

Drexel University

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The College of Information Science and Technology

Founded in 1892, the College offers programs leading to a Master of Science (Library and Information Science), a Master of Science in Information Systems (M.S.I.S.), and a Ph.D.

Both master's degree programs are offered online or on campus. The College also administers the information science and technology track of the University's multidisciplinary Master of Science in Software Engineering (M.S.S.E.) degree. The College also advanced certificate opportunities for librarians and information specialists in related fields to update their education or develop new specialties.

The College of Information Science and Technology is also known as "The *iSchool* at Drexel." This identity highlights the College's participation in The I-Schools Caucus, and its status as a founding member of the organization. The I-Schools Caucus is a national alliance of library, information science and information system schools, the purpose of which is to raise awareness and understanding of the information sciences as a cutting-edge and progressive field of study.

For more information about the College, visit the College of Information Science and Technology web site.

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About the Goals of the College

Education

- To provide the student with a foundation for understanding, developing, and operating information systems, services, and products — including information creation, organization, communication, processing, and storage, as well as the technical, social, and human context in which information professionals operate
- To relate fundamental concepts to practical applications, and to provide the student with the necessary skills to function as a responsive professional in a variety of specialized roles
- To ground the student in state-of-the-art information technologies

Research

- To encourage a spirit of inquiry and criticism, and to advance the theory and practice of the information professions through research and publication

Service

- To contribute to the growth and development of the information professions

The general learning objectives of the College are to prepare graduates of the degree programs to:

- Take positions of professional leadership
- Balance and integrate human and technical aspects of information systems, services, and products
- Exhibit a strong client orientation in delivering information systems, services, and products, including an understanding of the implications of a culturally diverse society
- Use a variety of information technologies and readily adopt appropriate new technologies
- Analyze people's information requirements and match them with available technologies
- Analyze the flow, structure, and use of information among people and within organizations
- Develop and defend positions on relevant social, political, and ethical issues
- Communicate effectively with others
- Develop critical thinking skills

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Admission Requirements

Deadlines for applications to the College of Information Science and Technology differ from those of the university. Applicants to degree programs must take the Graduate Record Examination and have the scores sent to Drexel University. See the College of Information Science and Technology's web pages for specific deadlines.

Although enrollment in the full-time programs is recommended whenever possible, part-time study is common. Courses are typically offered in the evening and occasionally on Saturdays.

Scores for the GRE General Test are required for all master's and Ph.D. applicants. Master's applicants will be automatically reviewed for a GRE waiver at the College's discretion based on a previous degree GPA. Generally the GPA threshold needed to receive a waiver is an overall 3.2 cum GPA or a half cum of a 3.2 on a 4.0 scale. Exceptions may apply.

Doctoral students must enroll as full-time students for at least three consecutive terms. All applicants to the Ph.D. program are required to take the General (Aptitude) Test of the GRE. Ph.D. applicants are not eligible for a waiver of the GRE requirement. For full information on Admissions Requirements please visit the College of Information Science and Technology's web site.

The standard requirement for the M.S. or M.S.I.S. degree is 45 credits. Students should allow approximately five to eight terms to complete the program.

In addition to the above-mentioned requirements, prospective M.S. and M.S.I.S. students must also complete the Credit for Work Experience Form. This form can be found in the Admissions Requirements section of each program on the College Web site. (This form must be completed and returned for an application to be considered complete regardless of whether or not the student is requesting Credit for Work Experience.)

All entering M.S. students must have a demonstrated competency in the use of basic desktop software.

M.S.I.S. and M.S.S.E. applicants should have a strong technical background either through education or work experience.

Although the time limit set by the University for completion of any degree is seven years, the College of Information Science and Technology strongly recommends that part-time students complete the master's degree in no more than four years, for a meaningful and cohesive educational experience. On average, most part-time students complete the program in two to three years.

Placement of Graduates

The College maintains a Career Services Office with job listings from international, national and local sources on their web site. The office can direct students in finding employment at a preprofessional level, an entry level-position upon graduation, or a new position in the future.

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Financial Assistance

The College of Information Science and Technology offers many different types of aid including research assistantships (Ph.D. only), endowed scholarships, dean's and doctoral fellowships, and College alumni loan funds. All eligible students and applicants can apply for any available aid incentives provided that they meet the stated criteria and submit the required documentation. All information, including criteria and application procedures, is located on the College's Scholarships web page, and the Funding Your Education area under each graduate degree section on their respective web pages.

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Facilities

W. W. Hagerty Library

The Hagerty Library supports research in the College of Information Science and Technology through provision of books, periodical literature, and related materials in all fields of inquiry in library and information science, computer science, systems engineering, information systems, and technology. With over 450 online literature databases, more than 21,500 full-text electronic journal titles and more than 110,000 electronic books, the majority of the Library's resources are now available online via its homepage (<http://www.library.drexel.edu/>). On-site amenities include close to one hundred laptop and desktop PCs for walk-in use by students and hundreds of seating options for quiet work or group projects, including over a dozen group study rooms and the 24/7 cafe area. The staff of ten reference librarians includes an IST subject specialist who is available for individual research consultations.

iCommons

Located in Room 106 of the Rush Building, the College's newly renovated iCommons features a new wireless/laptop area, more collaborative space for its students and a furnished common area. There is a fully equipped conference room for student use with Plasma display and videoconferencing capabilities. The iCommons provides technical support to students, faculty, and administrative staff. In addition, the staff provides audio-visual support for all presentation classrooms within the Rush Building. Use of the iCommons is reserved for all students taking IST courses.

The computers for general use are Microsoft Windows machines with appropriate applications which include the Microsoft Office suite, various database management systems, modeling tools, and statistical analysis software. Library related resources may be accessed at the iCommons and through the Hagerty Library. IST is a member of the Rational SEED Program which provides cutting-edge CASE and project management software for usage in the iCommons and IST classrooms.

IST students can access Drexel's mail server from within the iCommons. The iCommons, student labs, and classrooms have access to networked databases, print and file resources within the College, and the Internet via the University's network. Email accounts, Internet and BannerWeb access are available through the Office of Information Resources and Technology.

Other Facilities

The College maintains 7 classrooms equipped for audio-visual presentation. These rooms typically contain a networked PC, VCR, ceiling mounted projectors, and other equipment for presentations and demonstrations. Two of these classrooms are fully equipped to function as computing labs for networking, programming and database-related projects.

Information Technology Lab

In 2005, IST designed and built a laboratory in support of the new degree program in Information Technology. This lab consists of enterprise class information technology hardware that students would encounter in industry positions. The hardware includes more than a dozen servers that are available to students and CISCO networking hardware.

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Master of Science (Library and Information Science)

Learning Objectives of the M.S. Degree

Graduates of the M.S. program (Library and Information Science) are prepared to assume leadership positions in designing, executing, and evaluating information services and products, and managing organizations that facilitate access to recorded knowledge. Their preparation encompasses the knowledge and abilities required to:

- Describe in standard terms the major attributes of information resources
- Demonstrate knowledge of the structure and bibliographic control of literatures
- Augment access to information resources through processes such as thesaurus creation, classification, indexing, abstracting, systematic listing, and reviewing
- Select information resources appropriate for given audiences and develop appropriate information-seeking strategies
- Retrieve textual, numeric, bibliographic, image, and other information from all appropriate information sources
- Analyze or synthesize data and information for the client, in the form of digests, reviews of the literature, or technical reports
- Teach people to use information resources effectively
- Manage information organizations and the production of information services and products through planning, controlling, staffing, organizing, and leading

Accreditation

The College of Information Science and Technology is a member of the Association for Library and Information Science Education, and its M.S. program (Library and Information Science) is accredited by the American Library Association.

Professional Affiliation for M.S. Students

Student groups include student chapters of the American Library Association, the American Society for Information Science and Technology, and the Special Libraries Association.

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Master of Science (Library and Information Science)

Total credits: 45.0

Curriculum

The library and information science program assures students of a solid introduction to the field, a logical progression of coursework, and a wide variety of electives. All students are required to complete the six core courses, totaling 18 credits. Completion of the The M.S.(L.I.S) program requires a total of 45 credits. Students may take any available electives to complete their required number of credits in the program.

Students may declare a concentration in one of five areas: *library and information services*, *competitive intelligence and knowledge management*, *digital libraries*, *youth services* and *school library media*. These concentrations will appear on the student transcript. Except for the school library media concentration, three courses are typically required and two are chosen from a limited list of courses relevant to the topic area. The remaining 12 credits are free electives.

In exceptional cases, a student with previous coursework in an ALA-accredited program or information science may petition for exemption from one to three required courses. This petition should be made at the time of application to the College and should include both a detailed statement of the reasons for seeking exemption and a copy of the transcript, including course descriptions.

Core courses		18.0 Credits
INFO 510	Information Resources and Services I	3.0
INFO 511	Information Resources and Services II	3.0
INFO 515	Action Research	3.0
INFO 520	Professional and Social Aspects of Information Services	3.0
INFO 530	Foundations of Information Systems	3.0
INFO 640	Managing Information Organizations	3.0
Electives		
	Free electives	12.0

Concentrations **15.0 credits**

Library and Information Services

This is a generalist concentration that includes key professional skills and an orientation to both a work setting and a relevant elective.

Students take the following courses required for the concentration:

INFO 652	Internet Information and Resource Design	3.0
INFO 660	Cataloging and Classification	3.0
INFO 665	Collection Development	3.0

Students select one Work Setting course and one Public or Technical Services course from the following list:

Work Settings

INFO 650	Public Library Service	3.0
INFO 651	Academic Library Service	3.0

Public Services

INFO 649	Library Programming	3.0
INFO 672-681	(specialized reference courses INFO 672, 673, 674, 675, 677, 680, and 681)	3.0

Technical Services

INFO 663	Technical Processes in Libraries	3.0
INFO 664	Library Automation	3.0
INFO 662	Metadata and Resource Description	3.0

Digital Libraries

This concentration covers a range of topics in digital resources, collections and services. It can serve as a bridging concentration accessible to MSIS students; several courses are part of the MSIS curriculum.

Students take the following courses required for the concentration:

INFO 652	Internet Information Resource Design	3.0
INFO 653	Digital Libraries	3.0
INFO 657	Digital Library Technologies	3.0

Students select two courses from the following list (courses are grouped based on general orientation):

Resource-focused courses

INFO 622	Content Representation	3.0
INFO 662	Metadata and Resource Description	3.0
INFO 740	Digital Reference Services	3.0

Systems-focused courses

INFO 605	Database Management I	3.0
INFO 608	Human Computer Interaction	3.0
INFO 624	Information Retrieval Systems	3.0
INFO 658	Information Architecture	3.0

Competitive Intelligence and Knowledge Management

This concentration focuses on information needs and knowledge management in special library, corporate, and other organizational settings.

Students take the following courses required for the concentration:

INFO 643	Information Serviced in Organizations	3.0
INFO 644	Knowledge Management Systems	3.0
INFO 678	Competitive Intelligence	3.0

Students select one course from the following list:

INFO 674	Resources in Science and Technology	3.0
INFO 675	Medical Bibliography	3.0
INFO 677	Resources in Business	3.0

INFO 681	Legal Bibliography	3.0
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Students select one additional course from the following list:

INFO 612	Knowledge Base Systems	3.0
INFO 650	Public Library Service	3.0
INFO 651	Academic Library Service	3.0

Youth Services

This concentration meets the interests of students planning public library careers with a focus on youth populations.

Students take the following courses required for the concentration:

INFO 650	Public Library Service	3.0
INFO 683	Resources for Children	3.0
INFO 684	Resources for Young Adults	3.0

Students select two courses from the following list:

INFO 649	Library Programming	3.0
INFO 652	Internet Information Resource Design	3.0
INFO 665	Collection Development	3.0
INFO 688	Instructional Role of the Information Specialist	3.0

School Library Media

The School Library Media concentration is designed for students who wish to work in K-12 school library programs in both public and private schools. Designed to prepare graduates to be eligible for certification as school librarians by the Pennsylvania Department of Education (PDE), the program meets the requirements of the State of Pennsylvania and provides a strong basis for seeking certification in other states as well. In most instances, students will be required to complete a supervised field study to be eligible for certification.

Three course sequences are available within the concentration: one for students who have *no prior teaching certification* from PDE; one for students who have had *prior teaching certification from PDE* and who wish to add school librarian certification to their credentials; and one for students *with ALA-accredited master's degrees* who wish to seek school librarian certification from PDE.

Currently, all courses in the School Library Media concentration except the Field of Study (INFO 891) are offered online. INFO 891, which is required for certification in the State of Pennsylvania, must be completed within a 50-mile radius of Drexel University's main campus. Students seeking certification elsewhere should check on requirements in their own jurisdictions.

For full course sequences, visit
<http://www.ischool.drexel.edu/content/documents/pdf/slm.pdf>

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Online M.S. (Library and Information Science)

The online Master of Science (M.S.) is IST's second full master's degree program provided via the internet. The online program has a strong technological focus and offers an innovative M.S. curriculum to a wider professional audience.

Students may choose one of the concentrations in Library and Information Services, Competitive Intelligence and Knowledge Management, Digital Libraries or Youth Services. All courses in these four concentrations are available online. Currently, all courses in the School Library Media Concentration except the Field of Study (INFO 891) are offered online. INFO 891, which is required for certification in the state of Pennsylvania, must be completed within a 50-mile radius of Drexel University's main campus. Students seeking certification elsewhere should check on requirements in their own jurisdictions.

The Archival Management, while not a formal concentration, is a specialization and also requires on-campus courses which are offered in conjunction with Temple University.

For more information about this program online, visit the M.S. (Library and Information Science) Drexel eLearning web page.

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Special Options

School Library Media Concentration

This concentration is for students who wish to work in K-12 school library programs in both public and private schools. Designed to prepare graduates to be eligible for certification as school librarians by the Pennsylvania Department of Education (PDE), the program meets the requirements of the State of Pennsylvania and provides a strong basis for seeking certification in other states as well. In most instances, students will be required to complete a supervised field study to be eligible for certification.

Temple Archives Option

Students interested in archives, archives management, and/or historical documents have the option of earning graduate credits by taking courses in Temple University's history department. The archives sequence consists of Introduction to Archives and Manuscripts, Research in Archives and Manuscripts, and Internship in Archives. This sequence satisfies the educational requirement for individuals desiring to qualify for the Certified Archivists (CA) examination. Courses in archives are being introduced in the College in fall 2008.

View the College of Information Science and Technology's web site for more information about these special options available to students pursuing a master's degree in library and information science.

Master of Science in Information Systems

Learning Objectives of the M.S.I.S. Degree

Graduates of the M.S.I.S. program are prepared to assume leadership and management positions designing, developing, and delivering innovative technological solutions to information problems in a variety of contexts. Their preparation encompasses the knowledge and abilities required to:

- Apply a systems approach to developing and delivering information systems and services:
 - Identifying clients' information requirements
 - Analyzing the flow and structure of information in user tasks and organizational processes with the appropriate formal tools and methods
 - Matching requirements to technological opportunities and performing benefit/cost tradeoff analyses among design options
 - Designing, implementing, and integrating specified system solutions
 - Evaluating development products, including interim deliverables and
 - Developing and implementing plans for maintenance and support of operational systems
- Lead and manage teams of information professionals in the development of quality systems and services:
 - Understanding the business aspects of information systems development and application in organizations
 - Planning, controlling, staffing, and organizing to manage the processes for system development, services delivery, or system support and
 - Preparing general managers with technical information systems competencies.

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Master of Science in Information Systems

Curriculum

The M.S.I.S. program requires 45 credits.

Foundation Courses

Courses required to satisfy these foundation courses do not count toward the credit requirements for the MSIS.

- INFO 503 Introduction to Information Systems Analysis
- INFO 532 Software Development
- INFO 605 Database Management I
- INFO 614 Distributed Computing and Networking or INFO 534 Networking Applications
- BUSN 501 Measuring and Maximizing Financial Performance

The distribution of credits for the M.S.I.S. degree is as follows:

Required courses	24.0 Credits
INFO 540 Introduction to Information Systems Analysis	3.0
INFO 608 Human-Computer Interaction	3.0
INFO 620 Information Systems Analysis and Design	3.0
INFO 630 Evaluation of Information Systems	3.0
INFO 631 Information Technology Integration	3.0
INFO 638 Software Project Management	3.0
INFO 646 Information Systems Management	3.0
INFO 782 Issues in Informatics	3.0

Distribution requirements 12.0

Completion of at least four of the following distribution courses is required for the degree. Additional courses from this list may also be taken as electives.

INFO 606 Database Management II	3.0
INFO 607 Applied Information and Database Technology	3.0
INFO 610 Analysis of Interactive Systems	3.0
INFO 611 Design of Interactive Systems	3.0
INFO 612 Knowledge Base Systems	3.0
INFO 613 Extensible Markup Language (XML) and Databases	3.0
INFO 616 Computer-Supported Cooperative Work	3.0
INFO 617 Introduction to System Dynamics	3.0
INFO 622 Content Representation	3.0
INFO 624 Information Retrieval Systems	3.0

INFO 625	Cognition and Information Retrieval	3.0
INFO 626	Language Processing	3.0
INFO 627	Requirements Engineering and Management	3.0
INFO 628	Information Systems Implementation	3.0
INFO 628	Concepts in Artificial Intelligence	3.0
INFO 633	Programming Internet Information Systems	3.0
INFO 634	Data Mining	3.0
INFO 636	Software Engineering Process I	3.0
INFO 637	Software Engineering Process II	3.0
INFO 648	Healthcare Informatics	3.0
INFO 655	Information Visualization	3.0
INFO 658	Information Architecture	3.0
INFO 710	Information Forensics	3.0
INFO 712	Information Assurance	3.0
INFO 714	Information Systems Auditing	3.0

Electives

	Free electives*	9.0
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*Students may take any master's-level IST course with the exception of INFO 503, 530, 532, 614, 534, 605, 652, 510, 511 and BUSN 501. If selecting a course outside Drexel University students should seek approval of Advisor.

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Online M.S.I.S.

For students whose professional or personal commitments prevent them from attending regular class meetings, the M.S.I.S. is available online. Classes are conducted completely online, providing an intensive learning experience with the same content and quality as the degree available through the University's traditional campus-based master's program.

For more information about this program online, visit the M.S.I.S. Drexel eLearning web page.

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Master of Science in Software Engineering

Drexel University's Master of Science in Software Engineering (M.S.S.E.) degree program was created in response to the growing importance of software to the national infrastructure and the rapid rise in demand for professional software engineers.

All students in the M.S.S.E. program take a core curriculum that spans the scope of disciplinary areas relevant to the degree, thereby providing a common foundation for all students in the program. Students also elect an area of concentration, or track — a cohesive, more specialized set of courses that builds on the core to support each student's particular career interest. Three tracks are available: information science and technology, computer science, and engineering. Students in all tracks are encouraged to participate in Drexel's Graduate Co-op Program if they do not have prior or current work experience. The average time to complete this master's degree is three years of part-time study.

Master of Science in Software Engineering

Admissions Requirements

In addition to satisfying the general admission requirements of the University, all applicants to the program must satisfy the following entrance requirements:

- Applicants must have a bachelor's degree from an accredited institution of higher education with an appropriate undergraduate major. Appropriate undergraduate majors include, but are not limited to, computer science, engineering, information systems, management science, and mathematics. Applicants may also have master's degrees in similar fields.
- The GRE General (Aptitude) Test is required for all applicants pursuing full-time study on the engineering and computer science tracks. M.S.S.E. applicants for the information science and technology track with a cumulative GPA of 3.2 or higher (on a 4.0 grade scale) in any completed degree, bachelor's or above and applicants with a "half cum" of 3.2 or higher (on a 4.0 grade scale) in any completed degree, bachelor's or above may be eligible for admission to the master's program without taking the GRE.
- After consultation with an academic advisor, students found to be deficient in one or more of the areas below will be required to take foundation courses (these will not count toward the degree) to prepare them for admission to the M.S.S.E. program. These foundation courses, to be determined by the advisor, will provide students with the requisite knowledge and skill necessary to begin the master's program. Foundation courses must be taken at Drexel or another approved university.
- Applicants should possess the following knowledge and/or experience:
 - Advanced capability to program in a block-structured programming language such as Pascal, C, or Ada, or an object-oriented language such as C++ or Smalltalk.
 - A grade of B or better in an undergraduate course in systems analysis and design or software engineering.
 - A grade of B or better in an undergraduate course in data structures and algorithms.
 - A grade of B or better in an undergraduate course in discrete mathematics.
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 - Applicants must demonstrate evidence of an understanding of the development of industrial-strength software applications. This requirement may be met by at least two years of experience working directly with software system development, or (with permission of an advisor) by extensive software-intensive coursework. Students may also be required to have or develop proficiency in particular technologies, operating systems, or programming languages.

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Master of Science in Software Engineering

Degree Requirements

Degree requirements vary by track. All students take the required six core courses (18 credits).

Core Courses

Core courses cover topics that are essential for the practicing software engineer.

Core Courses		18.0 Credits
Computer science courses		
CS 575	Software Design	3.0
CS 576	Dependable Software Systems	3.0
Electrical and computer engineering courses		
ECEC 500	Fundamentals of Computer Hardware	3.0
ECEC 600	Fundamentals of Computer Networks	3.0
Information science and technology courses		
INFO 627	Requirements Engineering and Management	3.0
INFO 638	Software Project Management	3.0

Tracks

Students in each track follow the policies determined by the respective College.

Information Science and Technology Track

Track Coordinator:

Dr. Eileen Abels, 215-895-6274, eileen.abels@ischool.drexel.edu

This track supports students interested in applying software engineering to information systems problems in commercial organizations and other settings. The principal focus is the process by which user and system requirements are converted into cost-effective, maintainable software systems. This is complemented by a concern for defining, creating, understanding, and evaluating the full range of software life-cycle products. The track places particular emphasis on information systems methodologies such as human-computer interaction, requirements analysis, modeling, and validation, along with the use of off-the-shelf tools and components to assist in software processes.

Students in the information science and technology track take a total of nine track courses: four required track courses, three courses selected from the track distribution courses, and two courses selected from the distribution courses or other approved electives. This track requires a total of 45 credits, 18 of which are from the required core. The Graduate Co-op program (GCP) is available for up to six credits which do not count toward graduation. Hence, the GCP option requires students to take six credits more than the non-GCP option.

Required courses		12.0 Credits
INFO 608	Human-Computer Interaction	3.0
INFO 630	Evaluation of Information Systems	3.0
INFO 636	Software Engineering Process I	3.0
INFO 637	Software Engineering Process II	3.0

Distribution courses		9.0 Credits
INFO 606	Database Management II	3.0
INFO 607	Applied Information and Database Technology	3.0
INFO 610	Analysis of Interactive Systems	3.0
INFO 611	Design of Interactive Systems	3.0
INFO 620	Information Systems Analysis and Design	3.0
INFO 631	Information Technology Integration	3.0
INFO 646	Information Systems Management	3.0

Two Elective courses		6.0 Credits
INFO 612	Knowledge Base Systems	3.0
INFO 613	XML and Databases	3.0
INFO 616	Computer-Supported Cooperative Work	3.0
INFO 617	Introduction to System Dynamics	3.0
INFO 634	Data Mining	3.0
INFO 780	Special Topics	3.0

Computer Science Track

Track Coordinator: Dr. Spiros Mancoridis, 215-895-6824, spiros@drexel.edu

The computer science track welcomes students who are interested in a variety of technical topics pertaining to the development of software systems such as databases, networks, operating systems, graphics and animation systems, compilers, expert systems, and systems for scientific computing. Students will use languages and apply techniques to specify, design, implement, test, and maintain software systems.

Students in the computer science track take 9 courses in addition to the 6 core courses. Of the 9 courses, 4 courses must be from one of the six concentrations. The other 5 courses are electives that may be fulfilled by any course offered for the M.S.S.E. degree.

Students in their final 3 quarters of study who have a 3.5 GPA or better may take a 9-credit project instead of 3 elective courses. To register for a project, the student must select a project advisor (a member of the CS faculty who is willing to supervise). The project is a large-scale software development effort in which students specify, design, implement, and test a significant software system.

The Graduate Co-op program (GCP) is also available for up to 6 credits. Hence, the GCP option requires students to take 6 credits more than the non-GCP option.

Concentration courses		Credits
Computing systems concentration		
CS 543	Operating Systems	3.0
CS 643	Advanced Operating Systems	3.0

CS 544	Computer Networks	3.0
CS 741	Computer Networks II	3.0
CS 645	Cryptography and Network Security	3.0
CS 675	Software Reverse Engineering	3.0

Programming languages concentration

CS 525	Theory of Computation	3.0
CS 550	Programming Languages	3.0
CS 551	Compiler Construction I	3.0
CS 552	Compiler Construction II	3.0
CS 675	Software Reverse Engineering	3.0
CS 680	Special Topics in Computer Science: Program Generation and Optimization	3.0

User interface software concentration

CS 536	Computer Graphics	3.0
CS 636	Advanced Computer Graphics	3.0
CS 530	Developing User Interfaces	3.0
CS 630	Cognitive Systems	3.0
CS 680	Special Topics in Computer Science: Game Design and Implementation	3.0
PSY 612	Psychology of Human-Computer Interaction Design	3.0

Artificial intelligence concentration

CS 510	Artificial Intelligence	3.0
CS 610	Advanced Artificial Intelligence	3.0
CS 612	Knowledge-Based Agents	3.0
CS 511	Robot Building Laboratory	3.0

Scientific computation concentration

CS 668	Computer Algebra I	3.0
CS 669	Computer Algebra II	3.0
CS 680	Special Topics in Computer Science: Methods I	3.0
CS 680	Special Topics in Computer Science: Methods II	3.0
CS 540	High Performance Computing	3.0
CS 567	Applied Symbolic Computing	3.0
CS 676	Parallel Programming	3.0

For additional information on the Computer Science Track, as well as an FAQ, visit the Department of Computer Science's Master of Science in Software Engineering web page.

Engineering Track

Track Coordinator: Dr. Leonid Hrebien, 215-895-6755, lhrebien@ece.drexel.edu

Students in this track pursue techniques to model engineering problems and offer software solutions. The courses in this track emphasize problems facing engineering industries including electrical, mechanical, environmental, chemical, and others. Systems modeling and simulation techniques will be used to solve these problems.

Students in this track take 27 or more credits of track courses in addition to the 18 credits of required core courses. Three computer engineering courses are required; the other courses are from one of five concentrations. A total of 45 approved graduate credits are required for the M.S.S.E., including the 18 credits of core

courses. Students opting for the Graduate Co-op Program (GCP) option are required to complete 51 approved credits, including 6 GCP credits.

For more information on curriculum requirements, visit the Department of Electrical and Computer Engineering's Graduate Student Guide.

Courses		Credits
ECEC 511	Issues in Combinational Circuit Design	3.0
ECEC 512	Issues in Sequential Circuit Design	3.0
ECEC 513	Design for Testability	3.0

Chemical engineering concentration

CHE 554	Process Systems Engineering	3.0
CHE 658	Advanced Process Design	3.0

Civil and architectural engineering concentration

CIVE 501	Model Analysis of Structures	3.0
CIVE 605	Advanced Mechanics of Materials	3.0
CIVE 701	Structural Analysis I	3.0
CIVE 702	Structural Analysis II	3.0
CIVE 703	Structural Analysis III	3.0
CIVE 704	Behavior and Stability of Structural Members I	3.0

Electrical and computer engineering concentration

ECEC 621	High Performance Computer Architecture	3.0
ECEC 622	Parallel Computer Architecture	3.0
ECEC 623	Advanced Parallel Computer Architecture	3.0

NOTE: Any other ECE 600-level or above course may be eligible for credit for the Electrical and Computer Engineering concentration..

Materials engineering concentration

MATE 605	Computer Simulation of Materials and Processes I	3.0
MATE 606	Computer Simulation of Materials and Processes II	3.0
MATE 670	Materials Processing I	3.0
MATE 671	Materials Processing II	3.0

Mechanical engineering and mechanics concentration

MEM 534	Discrete Time Control and Estimation I	3.0
MEM 535	Discrete Time Control and Estimation II	3.0
MEM 536	Microcomputer-Based Control of Dynamic Systems I	3.0
MEM 537	Microcomputer-Based Control of Dynamic Systems II	3.0
MEM 574	Introduction to CAM	3.0
MEM 534	Reliability of Mechanical Systems I	3.0
MEM 677	Reliability of Mechanical Systems II	3.0
MEM 678	Reliability of Mechanical Systems III	3.0
MEM 681	Finite Element Methods I	3.0
MEM 682	Finite Element Methods II	3.0
MEM 683	Finite Element Methods III	3.0

Drexel University

Catalog 2008/2009

Doctor of Philosophy (Ph.D.)

Purpose and Scope

The Ph.D. degree is not based on the accumulation of credits but represents a high level of scholarly achievement in both supervised and independent study and research. There are few fixed program requirements, and the master's degree is not a prerequisite for the Ph.D. The doctoral program has two major goals: to allow students to acquire in-depth knowledge of a specialized area within the field of information science and technology and to prepare students for a career in which research is a basic element, whether that career is in administration, research, or teaching.

For additional information about the program visit the College of Information Science and Technology's Ph.D. Program web pages.

Drexel University

Catalog 2008/2009

Doctor of Philosophy (Ph.D.)

Coursework

The degree requires a minimum of 60 credits beyond the bachelor's degree for the Ph.D. degree or 45 credits beyond an applicable M.S. degree. At least three consecutive terms of full-time resident doctoral study are required. Students may be admitted to the program for part-time study, but they must be formally accepted as doctoral students and must meet the residency requirement.

Courses are taken, under an approved plan of study, to ensure the development of competence in:

- Information science and technology broadly construed
- One or more domains of study
- Research methodology
- Other courses as required by the plan of study
- Additional credits as needed

Advancement to Candidacy

To measure proficiencies in research and to assess students' mastery of their chosen area of study, students maintain a portfolio that is reviewed on a regular basis. Candidacy is awarded based on satisfactory reviews and the presentation of a scholarly document reviewing the literature and developing research questions in the student's dissertation area.

Dissertation

The dissertation must be an original scholarly contribution to the field of information science and technology that will demonstrate the student's capacity to conduct research. The final defense of the dissertation completes the program.

For a sample plan of study, visit the College of Information Science and Technology's Ph.D. Program web pages.

Drexel University

Catalog 2008/2009

Information Science and Technology Professional Development Programs

The College of Information Science and Technology offers opportunities for librarians and information specialists in related fields to update their education or develop new specialties.

Post-Master's Advanced Certificate in Information Studies and Technology

This non-degree program provides specialized training beyond the master's degree so that practitioners can update and extend their skills and knowledge by adding position-relevant coursework in order to meet their current employment requirements. It is not intended to provide coursework that can be applied to the IST master's or doctoral degrees. The program leads to an Advanced Certificate in Information Studies and Technology awarded through the College of Information Science and Technology.

Admission Requirements

Applicants must have completed a master's degree in areas such as library science, computer or information science, information systems, instructional technology, software engineering, or other appropriate degrees from a suitable accredited program that has prepared them for advanced study in the area chosen for specialization. Applicants must meet all the general requirements for admission to graduate studies and the College of Information Science and Technology. Admissions requirements include: completed graduate application form, photocopies of transcripts from all colleges and/or universities attended, essay, resume and Graduate Record Examination (or equivalent), if required.

Program Requirements

The Advanced Certificate in Information Studies and Technology consists of a minimum of eight courses that must be completed within three calendar years. Students must take four INFO courses as well as complete the final independent study within the College. The three remaining courses may be taken from offerings within the College or from other programs in the University, based on consultation with the student's advisor and agreement of the faculty mentor. [More courses, including a practicum in place of the independent study, may be required for students holding a master's in library science who are seeking certification as School Library/Media specialists in Pennsylvania.]

Students design a program of study in consultation with a faculty mentor, and must complete the required courses within three calendar years. Such individualized plans often require coursework found in other Drexel departments or other universities, but at least 4 courses must be chosen from Information Science and Technology courses. Students also complete an independent study project, which integrates studies, field experiences, individual reading, and work experience. Successful completion of the certification program requires a cumulative grade point average of 3.0.

Post-Master's Study

Applicants who hold a master's degree from the College of Information Science and Technology may request readmission by contacting the College.

Special Associate Study

Students who are currently enrolled in a Library Science or Information Systems graduate program at another university may take a graduate class from the College by applying for Special Associate status. Applications for Special Associate students are accepted every quarter. Admissions requirements include: completed graduate application form and a letter from your graduate advisor or department head indicating which classes you have permission to take and that you are in good academic standing.

For additional information, view the College of Information Science and Technology's Professional Development page.

Drexel University

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Dual M.S./M.S.I.S. Degree Option

The College of Information Science and Technology offers a dual masters degree program, leading to the Master of Science in Library and Information Science (M..S) and the Master of Science in Information Systems (M.S.I.S.). The dual degree combines the focus of the MS program a concern with selecting, organizing, managing and accessing information resources to meet user's information needs with the MSIS graduates skills in creating and managing the databases, interfaces, and information systems that connect users with the information they are seeking. Students who pursue this path greatly increase their ability to compete in today's cutting-edge information marketplace, where the importance of digitized information resources and the needs of organizations and companies to provide networked access to these resources via intranet gateways and knowledge management systems is steadily increasing.

Graduate students already enrolled in a masters degree program at Drexel have the opportunity, through the dual masters program to work simultaneously on two masters degrees and to receive both upon graduation. To be eligible, graduate students must be currently working on their first degree when requesting admission to the second.

For more information, see the MS/MSIS degree web page on the College's web site.