

**Computer Science  
Comprehensive Program  
Review  
Follow-Up**

1. Provide evidence of *quality* enhancement of the program since 2003.

In 2004, the computer science program was accredited by the Computing Accreditation Commission of ABET. ABET found that the curriculum and faculty met the accreditation standards. The only major concern that ABET found was a heavy faculty workload. The next accreditation review is scheduled for 2009-2010.

The computer science faculty has been very active in scholarly activities since 2003. Since that time, faculty have made over 120 conference presentations, have had over 20 publications in peer-reviewed journals, authored four textbooks, and received (individually or part of a team) over \$1,800,000 dollars in grants. In addition, the department hosted a ACMSE conference with the faculty holding most of the key conference committee positions.

Computer science is a rapidly changing discipline so the program curriculum is under continuous review by the computer science committee. Besides constantly updating current courses, special topics courses covering new concepts and technologies (for example encryption, computer security, XML technologies, data mining and web services using J2EE) have been taught when some like the web services and encryption becoming permanent courses in the curriculum. There is a major curriculum proposal that is currently making its way through the curriculum approval process. The goal is for the changes to be in effect starting in the fall 2008 semester. Under this (and a parallel information systems curriculum proposal), the computer science program would no longer share courses with the information systems program allowing the computer science program to better serve the computer science majors. Relevant details of this proposal will be discussed in appropriate areas of this report.

2. Provide evidence of *productivity* enhancement of the program since 2003.

Semester	Majors	Graduates
Fall 2004	373	15
Spring 2005	338	23
Summer 2005	147	12
Fall 2005	287	13
Spring 2006	293	17
Summer 2006	125	4
Fall 2006	308	13
Spring 2007	290	12
Summer 2007	140	7
Fall 2007	313	25

Enrollment in computer science programs around the world has dropped in the last five years. There are many reasons including the “dot-com bust” and the perception that “all” computing jobs are being outsourced. Computer science programs throughout the world are trying various techniques to address this enrollment drop.

The CSIS department is a member of a group of computing programs at University System of Georgia institutions that have an NSF CPATH grant to try to address this problem.

A major motivation for the proposed curriculum changes is to address the recruitment and retention problems that are facing most computer science programs. Three of the first four courses in this proposal have a closed lab to increase hands-on instruction. The course instructor will be teaching the lab. This will provide the instructor the opportunity to work one-on-one with the students increasing the opportunity for “bonding” between the faculty and the students. Since the students will be working in teams in the lab, there should be an increase in the building of community among the students and between the students and the faculty.

Retention among computer science majors will also be addressed by having the beginning computer course in a learning community starting in the fall 2008 semester.

3. Identify the action plans and priorities from the 2003 Follow-Up Report that have been accomplished.

Laboratory space for the CS program has been increased. CL 2009 is dedicated to usage by CSIS courses. One classroom in the Clendenin Building has been remodeled so that there is a computer for each student and another classroom is scheduled to similarly remodeled.

Three computer science faculty members have been added: Timothy Wang, Ying Xie, and Yong Shi. Each brings expertise in a critical and evolving area of computer science.

There are approximately seven servers dedicated to the computer science program. This is in addition to individual faculty workstations and laptops. ABET reported that the technology in the program satisfied its standards.

The computer science program was accredited by ABET.

The computer science faculty members have remained current with respect to changes in technology. The following current technologies have been integrated in the computer science program.

- XML technologies
- Web services using J2EE
- Data mining
- Advanced software development platforms (Rational Software Architect obtained through membership in the IBM Academic Alliance)
- Gaming
- Linux

4. Identify the action plans and priorities from the 2003 Follow-Up Report that still need to be addressed and indicate a timeline for their completion. If specific action plans and priorities have changed since 2003, please explain.

As previously stated, world wide enrollment in computer science programs has dropped since the “dot-com bust” and the negative publicity concerning outsourcing. The large amount of sharing of courses between the computer science program and the information systems program greatly hindered both programs in making curriculum changes to address this concern. Major curriculum changes in both programs are in the approval process. The two major thrusts of the proposed curriculum changes that are designed to address recruitment and retention are the usage of potentially more attractive platforms and an emphasis on hands-on instruction with considerably more interaction between faculty and students.

Microsoft’s .net platform (using the C# programming language) will be introduced and used early in the program. This platform is a major computing platform in the business world and there are many job openings for people with experience in this platform.

As previously stated, three of the first four courses in the proposed curriculum change will have a hands-on lab taught by the instructor of the course. This will allow the instructor to work with each student in a hands-on environment providing the instructor with a better opportunity to more quickly spot at risk students in order to take proactive steps to help these students succeed. The laboratory environment should help break down any artificial barriers between the faculty and students leading to more interaction between faculty and students. This should help build a sense of belonging for the students and a sense of community between faculty and students. The laboratories will also provide many more feedback loops for the students which will help their understanding of the material.

5. Address the current status of the program’s *viability*. If viable, justify whether the program should be sustained, reconfigured, or enhanced.

Recent employment projections indicate that the top ten jobs categories in the near future are in either the medical field or in computing. The technology companies are extremely worried that they will not be able to find enough qualified employees to sustain this country’s leadership in technology. The chart in the appendix is an example of one of these projections. Based on these demand projections, computer science enrollments internationally should be increasing in the near future. The curriculum proposal should put the computer science program in an excellent position to help meet this demand.

a. Indicate how the program advances specific goals and action steps of KSU's Strategic Plan.

- Goal 1

- Action Step 3: Enhance the quality and quantity of technology for teaching, research, and scholarship

The computer science program studies computing technology and is a leader in using this technology for teaching.

- Action Step 9: Review and modify as necessary the general education curriculum and each degree program to assure continued relevance to the needs and interests of the students, the state, and the nation.

Leaders in the technology field are concerned that there are not enough computer science professionals in the pipeline to allow this country to maintain its leadership in technology. The computer science program is founded on the basic computer science concepts and uses current technologies to prepare graduates for a career in the computing field. The proposed curriculum changes should increase the appeal of the program to the students.

- Goal 2

- Action Step 1: Institute mandatory advising through 60 hours.

In addition to faculty advisement, the CSIS Department has a coordinator of student advisement.

- Action Step 3: Assess, support, and implement best-practice teaching strategies for learner-centered teaching

In response to the enrollment and attrition problems in computer science programs, there has been a lot of work (including the development of many new programming platforms) on how to improve the teaching of beginning programming. The computer science program is actively investing this work to determine the best way of implementing our beginning courses.

- Action Step 4: Implement and publicize course planning three semesters into the future.

Program electives are planned two years in advance and published one year in advance.

- Action Step 7: Develop an early identification, intervention, and tutoring system to assist at-risk students.

One of the goals of the labs in the beginning courses is to provide this early identification.

- Goal 3

- Action Step 9: Increase funds brought to KSU through grants, contracts, and alumni giving by at least 10 percent per year.

Computer Science program faculty have been (either individually or as parts of teams of faculty) recipients of over \$1,800,000 worth of grants since 2003.

- Goal 4

- Action Step 2: Increase student participation in study abroad programs by 5 percent per year.

In summer 2007, 6 computer science majors participated in a student abroad program to China. Additional study abroad programs are being planned.

- b. Identify resources needed to strengthen the program's ability to meet the goals of KSU's Quality Enhancement Plan.

Additional support for international programs for both faculty and students would help the program meet the QEP goals.

- c. If the program is delivered off-campus, please provide a cost analysis of the off-site delivery.

N/A

- d. Indicate the resources needed to sustain, reconfigure, or enhance the program's quality and productivity.

The primary location of attrition in computer science programs is the beginning courses. The program needs a faculty member dedicated to these beginning courses.

For the curriculum proposal to meet its goals, faculty teaching the lower division courses (especially those with labs) must be able to dedicate a large amount of time to the interaction and "bonding" with the students. The workload for these faculty members must take into account this large time commitment.

There has been a large amount of erroneous press concerning potential careers in computing. It will take much more aggressive marketing to compensate for this negative press. Resources for this marketing are needed.

# Appendix

