Major Changes in the Curriculum (2003 – 2009)

1. With the objective of improving the programming experiences of students, the undergraduate committee proposed and implemented a transition from C++ to Java in the frontier programming courses, 227 and 228 (in 2005). A third course in C/C++ (229) is also required so that students obtain an understanding of language issues that are not covered in Java.

2. Beginning with the 2005-07 catalog, Com S 104 was no longer a required course for majors.

3. From the outcomes assessment evaluations and student feedback, the undergraduate committee proposed and implemented a required laboratory component to our first course in programming, Com S 227, increasing its credit hours from three to four. Student feedback on this change has been positive.

4. Interaction with industry: Faculty constantly interact with industry professionals either when they come to recruit students or when they come to give presentations on campus. In recent years the department has proactively visited with companies in close proximity to establish various linkages including more scholarship opportunities, infrastructure enhancement, support for learning communities, and career shadowing for undergraduate students to gain a real-world picture of their future career as IT professionals. Through these industrial exposures both faculty and students have gained knowledge on the need for combining computing fundamentals with practical programming experiences and the need for software engineering skills. As a result we have developed a degree program in software engineering to improve our course offerings to students.

5. To keep up with changes in the discipline, courses are continually updated to cover new concepts such as Web Services (Com S 430), nanoassembly (Com S 433), requirements engineering (Com S 409), and to improve students' abilities in problem solving. An optional course in Linux (Com S 252) to improve students' understanding of open source software was also introduced in 2003.

6. Ongoing upgrades to equipment and laboratories are made on the basis of five-year equipment plans that have been consistently supported by the administrative leadership in the LAS College. The department has also received equipment grants through LASCAC in the fall competition to enhance its course contents. Three such enhancements are described in points 6, 7, and 8 below.

7. Support of high-performance computing via Graphical Processing Unit (GPU) Programming: Dr. Wallapak Tavanapong is developing new lab materials for Com S 401 as part of an ongoing effort by the Department of Computer Science to provide cutting-edge knowledge to undergraduate students. The new materials will cover knowledge in Graphical Processing Unit (GPU) Programming. GPU has recently emerged as an affordable solution for high performance computing. GPU-supported graphics cards are affordable; they have multiple small processing elements (PE) that can be used to simultaneously process the same task on multiple, independent, similar data sets.

8. As part of the Computer Science Department's continuing efforts to update and enhance its curriculum, Dr. Andrew Miner is developing a new course covering the underlying theory and practical issues involved in implementation of computer games. The goal is to have a specialized laboratory in which students can develop their own games as part of an upper-level elective course. Such a course will build upon existing courses that are already part of the core Computer Science curriculum.

9. Undergraduate education in databases is being enhanced by Dr. Shashi Gadia by making existing as well as state-of-the-art XML technologies more accessible to students. Students taking Com S 363 are able to run a batch consisting of a mix of queries on a variety of SQL and XQuery database platforms that does not now exist elsewhere. Students will be able to deal with large XML documents and compare the performance of different platforms from the same GUI (graphical user interface). The new enhancements will lead to a better understanding of XML and better software development.

10. The undergraduate labs have been upgraded with much faster workstations. A Terminal Server cluster gives users remote Windows access 24/7. Additionally, our open hours have increased from 110 to 148 per week. Disk space and printing quota have been increased several folds. Future plans include faster, multi-core grid clusters and more computing resources. The number of labs will increase from 3 to 5. The operating systems include Microsoft Windows, Redhat Linux, and MacOS so students are afforded opportunities to explore a variety of computing environment options.

11. The LAS College has recognized and supported our need to maintain a respectable student/TA ratio. We have been maintaining total TA hours in a consistent manner in recent years.

12. The institution is keenly aware of the critical space needs of the Department of Computer Science and is doing everything within its power to improve it. Since the arrival of Dr. Chang in July 2002, several news areas of Atanasoff Hall were converted into Computer Science space. The department acquired new space for its instructional laboratories in Pearson Hall and consequently, many research laboratories are now utilizing space in Atanasoff Hall. Plans to pursue additional space have been discussed with the LAS College, and Computer Science was recently included in new building proposals to obtain more space.

13. With feedback from outcomes assessment surveys given by students and alumni, through interactions with industry professionals, and through discussions with the Department of Electrical and Computer Engineering, a joint software engineering curriculum was developed and implemented with the Department of Electrical and Computer Engineering in 2007. It is anticipated that this degree program will give the flexibility demanded by our students and address the concern of industry professionals in improving the proficiency of our students in developing software systems. Since 2005 four new faculty members in software engineering and programming languages have been hired to support this new curriculum focus.

14. A joint degree program in Bioinformatics and Computational Biology was developed and approved by the Board of Regents in 2006. The departments involved are Computer Science, Mathematics, and Genetics Development and Cell Biology.

15. The department's minor degree program in Computer Science was reinstated in 2005. In addition to enhancing the college experience of students, the minor adds to their employment marketability as well.