B. Course Outcomes Survey by Instructors

This survey, called the Instructor Course Appraisal (ICA), is completed by each instructor of a required or elective CS course section.

- The Instructor separately rates the individual course outcomes in respect of two criteria
  Appropriateness: *Essential   Very Appropriate   Appropriate   Inappropriate*
  Coverage: *Extensive   Adequate   Not Enough   Not At All*
- The Instructor separately rates the course prerequisites in respect of two criteria
  Relevance: *Irrelevant   Incidental   Useful   Highly Useful*
  Student Mastery: *Good   Adequate   Deficient   Non-existent*
- The Instructor rates the students' overall preparation for taking the course
  Student Preparation: *Good   Adequate   Deficient   Non-existent*
- In addition, the Instructor may append general comments and suggestions specific to each course prerequisite or outcome.

These responses, comments and suggestions from the ICAs, together with the data from the Student Course Outcomes surveys (see **Table 1**) and student comments, form the basis of the Subject Area Coordinators' reports. The summaries included in this section are mostly based on these SAC reports, with occasional augmentation directly from the ICAs. As noted in the preceding section, the complete SAC reports from which these observations are taken are included in Appendix C.

Note: The data here are qualitative; no numeric scores are assigned to responses.

Subject Area: Application Development -- (SAC: Antonio Hernandez)

CEN 3721 Introduction to Human-Computer Interaction
- An instructor recommended a 2nd HCI course for either IT students or CS students, but that view was not expressed by others.
- No change in the curriculum or outcomes is suggested.
  The suggestion is now in effect, there is an HCI course that only IT majors can take, and one that only CS majors can take. UPC recommends no further changes here.

COP 4005 Windows Programming for IT
- In faculty appraisals, it was mentioned that students have limited programming skills.
- Evaluation at the department level might be necessary to determine whether previous courses develop in students the programming skills required by this course.
  This course has multiple prerequisites: The IT HCI course, Programming II, plus a co-requisite of Database. Viewing the prerequisite topics, each appears covered by HCI or Programming II. UPC does not recommend any changes to this course but will explore issue(s) of under preparation in COP3804.

COP 4655 Mobile Application Development

- The course coverage adequacy statistic seems somewhat low and the student participation in the survey was very low. Hence it is difficult to use this statistics 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.
- In faculty appraisals, it was mentioned that students have poor OO development skills.
- Evaluation at the department level might be necessary to determine whether previous courses develop in students the programming skills required by this course.
KF-SCIS has migrated to an online Course Evaluation (CE) system that records percentages of students that respond. Instructors will be encouraged to offer bonus points based on this percentage. The course is language-agnostic and that means there is no requirement to use Swift, however instructors that use Swift will be encouraged to provide a basic background during the first two weeks of the class. UPC proposes tying Syllabi directly to assessment comments accessible to faculty, so that future instructors for this course will receive this feedback.

COP 4813 Web Application Programming
- In faculty appraisals, it was mentioned by an instructor that skills in Web site development were deficient; these are acquired in a prereq course.
- Consider inclusion of review lecture/materials on Web site development.
UPC recommends adding the course outcomes of CGS4854 (Website Construction Management) as prerequisite requirements of COP4813. UPC actually recommends making this change across the board; i.e. all courses with prerequisites should have prerequisite topics relevant to the course outcomes of their prerequisites.

COP 4814 Component-Based Software Development
- While the course coverage adequacy 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.
- 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.
FIU now has a Quality Management process in place for online courses that automatically aligns module and course outcomes. This process can be implemented manually for in-person courses. COP4814 instructors will be encouraged to structure their assignments in this manner. UPC proposes tying Syllabi directly to assessment comments accessible to faculty, so that future instructors for this course will receive this feedback.

Subject Area: Database (SAC: Antonio L Bajuelos)

COP 4703 Information Retrieval Concepts
- Students suggested the inclusion of more practical hands-on applications of the theory covered in class.

- 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. *Instructors will be encouraged to incorporate practical applications of the theory as programming assignments and projects. UPC proposes tying Syllabi directly to assessment comments accessible to faculty, so that future instructors for this course will receive this feedback. UPC proposes removing "Design of basic web pages" from the prerequisite topics in the course syllabus, as upon exploration of course topics nothing should require it, and no "web" course is a current prerequisite of COP4703. Instructors will be encouraged not to assume prior web programming experience. UPC proposes tying Syllabi directly to assessment comments accessible to faculty, so that future instructors for this course will receive this feedback.*

COP 4722 Survey of Database Systems
- Some students expressed a concern about sharing the work in group projects and the credit for each team member.
- There is no significant concern expressed by the students or faculty.
- In the past, one instructor consistently indicated that the objective "Object-Oriented Database" and "Spatial and Multimedia Databases" as inappropriate. It is recommended that two outcomes of this course need to be discussed and possibly readjusted. *COP4722 has now officially been replaced with COP4751, and both of those objectives in point 3 have been removed. Instructors in COP4751 will be encouraged to examine their teamwork policies to ensure students receive just credit for their work. UPC proposes tying Syllabi directly to assessment comments accessible to faculty, so that future instructors for this course will receive this feedback.*

COP 4751 Advanced Database Management
        New course to replace COP 4722 starting in Spring 2021
- No change is suggested on the course outcomes or syllabus. *No changes recommended by UPC.*

CTS 4408 Database Administration
- There is no significant concern expressed by the students or faculty.
- 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) *COP4703 is already a prerequisite course and SQL queries is a prerequisite topic, no changes are recommended by the UPC.*

Subject Area: Network (SAC: Deng Pan)

CGS 3767 Computer Operating Systems
- 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.
- Instructor recommendations included more programming preparation for students and tutoring resources.
- 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.
    Feedback seems to suggest some sections of this course were encompassed by Windows 7 (which UPC acknowledges as outdated) and less by *NIX environments. The Syllabus makes clear that Windows, KDE and GNOME are all to be explored in this course. Instructors will be reminded to expose students to a variety of systems, as indicated by the Syllabus. UPC proposes tying Syllabi directly to assessment comments accessible to faculty, so that future instructors for this course will receive this feedback.

CGS 4285 Applied Computer Networking
- 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.
- Add more hands-on practice.
- Avoid scheduling the course for a mini semester with six weeks.
- The course outcomes should be reviewed and updated.
    UPC recommends this course to be offered in a C semester only. Instructors will be encouraged to incorporate hands-on learning into their class sessions. UPC proposes tying Syllabi directly to assessment comments accessible to faculty, so that future instructors for this course will receive this feedback.

CNT 4513 Data Communications
- Multiple students requested more hands-on projects, especially Wireshark labs.
- An instructor suggested more focus on web programming.
- 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.
    Instructors will be encouraged to incorporate hands-on learning into their course sessions (there is no requirement for using Wireshark). UPC proposes tying Syllabi directly to assessment comments accessible to faculty, so that future instructors for this course will receive this feedback. UPC proposes removing ATM protocols as an

outcome. Administrators will meet with relevant faculty that teach CNT 4513 to discuss other appropriate changes to the syllabus.

CNT 4504 Advanced Network Management
- There is no significant concern expressed by the students or faculty.
  No changes recommended by UPC

Subject Area: Professional Development (SAC: Richard Whitaker)

CGS 1920 Introduction to Computing (1 credit)
- The faculty members that have taught this course have discussed changing the title of this course to "Introduction to the Field of Computing". This should be considered by the UPC.
- No other changes are recommended.
  UPC recommends changing the name of CGS1920 to Introduction to Computing.

CGS 3095 Technology in the Global Arena
- A few students commented that the textbook was not helpful for the course.
- No other changes are recommended.
  Official course syllabus only makes a suggestion for the textbook, so no changes are recommended by UPC. A re-evaluation of this textbook will be performed in the future by members of the UPC and instructors of CGS3095. UPC has compiled a list of candidate courses for textbook changes, to be discussed at future meeting(s) involving administrators and corresponding instructors.

ENC 3249 Professional and Technical Writing for Computing (Taught by 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.
- No changes are recommended.
  Different department; no changes are recommended by UPC

Subject Area: Programming (SAC: Maria Cristina Charters)

CGS 4854 Website Construction Management
- There was a concern expressed by several students in the Students Suggestions section, requesting that the course be updated to include current topics.
- 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.
  UPC has compiled a list of candidate courses for textbook changes, to be discussed at future meeting(s) involving administrators and corresponding instructors. Administrators will meet with relevant faculty that teach this course for appropriate upgrades to the syllabus.

COP 2250 Programming in Java
- Students expressed concern about the amount and speed of topics covered.
- Provide students with additional lab time where students can have more hands-on practice and support from the instructor and peer learning assistants.
Instructors will be encouraged to ensure an adequate pace for the course, and appropriate completion time is provided for assignments. UPC proposes tying Syllabi directly to assessment comments accessible to faculty, so that future instructors for this course will receive this feedback.

COP 3804 Intermediate Java
- 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.
- 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.
UPC has compiled a list of candidate courses for textbook changes, to be discussed at future meeting(s) involving administrators and corresponding instructors. Instructors will be encouraged to ensure adequate time is provided to complete assignments and that appropriate assistance is available. UPC proposes tying Syllabi directly to assessment comments accessible to faculty, so that future instructors for this course will receive this feedback.

Subject Area: Security (SAC: Amin Kharraz)

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.
- 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 (ie., case studies, root causes), password management at the enterprise level.
Administrators will meet with faculty that teach CIS4365 to discuss relevant ways to expand the Syllabus to encapsulate data breaches and password management

CNT 4182 Mobile and IoT Cybersecurity Policies and Practices
- There is also no significant concern expressed by the students.
- It is not clear to me how successful the group project 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. *Administrators will meet with faculty that teach CNT4182 to discuss relevant ways to expand the Syllabus to encapsulate malicious code, evasion and malware.*

CNT 4403 Computing and Network Security
- 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. *Instructors will be encouraged to review and follow the Syllabus, and will be directed towards appropriate resources for student assistance. UPC proposes tying Syllabi directly to assessment comments accessible to faculty, so that future instructors for this course will receive this feedback.*

Subject Area: Systems (SAC: Kianoush Gholamiboroujeni)

CIS 4431 IT Automation
- There is no significant concern expressed in the Students Suggestions section. *No suggestions from UPC.*

CNT 4603 Windows System Administration
  The course was not offered during the evaluation period.
  No suggestions from UPC.

CTS 4348 Unix System Administration
- There is no significant concern expressed in the Students Suggestions section. One instructor suggested that students need more exposure to Linux and hands on experience.
- 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. *As based on the current prerequisite courses and topics no prior Linux exposure can be assumed, instructors for now will be encouraged to provide some initial background during the first two weeks of the course. UPC will discuss the possible addition of COP4604 (Advanced UNIX Programming) as a prerequisite course.*

CTS 4743 Enterprise IT Troubleshooting
- There is no significant concern expressed by the students or faculty.
- No change is needed on the course outcomes or syllabus. *No suggestions from UPC.*

CNT 4603 Windows System Administration

The course was not offered during the evaluation period.

No suggestions from UPC.