

University of Pittsburgh

# Undergraduate Program in Information Science



**School of Information Sciences**  
**Building Systems**  
**Designing Interfaces**  
**Securing the Digital Environment**



## Letter from the Chair



Information science is a field that is still emerging—many people are just now discovering its tremendous potential. It's a chance to use a strong technology background with a commitment to helping people and solving problems. It's dynamic because there's so much flexibility and opportunity as the profession continues to evolve and reinvent itself.

Robert Perkoski  
Chair,  
Undergraduate Program  
in Information Science

Dear Students,

What are you looking for in an undergraduate degree program? Challenging and interesting classes? Hands-on experience? Internship opportunities that will better prepare you for a career? A degree that will enable you to find challenging jobs in incredibly diverse fields, from health care to high-tech industries?

The School of Information Sciences (SIS) at the University of Pittsburgh offers an undergraduate degree program that will give you the practical knowledge and skills to use today's information technology. You will also gain the theoretical knowledge that will allow you to design and manage the technologies that will be part of our future. Information—and the technology to manage it—will be a critical factor in solving many of the world's most pressing problems in healthcare, government, education, and the environment.

At SIS, you will gain the knowledge and skills to build information systems, design user interfaces, and provide security for the digital environment. Our program is designed—with input from corporate leaders and alumni—to give you a strong base of knowledge about programming principles, data-

base systems, networks, systems analysis, and human-computer interaction. Then, you will be able to tailor your studies by taking a series of in-depth courses in one of the information science concentrations: information systems, user-centered design, and networks and security. Your program of study will include a capstone experience—perhaps an internship with a regional company or organization, an assistantship for graduate-level research, or a self-designed project.

Industry needs professionals to effectively and efficiently manage a key resource—information. You will find a successful career as an information professional if you have the appropriate knowledge, skills, and experience to manage and process information to best meet the ever-changing needs of industry. The Undergraduate Program in Information Science will give you the tools to be a success today and in the future.

Thank you for your interest in the Undergraduate Program in Information Science. Please don't hesitate to contact the School of Information Sciences if you have any further questions or if you would like to schedule an appointment to learn more about the opportunities in this exciting profession.

Sincerely,

Robert Perkoski  
Chair, Undergraduate Program in Information Science  
University of Pittsburgh School of Information Sciences  
412-624-5413  
perks@pitt.edu

For more information about our programs and our faculty members' individual backgrounds and interests, please visit our Web site at [www.sis.pitt.edu/~bsis](http://www.sis.pitt.edu/~bsis).

## Undergraduate Program in Information Science

### What will I study as part of this degree program?

The Undergraduate Program in Information Science is designed to meet the future needs of industry—in fact, industry leaders have guided the development of the program. In response to changes in technology, the curriculum is Java-based, Web-centric, and incorporates practical experience to better train students. Undergraduates will take a series of core courses that will build expertise in the basic principles of programming, database systems, networks, systems analysis, and human factors.

After completing the core courses, students can choose to take one of the industry-centered concentrations or build their own challenging program of study. SIS offers three concentrations to further strengthen both skills and career prospects:

The **information systems concentration** will enable students to use object-oriented design tools to design, build, implement, and test Web-based information systems. Courses offered include Java II, Object-oriented Design, Enterprise Systems, System Architecture, and Web Services.

The **user-centered design concentration** will provide the visual and human-computer interaction skills needed to design and build prototypes of information systems interfaces, as well as to perform usability testing of these systems. Courses offered in conjunction with this concentration include Information Visualization, Web Programming, Graphics, and User-centered Design.

Students who choose the **networks and security concentration** will learn to design, build, and test local area networks (LANs); wide area networks (WANs); and wireless, Internet, and Web-based networks. This concentration will also examine how to incorporate security protocols into both land-based and wireless networks. Students will be able to take courses in networks, computer security, wireless networks, and mobile applications.



### Welcome from the Dean

Here at the School of Information Sciences, students learn the techniques and tools, the theory, and the practical knowledge necessary to lead businesses and society through changes in technology and information needs.

Our school, with its more than 100 years of educating information professionals, offers students a solid base of knowledge in the principles of information management. Our faculty—nationally and internationally recognized for their leading-edge research—give students remarkable opportunities to gain experience in development and research that will not be found elsewhere. From designing software to creating safeguards for critical information systems, students participate in hands-on experiments and research at one of the top 25 research institutions in the United States.

Our graduates find themselves in an enviable position: they have the skills to succeed as businesses grow and information needs change.

Ronald L. Larsen  
Dean and Professor

### Internships Enhance Skills

Students in the Undergraduate Program in Information Science will participate in a capstone experience, further enhancing their practical skills. Capstone experiences may include performing internships with regional companies and organizations, assisting with graduate research, or executing a self-designed project.

#### Selected List of Previous Internships

- **GlaxoSmithKline Consumer Healthcare North America**  
Information Technology Internship
- **Alcoa**  
Student Co-op
- **H.J. Heinz Co.**  
Information Technology Summer Internship
- **UPMC Physician Services Division – Information Technology**  
Student Internship
- **IBM Corp.**  
Student Co-op
- **PPG Industries**  
Student Internship

## Faculty Specializations



“IT Worker Shortage Feared”  
*Toronto Star*, 2006

“U.S. government projects that several IT occupations will be among the fastest growing occupations.”

Association for Computing Machinery, 2006

“Information technology will be a growth area at least for the coming decade.”

Association for Computing Machinery, 2006

“The tech job market has sprung back to life and this year could be the best one since 2000.”

*BusinessWeek*,  
January 23, 2006

At the School of Information Sciences, you will have the opportunity to study and work with highly regarded educators and researchers in the information science field. The information science faculty teach at both the undergraduate and graduate levels while conducting research to advance the discipline. Here are just a few of the faculty at the School of Information Sciences and their research and teaching interests.

### Research Gives Graduates an Edge

Students have the opportunity to work with the faculty of the School of Information Sciences on specific research projects funded by agencies such as the Defense Advanced Research Projects Agency (DARPA), National Science Foundation, Office of Naval Research, and U.S. Air Force.

#### Visual Information Systems Center, School of Information Sciences

The Visual Information Systems Center (VISIC) is a multidisciplinary research facility. The center's primary areas of expertise include visual data mining, geographic information systems, and immersive environments.

#### Peter Brusilovsky

Associate Professor

*Research Interests:* Adaptive hypermedia and adaptive Web, user modeling and personalization, navigation support in electronic environments, intelligent tutoring systems and shells, Web-based education, and human-computer interaction. Teaches introductory programming courses.

#### Marek Druzdzel

Associate Professor

*Research Interests:* Decision making under uncertainty, decision-theoretic methods in intelligent systems, and user interfaces for decision support systems. Teaches programming techniques courses.

#### James Joshi

Assistant Professor

*Research Interests:* Information systems security, role-based access control, XML security, distributed systems, multimedia systems, and systems survivability. Teaches information assurance classes.

Students can assist in various research projects, including developing visual information systems for medical and educational research, creating virtual environments for emergency responders, and building geographical information systems for corporate partners.

#### ULab, School of Information Sciences

The ULab is an academic research team, primarily focused on usability engineering, that is involved in a multi-disciplinary program of research on human-robotic interaction, group decision modeling, virtual reality, human factors, and human modeling using machine learning.



#### Prashant Krishnamurthy

Associate Professor

*Research Interests:* Information and network security, wireless security, wireless data networks and indoor radio propagation, and channel modeling. Teaches telecommunications courses.

#### Michael Lewis

Professor

*Research Interests:* Human factors, human-computer interaction, visualization, computer-supported cooperative work (CSCW), virtual environments, software agents, human error, negotiation, and e-commerce. Teaches human factors courses.

#### Glenn Ray

Assistant Professor

*Research Interests:* Software engineering, object-oriented analysis and design, Web services, and geographic information systems. Teaches information science and systems analysis and design courses.

#### Ken Sochats

Assistant Professor and Visual Information Systems Center (VISIC) Director

*Research Interests:* Information networks, simulation, databases, artificial intelligence, management information systems (MIS), systems analysis and design, software engineering, network design, geographic information systems (GIS) and information visualization, and graphics. Teaches courses in graphics and information systems analysis and design.

#### Vladimir Zadorozhny

Assistant Professor

*Research Interests:* Scalable architectures for wide-area environments with heterogeneous information servers, Web-based information systems, query optimization in distributed databases, semantic interoperability in heterogeneous network environments, distributed object systems, and object meta-models. Teaches database management courses.

#### Martin B.H. Weiss

Associate Dean and Associate Professor

*Research Interests:* Policy implications of new technologies, cost modeling of technology, and cooperation among competing firms. Teaches telecommunications and policy courses.



Tom Reinsel

Tom Reinsel came to Pitt unsure of which career path he wanted to take. He considered computer science, but the major seemed too technical. Then he was introduced to information science and he liked the interdisciplinary approach and emphasis on helping people use technology to meet challenges. After working his way through Pitt's Undergraduate Program in Information Science and earning a bachelor's degree in 1990, followed by a master's degree in telecommunications the next year, he started a consulting company, Pepperweed Consulting, and watched the company make the *Inc. 500* list of fastest growing companies in 2003 (with more than \$22 million in revenue). Reinsel reflects on his experience at Pitt.

“Everything in the IS Building created a sense of community. I felt like I had a place to go. I felt like I had a home. There was a lab upstairs where you could interact with graduate students and faculty, and that attracted me. It felt open and people were really encouraging.”

“The education at SIS is a combination of software knowledge applied to hardware systems—it's a magical blend. SIS equips you for a broad world that will change rapidly in the next few years.”



"We provide education rather than training. Here, you'll receive an overall education so you can be an expert in many areas, whether it is consulting to help end users, companies, or developers of technology. The foundations we build are stronger, our insight into the future is deeper, and the experiences we provide are unmatched."

"We enable people to make valuable contributions to society. Our people love what they do, and when you love your career, you feel like you never work a day in your life."

—Martin Weiss  
Associate Dean  
and Associate Professor

"As a high school senior, I didn't know what I wanted to do. Until I enrolled at Pitt, I thought computer programmers sat behind a desk and coded all day. [It's] quite the opposite. If you like to interact with people, are curious about how things work, and want an environment that is never stale, you should think about a career in information science. There's never a dull moment."

—Janine Burbage  
IBM Life Sciences  
Solutions Development,  
Software Engineer

## What can I do with this degree?

There are no limits to what you can do with a Bachelor of Science degree in information science.

### You can work as a:

- System Analyst and Designer
- Web Site Designer
- Network Analyst
- Database Manager
- Project Data Manager
- Solution Development Associate
- Software Engineer

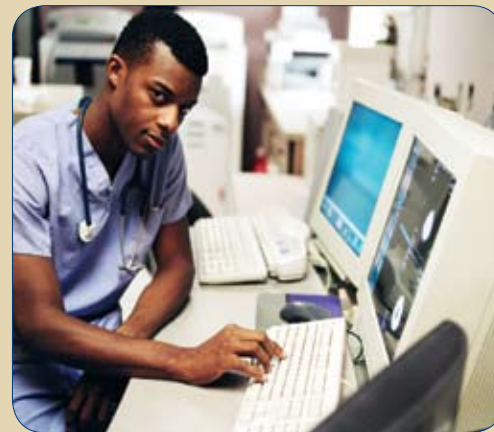
### You can find a satisfying career in:

- Financial Services
- Health Care
- Private Industry
- Government Agencies
- Education
- Communications
- Judicial Systems

## Secure Enriching Careers

Graduates of the School of Information Sciences at the University of Pittsburgh have gone on to find enriching careers. Below is a selection of actual positions that our recent graduates have secured.

- IT Developer, U.S. Steel
- Technical Support Analyst, H.B. Maynard and Co.
- Sales, Online Services, Knight-Ridder Financial
- Manager, Kennedy Space Center
- Lead Programmer, PNC Bank
- Systems Analyst, University of Pittsburgh
- International Program Manager, Microsoft Corp.
- Technical Support Engineer, IBM Corp.
- Information Technology Manager, PPG Industries
- Programmer/Analyst, PHICO Insurance Co.
- Application Architect, Mellon Financial Corp.
- Programmer, Westinghouse Electric Co.
- Application Developer, U.S. Government
- Internet Protocol Network Design Engineer, Gemini Networks
- Systems Analyst, Exxon Mobil Corp.
- Information Technology Business Integrator, Eli Lilly and Co.
- Multimedia Designer, American Eagle Outfitters
- Information Technology Specialist, Federal Bureau of Investigation
- Telecommunications Specialist, Drug Enforcement Administration



## Admissions Information

The Undergraduate Program in Information Science is an upper-division program at the University of Pittsburgh. Students are admitted at the end of their sophomore year.

There are several Web sites on admissions that you may want to consult:

[www.pitt.edu/~oafa](http://www.pitt.edu/~oafa)

[www.sis.pitt.edu/~bsis/admission.htm](http://www.sis.pitt.edu/~bsis/admission.htm)

[www.pitt.edu/~oafa/trans\\_deadlines.html](http://www.pitt.edu/~oafa/trans_deadlines.html)

[www.ois.pitt.edu/intladmissions.html](http://www.ois.pitt.edu/intladmissions.html)

During their freshman and sophomore years, Pitt students can take the courses needed for admission to this program and those that will satisfy the University's course requirements.

A student must have satisfied the following to be considered for admission:

- Completion of 55 credits (includes current term credits)
- Overall GPA of at least 2.75
- Information science GPA of at least 2.75
- Completion of Introduction to Information Science course
- Completion of Introduction to Programming for Information Science Students course

Upon completion of 55 credits, students apply to the information science program simply by meeting with their advisor and completing the Undergraduate Academic Program Change Form and an SIS School Transfer Application. The students' advisor will submit everything to the School of Information Sciences and your application materials will be reviewed by the admissions committee. Decisions are usually made within two weeks.

## Transfer Students

Students from other institutions of higher education are more than welcome to transfer into the School of Information Sciences Undergraduate Program. To do so, they must have satisfied the following criteria:

- Completion of 55 credits (includes current term credits)
- Overall GPA of at least 2.75
- Completion of an introductory programming course
- Completion of an introductory computer concepts class

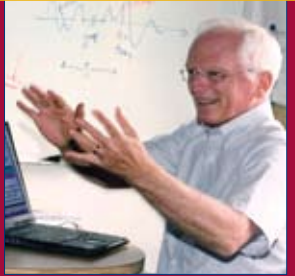
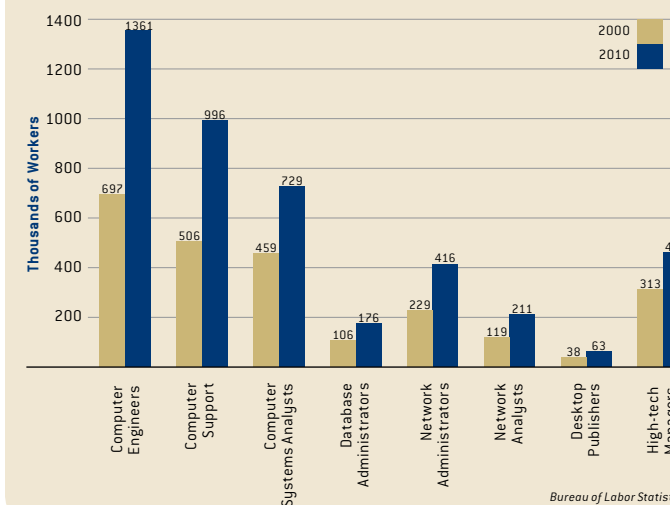
Prospective transfer students should visit [www.pitt.edu/~oafa](http://www.pitt.edu/~oafa) and complete the electronic admissions application.

## Application Deadlines

**August 1** for the fall term  
**December 1** for the spring term  
**April 1** for the summer term

For further information about admission to the Undergraduate Program in Information Science please call 412-624-5143.

### Computer occupations are projected to have some of the steepest gains between 2000 and 2010



"It's been said that if you know how, you'll always have a job. But if you know why, you'll always be the boss. We look at what industry wants and respond to its needs. Our people understand the big picture and have the skills to be productive immediately."

—Richard Thompson  
Professor and Chair  
Telecommunication Program

"The strong problem-solving skills in the BSIS program at Pitt have given me an advantage over other IS professionals, no question. BSIS assignments and challenging projects required us to break down a particular situation and develop a solution to meet the needs of a customer. If you enjoy working with people and the thought of finding solutions that solve business problems excites you, then IS is for you. If you want to work in a field where change is the norm and the environment is fast paced, it can offer you a rewarding career."

—Michael Wiley  
Eli Lilly  
Global Telecommunications  
Team Leader

"Tell me, I forget.  
Show me, I remember.  
Involve me, I understand."

Ancient Chinese proverb

## The University of Pittsburgh

The University of Pittsburgh, founded in 1787, is one of the oldest institutions of higher education west of the Alleghenies.

The University of Pittsburgh is a member of the Association of American Universities (AAU), a prestigious organization that comprises 62 leading doctorate-granting research institutions in the United States and Canada. By enrolling at the University, you'll have access to the faculty, research centers, and facilities of a major research university.

The School of Information Sciences (SIS) at the University of Pittsburgh is one of the nation's pioneering schools in the education of information professionals, with a history that dates back more than 100 years. During the past century, the school has built and maintained a tradition of excellence and innovation in education, research, and professional activities pertaining to the information sciences.

SIS faculty, staff, students, and programs—uniquely interdisciplinary, multicultural, and international by design—are dedicated to the building of a global society and an informed citizenry based upon access to reliable and useful information.

In the Undergraduate Program in Information Science, the average student-to-faculty ratio is 25:1, so students are able to receive personal attention from the faculty.

SIS offers several degree programs which have garnered outstanding reputations, both nationally and internationally. Currently, there are more than 700 students enrolled at the school in the following programs:

(COURTESY JEFF GREENBURG)



Pittsburgh's night skyline

- Bachelor of Science in information science
- Master of Science in information science
- Master of Science in telecommunications
- Master of Science in library and information science
- Doctor of Philosophy (PhD) in information science
- Doctor of Philosophy (PhD) in information science with a concentration in telecommunications
- Doctor of Philosophy (PhD) in library and information science.

### Mission of the School of Information Sciences

The mission of SIS is to connect people, information, and technology. The faculty engage in research, scholarly, and professional activities that advance learning through the extension of the frontiers of knowledge and creative endeavor. The school works with industry, government, and local communities to provide unique opportunities for students and to advance the fields within the information sciences.



University of Pittsburgh

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