Drexel University
CATALOG 2011-2012

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The College of Information Science and Technology

The College of Information Science and Technology

About the College

The College of Information Science and Technology is also known as the *iSchool* at Drexel. This identity highlights the College's participation in the iSchools Caucus, and its status as a founding member of the organization. The iSchools Caucus is a international 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. The College of Information Science and Technology educates interdisciplinary professionals to provide information services and systems to meet a wide range of needs. The College complements its educational programs with research that increases the benefits of information science and technology for all sectors of society.

The College offers the majors in Information Systems and Information Technology both as four and five-year programs, and offers the Software Engineering major as a five-year program. The degree programs are open to freshmen and transfers from other departments at Drexel and other universities. Students have access to the College of Information Science and Technology's iCommons and the computing facilities available to all Drexel students.

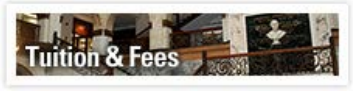
Transfer admission occurs in the fall and winter terms only due to the sequence of required courses. Internal transfer students can be admitted any term. Please contact a College advisor for more information.

The College of Information Science and Technology offers graduate work leading to the degrees of Master of Science in Library and Information Science; Master of Science in Information Systems; Master of Science in Software Engineering; and Doctor of Philosophy.

Co-operative Education

Co-operative education at Drexel's *iSchool* emphasizes career management through experiential learning as an integral part of the education process. The *iSchool* co-op is based on employment in practical, major-related positions consistent with the interests, abilities, and aptitudes of the students.

For more general information on Drexel University's co-op opportunities, visit the Drexel Steinbright Career Development Center.



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About Computer-Related Disciplines

Drexeloffers real choices among majors that are genuinely distinct. By learning more about computer-related disciplines, students can decide which discipline is best suited to theirinterests:

Information Systems

College of Information Science and Technology
Information systems analysts and designers spend most of their time learning how to elicit system requirements from users, modeling these requirements, building and testing prototypes, developing software specifications, designing and developing graphical user interfaces, and evaluating the organizational effectiveness of information systems.

Students who are interested in designing requirements-driven information systems should consider a major in Information Systems.

Information Technology

College of Information Science and Technology
The bachelor of science in Information Technology integrates closely with Drexel's bachelor of science in information systems (BSIS), and each enriches the other. The two degrees share a common freshman year and the same set of major courses, but they have different requirements.The difference is in the nature of specialization in upper-level courses.

The BSIT is aimed at students who want a degree focused on applied information technology — but with an emphasis on IT infrastructure rather than applications in business.

Students who are interested in analyzing IT problems and design, as well as implementing and evaluating effective and usable IT solutions should consider a major in Information Technology.

Software Engineering

College of Information Science and Technology and College of Engineering
Drexel's software engineering program focuses on the application of processes, methods, and tools to building and maintaining quality computer software, at a predictable cost, on a predictable schedule.

Students in this major learn to appropriately apply discrete mathematics, probability, statistics, and relevant topics in computer science and supporting disciplines to complex software systems, and to work in one or more significant application domains designing software.

Students interested in analyzing, designing, verifying, validating, implementing, applying and maintaining software systems should consider a major in Software Engineering.

Computer Science

College of Engineering
Computer science majors spend most of their time studying and designing algorithms, implementing them into software systems, and improving their performance. Study of theories and techniques are covered in such courses as Object-Oriented Programming, Analysis of Algorithms, Software Engineering, and Programming Language Concepts. Areas of application range from operating systems to artificial intelligence, scientific computing to computer networks, and expert systems to computer graphics.

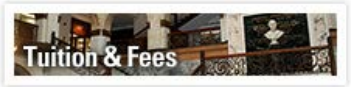
Students interested in enhancing the performance of computers via software and related technology should consider a major in Computer Science.

Computer Engineering

College of Engineering
Computer engineers work for computer and microprocessor manufacturers; manufacturers of digital devices for telecommunications, peripherals, electronics, control, and robotics; software engineering; the computer network industry; and related fields. A degree in Computer Engineering can also serve as an excellent foundation to pursue graduate professional careers in medicine, law, business, and government.

Digital Media

Antoinette Westphal College of Media Arts and Design
Drexel's major in Digital Media is designed to educate creative innovators and visual problem solvers in areas of theory and practice in traditional and new media. The freshman year includes foundation courses in basic design, art history, drawing, and liberal arts. In subsequent years, courses in several disciplines— including graphic design, photography, film and



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video, computer programming, and human-computer interaction—are required to broaden students perspective about digital media. These courses are taken concurrently with professional studio workshop courses in 3D modeling, animation, multimedia interactivity, and visual effects.

Management Information Systems (MIS)

Lebow College of Business

Combining the science, technology, and theory of information systems with an advanced knowledge of business functionality is the aim of management information specialists. The Management Information Systems concentration emphasizes human-computer interaction and the practical applications of computer systems in business, including effective data management and efficient systems of information relay. Career opportunities exist in a wide range of business settings.

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Information Science and Technology Facilities

Available Facilities

W. W. Hagerty Library
The Hagerty Library supports research 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 iCommons features desktop computers, a wireless/laptop area, free black and white printing, 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 *iSchool* courses.

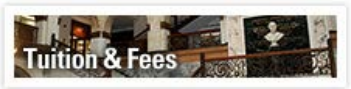
The computers for general use are Microsoft Windows and Apple OSX machines with appropriate applications which include the Microsoft Office suite, various database management systems, modeling tools, and statistical analysis software. Library related resources may be accessed at the iCommons and through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

iSchool 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, the *iSchool* 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. The hardware is networked and reconfigurable as needed for the various classes the laboratory supports. In addition a special system has been built into to the classroom to allow real time control of all classroom workstations.

Alumni Garden
The Rush Building's Alumni Garden provides additional collaborative space for students, alumni and faculty. The Garden features wireless networking, tables with built-in power outlets, accessible covered patio and balconies and a bicycle rack. The Alumni Garden may be reserved for Drexel events.



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Information Systems

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Drexel's College of Information Science and Technology offers a Bachelor of Science Degree in Information Systems (BSIS) to meet the growing demand for individuals skilled in the development and management of information systems. This forward-looking program for undergraduates offers a solid background in liberal arts and sciences as well as the skills and knowledge needed to design, create, manage, and effectively use modern information systems.

The Information Systems curriculum has no single application focus. It is directed to the art and science of managing information in all application environments. Students learn how to determine information needs, design appropriate information systems, manage those systems, and measure the systems' performance. The emphasis is on the users of computers, and on building professional-level information systems skills.To further emphasize the business aspect of the degree, the BSIS curriculum includes a built in business minor.

The BSIS is accredited by the Computing Accreditation Commission (CAC) of the Accreditation Board for Engineering and Technology (ABET).

BSIS Program Outcomes

The program enables students to achieve, by the time of graduation:

(a) An ability to apply knowledge of computing and mathematics appropriate to the discipline

(b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution

(c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs

(d) An ability to function effectively on teams to accomplish a common goal

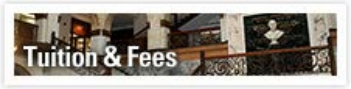
(e) An understanding of professional, ethical, legal, security and social issues and responsibilities

(f) An ability to communicate effectively with a range of audiences

(g) An ability to analyze the local and global impact of computing on individuals, organizations, and society

(h) Recognition of the need for and an ability to engage in continuing professional development

(i) An ability to use current techniques, skills, and tools necessary for computing practice.
(j) An understanding of processes that support the delivery and management of information systems within a specific application environment.



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Information Systems

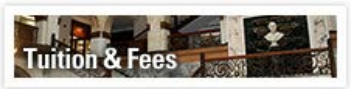
Bachelor of Science Degree: 188.0 credits

Degree Requirements

Incoming students, 2011/2012

University and college requirements		**4.0 Credits**
COOP 101	Career Management/Professional Development	0.0
UNIV 101	The Drexel Experience	4.0
or		
INFO 120	Seminar for Transfer Students	4.0

Information systems requirements		**77.0 Credits**
INFO 101	Introduction to Information Technology	3.0
INFO 102	Introduction to Information Systems	3.0
INFO 105	Information Evaluation, Organization, and Use	3.0
INFO 108	Foundations of Software	3.0
INFO 110	Human-Computer Interaction I	3.0
INFO 151	Web Systems and Services I	3.0
INFO 152	Web Systems and Services II	3.0
INFO 153	Applied Data Management	3.0
INFO 154	Software System Construction	3.0
INFO 200	Systems Analysis I	3.0
INFO 210	Database Management Systems	3.0
INFO 215	Social Aspects of Information Systems	3.0
INFO 324	Team Process and Product	3.0
INFO 330	Computer Networking Technology I	4.0
INFO 333	Introduction to Information Security	3.0
INFO 355	Systems Analysis II	3.0
INFO 420 WI	Software Project Management	3.0
INFO 424	Team Project Practicum	3.0
INFO 425 WI	Design Problem I	3.0
INFO 426 WI	Design Problem II	3.0
Information Systems electives*		16.0



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*Any non-required INFO course.

Natural Science Sequence		**8.0 -9.0 Credits**
Students select one sequence from the following:		
CHEM 101	General Chemistry I	3.5
CHEM 102	General Chemistry II	4.5
or		
CHEM 111	General Chemistry I	4.0
CHEM 112	General Chemistry II	4.0
or		
PHYS 103	General Physics I	4.0
PHYS 104	General Physics II	4.0
or		
PHYS 101	Fundamentals of Physics I	4.0
PHYS 102	Fundamentals of Physics II	4.0
or		
BIO 107	Cells, Genetics and Physiology	3.0
BIO 108	Cells, Genetics and Physiology Lab	1.0
BIO 109	Biological Diversity, Ecology and Evolution	3.0
BIO 110	Biological Diversity, Ecology and Evolution Lab	1.0
or		
PHEV 145	Weather I: Climate and Global Change	4.0
PHEV 146	Weather II: Analysis and Forecasting	4.0
or		
BIO 100*	Applied Cells, Genetics & Physiology	3.0
CHEM 151	Applied Chemistry	3.0
PHYS 151	Applied Physics	3.0

***BIO 101 Applied Biological Diversity, Ecology & Evolution can be substituted for this course in this sequence.**

Mathematics/ requirements		**12.0 Credits**
MATH 101	Introduction to Analysis I	4.0
MATH 102	Introduction to Analysis II	4.0
MATH 180	Discrete Computational Structures	4.0
or		
MATH 121	Calculus I	4.0
MATH 122	Calculus II	4.0
MATH 180	Discrete Computational Structures	4.0

Arts/humanities requirements		**24.0 Credits**
ENGL 101	Expository Writing and Reading	3.0
ENGL 102	Persuasive Writing and Reading	3.0
ENGL 103	Analytical Writing and Reading	3.0

PHIL 105	Critical Reasoning	3.0
PHIL 111	Propositional (Zero-Order) Logic	3.0
COM 230	Techniques of Speaking	3.0
COM 310 WI	Technical Communication	3.0
Arts/Humanities elective*		3.0

* Any non-required course in COM, HIST, ENGL,GREC, PHIL, PSCI, ARTH, FMVD, VSST, and WRIT or any foreign language course.

Behavioral science requirements		**21.0 Credits**
PSY 101	General Psychology	3.0
PSY 330	Cognitive Psychology	3.0
SOC 101 **or** ANTH 101	Introduction to Sociology Cultural Diversity	3.0
SOC 250	Research Methods I	3.0
SOC 350	Research Methods II	3.0
Behavioral Science electives*		6.0

* Any non-required course offered by the AFAS, ANTH, PSY, SOC or WMST departments.

Business Minor Requirements	**24.0 - 32.0 Credits**

Students select one of the following business minors and complete all the required courses:

- Accounting
- Business
- Entrepreneurship
- Finance
- Legal Studies
- Marketing
- Operations Management

Note: Students taking a minor other than Business will also need to take STAT 201 Statistics I and STAT 202 Statistics II.

STAT 201	Statistics I	4.0
STAT 202	Statistics II	4.0

Free Electives	**9.0-20.0 Credits**
Free electives	9.0-20.0

Writing-Intensive Course Requirements
In order to graduate, all students must pass three writing-intensive courses after their freshman year. Two writing-intensive courses must be in a student's major. The third can be in any discipline. Students are advised to take one writing-intensive class each year, beginning with the sophomore year, and to avoid “clustering” these courses near the end of their matriculation. Transfer students need to meet with an academic advisor to review the number of writing-intensive courses required to graduate.

A "WI" next to a course in this catalog may indicate that this course can fulfill a writing-intensive requirement. For the most up-to-date list of writing-intensive courses being offered, students should check the Writing Intensive Course List on

the Drexel University Writing Center page. Students scheduling their courses in Banner/DrexelOne can also conduct a search for courses with the attribute "WI" to bring up a list of all writing-intensive courses available that term.

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Recommended Plan Of Study

BS Information Systems
5 YR UG Co-op Concentration

Term 1		Credits
ENGL 101	Expository Writing and Reading	3.0
INFO 101	Introduction to Information Technology	3.0
INFO 108	Foundations of Software	3.0
UNIV 101	The Drexel Experience	2.0
MATH 121	Calculus I	4.0
or		
MATH 101	Introduction to Math Analysis	4.0
	Term Credits	*15.0*

Term 2		Credits
ENGL 102	Persuasive Writing and Reading	3.0
INFO 102	Introduction to Information Systems	3.0
INFO 151	Web Systems and Services I	3.0
UNIV 101	The Drexel Experience	2.0
MATH 122	Calculus II	4.0
or		
MATH 102	Introduction to Math Analysis	4.0
	Term Credits	*15.0*

Term 3		Credits
ENGL 103	Analytical Writing and Reading	3.0
INFO 105	Information Organization, Evaluation and Use	3.0
INFO 110	Human-Computer Interaction I	3.0
INFO 152	Web Systems and Services II	3.0
MATH 180	Discrete Computational Structutures	4.0
	Term Credits	*16.0*

Term 4		Credits
INFO 153	Applied Data Management	3.0
INFO 200	Systems Analysis I	3.0
INFO 333	Intro Information Security	3.0
PHIL 105	Critical Reasoning	3.0
SOC 250	Research Methods I	3.0
SOC 101	Introduction to Sociology	3.0
or		
ANTH 101	Introduction to Cultural Diversity	3.0
	Term Credits	*18.0*

Term 5		Credits
INFO 154	Software System Construction	3.0
INFO 210	Database Management Systems	3.0
PSY 101	General Psychology I	3.0
SOC 350	Research Methods II	3.0
	Information Systems (INFO) elective	3.0
	Term Credits	*15.0*

Term 6		Credits
COM 230	Techniques of Speaking	3.0
INFO 324	Team Process and Product	3.0
INFO 355	Systems Analysis II	3.0
PHIL 111	Propositional (zero-order) Logic	3.0
	Business elective	4.0
	Term Credits	*16.0*

Term 7		Credits
INFO 215	Social Aspects Of Information Systems	3.0
INFO 330	Computer Networking Tech I	4.0
PSY 330	Cognitive Psychology	3.0
	Information Systems (INFO) elective	3.0
	Business elective	4.0
	Term Credits	*17.0*

Term 8		Credits
COM 310	Technical Communication	3.0
STAT 201	Introduction to Business Statistics	4.0
	Free elective	3.0
	Information Systems (INFO) elective	3.0
	Science sequence course 1 (See degree requirements list)	4.0
	Term Credits	*17.0*

Term 9		Credits
STAT 202	Business Statistics II	4.0
	Science sequence course 2 (See degree requirements list)	4.0
	Business elective	4.0
	Information Systems (INFO) elective	3.0
	Term Credits	*15.0*

Term 10		Credits
INFO 420	Software Project Management	3.0
INFO 424	Team Project Practicum	3.0
	Business elective	4.0
	Behavioral science elective	3.0
	Information Systems (INFO) elective	3.0
	Term Credits	*16.0*

Term 11		Credits
INFO 425	Design Problem I	3.0
	Free elective	4.0
	Behavioral science elective	3.0
	Business elective	4.0
	Term Credits	*14.0*

Term 12		Credits
INFO 426	Design Problem II	3.0
	Business elective	4.0
	Free elective	4.0
	Arts and Humanities elective	3.0
	Term Credits	*14.0*

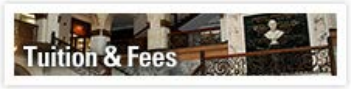
	Total Credits (minimum)	188.0

Information Systems

Bachelor's/Master's Accelerated Degree Program

The College of Information Science and Technology offers a BS/MS Accelerated Degree Program designed to allow students to complete both a bachelor's degree and a master's degree along with a cooperative educational experience within the traditional five years. Students accepted in this program can combine any of the Information Science and Technology BS and MS degree programs.

For more information on the criteria for entering this program, as well as a sample plan of study, visit the BS/MS page on the College's web site.



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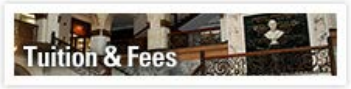

About the Program

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The Bachelor of Science Degree in Information Technology (BSIT) is offered by Drexel's College of Information Science and Technology as both a five-year and a four-year co-op program. In addition to the core coursework in information systems and information technology, the major includes 12 credits towards a minor in business. Only 12 additional credits would be required to complete a minor in business.

Students graduating with a Bachelor of Science Degree in Information Technology will:

- Understand and be able to apply core information technologies.
- Approach the application of information technology from a user-centered perspective aimed at meeting the needs of users and organizations in a societal and global context.
- Apply sound methods and approaches to identify and analyze IT problems and design, implement, and evaluate effective and usable IT solutions.
- Display personal and interpersonal IT career skills, including the ability to work on a team, to communicate with technical and nontechnical people, and to pursue lifelong learning.

BSIT Program Outcomes

The program enables students to achieve, by the time of graduation:

(a) An ability to apply knowledge of computing and mathematics appropriate to the discipline

(b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution

(c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs

(d) An ability to function effectively on teams to accomplish a common goal

(e) An understanding of professional, ethical, legal, security and social issues and responsibilities

(f) An ability to communicate effectively with a range of audiences

(g) An ability to analyze the local and global impact of computing on individuals, organizations, and society

(h) Recognition of the need for and an ability to engage in continuing professional development

(i) An ability to use current techniques, skills, and tools necessary for computing practice.
(j) An ability to use and apply current technical concepts and practices in the core information technologies.

(k) An ability to identify and analyze user needs and take them into account in the selection, creation, evaluation and administration of computer-based systems

(l) An ability to effectively integrate IT-based solutions into the user environment.

(m) An understanding of best practices and standards and their application.

(n) An ability to assist in the creation of an effective project plan.

(o) An ability to Identify and manage information assurance and security risks, and integrate appropriate mitigation strategies in the administration and management of computing, communication, and organizational systems.

(p) An ability to identify and evaluate current and emerging technologies and assess their applicability to address the user's needs.

Integration with BSIS.

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The BSIT integrates closely with Drexel's bachelor of science in information systems (BSIS), and each enriches the other. The two degrees share a common freshman year and the same set of major courses, but they have different requirements. The difference is in the nature of specialization in upper-level courses. The BSIT is aimed at students who want a degree focused on applied information technology but with an emphasis on IT infrastructure rather than applications in business.

The structure of the freshman year allows students to embark on IT or IS without having to choose between them until later.

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Information Technology

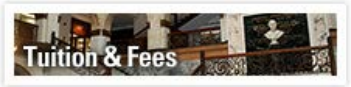
Bachelor of Science Degree: 188.0 credits

Degree Requirements

Incoming students, 2011/2012

University and college requirements		**4.0 Credits**
COOP 101	Career Management/Professional Development	0.0
UNIV 101	The Drexel Experience	4.0
or		
INFO 120	Seminar for Transfer Students	4.0

Technology requirements		**86.0 Credits**
INFO 101	Introduction to Information Technology	3.0
INFO 102	Introduction to Information Systems	3.0
INFO 105	Information Evaluation, Organization, and Use	3.0
INFO 108	Foundations of Software	4.0
INFO 110	Human-Computer Interaction I	3.0
INFO 151	Web Systems and Services I	3.0
INFO 152	Web Systems and Services II	3.0
INFO 153	Applied Data Management	3.0
INFO 200	Systems Analysis I	3.0
INFO 210	Database Management Systems	3.0
INFO 215	Social Aspects of Information Systems	3.0
INFO 320	Server Technology I	4.0
INFO 324	Team Process and Product	3.0
INFO 330	Computer Networking Technology I	4.0
INFO 333	Introduction to Information Security	3.0
INFO 410	Information Technology Infrastructure	3.0
INFO 415	Information Technology Services	3.0
INFO 420 WI	Software Project Management	3.0
INFO 424	Team Project Practicum	3.0
INFO 425 WI	Design Problem I	3.0



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INFO 426 WI	Design Problem II	3.0
	INFO electives (Technology electives)	9.0 - 12.0

Concentration requirements **9.0 - 12.0 Credits**

Students select one of the following sequences:

Database Management **9.0 credits**

INFO 300	Information Retrieval Systems	3.0
INFO 365	Database Administration I	3.0
INFO 366	Database Administration II	3.0

or

Server and Network Technology **12.0 Credits**

INFO 321	Server Technology II	4.0
INFO 322	Server Technology III	4.0
INFO 331	Computer Networking Technology II	4.0

Natural Science Sequence **8.0 -9.0 Credits**

Students select one sequence from the following:

CHEM 101	General Chemistry I	3.5
CHEM 102	General Chemistry II	4.5

or

CHEM 111	General Chemistry I	4.0
CHEM 112	General Chemistry II	4.0

or

PHYS 103	General Physics I	4.0
PHYS 104	General Physics II	4.0

or

PHYS 101	Fundamentals of Physics I	4.0
PHYS 102	Fundamentals of Physics II	4.0

or

BIO 107	Cells, Genetics and Physiology	3.0
BIO 108	Cells, Genetics and Physiology Lab	1.0
BIO 109	Biological Diversity, Ecology and Evolution	3.0
BIO 110	Biological Diversity, Ecology and Evolution Lab	1.0

or

PHEV 145	Weather I: Climate and Global Change	4.0
PHEV 146	Weather II: Analysis and Forecasting	4.0

or

BIO 100*	Applied Cells, Genetics & Physiology	3.0
CHEM 151	Applied Chemistry	3.0
PHYS 151	Applied Physics	3.0

***BIO 101 Applied Biological Diversity, Ecology & Evolution can be substituted for this course in this sequence.**

Mathematics/ requirements		12.0 Credits
MATH 101	Introduction to Analysis I	4.0
MATH 102	Introduction to Analysis II	4.0
MATH 180	Discrete Computational Structures	4.0
or		
MATH 121	Calculus I	4.0
MATH 122	Calculus II	4.0
MATH 180	Discrete Computational Structures	4.0

Arts/humanities requirements		24.0 Credits
ENGL 101	Expository Writing and Reading	3.0
ENGL 102	Persuasive Writing and Reading	3.0
ENGL 103	Analytical Writing and Reading	3.0
PHIL 105	Critical Reasoning	3.0
PHIL 111	Propositional (Zero-Order) Logic	3.0
COM 230	Techniques of Speaking	3.0
COM 310 WI	Technical Communication	3.0
Arts/Humanities elective*		3.0

* Any non-required course in COM, HIST, ENGL,GREC, PHIL, PSCI, ARTH, FMVD, VSST, and WRIT or any foreign language course.

Behavioral science requirements		12.0 Credits
PSY 101	General Psychology	3.0
PSY 330	Cognitive Psychology	3.0
Behavioral Science electives*		6.0

* Any non-required course offered by the AFAS, ANTH, PSY, SOC or WMST departments.

Business requirements		12.0 Credits
STAT 201	Statistics I	4.0
STAT 202	Statistics II	4.0
Students select one of the following:		
ACCT 115	Financial Accounting Foundations	4.0
ECON 201	Principles of Microeconomics	4.0
ORGB 300 WI	Organizational Behavior	4.0

Free Electives		29.0-32.0 Credits
	Free electives	29.0-32.0

Writing-Intensive Course Requirements
In order to graduate, all students must pass three writing-intensive courses after their freshman year. Two writing-intensive courses must be in a student's major.

The third can be in any discipline. Students are advised to take one writing-intensive class each year, beginning with the sophomore year, and to avoid “clustering” these courses near the end of their matriculation. Transfer students need to meet with an academic advisor to review the number of writing-intensive courses required to graduate.

A "WI" next to a course in this catalog may indicate that this course can fulfill a writing-intensive requirement. For the most up-to-date list of writing-intensive courses being offered, students should check the Writing Intensive Course List on the Drexel University Writing Center page. Students scheduling their courses in Banner/DrexelOne can also conduct a search for courses with the attribute "WI" to bring up a list of all writing-intensive courses available that term.

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Recommended Plan Of Study

BS Information Technology
5 YR UG Co-op Concentration

Term 1		Credits
ENGL 101	Expository Writing and Reading	3.0
INFO 101	Introduction to Information Technology	3.0
INFO 108	Foundations of Software	3.0
UNIV 101	The Drexel Experience	2.0
MATH 121	Calculus I	4.0
or		
MATH 101	Introduction to Analysis I	4.0
	Term Credits	*15.0*

Term 2		Credits
ENGL 102	Persuasive Writing and Reading	3.0
INFO 102	Introduction to Information Systems	3.0
INFO 151	Web Systems and Services I	3.0
UNIV 101	The Drexel Experience	2.0
MATH 122	Calculus II	4.0
or		
MATH 102	Introduction to Analysis II	4.0
	Free elective	3.0
	Term Credits	*18.0*

Term 3		Credits
ENGL 103	Analytical Writing and Reading	3.0
INFO 105	Information Organization, Evaluation and Use	3.0
INFO 110	Human-Computer Interaction I	3.0
INFO 152	Web Systems and Services II	3.0
MATH 180	Discrete Computational Structures	4.0
	Term Credits	*16.0*

Term 4		Credits
COM 230	Techniques of Speaking	3.0
INFO 153	Applied Data Management	3.0
INFO 200	Systems Analysis I	3.0
INFO 320	Server Technology I	4.0
PSY 101	General Psychology I	3.0
	Term Credits	*16.0*

Term 5		Credits
INFO 210	Database Management Systems	3.0
PHIL 105	Critical Reasoning	3.0
PSY 330	Cognitive Psychology	3.0
	Free elective	3.0
	IT elective	3.0
	Term Credits	*15.0*

Term 6	Credits

INFO 333	Intro Information Security	3.0
PHIL 111	Propositional (zero-order) Logic	3.0
	Natural science sequence course (See degree requirements for list)	4.0
	Free elective	3.0
	IT advanced topic course (see degree requirements for sequences)	3.0
	Term Credits	*16.0*

Term 7		Credits
INFO 215	Social Aspects Of Information Systems	3.0
INFO 324	Team Process and Product	3.0
INFO 330	Computer Networking Tech I	4.0
	IT advanced topic course (see degree requirements for sequences)	3.0
	Natural science sequence course (See degree requirements for list)	4.0
	Term Credits	*17.0*

Term 8		Credits
COM 310	Technical Communication	3.0
INFO 410	Information Technology Infrastructure	3.0
STAT 201	Introduction to Business Statistics	4.0
	Free elective	3.0
	IT elective	3.0
	Term Credits	*16.0*

Term 9		Credits
INFO 415	IT Services	3.0
STAT 202	Business Statistics II	4.0
	IT advanced topic course (see degree requirements for sequences)	3.0
	IT elective	3.0
	Free elective	3.0
	Term Credits	*16.0*

Term 10		Credits
INFO 420	Software Project Management	3.0
INFO 424	Team Project Practicum	3.0
ACCT 115	Financial Accounting Foundations	4.0
or		
ORGB 300	Organizational Behavior	4.0
or		
ECON 201	Principles of Microeconomics	4.0
	IT elective	3.0
	Free elective	2.0
	Term Credits	*15.0*

Term 11		Credits
INFO 425	Design Problem I	3.0
	Behavioral science elective	3.0
	Arts and Humanities elective	3.0
	Free electives	6.0
	Term Credits	*15.0*

Term 12		Credits
INFO 426	Design Problem II	3.0
	Free electives	7.0

Behavioral science elective	**3.0**
Term Credits	***13.0***
Total Credits (minimum)	**188.0**

Software Engineering

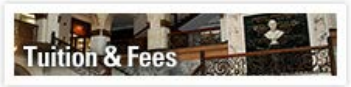
About the Major

Advances in information technology have captured the public imagination and had tremendous economic and social impact over the last 50 years. These advances offer great benefit, but have also created a great need for highly dependable systems developed at predictable cost. Unfortunately, it has become increasingly clear that our ability to produce the software for these systems in a way that meets cost and quality requirements is quite limited.
For example:

- Studies conclude that cost and schedule overruns on commercial software projects commonly average at least 100%. Some studies report averages as high as 300 - 400%.
- Studies of large projects indicate that about 25% of them are abandoned and never completed.
- There is a growing list of incidents in which software failures have caused injury and death.

Software engineering is an attempt to solve this problem. The notion can be traced to a conference sponsored by NATO in 1967. The conference was organized to discuss the problems in creating software systems reliably. In the years since, there has been some progress, but the problems that motivated the original conference are still very much in evidence. There is good reason to believe that the creation of software will never be easy. But there is tremendous incentive to make the process as efficient and reliable as possible.

In summary, software engineering can be defined as the application of processes, methods, and tools to the problem of building and maintaining computer software with a defined level of quality, at a predictable cost, on a predictable schedule.



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Software Engineering

Bachelor of Science in Software Engineering, 188.0 quarter credits

Required Courses

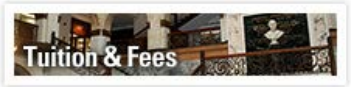
Incoming students, 2011/2012

University and college requirements		2.0 Credits
COOP 101	Career Management/Professional Development	0.0
UNIV 101	The Drexel Experience	2.0
or		
INFO 120	Seminar for Transfer Students	2.0

Software engineering requirements		36.0 Credits
SE 101	Foundations of Software Engineering I	3.0
SE 102	Foundations of Software Engineering II	3.0
SE 103	Foundations of Software Engineering III	3.0
SE 210	Software Specification and Design I	3.0
SE 211	Software Specification and Design II	3.0
SE 310	Software Architecture I	3.0
SE 311	Software Architecture II	3.0
SE 320	Software Verification and Validation	3.0
SE 410	Software Evolution	3.0
SE 491	Design Project I	3.0
SE 492	Design Project II	3.0
SE 493	Design Project III	3.0

Computer science requirements		13.0 Credits
CS 260	Data Structures	3.0
CS 265	Advanced Programming Techniques	3.0
CS 281	Systems Architecture I	4.0
CS 283	Systems Programming	3.0

Networking elective		3.0 - 4.0 Credits



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CS 472	Computer Networks	3.0
or		
INFO 330	Computer Networking Technology I	4.0

Information systems requirements		**9.0 Credits**
INFO 210	Database Management Systems	3.0
INFO 310	Human Computer Interaction II	3.0
INFO 420 WI	Software Project Management	3.0

Computing electives		**18.0 Credits**
	Any non-required INFO, CS or SE course at the 300+ level	18.0

Mathematics/statistics requirements		**26.0 Credits**
CS 270	Mathematical Foundations of Computer Science	3.0
MATH 121	Calculus I	4.0
MATH 122	Calculus II	4.0
MATH 123	Calculus III	4.0
MATH 221	Discrete Mathematics	3.0
STAT 201	Statistics I	4.0
STAT 202	Statistics II	4.0

Science sequence requirements		**21.0 Credits**
Students select one science sequence from the following:		
CHEM 101	General Chemistry I	3.5
CHEM 102	General Chemistry II	4.5
CHEM 103	General Chemistry III	5.0
or		
PHYS 101	Fundamentals of Physics I	4.0
PHYS 102	Fundamentals of Physics II	4.0
PHYS 201	Fundamentals of Physics III	4.0
or		
BIO 122	Cells and Genetics	4.5
BIO 124	Evolution and Organismal Diversity	4.5
BIO 126	Physiology and Ecology	4.5

Science Electives		
	Students select 8.0 - 9.0 additional credits from any natural science courses	7.5 - 9.0

Liberal Studies requirements		**33.0 Credits**

ENGL 101	Expository Writing and Reading	3.0
ENGL 102	Persuasive Writing and Reading	3.0
ENGL 103	Analytical Writing and Reading	3.0
PHIL 105	Critical Reasoning	3.0
PHIL 311	Computer Ethics	3.0
COM 230	Techniques of Speaking	3.0
COM 310 WI	Technical Communication	3.0
PSY 101	General Psychology	3.0
PSY 330	Cognitive Psychology	3.0
Liberal studies electives*		6.0

* Any non-required course in ENGL, PHIL, COM, PSY, SOC, ANTH, WMST, AFAM, PSCI.

Students select two of the following business courses:		**8.0 Credits**
ACCT 115	Financial Accounting Foundations	4.0
ECON 201	Principles of Microeconomics	4.0
ECON 202	Principles of Macroeconomics	4.0

Free electives		**18.0 - 19.0 Credits**
	Free electives	16.0-19.0

Writing-Intensive Course Requirements
In order to graduate, all students must pass three writing-intensive courses after their freshman year. Two writing-intensive courses must be in a student's major. The third can be in any discipline. Students are advised to take one writing-intensive class each year, beginning with the sophomore year, and to avoid “clustering” these courses near the end of their matriculation. Transfer students need to meet with an academic advisor to review the number of writing-intensive courses required to graduate.

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Recommended Plan Of Study

BS Software Engineering
5 YR UG Co-op Concentration

Term 1		Credits
COOP 101	Career Management/Professional Development	0.0
ENGL 101	Expository Writing and Reading	3.0
MATH 121	Calculus I	4.0
SE 101	Foundations of Software Engineering I	3.0
UNIV 101	The Drexel Experience	1.0
	First course in a 3-part laboratory science sequence	4.0-4.5
	Term Credits	*15.0-15.5*

Term 2		Credits
ENGL 102	Persuasive Writing and Reading	3.0
MATH 122	Calculus II	4.0
SE 102	Foundations of Software Engineering II	3.0
UNIV 101	The Drexel Experience	0.5
	Second course in a 3-part laboratory science sequence	4.0-4.5
	Term Credits	*14.5-15.0*

Term 3		Credits
ENGL 103	Analytical Writing and Reading	3.0
MATH 123	Calculus III	4.0
SE 103	Foundations of Software Engineering III	3.0
UNIV 101	The Drexel Experience	0.5
	Third course in a 3-part laboratory science sequence	4.0-4.5
	Liberal studies elective	3.0
	Term Credits	*17.5-18.0*

Term 4		Credits
COM 230	Techniques of Speaking	3.0
SE 210	Software Specification and Design I	3.0
CS 265	Advanced Programming Tools and Techniques	3.0
CS 270	Mathematical Foundations of Computer Science	3.0
	Natural science elective	3.0
	Term Credits	*15.0*

Term 5		Credits
CS 260	Data Structures	3.0
INFO 210	Database Management Systems	3.0
MATH 221	Discrete Mathematics	3.0
SE 211	Software Specification and Design II	3.0
	Natural science elective	3.0
	Term Credits	*15.0*

Term 6		Credits
COM 310	Technical Communication	3.0
CS 281	Systems Architecture I	4.0
PSY 101		

	General Psychology I	3.0
SE 310	Software Architecture I	3.0
STAT 201	Business Statistics I	4.0
	Term Credits	*17.0*

Term 7		Credits
SE 311	Software Architecture II	3.0
STAT 202	Business Statistics II	4.0
	Computing elective (300-level or higher INFO, SE, CS)	3.0
	Natural science elective	3.0
	Free elective	3.0
	Term Credits	*16.0*

Term 8		Credits
CS 283	Systems Programming	3.0
INFO 420	Software Project Management	3.0
PHIL 105	Critical Reasoning	3.0
SE 320	Software Verification and Validation	3.0
	Free elective	3.0
	Term Credits	*15.0*

Term 9		Credits
INFO 310	Human-Computer Interaction II	3.0
PHIL 311	Computer Ethics	3.0
SE 410	Software Evolution	3.0
	Free elective	3.0
	Computing electives (300-level or higher INFO, SE, CS)	3.0
	Term Credits	*15.0*

Term 10		Credits
SE 491	Design Project I	3.0
INFO 330	Computer Networking Technologies I	4.0
or		
CS 472	Computer Networks	3.0
ECON 201	Principles of Microeconomics	4.0
or		
ECON 202	Principles of Macroeconomics	4.0
or		
ACCT 115	Financial Accounting Foundations	4.0
	Computing elective (300-level or higher INFO, SE, CS)	3.0
	Free elective	3.0
	Term Credits	*17.0*

Term 11		Credits
PSY 330	Cognitive Psychology	3.0
SE 492	Design Project II	3.0
ACCT 115	Financial Accounting Foundations	4.0
or		
ECON 202	Principles of Macroeconomics	4.0
or		
ECON 201	Principles of Microeconomics	4.0
	Computing electives (300-level or higher INFO, SE, CS)	6.0
	Term Credits	*16.0*

Term 12		Credits
SE 493	Design Project III	3.0
	Liberal studies elective	3.0
	Computing elective (300-level or higher INFO, SE, CS)	3.0

Free electives	**6.0**
Term Credits	***15.0***
Total Credits (minimum)	**188.0-189.5**

Software Engineering

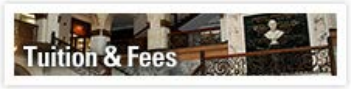
Bachelor's/Master's Accelerated Degree Programs

Accelerated degree programs combine the practical work experience of a Drexel undergraduate education with the credentials of a graduate degree. Some programs offer the co-operative education option. Students may earn both degrees in the same major or, in some programs, complete a master's degree in a different field. Each dual degree program has specific requirements and students should work closely with advisors to map out a clear plan of study.
According to University regulations, students can only apply to participate in accelerated/dual degree programs after the completion of 90 credits and before the completion of 120 credits.

Requirements for the Bachelor's/Master's Dual Degree in Software Engineering
Applicants to the program must have an overall cumulative Grade Point Average of 3.25 or higher. Letters of recommendation from faculty members from either the Department of Computer Science or the College of Information Science and Technology are required. Students must submit a plan of study. Consult the Graduate Advisor and course schedules for guidance.

Acceptance to the program will be based on a combination of the student's GPA and letters of recommendation. Acceptance may be denied if the plan of study is not feasible. For more information, contact the Department of Computer Science or the College of Information Science and Technology.
Applicants must have completed the following core Software Engineering courses with a minimum GPA of 3.25:

- SE 101 (Foundations of SE I)
- SE 102 (Foundations of SE II)
- SE 103 (Foundations of SE III)
- SE 210 (Software Specifications & Design I)
- SE 211 (Software Specifications & Design II)
- SE 310 (Systems Architecture I)



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Minor in Informatics

24.0 quarter credits

Informatics is the science of information, the practice of information processing, and the engineering of information systems. The *iSchool*'s minor in informatics combines basic courses in information systems and technology with courses that address the cognitive issues and social contexts in which information systems and technologies are embedded.

Any student in any major can benefit from a minor in informatics. Graduates with such background knowledge are prepared to actively participate in the application of information technology within their major area of study.

The minor is available to all University students in good standing, with the exception of students majoring in Information Systems, Information Technology or Software Engineering. A minimum of 24.0 credits is required to complete this minor.

Requirements		**24.0 Credits**
INFO 101	Introduction to Information Technology	3.0
INFO 102	Introduction to Information Systems	3.0
INFO 105	Information Organization, Evaluation and Use	3.0
INFO 108	Foundations of Software	3.0
INFO 110	Human-Computer Interaction I	3.0
INFO 210	Database Management Systems	3.0

Students select one of the following elective pairs:

Informatics on the Internet

INFO 151	Web Systems and Services I	3.0
INFO 152	Web Systems and Services II	3.0

Informatics in Society

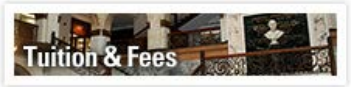
INFO 205 WI	Strategic Uses of Information Systems	3.0
INFO 215	Social Aspects of Information Systems	3.0

Informatics in the Organization

INFO 205 WI	Strategic Uses of Information Systems	3.0
INFO 435	Information Services	3.0

Planning and Delivery of IT Services

INFO 410	Information Technology Infrastructure	3.0
INFO 415	IT Services	3.0



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Minor in Information Systems

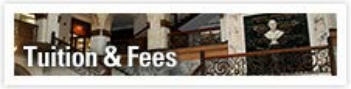
25.0 quarter credits

The information systems minor is available to all University students in good standing, with the exception of students already majoring in Information Systems. A minimum of 25 credits is required to complete the academic minor in information systems.

Required courses

INFO 102	Introduction to Information Systems	3.0
INFO 110	Human-Computer Interaction I	3.0
INFO 200	Systems Analysis I	3.0
INFO 210	Database Management Systems	3.0
INFO 330	Computer Networking Technology I	4.0
INFO 355	Systems Analysis II	3.0
	Information systems electives*	6.0

*An additional 6.0 credits or more are to be chosen from other course offerings in information systems pertinent to the student's overall program of study. Guidance in selecting these electives will be provided by staff and faculty of the College of Information Science and Technology.



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Minor in Software Engineering

The software engineering minor is available to all University students in good standing, with the exception of software engineering majors. A total of 24 credits is needed to complete the academic minor in software engineering.

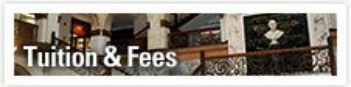
Prerequisites
Computer programming competence may be established by completing one of the following course sequences:

- CS 171-2 (Computer Programming I-II)
- CS 131-2-3 (Computer Programming A-B-C)
- SE 101-2-3 (Fundamentals of Software Engineering I-II-III)
- CS/ECE203-ECEC480 (Programming for Engineers, Advanced Programming for Engineers)
- INFO 151-2-3-4 (IS Software I-II-III-IV)

  Additional computer programming competence may be established by completing both CS 265 (Advanced Programming Techniques) and CS 260 (Data Structures).

Minor Requirements

SE 210	Software Specification and Design I	3.0
SE 211	Software Specification and Design II	3.0
SE 310	Software Architecture I	3.0
SE 311	Software Architecture II	3.0
SE 320	Sofware Verification and Validation	3.0
SE 410	Software Evolution	3.0
	Two Computing/Software Engineering electives	6.0



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