

Resolution to Establish a Graduate Field and Ph.D. Program In Information Science

WHEREAS, the Committee on Academic Programs and Policies has reviewed a proposal for the establishment of a Graduate Field and Ph.D. Program in Information Science, and

WHEREAS, the Committee recommends creation of this new graduate field and Ph.D. program,

THEREFORE, BE IT RESOLVED that the Faculty Senate approves the establishment of a Graduate Field and Ph.D. Program in Information Science and urges the administration to place this on the agenda of the Board of Trustees for approval.

Rationale: Digital technologies have become pervasive in culture, economy, law, government, and research, dramatically changing the way people work and live. The proliferation and significance of these complex technological systems of information demand a new focus in academic scholarship – one committed to cross-disciplinary study, astute about both the technical and the social, and devoted to integrating theory, investigation, design, and practice. Information Science at Cornell is an interdisciplinary program that studies digital information in its human and social context. Cornell has vigorous research programs in Information Science, but until recently there was no organized academic program. The Information Science Program was established in 2000/01, to develop academic programs and to be a focus for research.

The field of Information Science studies the design and use of information systems in a social context: it studies the creation, representation, organization, application, and analysis of information in digital form.

The focus of Information Science is on systems and their use, rather than on the computing and communication technologies that underlie and sustain them. Moreover, Information Science examines the social, cultural, economic, historical, legal, and political contexts in which information systems are employed, both to inform the design of such systems and to understand their impact on individuals, social groups, and institutions. The field's interdisciplinary research combines multiple methodologies, including mathematical analysis, computer modeling, software system design, experimental studies, and critical social evaluations, from such traditional disciplines as computer science, cognitive psychology, social science, cultural studies, and history.

The primary reason for proposing a new graduate field is to recruit graduate students. When a student has research interests that fit naturally within an existing field, then the students should register in that field (e.g., Communication, Computer Science, Linguistics, Operations Research, Psychology, etc.). However, this is awkward for those

students and faculty whose interests are genuinely interdisciplinary. At present, the university does not have a good way to attract such students; potential students do not know which field to apply to or even whether to apply to Cornell.

The Ph.D. in Information Science is intended for students who are interested in all aspects of how digital information is created and organized: by computer systems, by people, and within social systems. The program explores the interface between people and information systems, the technical ideas behind computer-supported information systems such as the Web, and how society shapes these systems and is shaped by them. The Cornell program has a strong emphasis on interdisciplinary research that bridges the gap between scientific and technical fields, and the social sciences. The focus is on long-term fundamental research, allied to innovative applications. The program has four concentrations:

- *Information Systems* examines the computer science problems of representing, organization, storing, manipulating, and using digital information.
- *Human Computer Interaction* uses an iterative, user-centered design approach to study the interplay between technology and what people do with technology.
- *Cognition* focuses on the human mind, which is the ultimate producer and user of information.
- *Social Systems* studies the cultural, economic, historical, legal, political, and social contexts in which digital information is a major factor.

A student who is awarded a Ph.D. in Information Science will need to achieve three objectives: (a) breadth in the disciplines that contribute to the field, (b) depth in several aspects of the field, (c) original research, on a topic from one or more of the Information Science concentrations.

Student Characteristics

A primary goal of the proposed field is to attract excellent students to Cornell. From our experience with undergraduates we know that a substantial number of students are interested in the inter-relationship of computer science, people, and society. The Information Science Program already receives many inquiries from well-qualified students. Currently, students do not have a have an appropriate field at Cornell for graduate work, and we have had to advise some first-rate students to apply elsewhere. Other universities that have introduced Ph.D. programs in related areas (e.g., the University of California at Berkeley and the University of Washington) report considerable demand from well-qualified students.

At Cornell, some graduate fields expect entering students to have majored in specific disciplines (e.g., Physics or Computer Science). Others (e.g., Science & Technology Studies) recruit strong students irrespective of background. Information Science will follow this second model. There will be no special admissions requirements. The field will be looking for highly able students who can demonstrate strong potential in both computer science and the social sciences.

The program requires strong analytical skills, breadth in a number of the focus areas, and depth. An ideal entering students will have an undergraduate degree in a related area, with solid writing skills, computing experience, and a mathematical foundation that includes probability, statistics, and linear algebra. However, the program is designed so that students have an opportunity to fill gaps in their background at the beginning of their studies. In practice we expect that most entering students will have a strong undergraduate degree, with a major in a relevant field, including a significant quantitative or technical component.

Students leaving the program will have a very strong knowledge of the intersection between computer science and the social sciences. There is great demand for students with such skills. As such they will be very well placed to follow professional careers in either the commercial or not-for-profit sectors, or to enter a research career.

The name "Information Science" has different shades of meaning in other universities. In particular, some universities consider a degree in Information Science as professional training, whereas we see the field as an area of inquiry in the liberal arts tradition. A Ph.D. in Information Science could be the basis for an academic or research position, or the basis for a professional career in any aspect of digital information.

Administrative Support

Administrative support for the Ph.D. program will come from the Faculty of Computing and Information Science and the Information Science Program. During the past two years, Computing and Information Science has augmented the administrative structure of the Computer Science Department to support new programs, including both the undergraduate and graduate programs in Information Science. This support includes student advising, computer facilities, research administration, and general administration.

Student Support

All students will receive full support. We have initial funding for six students in the first year (Teaching Assistantships and Graduate Research Assistants). Additional support will be provided by individual faculty members from their research grants. The Dean of Computing and Information Science has committed funds for several Teaching Assistantships.

Information Science is a field with excellent opportunities for external funding, notably from the National Science Foundation, and the faculty have a good track record of raising grant money for Graduate Research Assistants. In recent years, without the benefit of a graduate field, we have had more money available to support students than suitable students.

Space

The program has newly refurbished space at 301 College Avenue. This provides excellent space for the medium term. The area has modern computing facilities and a usability laboratory for research on human-computer interaction.