Memorandum of Understanding
2010-11 Program Review
Department of Computer Science
College of Arts and Sciences
October 2011

Members of the Computer Science (CS) faculty, the Dean and Associate Dean of the College of Arts and Sciences, and the Interim Vice Chancellor for Academic Affairs met on October 28, 2011 to review and discuss the CS Department’s program review. The self-study by the CS Department (on file), the report by the external reviewer – Dr. Brent Auernheimer (on file), and the Dean’s summary table of the external reviewer’s report (on file) were the basis for the discussion. The group agreed upon the summary points and action plan that follow:

Summary Facts:

1) The CS Department consists of five tenure-track faculty (Keith Edwards, Sevki Erdogan, Jie Cheng, Michael Peterson, and Syed (Shawon) Rahman), two instructors (David Bishop and Barbara Meguro), and an APT (Helen Torigoe).

2) The CS Department offers a B.S. degree. The CS Department also offers three certificates: Database Management, E-Commerce Technology and Business, and Computer Application Development Specialization.

3) The CS Department’s teaching facilities include two computer classrooms – PB4-101 and CH-11A—and an upper division lab – CH-13. PB4-101 and CH-11A (which also doubles as a lower division lab) each seat 22 students at individual workstations. CS-13 includes 17 workstations. CH-12 houses the Department’s server, as well as its supercomputer (a 256 node IBM Netfinity cluster). CH-11B houses an open lab of 12 work stations. The CS Department has an APT who services and maintains their classrooms and labs.

4) Three CS faculty (Rahman, Peterson, and Erdogan), and around 10 CS students, are engaged in our current NSF-EPSCoR project (EPS-0903833, Total amount: $20,000,000, duration: five years, 9/2009-9/2014). The CS Department added research infrastructure using EPSCoR support -- e.g. a GPU(Graphical Processor Unit)-based visualization server machine consists four NVIDIA Tesla Series high performance computing GPUs and two Intel Xeon CPUs. EPSCoR project is in the process of purchasing a few workstations and sever machine for our CS Department researchers.

5) Graduates of the CS program perform well on the Computer Science Major Field Test (MFT), as well as in ACM programming and network security competitions. Alumni data suggest that graduates of the CS program are able to obtain employment after receiving their degree.

Key Issues/Questions:

1) Low graduation rate -- The Department averages about 95 majors per year, but only graduates about nine (9) students per year.

2) Need for “refreshment” plan – A funding plan is needed to replace the computers in the Department’s classrooms and labs, as well as server equipment, every three years or so.
3) **Digital library access for tenure-track faculty** – Faculty require access to the digital libraries of their two professional organizations -- ACM and IEEE Computer Society.

4) **Department assessment plan** – Department needs to engage in program and course-by-course assessment, in addition to its use of the Computer Science Major Field Test, for assessment (and possible accreditation) purposes.

5) **ABET accreditation** – Should the Department seek ABET accreditation in the future?

6) **APT back-up** – Currently, the task of maintaining the CS computer classrooms/labs is the sole responsibility of the Department’s APT. The concern is that if the APT is suddenly unavailable, no one in the department is able to take the place of the APT.

**Action Plan:**

1) To address low graduation, the CS Department will add a lab component to their CS 150-151 course sequence to provide students with more hands-on, experiential learning. The one-credit lab will provide weekly small-scale programming assignments. A decision needs to be made by the CS Department whether this one-credit lab will be required of all students taking CS 150-151, or whether it will be an optional lab.

2) To address low graduation, the CS Department will explore with the Mathematics and Physics & Astronomy Departments the possibility of creating an “Introductory Mathematics for Scientists and Engineers” course that will serve as a remedial Math class for CS and Physics students to help them succeed in their required Calculus courses.

3) To address low graduation, the CS Department will review options on modifying the curriculum of the CS 150/151 first year programming sequence to determine whether we should continue to exclusively use C++, replace C++ with Java, or introduce a blend of C++ and Java. Opinions among the faculty differ, so the CS Department will review current educational literature to determine whether the language chosen for first year programming students affects retention.

4) To address low graduation and poor retention of first and second year CS students, the CS Department will make several curriculum adjustments to the intended course sequence during the first two years of the CS program:
   - A. MATH 205 will become a co-requisite rather than a prerequisite for CS 141.
   - B. CS 241 will become a co-requisite rather than a prerequisite for CS 321.
   - C. CS 321 will be moved to the Fall semester to be taught concurrently with CS 241. The timing of related materials between these two courses will be coordinated. (CS 241 introduces mathematical concepts of data structures, CS 321 reinforces these concepts through programming exercises).
   - D. CS 266 will be moved from the Fall semester to the Spring semester to make room for CS 321 in the fall.

5) To address low graduation, the CS Department will propose the introduction of a required Pre-CS program for incoming freshmen. Students will not be admitted to the CS program until they have completed the introductory work for the program (CS 150, 151, 141, and MATH 205). This will allow us to more easily identify students in need of remedial assistance and advising. One CS faculty member will be designated as the Pre-CS advisor. This program will provide students with realistic expectations of the CS degree requirements while providing simplified pathways to advising for incoming students.
6) To address the need for a computer "refreshment" program, the CAS Dean will work with the VCAA to develop a three-year replacement plan that would recycle 1/3 of the computers every year, and replace the server and software every 3 years. (Recycled CS computers could be made available to faculty/staff/students in other units of campus.) pending funding.

7) To address digital library access, the CAS Dean will explore whether the undergraduate Engineering ATP planning funds can be used to purchase digital library access.

8) To address the back-up concern for the APT, the CS Department will look into training one of its instructors to serve as a functional back-up to the APT. Once the engineering program is created, and they hire their own APT, the CS Department will explore whether the APTs for CS and Engineering can be cross-trained to serve as each other's back-up.

9) The Dean will discuss with the VCAA and the Chancellor whether to support the CS Department's desire to seek ABET accreditation and, if so, what the timing of the application will be. If a decision is made to pursue ABET accreditation in Computer Science, then sufficient funding and, if necessary, faculty course load reduction, will be provided to the department for that purpose.

Signatures

Sevki Erdogan, Professor and Chair

H. Keith Edwards, Associate Professor

Jie Cheng, Assistant Professor

Michael Peterson, Associate Professor

Syed (Shawon) Rahman, Assistant Professor

David Bishop, Instructor

Barbara Meguro, Instructor

Randy Y. Hirokawa, Dean

Keith Simmons, VCAA

Date 13/12/2012
Date 2012/09/13
Date 09/13/2012
Date 09/13/2012
Date 09/13/2012
Date 10/5/12
Date OCT 05 2012