

Academic Program Review Response and Action Plan
Department of Computer Science
Stephanie Forrest, Dept. Chair
September 9, 2010

1 CS Goals and Future Directions

The Computer Science Dept. has the following objectives:

1. Excellence in teaching and research
 - (a) B.S. graduates prepared for top-tier graduate programs and employment as software professionals.
 - (b) M.S./Ph.D graduates receive offers from top-tier employers
 - (c) Rank among the top 40 departments nationally
 - (d) Maintain ABET accreditation
2. Emphasis on interdisciplinary research and teaching
 - (a) Links with other departments and colleges
 - (b) Strong collaborations with external research laboratories
3. Broadening participation of underrepresented groups
4. Industrial partners and sponsors

1.1 CS Dept. Future Directions

In the 2006-2010 time frame, nearly 1/3 of the CS faculty retired, and 6 Assistant Professors were hired. Integrating these new faculty, mentoring them, and adjusting our curriculum to accommodate their interests and expertise is a major current focus for the department.

CS enrollments at UNM fluctuate similarly to those in the rest of the country. The department is currently rebounding from a precipitous decline following the dot com bust, and enrollments are projected to grow over the next several years.

2 Department Quality

The Review Team report was complimentary about CS faculty quality and suggested that the Department could promote increased understanding of our discipline in the School of Engineering and the University. The Department is unsure how to address this comment.

The report states that the department performs on a per-faculty level that is commensurate with a national ranking of 25-36. It further states that the department is unlikely to break into the top 40 ranking without significant growth. This issue could be addressed either by dedicating new

resources to the CS Department, or by combining existing resources to form a larger and more visible academic unit. The second alternative could be pursued either by creating a Computer Science and Engineering Dept. (a common strategy at other universities) or an independent School of Computing (the current national trend). The department is willing to pursue any of these options but would need significant institutional momentum and backing to implement.

3 Leadership

This response addresses the “Leadership” and the “Senior Leadership” sections of the report. The current Chair is on a one-year extension of her original 4-year term, and the Associate Chair is eligible to retire. There are no obvious internal candidates among the current faculty, and a task force convened by the Dean last year determined that an External Chair search is the best option for the department. The report identifies a need for senior-level faculty to lead medium- and large-scale collaborative research projects. This highlights the importance of hiring an External Chair with stellar research leadership credentials.

4 The CS Pipeline

The report identified significant problems with advising for CS students in the period between Freshman admission and admission to the CS major. The Department has been aware of these issues generally but never succeeded in identifying clearly where the breakdowns occur. We are grateful to the committee for investigating this issue so carefully.

In response to this concern, we prepared as requested a one-page summary of advising guidelines for students interested in CS. We prepared one version for advisors in Engineering Student Services and a slightly different one for advisors in University College Advisement. We delivered them to Steve Peralta in ESS, Wynn Goering, and Vanessa Harris in University College. The CS Coordinator for Program Advisement met recently with University College Advisors Kyle Beenhower and Will McClary, and she is scheduled to attend the Univ. College Advisor’s Staff Meeting Oct. 5.

In response to this concern, the CS Coordinator for Program Advisement (i.e., the student advisor) spent one morning per week all summer sitting in the SOE Freshman Orientation Advising sessions. She met approximately 30 incoming Freshman who have expressed interest in CS as a major: Reviewing their academic record; advising them on a plan for admission to CS; scheduling follow-up advising in the CS Dept.; and distributing the CS Dept. Freshman Merit Scholarship application form. Several of the 30 were also interested in IFDM and the Coordinator (Lynne Jacobson) discussed interactions between CS and IFDM degree requirements. One immediate result was an additional 6 applications for the CS Merit Scholarship offered to entering Freshmen who plan on majoring in CS. The CS Coordinator for Program Advisement met several times with Tonya Bryant (IFDM Advisement Coordinator) to educate her about CS Degree requirements and to improve the printed information given to students about program requirements for combining a CS major with IFDM participation.

The department is participating in a SOE-wide \$3 million NSF STEP proposal to be submitted soon, which is aimed specifically at increasing retention rates in underclassmen. If awarded, the grant will provide mentoring and internships for undergraduates to improve retention and give them work experience. We hope that this program will supplement improvements in the advising

process for potential computer science majors.

The report recommends that the department participate in national STEM initiatives. This is a good suggestion. However, in the immediate future the department prefers to invest its efforts in mentoring, supporting, and retaining the new female (2) and minority (3) Assistant Professors who have been hired over the past 4 years. The department believes that seeing these important new hires through the tenure and promotion process is a more immediate priority than more indirect efforts at the national level, especially because our student population is already significantly more diverse than most other CS programs in the U.S.

The report recommends upgrading TA lines for low-level classes from Undergrad to Grad-level TAs. More graduate TA lines would enhance our classroom teaching, and it would allow the department to recruit more graduate students to its program. The department concurs that this should be a high priority, especially as enrollments increase over the next few years, and to help support the university's initiatives in graduate education. Converting these lines would entail significant cost increases. Over the next few years, it is unlikely that the department will receive the resources to act on this recommendation.

5 Retention

The report predicts that the department will have an increasing number of faculty retention issues over the next several years. The current Chair concurs, having handled two faculty retentions herself almost entirely from existing CS resources. The department will not be able to support future retention packages out of its own resources, especially recurring salary increases.

The report identified low graduate RA stipends as a potential source of retention problems. The department has addressed this concern by raising its RA stipends significantly. Previously, Academic Year salaries in CS ranged from \$12,150 to \$15,300, with an average of \$13,500. Beginning in the Fall Semester 2010, the range for RAs is \$16,000 to \$20,000. For comparison, the Taulbee Survey reports the following RA AY salaries: Depts Ranked 25-36 (\$16,977); Depts ranked 13-24 (\$20,677); Depts ranked 1-12 (\$22,380).

One problem created by this policy is the inequity between RAs and graduate TAs, who are still paid between \$12,150 and \$13,330. We estimate that it would cost an additional \$25,740 per year to address this inequity. Our estimate is based on the following calculation: TAs are currently paid \$6723/semester (\$13446/AY) and we hire about 10 TAs/semester at a total annual cost of \$134,460; increasing the TA salary to current RA minimum rate for the AY would cost \$16,020 annually per TA (total cost \$160,200).

To upgrade undergraduate TAs to graduate TAs for a few selected classes (CS 152, 241, and 251) would cost an additional \$66,045 per year. We currently hire about 2458 hours per year of undergrad TAs to cover those three classes. Most are paid the minimum wage of \$7.50 hour for a total cost to the department of \$18,435 per AY. We would need 4 new TA slots to cover the hours that are currently done by undergrads (\$84,880, which includes \$23,000 for tuition). This estimate does not include the cost of undergrad TAs for CS 150 and 151, which cost an additional \$57,675 per year.

To put this in perspective, the two combined lines (grad and undergrad) are budgeted at \$219,217, and the department currently spends about \$223,460 a year on TAs.

6 Special IT Needs

The report emphasized the special needs that CS departments have for IT support for research and teaching. The report recommends that a “process be defined for approving special IT needs.” The department feels that this is the single most important recommendation of the report, and one that can be addressed for essentially zero cost.

On June 18, the CS Chair sent a letter to Acting SOE Assoc. Dean for Research, John Wood, outlining immediate CS needs in this area. This letter has been forwarded to the OVPR, and to date we have received no response or acknowledgment of our requests. A copy of the letter is attached to this document.

The APR report also recommended giving the CS Dept. control over computer teaching laboratories, comparable to science laboratories. The Department has no space for such laboratories and has requested SOE’s help to provide space and equipment for a new teaching laboratory.

7 Space

The report highlights problems with existing CS space and the need for new space dedicated to laboratories. Since the report was written, a \$3.8M capital project request for Farris Renovation Phase I was submitted by UNM to the state of NM. This project, if funded, would not address outstanding HVAC, insulation and window upgrades for energy efficiency, elevator upgrades, and important space reprogramming issues in the Dept. In addition, the Provost and the Dean of Engineering have each committed \$100,000 to a limited remodel of the CS Department Offices and first floor.

8 ABET

The report made a number of suggestions regarding the 2011-2012 ABET reaccreditation process, primarily focused on how we define and measure educational objectives and on pre-major advising. The department is planning to review and update its educational objectives and assessments this Fall, in line with the suggestions contained in the report. As mentioned earlier, the department has already taken some steps to address the advising pipeline issue but we will need cooperation from other units, which may require assistance from Scholes Hall in order to implement effectively.

9 Action Plan

The plan is divided into two subsections: Issues that the department can address on its own, and issues that the department cannot address without outside help.

9.1 Issues that reside primarily in the department

1. Continue to mentor recent faculty hires and help them launch successful teaching and independent research programs.

2. Plan for Chair succession by conducting External Chair Search in AY 2010-2011.
3. ABET re-accreditation in 2011-2012.
4. Develop 4+1 B.S.+M.S. program.
5. Promote understanding and appreciation of CS throughout UNM.
6. Work with SOE ESS and University College advising to improve pre-major advising.

9.2 Issues that reside primarily outside the department

1. Appoint a committee led by academics with IT administration representation to address IT issues related to research and teaching, with the authority to approve special IT needs throughout the academic units of the university.
2. Teaching laboratory with computers scheduled and controlled by CS.
3. Renovation of existing space to improve faculty/student recruiting and retention, provide additional research laboratory and improve usage of existing space, and to address safety issues.
4. Add 1 FTE advisor in CS, as recommended in the report to improve student advising.
5. Additional funding to upgrade undergraduate TA lines to graduate TA lines, and to bring TA salaries in line with RA salaries.
6. Develop plan for department growth, either by dedicating new resources or creating a new academic unit that leverages existing resources.