and client services. [Usage]
2. Identify situations in which a support organization needs to be consulted in resolving operating system issues. [Usage]

Administrative Domains:

1. Describe the responsibilities common to the various administrative domains. [Assessment]
2. Describe the responsibilities unique to each of the various administrative domains. [Assessment]
3. Identify responsibilities in each domain that support activities in other domains. [Familiarity]

Organizational Context:

1. Outline the basic parts of a typical IT environment. [Assessment]