

Computer Science Department History

Change as Constant: Computer Science at Salem State College

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For more than 30 years, the Computer Science Department at Salem State has offered the opportunity for studying technology as restless and changeable as any subject matter in the curriculum. The academic discipline of Computer Science has always been to a significant extent driven by existing hardware and software technology. A theoretical model of machine computation was developed and studied by the British mathematician Alan Turing in 1936 before computers in the modern sense existed. When the use of computers began to spread by the end of World War II, academic treatment tended to deal with practical matters: how to build them (the engineering aspect) or how to use them (learning computer languages and writing programs to solve specific problems). And both aspects were based on the then-current state of affairs: a computer was a mainframe, a large, expensive machine that could be used by only one person at a time to solve one problem at a time. The idea of multiple users sharing a machine did not become a practical fact until the early 1960s, and when it did, entire new subject areas were added to the typical computer curriculum. At about the same time, Computer Science became recognized as a separate academic discipline, at least at the graduate level. (The first Ph.D. in Computer Science was awarded in 1965 at the University of Pennsylvania.)

When the first computer courses at Salem State College were introduced in the early 1970s, the Computer Science Department had not yet been created, so the courses carried an EDU (Education) or IDS (Interdisciplinary) designation. (Before on-campus computer facilities became available, the courses were taught using a borrowed computer located in a former mattress factory on Route 128 outside of Salem.) These courses were based on the one-user-at-a-time model. Shortly after the establishment of the Computer Science Department in the Fall of 1977, time-sharing became possible when the higher education Board of Regents established the Regents Computer Network (later known as the Massachusetts Educational Computer Network), which served all of the Massachusetts state colleges from a central installation on the top floors of a bank building on Causeway Street in Boston, next to the old North Station. But this was still mainframe-based, with programs and data supplied in the form of thick decks of punched cards, so the Department's computer lab was filled with cumbersome (and very loud) key-punch machines. Teletype machines were later added to allow interactive communication with the remote mainframe. The MECN eventually

fell out of use and was dismantled when most of the state colleges acquired their own computer facilities. Salem State College leased a VAX 11/750 from Digital Equipment Corporation for the use of the Computer Science Department, and a department faculty member served as a system administrator. For a short time, there was also a classroom full of DEC Rainbow PCs, used mainly for teaching courses in computer graphics. Two or three years later the Computer Science Department switched to the time-sharing Alpha system set up by the Geography Department's Digital Geography Laboratory.

Personal computers became widely available in the late 1970s and first showed up for general student use on the Salem State campus in the Computer Literacy Laboratory, set up and supervised by Dr. Alice Stadthaus of the Interdisciplinary Studies Department. The Computer Science Department later set up its own network of IBM-compatible PCs, the Packet LAN (now updated and renamed CSFleet), and that has served not only Computer Science majors and minors but also the students in the department's computer literacy courses and service courses ever since.

The migration from mainframes to PCs and from stand-alone computers to ones linked on a network, the introduction of multi-processor computers and parallel computing, the development of object-oriented software technology, and the current overwhelming influence of the Internet and the World Wide Web, have affected the content and delivery of virtually every course in the department's curriculum and have led to the introduction of new courses and new areas of specialization. There is no reason to think that these circumstances will change in the foreseeable future.

Nor is there any reason to suppose that simply keeping up with new developments in technology will suffice to define a vital curriculum, either for Computer Science majors or for a general computer-literate population. Having the intellectual tools that make "keeping up" possible (i.e., knowing how to "keep up") is equally important. Professor Kasprzyk's discussion of "computer literacy" deals with this point in more detail. Thinking of computer literacy as merely skills-of-the-moment is both short-sighted and crippling. A person who has only current skills, without any of the conceptual backgrounds to place these skills in context, is likely to have trouble adapting to the inevitable rapid changes in computer technology and usage. Numerous discussions in professional journals in computer science and in computer science education have taken the same view. For this reason, adaptability to new hardware, new computer languages, new design techniques, and new application areas has become an important component of all courses in the Computer Science curriculum.

In the area of core requirements in the general curriculum, the requirements in reading, writing, and mathematics represent skills that are not limited to the moment or to specialized circumstances but are abilities that one can expect to need and build on continually and in many different circumstances. With the pervasiveness of computers in today's society, and the rapid pace at which computer technology changes, genuine computer literacy skills provide the same foundation for growth and adaptability. In addition to the body of courses provided for Computer Science majors and minors, the Computer Science Department offers a variety of courses in various aspects of computer literacy and information technology.