



**To:** SCIS Administration: S.S. Iyengar, Mark Weiss, Erica Levy

**From:** SCIS Undergraduate Committee:

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The SCIS Undergraduate Committee has completed its review of the 2015-2017 assessment report for BS in CS. The committee's recommendations are included in the attached document.

## Undergraduate Committee's Recommendations on the 2015-2017 Assessment Report

In this document, the relevant sections of the assessment report are reproduced (in italics) to facilitate referencing to the assessment report and the recommendations are highlighted below the sections. The following acronyms are used throughout the report:

AC – Assessments Coordinator  
CpE – Computer Engineering  
CS – Computer Science  
SAC – Subject Area Coordinator  
SE – Software Engineering  
UGC – Undergraduate Committee

### I. RECOMMENDATIONS

#### A. Recommendations of the Subject Area Coordinators

##### Subject Area: Professional Development (SAC: Caryl Rahn)

*CGS 3095: The course reports are excellent, and it is suggested that the Programming prerequisite (COP 2210, or equivalent) be removed.*

UGC suggests **not** to remove the pre-req for CGS 3095, since programming exposure is essential to understand the ethical implications of computing.

*ENC 3249: No changes are recommended. However, technical writing should be emphasized more in this course as instructors found the students “deficient to adequate” in writing skills.*

UGC suggests to improve Instructor Course Appraisal process to collect more information of deficiency when an instructor finds students' preparation is deficient.

##### Subject Area: Computer Organization (SAC: Nagarajan Prabakar)

*CDA 3103: From instructor course appraisals, students seem to be deficient in Boolean logic and problem solving skills. These deficiencies need to be addressed in introductory CS courses. Use of interactive textbooks (Zybooks) improves student learning, and this should be explored.*

UGC recommends a minor change to course outcomes of CDA-3103. COP-2210 outcomes should include complex Boolean expressions in IF & WHILE statements.

*CDA 4101: From instructor course appraisals, additional course outcomes need to be revised with respect to Advanced Architecture topics.*

UGC suggests a set of revised course outcomes

*CNT 4713: No change is needed on the course outcomes or syllabus.*

UGC recommends the instructors of CNT-4713 must meet with CEN-4010 instructors and determine web programming concepts that need to be taught in the beginning of the term (CNT-4713 is a co-req for CEN-4010).

##### Subject Area: Computer Systems (SAC: Shu-Ching Chen)

**CDA 4625:** *The course does not have Outcomes defined, yet.*

The syllabus file has been added to SCIS website. UGC recommends that outcomes of this course needs to be assessed from Spring 2018.

**Subject Area: Foundations (SAC: Xudong He)**

UGC recommends that in ICA form, if student preparation is deemed deficient, another field is required with instructor's comment specifying the nature of the deficiency.

UGC: Recommends to modify course outcomes for

COP3337: O3: Be familiar with writing recursive methods

COP3530: O2: Master writing recursive methods.

**MAD 2104 & MAD 3512:** *Neither student evaluations nor instructor appraisals are available for these courses. No changes are recommended.*

UGC suggest the administration to request Math department to provide course outcomes for these courses and add student evaluations to SCIS CES system.

**COP 4555:** *The three instructors found that the student preparation for this class ranges from deficient to adequate. One instructor found two groups of students; one performing very well, and the other quite badly. All instructors covered F# in the first half of the course, and broad topics of programming language design and implementation in the second half. Student suggestions include: provide more F# examples, give more practice problems, conduct quizzes, and use a different functional programming language. The overall student evaluations are very good, and no changes are warranted.*

UGC: Student comments do not indicate problems with the course structure.

**COT 4521:** *Students suggest that instructor use less power point presentations and give more compact lectures. Instructor suggested that Data Structures and Linear Algebra should be required pre-requisites.*

UGC: suggests no change to the prereq.

**COP 4534:** *Instructors found students' preparedness for the class to be between deficient and adequate. One instructor noted the necessity of better mathematical background for the students. Student suggestions include: follow the textbook more closely, and provide additional resources for topics not covered in the book. No specific changes are recommended.*

After consultation with the instructor, UGC suggests no change to the prereq.

**Subject Area: Programming (SAC: Tim Downey)**

**COP 2210:** *From instructor course appraisals, students seem to be deficient in mathematical preparation for the course. Adding a pre-requisite of Algebra might be considered. One instructor feels that outcomes for Javadoc and program style should be added to the course.*

UGC: Recommends faculty to discuss adding Pre-Calculus as a prereq or testing out of algebra in the existing math placement test Aleks. Suggests a revised set of outcomes.

*COP 3337: From instructor course appraisals, students seem to be deficient in algorithmic reasoning, problem solving, ArrayLists, Strings and methods. Instructors note a wide range of skills. COP2210 instructors should be encouraged to cover all course outcomes. A lab should be considered for this course.*

UGC: Suggests to use interactive textbook with a lab component (no additional credit). Also, has proposed a revised set of outcomes. Instructors should plan their courses appropriately to leave time to cover linked lists, stacks, collections and recursion.

*COP 3530: From instructor course appraisals, students seem to be deficient in linked lists, stacks, collections and recursion. COP3337 instructors should plan their courses appropriately to leave time to cover these topics.*

UGC: Suggests the administration to arrange meeting with instructors of COP3337 and COP3530 and make sure that they agree on the competency level of the outcomes from COP3337. .

*COP 4338: From instructor course appraisals, students seem to be deficient in experience with algorithms and Unix. Several instructors did not cover the debugging outcome. Since Unix and debugging with GDB are not taught in our curriculum, the course outcomes need to be adjusted to make time to cover these topics. COP3530 is a co-requisite for the course, perhaps it should be a prerequisite. A newer book that covers more of the outcomes should be found.*

UGC: Unix is not a prereq. Remove the prerequisite topic “Basic knowledge of UNIX systems.

### **Subject Area: Software Engineering (SAC: Monique Ross)**

#### **CEN4010:**

##### **Observations:**

- *The software engineering course is loaded with a great deal of material – software process, documentation, and an overarching project (that at times requires new acquired skillset); however, the explicit connection between the material and the end product is lost amongst what is perceived by students as a huge disconnect between the text, exams, and expectations.*
- *Students and professors alike lack the understanding of the co-requisite Net-centric. Students believe it left them under-prepared, faculty think it is unnecessary. In either case, there exists an incongruence between the perceived goal of Net-centric and actual outcomes.*
- *It appears as if students both appreciate and loathe the project; namely because they understand the value and practicality but are largely overwhelmed by the expectations – new technology, process, exams, and working product.*

##### **Recommendations:**

- *Evaluate the co-requisite of Net-Centric – is there misalignment between expectations of the course and outcomes or should it be removed as a co-requisite to the course.*

UGC recommends the administration to coordinate a meeting between CNT4713 and CEN4010 instructors so that necessary web application topics need to be covered in CNT4713 at the beginning of the term.

- *In order to stay aligned with the expectations of the workforce, explore the transition to Agile software development process. Such a transition would: 1) alleviate some angst by students on how to manage and execute a working executable at the conclusion of the course while developing meaningful documentation; 2) provide insight to current work practices*
- *Professors of this course should adopt an Agile/Scrum book; suggested text: Ashmore, S., Runyan, K. (2015). Introduction to agile methods. Boston: Addison – Wesley.*
- *UML supplemental materials can be provided through the use of alternative media – YouTube, websites, manuals*
- *Class lecture times should be spent more on practicing Agile software engineering development rather than just giving lectures.*
- *Learning by example and practice is the best way to transfer the knowledge and experience from the professor to the students*

UGC suggests that the SAC of this area needs to discuss about the implementation of this course with instructors and make sure that all mastery outcomes are covered in all sections of this course.

**CEN 4021:** *The following recommendation is made: Emphasize the importance of instructor assessment of course.*

UGC suggests the administration to remind & encourage instructors to submit their course assessments.

**CEN 4072:** *The following recommendations are made.*

- *Test-driven development is one of the popular agile software development practices in industry. Students should be exposed to this approach.*
- *The lectures time should be spent more on practicing the testing methods using state-of-the-art tools.*

UGC suggests to remove Outcome O6 “Be exposed to program debugging”.

**CIS 4911:** *The following observations and recommendations are made by the SAC.*

*Software Engineering I, should be evaluated and perhaps redesigned to ensure that students (in all section offerings) have the same tools or resources necessary to be successful in Senior Project including:*

- *Students should have a stronger understanding of UML diagrams and the appropriateness of different diagrams for portraying different aspects of a product*
- *Students should learn how to be a productive team member in a self-organizing Agile/Scrum development team*
- *Students should be proficient in Agile/Scrum software development process*

UGC suggests that the SAC of this area needs to discuss about the implementation of CEN-4010 with instructors and make sure that all mastery outcomes are covered in all sections of this course.

## **B. Recommendations of the Assessments Coordinator**

### **1. Course Related:**

AC-01: The Course Outcomes Surveys for MAD 2104 and MAD 3512 are not conducted. This is a continuing concern. However, it should be substantially diminished beginning in the next Assessment cycle because MAD 2104 will be substituted by COT 3100, the course offered and controlled by SCIS. If possible, some other assessment mechanism must be employed for MAD 3512 on a regular schedule.

UGC recommends the administration to include these math course sections to CES online system to improve the assessment.

AC-04: From the SAC reports of various courses (CDA 3103, COP 2210, and COT 3541), it is clear that the students are quite deficient in the concepts related to algorithmic process, programming, and problem solving. This is a continuing concern for which the suggestion made in the last Assessment Report is still valid: {one way to address this issue is to provide a pre-programming course focused on problem solving and logic skills. Students in COP 2210 should be evaluated in the first week of classes in order to recommend them to enroll in this pre-programming course before taking COP 2210. [Important Note: We have already created COP 1000 but need to ascertain that it is more widely advertised to the student community through our advisers.]}

See recommendations for COP-2210 above.

AC-06: Course Outcomes for CDA 4625 are undefined. These should be designed as soon as possible.

The course syllabus with outcomes has been included on SCIS website. It needs to be included in CES from Spring 2018.

AC-07: Students of CEN 4010 expressed concerns over their preparedness for the class in the sense that the pre-requisites are not aligned with the expectations of the course (e.g., class project requires web development knowledge not covered earlier). The SAC should evaluate this concern and take prevent action if appropriate.

Instructors of CNT-4713 must meet with CEN-4010 instructors and determine web programming concepts that need to be taught in the beginning of the term (CNT-4713 is a co-req for CEN-4010).

AC-08: Instructors of CEN 4072 indicate that due to lack of time, they are unable to cover “the details of debugging” in this course. If so, then it should be removed from the Course Outcomes. Also, students indicate that knowledge of many topics covered in CEN 4010 is mandatory for this course, and hence, we should consider making CEN 4010 a pre-requisite for CEN 4072.

See the proposed revised course outcomes regarding debugging for CEN-4072, COP-2210, and COP-3337.

*AC-10: The SAC reviewing CGS 3095 mentions that the programming pre-requisite (COP 2210, or equivalent) is not necessary for this course. This should be reviewed, and modified if deemed worthwhile.*

UGC suggests **not** to remove the pre-req for CGS 3095, since programming exposure is essential to understand the ethical implications of computing.