

Academic Program Review of the
Department of Computer Science
University of Wisconsin - La Crosse
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Prepared by the Academic Program Review Subcommittee:
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BACKGROUND:

The Self Study for the Department of Computer Science submitted its self-study report to the College of Science & Health, Dean's Office fall semester, 2006. Prof. James A. Schnepf, the College of St Benedict/St John's University completed the external review on July 11, 2006.

SUMMARY OF THE SELF STUDY:

Goals and Objectives

The Department of Computer Science has a clear list of goals and objectives listed in the "Purposes" section of the self-study document. Goals and objectives are supported by subheading listings in Curriculum, Instruction, Faculty, Advising, Service, Government and Leadership. The Goals/Objectives of the Department include:

1. to provide a computer science program curriculum of the highest quality.
2. to maintain a computer science department faculty with technical expertise and currency.
3. to provide accessible academic advising for computer science majors, and other students seeking information regarding computer science.
4. to provide leadership in the uses of computing.

Summary of how the program reaches its Goals/Objectives

The Department of Computer Science is the second oldest computer science program in the state. The goals and objectives of the department are clear and well defined. What is a somewhat unclear is how the program assesses student learning. Both the department self study and the external reviewer agree that the department would benefit greatly from revising the goals and objectives to “. . . focus the goals (student learning) on the outcomes more than process.”

NOTABLE STRENGTH AND WEAKNESSES OF THE PROGRAM:

The faculty in Computer Science is their strongest asset. The department has a dedicated group committed to quality teaching, scholarship and service to the

University. Computer Science has a strong curriculum and is forward thinking. Their commitment to strong curricular programming include:

1. Undergraduate dual degree options with Madison (computer engineering or electrical engineering) and WTC (2+2 agreement)
2. The Masters of Software Engineering degree
3. The Five-Year Dual Degree BS/MSE
4. South Central University, Wuhan, China collaborative program

The department is a cohesive group of professionals. Each member of the department is able to support the department's goals and objectives through their respective subspecialties, while allowing the department flexibility to respond to the rapidly evolving field of computer science. Since the last APR review, the faculty has been active in presenting at regional and national conferences, publication of creative and scholarly work and work on outside grants.

Programs

The department offers a variety of programs for majors as well as C-S 101, the major computer offering in General Education.

Degrees in Computer Science

- Bachelor of Science,
- Dual Degree options with study in Chemistry, Mathematics and Physics. Upon completion of UW-L Coursework, students transfer to Madison to complete study in Computer Engineering or Electrical Engineering.
- C-S Major with Teacher Certification
- 2+2 Agreement with Western Technical College. WTC students with two year AA degree in Electrical Engineering Technology and complete C-S degree in two years at UW-L
- Masters of Software Engineering
- Computational Science Minor
- Computer Science Minor

Curriculum

The Department of Computer Science has a core curriculum focused in software development with solid representation in the sub-specialties including Database Design, Computer Architecture and Operating System Design, Languages, Software Engineering and Artificial Intelligence. The department also requires two semesters of Calculus and a course in logic and discrete mathematics. New courses in Digital imaging and Information Security help keep the department at the forefront of their field.

The department curriculum supports the General Education program through its C-S 101, Introduction to Computing, though budget cuts have hindered their ability to offer more sections and meet student demand.

Program Success

Assessment of program success has been hampered somewhat by the lack of clear student learning outcomes. Department goals and objectives are met but consistent with national trends the department has seen a decline in the number of majors. Nationally this has been associated with the Dot-Com bust and a trend away from computer science programming at the high school level. Computer Science at UW-I is consistent with national trends. The department reviews course curriculum relative to the ACM-IEEE standards. Revisions based on assessments include C-S 120 becoming a 4-credit course, moving curricular emphasis toward Java and object oriented techniques as well as the inclusion of C-S 442 Structures of Compilers as a requirement for the major.

National trends show an increased demand for majors in Computer Science outpacing the numbers graduating in the field.

Previous Academic Program Review and New Program Initiatives

The previous APR review listed three recommendations.

1. funding of laboratory supervision and equipment
2. concern related to IT programs and services on campus
3. continued development of assessment procedures for C-S 101

The concern for laboratory funding was partially met through the Governor's Economic Stimulus Package during the last biennial budget. Budgetary concerns will always follow highly technical fields especially quickly changing systems in computer science.

Recommendation #2 has brought about a much greater collaboration between IT, MIS and C-S. These groups have received funding for Inter-Unit Collaboration and continue to find ways to coordinate efforts on a regular basis.

Assessment of the C-S 101 has been an ongoing evolution and been complicated by budget cuts over the past few years. The department is committed to continuing to update C-S 101. Nationally, Computational Thinking is becoming a greater factor in introductions to CS and is consistent with departmental aspirations.

Personnel

The department consists of seven full time positions (6.5 IFTE, with one member sharing a joint appointment with Mathematics) and two instructional staff, for a total of 8.5 IFTE. A major concern is the one-year appointments available for IAS. Future growth is dependant upon a restoration of lost positions from budget cuts. This is a serious concern across the campus and needs to be revisited as soon as possible. The department has a commendable balance of teaching,

scholarship and research and creative activity and a good record of securing external funds.

Support for Achieving Academic Program Goals (Resources)

The Department of Computer Science is situated fairly well in terms of laboratory space and equipment. Replacement of computers needs to remain on a schedule that is appropriate for their field and allows for maximum flexibility. The switch to Apple OS seems to be working quite well. Faculty support for C-S 101 will be crucial for its future success. Recent budget cuts and a strained relationship with the previous Dean's office have left it understaffed. The department and the current interim dean are collaborating much closer than before and attempting to heal this relationship.

Enrollments, as discussed are also a concern. While the job opportunities are plentiful, the major has declined across the country. The department is working to help increase student numbers in a number of ways. By establish computer oriented workshops for high school teachers, it is hoped to get more students interested early in their careers. More attention may need to be directed to programmatic recruitment in order to ensure solid incoming student populations in Computer Science.

Comments on External Reviewer/Department Response/Dean's Letter

The external review was thorough and constructive. The external review indicates a number of positive comments including:

- Quality and depth of the faculty
- Curricular innovations
- MSE Program
- Provides a solid curriculum for majors and non-majors
- Departmental service to the institution
- China collaborative program (South Central University)
- Renewed relationship with the SAH Dean's Office

The Department, the Dean of SAH and the external reviewer seem to be in close agreement. The MSE degree was not reviewed as part of this APR. It will be undergoing a five-year joint-review later this year.

APR's Recommendations

The Department of Computer Science is a strong and viable department. The APR Committee recommends the following:

- Establish more defined student learning outcomes
- Strengthen C-S 101 by working to restore staffing cuts

- Continue to advocate for a restoration of multi-year IAS appointments
- Explore more ways to recruit new students
- Closely monitor the balance between the MSE program and the UG major
- Consider ways to revive the Computational Science minor

The Department of Computer Science should submit its revised student learning outcomes in three years. The Department should undergo its next Academic Program Review in seven years.

APR Committee Approval 4/05/2007

Faculty Senate Approval 4/12/2007