

EXECUTIVE SUMMARY
Academic Program Review
College of Arts and Sciences

DEPARTMENT/PROGRAM
Department of Computer Science

EXTERNAL REVIEWERS
Professor and Chair Tia Newhall, Swarthmore College
Professor and Associate Dean Lynn Stein, Olin College
Professor Henry Walker, Grinnell College

CAMPUS VISIT
November 18-20, 2015

The review team read the self-study written by the faculty in USF's Computer Science department, reviewed the curriculum, course syllabi and evaluations; conducted class visits; interviewed faculty, students and staff; and met with the Dean, Associate Deans and other relevant members of the campus community. Prior to their visit, the reviewers were provided with USF's Vision, Mission, Values Statement, the program's self-study and other university materials.

1. How did the external review committee rate the quality of the program – excellent, very good, good, adequate, or poor? How does the program compare with benchmark top-tier programs nationally? Please provide a brief rationale for the external review committee's rating.

The committee gave the Computer Science Department an overall rating of GOOD. They noted that Computer Science "has strong potential to provide distinction for USF," and is a program with "highly motivated" faculty committed to supporting its students and leveraging the strengths of its regional environment. However, "substantial challenges" of staffing, potential program expansion, and culture/trust/morale must first be addressed "for the sustainability of the program."

2. What are the most important general issues that emerged from the external review process?

- Small classes and access to faculty are key features of the Computer Science program at USF. Both faculty and students are concerned about "losing this culture as CS enrollments climb."
- USF's proximity to Silicon Valley and San Francisco tech sectors provide students "unique opportunities" to learn and network with "local employers aplenty ... in computing-related fields."
- Program courses are "founded on a firm foundation" and contribute to "effective active learning." However, "the [overloaded] faculty lacks time to update and refine them."

- Classrooms specially designed for Computer Science are “designed well,” and “sufficient for department teaching needs,” but space for outside mentoring and tutoring is “barely adequate.”
- Faculty morale is low due to an “extreme level of understaffing.”
- While the department is “willing to support” other programs that may benefit from Computer Science courses, its contributions may come at “the expense of [its] undergraduate program.”
- There is “poor” communication between program faculty and USF’s administration, and a “dramatic fresh start is needed to begin ... building communication and trust.”

3. **What specific recommendations for improving the program’s quality has the external review committee made to the Dean?**

The Review team has provided twenty-seven* recommendations to ensure “the sustainability of the [Computer Science] Program.” These correspond to eight specific areas of concern: contextual (of computer science, as a whole; of USF’s values and mission); the mechanics of computer science at USF; staffing; culture, trust and morale; potential program expansion; the curriculum; facilities and support staffing; and faculty evaluations.

Contextual:

- USF Values and Mission
 - Recognize USF CS’s unique strength: a synthesis of Silicon Valley/SF CS resources with a program committed to serving local needs.
 - “Position CS at [USF’s] heart” and give it the resources to “create visible impact across USF’s community,” while paying special care to maintain small class sizes.
- Computer Science Discipline
 - Review use of the term “programming” to avoid “possible misunderstandings” between informal use of language and actual industry terms. Consider using more descriptive terms, such as “problem solving” or “applications” where relevant.
 - Emphasize the distinctions between and focuses of “computing” and “computer applications.”
 - Ensure that “new or evolving programs align properly with international expectations,” specifically regarding the nuances of already established subdisciplines.

Mechanics of Computer Science at USF

- Proceed with caution in building joint programs with computer science, as joint programs contribute to “fragility of departmental coverage” and “disproportionate impact on departmental loading.”
- Consider ways that current faculty outside of CS can provide aid to the program and strengthen its “redundancy and resilience.”

- Recognize that given the thriving tech culture in Silicon Valley and “the applied nature of many USF CS faculty,” an uncomfortable work environment might “be the impetus ... to look for employment elsewhere.”
- Consider promoting Computer Science at USF “more visibly”

Staffing and Increased Enrollments:

- Popular introductory section caps may be moderately increased from 30 students to 35-40 students, by doing the following:
 - Consider pair programming and teamwork for in-class activities
 - Make modest adjustments in classroom design to increase capacity
 - “Substantially increase” funding for teaching assistants to decrease workload on faculty, where feasible (i.e. grading, mentoring, tutoring)
- Take “special care” that course policies to restrict enrollments do not discriminate against disadvantaged students. Avoid grades higher than C or C+ as prerequisites to progress within the major for this reason.
- Retain existing term/adjunct positions, in addition to expanding tenure-track positions (n = 6) to alleviate departmental staffing “crisis”
- Follow CS industry trend and consider accepting professional Masters degrees as appropriate terminal credentials for term faculty

Culture, Trust and Morale

- Take steps to “repair and rebuild” trust, respect, and collegiality among CS faculty, using either internal or external faculty consultants for support
- Consider hiring a senior level faculty member to step into Department Chair role and “reset” department culture and relationships with USF administration
- Increase communication, support, and availability of clear expectations from USF administration to CS faculty.

Potential Program Expansion

- Avoid proposing additional expansion until “fundamental staffing shortages” and other challenges can be addressed
- Future expansion ideas should come partly from CS faculty themselves and “reflect joint ownership by them”

The Curriculum

- Increase sections of CS 107, a popular and often oversubscribed non-major/introductory class, to better serve demand across the College
- Ensure consistency of topics covered and learning outcomes across sections of other introductory major courses, to better support students and strengthen the curriculum
- Explore options to diversify electives without increasing total number of course offerings, perhaps by combining graduate and undergraduate offerings where feasible

Facilities and Support Staffing

- Increase student study lab and tutoring area space.
- Increase administrative support, with either a regular part-time position or additional student work study positions, to better support the department.

Faculty Evaluations

- Review the computations and statistics used in end-of-course faculty evaluations

4. In the opinion of the external review committee, is the program following the University's strategic initiatives?

Providing the environment necessary to promote student learning in the program.

The review team noted that "course pedagogy and classroom facilities" support "active learning," and program faculty are "highly motivated to help their students succeed". Reviewers also noted that "many CS faculty came to USF to contribute to this strong, undergraduate program," and their contributions have yielded close student-teacher relationships "cherished both by students and faculty." While the "effectiveness of the program" has manifested itself in skyrocketing enrollments, faculty have "moved to intervene" where the quality of undergraduate program is threatened, and "been able to accomplish far more than my be expected of a similarly sized unit." These factors well mirror the "nurturing environment for advancement that is distinctly USF."

5. In what way is the program contributing to the goal of making the University of San Francisco a premier Jesuit, Catholic urban university with a global perspective that educates leaders who will fashion a more humane and just world?

Reviewers characterized the University of San Francisco is "an urban university, connected to the fabric of the city around it, drawing from the local population and contributing back to it." The Computer Science program is no different, with USF's service oriented nature "central to how CS approaches its work," and modeled by faculty "committed to outreach programs, the college's mission, and to designing a program that fits well with this mission."

6. What is the timetable for the response to the external review committee's recommendations for program improvement? What can the Office of the Provost do to appropriately respond to the review?

The next step is for the Dean and Associate Deans to meet with the Chair of Computer Science and discuss the action plan based on the self-study and reviewers' report. Based on the reviewer's suggestions, the Office of the Provost could assist the program by: creating new faculty lines.

7. What general comments or issues, if any, are crucial to understanding the reviewers report?

No additional information is necessary to understand the report.