

Computer Science Information Technology Concentration Summary

Introduction

Information Technology is one of five currently recognized computing disciplines in ACM's Computing Curricula 2005 overview report. As the report states: "IT is a new and rapidly growing field that started as a grassroots response to the practical, everyday needs of business and other organizations." The Information Systems discipline grew out of a business perspective, and focuses on the information aspects of information technology. "Information Technology is the complement of that perspective: its emphasis is on the technology itself more than on the information it conveys." Students in Information Technology will aim their careers at developing, supporting, or administrating technology, rather than managing information, projects, or other technical professionals.

Accreditation

Information Technology is an emerging discipline, and accreditation standards for it are in active development. Accreditation standards have been agreed upon and are still in the process of full publication. In the meantime, ACM published a definitive report on the curricula in October 2005, and this concentration addresses the requirements of that report.

Core Topics

Information Technology is based on 5 pillars: databases, human-computer interaction, networking, programming, and web systems. The core required courses in the re-focused Information Science track reflect these pillars:

- Databases: CMPS 439
- Human-Computer Interaction: CMPS 420
- Networking: CMPS 309
- Programming: CMPS 161, 280, 285, 293, 390
- Web Systems: CMPS 294

Other Information Technology core topics support these pillars, and include:

- Information Assurance and Security: CMPS 319
- Integrative Programming & Technologies: CMPS 383, CMPS 411
- Platform Technologies, System Integration and Architecture: CMPS 375, CMPS 411, CMPS 431
- System Administration and Maintenance: CMPS 315
- Social and Professional Issues: CMPS 481

Mathematics Requirements

The Information Technology curricula report makes it clear that mathematical requirements for Information Technology are not as stringent as those for a scientific computer science track. It states:

Mathematics techniques and formal mathematical reasoning are important in most areas of Information Technology. Mathematics provides a language for working with ideas relevant to the field of IT, specific tools for analysis and verification, and a theoretical framework for understanding important computing ideas. It is also important for IT programs to include enough mathematics so that students may converse with other computing professionals.

It also quotes the SIGITE Curriculum Committee recommendations on mathematical content:

Discrete mathematics. All students need exposure to the tools of discrete mathematics. While additional courses are available, it is essential that IT students to receive adequate exposure in this area.

Statistics. Students should take at least one course in statistics so that they can be familiar with the terms and methods of statistical analysis. We also believe they would benefit greatly from learning about statistical probability.

This track satisfies this mathematical need by requiring Math 165, Math 241, and CMPS 257. This is also sufficient for general education math requirements in the College of Science and Technology. This reduced mathematical requirement will also be attractive to many students.

Electives

By eliminating the business courses and reducing the mathematics load, we not only are able to increase the amount of computer science in the track, but we increase elective hours to 18. This is sufficient to obtain a minor in an “application area” to which students can apply their computer science education, and is another primary recommendation of the ACM Information Technology curriculum report. This should have a side effect of providing much more flexibility to the degree program, and encouraging transfer students to join the program.

Course Changes

The following course changes and additions have been made, and will be effective for the Fall 2007 catalog:

- CMPS 294 (Internet Programming), 394 (Web Systems and Technologies), and 315 (System Administration) have been created. The course descriptions are as follows:
 - **CMPS 294. Internet Programming. Credit 3 hours. Prerequisite: Computer Science 280. This course concerns the art and science of programming for WWW Internet applications from a client-side perspective. Basic and advanced HTML will be covered, with emphasis on current scripting technologies.**
 - **CMPS 394. Web Systems and Technologies. Credit 3 hours. Prerequisite: Computer Science 294. This course covers the setup and management of important web-based services, server-supported programming technologies, and some other host-management issues such as user support, security, staffing, and purchasing.**
 - **CMPS 315. System Administration. Credit 3 hours. Prerequisite: Computer Science 285. This course teaches skills and concepts that are essential to the administration of operating systems, networks, software, various computing support systems, and system documentation, policies, and procedures. This also includes education and support of the users of these systems.**
- The CMPS 320 prerequisite for CMPS 420 has been changed to CMPS 390 to allow human-computer interaction (an IT pillar) to be covered without dependence on programming graphical user interfaces.
- The prerequisite for CMPS 441 has been changed to “Computer Science 390 and either Computer Science 387, Mathematics 241, or Mathematics 380” instead of “Computer Science 387 or Mathematics 380, and Computer Science 390”. This should be sufficient mathematical maturity for AI, and will open the course to non-calculus students in this track.