

1. Catalog Statement

CS 550 Computers and Society 3 cr Prereq: Junior standing
The effect of scientific and technological change on social and economic organization. Historical examples. Comparison, with these examples, of the computer and its effect. Consideration of possible uses of computer systems, social change which they would influence, and the choices they present. Problems raised by the speed with which information technology is being developed and utilized. Effect of information technology on economic institutions and phenomena; labor problems and the values involved; consequences for political organization and effects on democracy; possible use and misuse of information machines by government and police; effects on education; new patterns of individual and corporate life made possible. Legal issues associated with computers.

2. Explanation of Need

It is essential that university faculty and students in a highly technical area like Computer Sciences concern themselves with the non-technical aspects of the science and technology which they are studying and developing. This is especially important for a technological area of such far-reaching influence as computing. A university should not aim to turn out narrow technical specialists so much as liberally educated scholars with some technical competence; the subject matter of the course here proposed comprises an important part of any computer scientist's liberal education.

A computer scientist must concern himself with the various social, legal, ethical, and humanitarian issues related to computers. He is called on for advice concerning these issues and he cannot avoid responsibility for the political and managerial decisions which will have to be made concerning them. This course is intended to alert the student to the various issues involved and to prepare him for intelligent participation in the decision making which these issues will require.

It is encouraging that such courses are being introduced with increasing frequency into the curricula of the better universities and engineering schools. Students working in the recently introduced Computer Sciences undergraduate major will be strongly urged to take part in the course here proposed.

This course should also serve some purpose for many students who will not be computer specialists but whose lives will be radically affected by computer technology and who need to know or want to know something about its social implications.

The subject matter of the course here proposed has been covered twice in special topics courses which have been used to experiment with methods of teaching the subject matter and with teachability of the subject matter. In both cases students, both graduate and undergraduate, have participated in the trial courses in volume and with a great deal of enthusiasm.

3. Relations to Other Courses

There are courses given by the Physics Department (cf Physics 107 and 108), the Sociology Department, and the History of Science Department which cover, as one subject among many, the effects of scientific and technological change on social organization and some of the associated problems raised for people living through such change. One course, Sociology 329, does focus on social effects of technological change but specifically of technological change in agriculture. There exist at the present time within the university no courses devoted specifically to the problems raised in contemporary society by the rapid advance of information-processing technology.

4. Outline of Subject Matter

Economic issues: Use of computing by big and little companies and the apparent advantage given to the big; organization of computing and data-processing as a public utility; monopoly within the computing industry; reorganization of banking and monetary systems; role of computers in building up economically and technologically underdeveloped parts of the world; problems of financing very expensive computer research and development; allocation of resources among different sciences.

Labor issues: Displacement of workers; use of computers to help with retraining and relocation; likely long-range effects on how people live their lives and how they productively contribute to society; human use of human beings; methods of alleviating the short-range hardships; human factors problems raised by different kinds and amounts of information being made available to decision makers; use of computers for the improvement of education.

Political issues: Use of computers to improve government organization and government services; possible effects on the federal-state-local distribution of power; use and possible misuse of computers for police purposes; use of computers and data-processing systems to change voting and democratic decision procedures; possible use of computers for dictatorial concentrations of power; computerized data banks and protection of individual privacy.

Military issues: Changing nature of the military decision-making process; danger of over-dependence on computers; value of computing and data processing to military intelligence activities; use of computers to effectively implement and enforce disarmament.

Legal issues: Copyright and patent problems associated with computing and programming; computer evidence in courts; use of computers to improve court services; improved codification of laws; types of laws that will be necessary to control use of computers; criminal uses of computers.

Non-technical responsibilities of scientists: Role of the scientist in policy making and implementing; the "two cultures;" communication with the lay public; journalistic distortion and sensationalism.

5. Text and Reference Materials

Materials useful for the course are becoming increasingly available, e.g., reports from the Harvard project on technology and society. We list here likely texts and primary references to which students would be directed:

Bowen and Mangum (ed.): Automation and Economic Progress (Extracts from the report of the Presidential Commission on Technology, Automation, and Economic Progress)

Bell (ed.): Toward the Year 2000

Kahn and Wiener: The Year 2000

Westin: Privacy and Freedom

Galbraith: The New Industrial State

Lilley: Men, Machines, and History

Simon: The Shape of Automation

Philpson (ed.): Automation-Implications for the Future

Dunlop (ed.): Automation and Technological Change

Wiener: Human Use of Human Beings

MacBride: The Automated State