

SoIC Undergraduate Bulletin

Administration

- ROBERT B SCHNABEL, Ph.D., *Dean*
- GEOFFREY C FOX, Ph.D., *Associate Dean for Graduate Studies and Research*
- MAUREEN BIGGERS, *Assistant Dean for Diversity and Education*
- DENNIS P GROTH, Ph.D., *Associate Dean for Undergraduate Studies*
- DAVID LEAKE, Ph.D., *Associate Dean for Faculty Affairs*
- JAMES P SHEA, *Director of Planning*
- JOHN TWEEDIE, *Director of Administration and Finance*

Overview

Moore's Law says that computing power doubles every 18 months. Regardless of whether that law is literally correct, it illustrates the rapid changes in information technology that will continue for the foreseeable future. The School of Informatics prepares students to meet the continuing demand for information technology professionals who know how to grow and adapt to this environment of rapid technological change.

Informatics is focused on the best applications of technologies, and emphasizes the social and psychological aspects of information technology. Some have called informatics "technology with a human face." Informatics prepares professionals to use information technology to solve problems in a variety of settings. The degrees emphasize the development of new uses for technologies, always keeping in mind the needs of people and the best and most appropriate uses for technology.

Informatics students have the following:

- A technical understanding of how computing systems and programs operate
- An ability to adapt/assess and apply new trends in information technology (IT)
- Well-developed problem-solving skills
- Experience working on a team, such as those formed for the senior capstone experience
- Well-developed communications skills to clearly convey solutions and observations to others
- An understanding of social and ethical principles as they relate to IT issues

Degrees from the School of Informatics are unique because they involve students in learning how information technology relates to a traditional discipline in the sciences, liberal arts, or professions. In the School of Informatics, a student learns to use technology to solve problems in the chosen area of emphasis and is prepared to use technology to solve problems in a wide variety of career settings.

The undergraduate curriculum looks at information technology from a balanced perspective. It includes a technical core in the areas of mathematical foundations, distributed information, human-computer interaction, social/organization informatics, and new media. In addition to knowledge of core informatics and of informatics in

the context of a traditional discipline, students must take a set of general-education courses to ensure that they can communicate clearly in both written and spoken English, read effectively, and reason quantitatively. They must be able to raise and rationally debate ethical concerns suggested by information technologies and their interactions with other people. Students also must have some knowledge of the world; its peoples; and their cultural, artistic, and scientific achievements. To this end, the general-education requirement exposes students to the arts and humanities, social and historical studies, and the natural sciences.

The school offers a Bachelor of Science in Informatics degree, four specialized professional master's degrees, a Bachelor of Science in Computer Science degree, the Professional Master's Program in Computer Science, a variety of undergraduate and graduate programs in New Media, and the Undergraduate Program in Health Information Administration. Informatics research is conducted at the Informatics Research Institute, which provides expanded educational opportunities for both undergraduate and graduate students.

Information Technology in Today's Learning

When Indiana University was founded in 1820, only Greek and Latin were taught. The curriculum has obviously changed over time, in response to both intellectual and practical needs. The most recent school to be established at Indiana University, the School of Informatics, responds to the world's changing needs.

Today, one might say that programming languages and software tools are the Greek and Latin of our times, and no person can be called truly educated without mastery of these "languages." It is not intended to suggest that the classical languages or any natural languages have been supplanted by C++ and Java. Indeed, making available the classical corpus in searchable digital form was one of the first applications of computing to the humanities. The point is to suggest the pervasiveness of information technology in all of civilized life. Much as Greek and Latin opened doors to the scholarship of the nineteenth century, so information technology opens doors to art and science in the twenty-first century.

The development of networks and distributed systems over the past several decades has changed forever the notion of a computer as something that merely "computes." The computer is now an "information processor." Arthur C. Clarke once said that "a sufficiently advanced technology is indistinguishable from magic." Unfortunately, many people see computers and the Internet as magical. The mission of the School of Informatics is to educate citizens that advanced information technology is indistinguishable (or at least inseparable) from science and the arts.

History

Mission

Accreditation & Licenses

One School, Multiple Campuses

The School of Informatics spans the IU Bloomington (IUB), Indiana University-Purdue University Indianapolis (IUPUI), IU South Bend (IUSB), IU Kokomo (IUK),

and IU Southeast (IUSE) campuses. By combining the strengths of these five campuses, the School of Informatics is able to create a unique environment that enables students to earn degrees with strong information technology components in arts, humanities, science, and the professions. The expert faculty and excellent technological resources foster a synthesis of academic disciplines and cultures. Faculty from varied disciplines share developments in the fast-moving information technology areas through the School of Informatics and its degree programs. The school is actively forging cooperative arrangements with employers in the state and region; and creating internships, cooperative education programs, and opportunities for learning through service.

- IU Bloomington
- IUPUI
- IU Kokomo
- IU South Bend
- IU Southeast

IU Bloomington

Indiana University Bloomington (IUB) is a residential campus that offers undergraduate, professional, and graduate degrees in more than 70 fields of study. In the fall semester of 2007, the campus had a total enrollment of 38,386, including 29,608 undergraduates and 8,344 students in graduate and professional programs. More than 30 schools and departments at IUB are ranked among the top 10 nationally, with more than 100 ranked in the top 20 in their respective fields.

University Libraries at IUB

The University Libraries at IUB rank fourth in collection size among the Big Ten universities, fifth in the Committee on Institutional Cooperation (CIC), and thirteenth in the nation among major research libraries. The libraries' collections include 6.6 million bound volumes, 4 million microforms, and more than 70,000 current serials. The Herman B Wells Library houses a core collection especially for undergraduates and extensive graduate research collections—as well as reference services, technical services, government publications, and other essential library services. The Wells Library also is home to the Information Commons, which has more than 350 computer workstations. These facilities are complemented by the 14 campus libraries serving diverse disciplines, such as music, optometry, chemistry, geology, education, business, journalism, and other areas.

University Information Technology Services at IUB

University Information Technology Services (UITS) at IUB supports the application, use, and development of information technology for research, teaching, and learning. UITS makes available more than 1,200 computer workstations, located in 43 Student Technology Centers, for both scheduled instruction and individual study and more than 200 "InfoStations" and other limited-use workstations in locations across campus for access to e-mail and the Web. The Assistive Technology Lab, located in the Wells Library, offers programs and specialized information technology services for students with disabilities. Research computing facilities on campus include two high-performance supercomputers (a 47-processor IBM SP and a 64-processor SGI/Cray Origin2000), a multiterabyte massive data storage system, and a state-of-the-art campus backbone network. Another

strength that UITS brings is the Network Operations Centers for both Abilene (Internet 2) and TransPac. More fully described in the next section, they are housed on the IUPUI campus, but scholars and students in Bloomington also benefit from these high-speed communication links.

IUB Hutton Honors College

The School of Informatics encourages superior students to take advantage of the variety of opportunities offered through the Hutton Honors College and is pleased to help honors students plan their individual programs.

Grants and Scholarships at IUB

The School of Informatics is developing new sources of funding, and students are encouraged to review the Informatics Web site for up-to-date information.

Grants and scholarships also are available through other IU offices, such as the Hutton Honors College. Students are encouraged to consult with the Office of Student Financial Assistance (www.indiana.edu/~sfa) for additional funding opportunities.

IUPUI Indianapolis

IUPUI is an urban campus that combines IU and Purdue programs. In the fall semester of 2005 its schools had a total enrollment of 29,933, including 21,438 undergraduates and 8,495 students in graduate and professional programs. IUPUI currently ranks among the 10 largest campuses in the nation that offer graduate professional degrees.

IUPUI University Library

The IUPUI University Library is a technology-based learning center that supports teaching and learning in a new Information Commons; at hundreds of workstations in the library; at computers throughout the campus; and in the homes of students, faculty, and staff.

The collection covers a wide range of academic disciplines—from liberal arts to science, engineering, and technology. The collection contains 4,145 subscriptions to electronic and print periodicals, more than 25,000 e-books, more than 1 million print and online volumes, and the Joseph and Matthew Payton Philanthropic Studies Library and Ruth Lilly Special Collections and Archives. The University Library also creates and hosts digital resources about the state of Indiana, including an electronic atlas and image collection.

The University Library information system hosts more than 350 computer workstations, permitting patrons to search for information through an extensive and sophisticated online research system. Word processing and other electronic applications are also available on these machines. The University Library has more than 500 general and graduate study carrels; 40 group-study rooms with seating for approximately 180; and class and meeting rooms, including a 100-seat auditorium.

University Information Technology Services at IUPUI

University Information Technology Services (UITS) at IUPUI supports the application, use, and development of information technology for research, teaching, and learning. Students have access to more than 500 public workstations on campus. UITS partners with academic schools on campus to provide consulting support in 16 student technology centers and operates another 2 centers as campus-wide resources. The network

operations center for Abilene, the high-speed Internet2 backbone network, is located on the IUPUI campus, as is the network operations center for TransPAC, a high-speed network connecting the United States with countries in Asia and the Pacific Rim. The IUPUI campus also is home to the Cisco Networking Academy Training Center and the Cisco Certified Internetwork Expert (CCIE) Practice Lab. One of two such labs in the nation, the CCIE lab provides a testing environment for networking professionals worldwide who are candidates for certification as Cisco Certified Internetwork Experts.

Because Indiana's government, business, industry, finance, health, service, and nonprofit organizations are centered in Indianapolis, the urban environment plays an important role as a learning resource for students enrolled in the informatics programs. Many of the state's communication industries are concentrated in the capital city, and the larger organizations based here have made commitments to improve their communication and business processes through the use of information and information technology. IUPUI has established strong working relationships with both industry and government agencies in communications, information technology, and media arts and sciences.

IUPUI Honors Program

The IUPUI Honors Program offers special opportunities for academically superior students to do honors work or pursue department or general honors degrees. Undergraduates may enroll in independent study, H-Option courses, graduate courses, or designated honors courses. Students should check the Schedule of Classes for course offerings.

Students who have SAT scores of 1100 or above, rank in the top 10 percent of their high school class, or have a 3.30 grade point average are eligible to enroll in honors courses. For additional information on honors degrees, contact the Honors Office, University College 3140, at (317) 274-2660.

IU Kokomo

The Bachelor of Science in Informatics is offered on the Kokomo campus under the Department of Natural, Information, and Mathematical Sciences. Information on the Informatics degree program can be located on the Web at www.iuk.edu/~konims/Programs/BS_Info.shtml.

IU South Bend

Indiana University South Bend provides all the services and opportunities of a large university combined with the advantages and atmosphere of a small college.

Information on the School of Informatics degree programs offered at the IUSB campus can be located on the Web at www.iusb.edu/~majors/inform.shtml.

IU Southeast

The Bachelor of Science in Informatics is offered on the Southeast campus under the Department of Natural Sciences. Information on the Informatics degree program can be located on the Web at www.ius.edu/NaturalSciences/Informatics/index.cfm.

Contact Information

[School of Informatics and Computing](http://www.informat@indiana.edu)
901 E. 10th St.

Bloomington, IN 47408-3912
(812) 856-5754

informat@indiana.edu

Admission

Students wishing to major in informatics or computer science must be admitted to Indiana University and first enter the University Division at IUB. Freshmen should begin to satisfy specific degree requirements in the first year. Undergraduates who wish to be admitted to the School of Informatics and Computing must first satisfy the following requirements:

- Complete 26 credit hours of course work that can count toward a bachelor of science degree in informatics or computer science with a minimum cumulative grade point average of 2.0 (C).
- Complete the English composition requirement (ENG-W 131 or equivalent) with a minimum grade of C.
- Individual programs may have additional requirements.

Students pursuing a Bachelor of Science degree in informatics must also satisfy the following two requirements:

- Complete INFO-I 101, Introduction to Informatics, with a minimum grade of C.
- Complete the fundamental math skills requirement (MATH-M 118, or equivalent) with a minimum grade of C.

Contact the Office of Admissions at (812) 855-0661, e-mail iuadmit@indiana.edu, or view the Web site at www.indiana.edu/~iuadmit for complete instructions. For specific information on the Informatics program, phone (812) 856-5754, e-mail undergraduate@informatics.indiana.edu, or view the Web site at www.informatics.indiana.edu. For specific information on the Computer Science program, phone (812) 855-6038 or e-mail ug-info@cs.indiana.edu.

Direct Admission

Incoming freshmen with strong high school records and an interest in majoring in informatics or computer science can be offered direct admission into the School of Informatics and Computing. For more information, send e-mail to brownr@indiana.edu.

Transfer Students

Transfers from Other Undergraduate Schools on the IUB Campus

Students transferring to the School of Informatics at IUB from other undergraduate schools of the university—such as the College of Arts and Sciences or the Schools of Education, Public and Environmental Affairs, Music, or the Kelley School of Business—must have completed at least 26 credit hours of course work that can count toward a degree in the School of Informatics, with a minimum cumulative grade point average of 2.0 (C). Students also must complete the English composition requirement and receive a grade of C or higher before entering the School of Informatics. Students pursuing a B.S. degree in informatics (INFOBS) must also complete INFO-I 101 Introduction to Informatics, complete the mathematics

requirement, (MATH-M 118, or equivalent with a minimum grade of C) before entering the School of Informatics.

Transfers Within the School of Informatics on the IUB and IUPUI Campuses

Transfer students admitted to the School of Informatics on the IUB campus who want to transfer to the School of Informatics on the IUPUI campus, or vice versa, should file an Intercampus Transfer Form. Intercampus Transfer Forms are accepted throughout the year.

Transfers from Other Indiana University Campuses

Please consult “Transfer to Other Indiana University Campuses” at the back of this bulletin for information on transfers between Indiana University campuses.

Transfers from Other Colleges and Universities

Students who have completed at least 26 credit hours that can count toward a degree in the School of Informatics—including the English composition requirement—may apply for admission to the School of Informatics at IUB. Students pursuing a B.S. degree in Informatics (INFOBS) must also complete MATH-M 118 and INFO-I 101 with a minimum grade of C before being admitted.

The Office of Admissions at IUB will determine acceptance of credit from other institutions. The dean of the School of Informatics will determine the applicability of credit toward degree requirements. Please consult “Undergraduate Admissions Policy” at the front of this bulletin for more information about transfers from other colleges and universities.

Transfer Credit Rules

Credits transferred are generally evaluated according to the following rules:

- Courses taken at other institutions in which the student earned a grade below C do not transfer.
- Courses taken at other institutions on a quarter system instead of a semester system will be evaluated as carrying fewer credit hours (for example, a 3 credit hour course taken on a quarter system will transfer as 2.5 credits).
- Courses taken at other institutions for which there is an equivalent IU course (in terms of course description, level, and prerequisites) generally will be evaluated as credit in the equivalent IU courses.
- Courses taken at other institutions for which there is no equivalent IU course (in terms of course description, level, and prerequisites) generally will be evaluated as “undistributed” credit (marked UNDI on the IU transcript). Undistributed credits may count toward the student’s degree requirements, but the school through which the course is offered determines if the course may be equivalent to a certain distribution or requirement. Please see your advisor for further information.

Materials & Deadlines

Office of Admissions
Indiana University
300 N. Jordan Avenue
Bloomington, IN 47405-1106
(812) 855-0661
E-mail: iuadmit@indiana.edu
Web: www.indiana.edu/~iuadmit

International students should request the International Application for Admission from:

International Admissions
Indiana University
300 N. Jordan Avenue
Bloomington, IN 47405-1106
(812) 855-4306
E-mail: intladm@indiana.edu
Web: www.indiana.edu/~iuadmit

Students also may contact the School of Informatics or the Department of Computer Science for additional information:

School of Informatics
Indiana University
919 E. Tenth Street
Bloomington, IN 47408
(812) 856-5754
E-mail: undergraduate@informatics.indiana.edu
Web: www.informatics.indiana.edu

Computer Science
Indiana University
Lindley Hall 215
150 S. Woodlawn Avenue
Bloomington, IN 47405
(812) 855-6038
E-mail: ug-info@cs.indiana.edu
Web: www.cs.indiana.edu

Priority Dates for Application for Admission to Indiana University Bloomington

	International Students	U.S. Citizens and Permanent Residents
August (Fall)	February 1	February 1
January (Spring)	September 15	November 1
May (Summer I)	February 1	April 1
June (Summer II)	March 1	April 15

Planning & Counseling

The School of Informatics provides counseling services to assist students in planning their study. Students who have chosen a major are assigned an advisor and should make an appointment with that advisor prior to each registration period to discuss long-term goals as well as specific course work for the upcoming semester. Consulting an advisor is a semester-by-semester obligation of students to ensure ongoing progress toward a degree.

Students, however, are responsible for their progress. They should be thoroughly familiar with the general requirements for an informatics degree or a computer science degree. Students are urged to complete most of their general education requirements during their freshman and sophomore years.

When planning a program, students should refer to both the *Enrollment and Student Academic Information Bulletin* or the *Registration Guide and Academic Information* and this bulletin. Special attention should be paid to course descriptions and prerequisites. This bulletin identifies

prerequisites with a “P,” corequisites with a “C,” and recommended courses with an “R.” Students should not enroll in courses for which they do not have the prerequisites. Instructors may require a student to drop a class if the student has not fulfilled the prerequisites.

Undergraduate Programs

The School of Informatics and Computing offers a Bachelor of Science in Informatics (INFOBS), a Bachelor of Science in Computer Science (CSCIBS), and a Professional Master’s in Computer Science.

The very nature of these degrees, with the changing technologies and applications, requires that the content of each degree be continuously assessed and revised. Therefore, the faculty of the School of Informatics and Computing will periodically review and revise the curricula to ensure that students are prepared to meet contemporary workplace and intellectual demands. Please contact the School of Informatics and Computing Student Services Office, or refer to our Web site at www.informatics.indiana.edu.

Academic counseling for each student in the School of Informatics and Computing is provided by an academic advisor prior to each semester’s enrollment. Although academic counseling is intended to provide effective guidance, students are responsible for planning their own programs and for meeting the following degree requirements for graduation. Students are advised to read bulletin descriptions of all courses selected, paying careful attention to conditions concerning awarding of credit.

Bachelor of Science in Informatics

- General Requirements
- Course Requirements
- Dual Baccalaureate Degree
- Second Baccalaureate Degree

Cognate Areas

Students must receive at least a C– in each cognate area course and a cumulative GPA of 2.0 or higher in the cognate area. Cognate area courses may require prerequisites or consent of instructor. Please contact the respective department for this information.

Note: Many cognates complete minor requirements; please see respective Recorder’s office to declare the minor.

- Biology
- Business
- Chemistry
- Cognitive Science
- Communication and Culture
- Computer Science
- Economics
- Fine Arts
- Geography
- Human-Centered Computing
- Journalism
- Linguistics
- Mathematics

- Psychology
- Public and Environmental Affairs
- Public Health
- Security Cognate
- Telecommunications

General Requirements

Students must successfully complete a minimum of 122 credit hours for the Bachelor of Science degree. The campus at which a student is admitted will award the degree. Students may transfer no more than 60 credit hours toward a Bachelor of Science degree. Students must complete the specific degree requirements of the School of Informatics and Computing as follows:

- Students must complete a minimum of 30 credit hours in courses at the 300-400 (junior-senior) level.
- Students must have a minimum cumulative grade point average of 2.0 (C). Any course taken to satisfy the major requirements must be completed with a minimum grade of C– unless otherwise specified, and the grade point average of all courses taken in the major must be at least 2.0. The major requirements for informatics include core courses, informatics electives, and cognate courses.
- Students are expected to complete the requirements for their undergraduate degree within eight years of admission to the School of Informatics and Computing. Students are allowed to continue beyond this time period only at the discretion of the dean. If a student has not taken classes for three years or more, that student must satisfy program requirements of the School of Informatics and Computing in effect at the time of reactivation. Requests for deviation from requirements listed in the bulletin must be approved in writing by the dean, whose decision is final.
- Courses that fulfill the requirements for a cognate area also may meet the general-education distribution requirements.
- Cognate area courses cannot count as informatics core courses or informatics elective courses.
- If cognate area courses are equivalent to informatics core courses, students should substitute additional informatics elective courses in place of informatics core courses to meet the 35 credit hour requirement.
- Courses that fulfill the requirements for a bachelor’s degree in informatics also may apply to a minor outside of the School of Informatics and Computing. Students may obtain a maximum of three minors.

Course Requirements

Required Informatics Core Courses (35 cr.)

Equivalent honors versions of regular informatics courses may substitute throughout the major.

- INFO-I 101 Introduction to Informatics (4 cr.)
- INFO-I 201 Mathematical Foundations of Informatics (4 cr.)
- INFO-I 202 Social Informatics (3 cr.)
- INFO-I 210 Information Infrastructure I (4 cr.)
- INFO-I 211 Information Infrastructure II (4 cr.)
- INFO-I 300 Human-Computer Interaction (3 cr.)
- INFO-I 308 Information Representation (3 cr.)

- INFO-Y 395 Career Development for Informatics Majors (1 cr.)

Select two of the following:

- INFO-I 303 Organization Informatics (3 cr.)
- INFO-I 310 Multimedia Arts and Technology (3 cr.)
- INFO-I 320 Distributed Systems and Collaborative Computing (3 cr.)
- INFO-I 330 Legal and Social Informatics of Security (3 cr.)
- INFO-I 356 Globalization, Where We Fit In (3 cr.)
- INFO-I 399 Current Topics in Informatics (3 cr.)
- INFO-I 400 Topics in Informatics (3 cr.)
- INFO-I 421 Applications of Data Mining (3 cr.)
- INFO-I 427 Search Informatics (3 cr.)
- INFO-I 430 Security for Networked Systems (3 cr.)
- INFO-I 433 Protocol Design and Analysis (3 cr.)
- INFO-I 441 Human-Computer Interaction Design I (3 cr.)
- INFO-I 453 Computer and Information Ethics (3 cr.)
- INFO-I 485 Bioinspired Computing (3 cr.)
- INFO-I 486 Artificial Life (3 cr.)

Informatics Electives (3 cr.)

All courses listed below are subject to the successful completion of prerequisites or approval of the instructor.

Note that informatics elective courses cannot count as informatics core courses.

One additional course may be selected from the following:

- INFO-I 303 Organizational Informatics (3 cr.)
- INFO-I 310 Multimedia Arts and Technology (3 cr.)
- INFO-I 320 Distributed Systems and Collaborative Computing (3 cr.)
- INFO-I 330 Legal and Social Informatics of Security (3 cr.)
- INFO-I 356 Globalization, Where We Fit In (3 cr.)
- INFO-I 399 Current Topics in Informatics (1-3 cr.)
- INFO-I 400 Topics in Informatics (3 cr.)
- INFO-I 421 Applications of Data Mining (3 cr.)
- INFO-I 427 Search Informatics (3 cr.)
- INFO-I 430 Security for Networked Systems (3 cr.)
- INFO-I 433 Protocol Design and Analysis (3 cr.)
- INFO-I 441 Human-Computer Interaction Design I (3 cr.)
- INFO-I 453 Computer and Information Ethics (3 cr.)
- INFO-I 485 Bioinspired Computing (3 cr.)
- INFO-I 486 Artificial Life (3 cr.)
- BUS-S 305 Business Telecommunications (3 cr.)
- BUS-S 307 Data Management (3 cr.)
- BUS-S 308 Business Application Development (3 cr.)
- BUS-S 310 Systems Analysis and Design (3 cr.)
- BUS-S 410 Systems Implementation (3 cr.)
- BUS-S 433 Information Systems Security (3 cr.)
- COGS-Q 351/ B 351 Introduction to Artificial Intelligence and Computer Simulation (3 cr.)
- CSCI- Any course at the 300-level or above
- JOUR-J 300 Journalism/Communications Law (3 cr.)
- JOUR-J 414 Globalization of Information (also International Newsgathering Systems) (3 cr.)

- SOC-S 319 Science, Technology & Society (3 cr.)
- SPEA-V 369 Managing Information Technology (3 cr.)
- TEL-T 321 Telecommunications Policymaking (3 cr.)
- TEL-T 421 Economics of Communications (3 cr.)
- TEL-T 427 International Telecommunications (3 cr.)

Students may also count other courses with informatics content at a 300-level upon approval of the *associate dean of undergraduate studies*.

Capstone

Select one of the following capstone options for a total of 6 hours

- INFO-I 494/I 495 Design and Development of an Information System (3/3 cr.)
- INFO-I 491 Capstone Project Internship (3-6 cr.)
- INFO-I 492/I 493 Senior Thesis (3/3 cr.)

Cognate Area Courses (15-18 cr.)

Departments offering informatics cognate courses are listed in the cognate area of this bulletin. Students should, in consultation with their academic advisors, choose cognate areas before their sophomore year. Students must receive a grade of C– or higher in each course and a cumulative GPA of 2.0 or higher. Students should contact the School of Informatics and Computing Student Services Office or refer to our Web site at informatics.indiana.edu for the most current list of cognate areas.

General-Education Requirements (38-41 cr.)

English Composition (3 cr.)

This part of the writing requirement may be fulfilled in any one of the following ways:

1. Exemption without credit. Students scoring 670 or higher on the SAT Critical Reading test, or 32 or above on the ACT English Composition section, or 4 to 5 on the Advanced Placement English Composition section, are exempt from English composition.
2. Exemption with credit. A student will be granted 2 credit hours of ENG-W 143 if the student has:
 - a score of 670 or above on the SAT Critical Reading test, or 32 or above on the ACT English Composition section, or 4 to 5 on the Advanced Placement English Composition section, plus
 - a score of 660 or higher on the SAT Writing Test, and if the student applies to the Department of English in Ballantine Hall 442. Students should also see “Special Note” under “Credit by Examination” in this Bulletin.
3. Completion of any of the following options with a grade of C or higher:
 - ENG-W 131 (3 cr.)
 - ENG-W 170 (3 cr.)
 - ENG-L 141 and L 142 (4/4 cr.)
 - AAAD-A 141 and A 142 (4/4 cr.)
 - Two semesters of ENG-W 143 (1 cr.), combined with two introductory courses, CMLT-C 145, C 146 (3/3 cr.)
 - A combination of any two course options from (c), (d), and (e) above.

Note: Courses taken under these options, except for ENG-W 131, W 143, and W 170, may, if they are so designated, be applied toward distribution requirements.

Writing (3 cr.)

ENG-W 231 Professional Writing Skills, an approved substitute (3 cr.), or completion of one intensive writing course at the 200 level or above after completing the English composition requirement. Intensive writing courses at IUB are defined by the College of Arts and Sciences. Students must check the listings for courses in the online enrollment system each semester to make certain that the course section they have chosen fulfills the requirement.

Oral Communication (3 cr.)

CMCL-C 121 Public Speaking, or approved substitute (3 cr.)

Quantitative and Analytical Skills (6 cr.)

- Select one of the following: MATH-A 118 Finite Mathematics for the Social and Biological Sciences; MATH-D 116-D 117 Introduction to Finite Mathematics I-II; Math-M 118 Finite Mathematics; or Math-S 118 Honors Finite Mathematics. Students must receive a minimum grade of C in each course to meet the School of Informatics admission requirements.
- Select one of the following statistics courses: ANTH-A 306 Anthropological Statistics; CJUS-K 300 Techniques of Data Analysis; ECON-E 370 Statistical Analysis for Business and Economics; ECON-S 370 Statistical Analysis for Business and Economics: Honors; MATH-K 300 Statistical Techniques Health Professions; MATH-K 310 Statistical Techniques; MATH-M 365 Introduction to Probability and Statistics; POLS-Y 395 Quantitative Political Analysis; PSY-K 300 Statistical Techniques; PSY-K 310 Statistical Techniques; SOC-S 371 Statistics for Sociology; SPEA-K 300 Statistical Techniques; STAT-K 310 Statistical Techniques; STAT-S 300 Introduction to Applied Statistical Methods; STAT-S 301 Applied Statistical Methods for Business; STAT-S 320 Introduction to Statistics

Natural Sciences (8 cr.)

A minimum of 8 credit hours of natural science courses selected from the following list. One of the courses must be a laboratory course or have an associated laboratory section.

- Anthropology: ANTH-B 200 Bioanthropology (3 cr.), ANTH-B 301 Laboratory in Bioanthropology (3 cr.), ANTH-B 368 Evolution of Primate Social Behavior (3 cr.), and ANTH-B 370 Human Variation (3 cr.).
- Astronomy
- Biology
- Chemistry
- Geography: GEOG-G 107 Physical Systems (3 cr.), GEOG-G 109 Weather and Climate (3 cr.), GEOG-G 185 Global Environmental Change (3 cr.), GEOG-G 208 Human/Environment Interactions (3 cr.), GEOG-G 304 Physical Meteorology (3 cr.), GEOG-G 305 Environmental Change (3 cr.), GEOG-G 336 Environmental Remote Sensing (3 cr.), GEOG-G 350 Atmospheric Science (3 cr.),

GEOG-G 362 Dynamic Meteorology: Boundary-Layer Meteorology (3 cr.), GEOG-G 431 Dynamic Meteorology: Synoptic to Global Scales (3 cr.), GEOG-G 433 Synoptic Meteorology (3 cr.), GEOG-G 434 Air Pollution Meteorology (3 cr.), GEOG-G 471 Boundary Layer Meteorology (3 cr.), GEOG-G 473 Mesoscale Meteorology (3 cr.), GEOG-G 475 Climate Change (3 cr.), and GEOG-G 477 Atmospheric Science (3 cr.).

- Geological Sciences
- Human Biology: HUBI-B 101 The Human Organism (3 cr.); HUBI-B 201 Human Dilemmas (3 cr.); HUBI-B 301 The Intricate Human (3 cr.); HUBI-B 401 Complex Problems of Humanity (3 cr.).
- Medical Sciences: MSCI-M 131 Disease & the Human Body (3 cr.); MSCI-M 216 Med Sci of Psychoactive Drugs (3 cr.).
- Physics
- Psychology (excluding courses that are considered mathematical science and social and historical studies courses), PSY-P 101 Introductory Psychology I (3 cr.), PSY-P 106 General Psychology, Honors (4 cr.), PSY-P 151 Introduction to Psychology I for Majors (4 cr.), PSY-P 155 Introduction to Psychological and Brain Sciences, PSY-P 201 Biological Bases of Behavior (3 cr.), PSY-P 204 Psychological and Biological Bases of Human Sexuality (3 cr.), PSY-P 211 Methods of Experimental Psychology (3 cr.), PSY-P 325 Psychology of Learning (3 cr.), PSY-P 327 Psychology of Motivation (3 cr.), PSY-P 329 Sensation and Perception (3 cr.), PSY-P 330 Perception/Action (3 cr.), PSY-P 336 Psychological Tests and Individual Differences (3 cr.), PSY-P 350 Human Factors/Ergonomics (3 cr.), and PSY-P 417 Animal Behavior (3 cr.).

Arts, Humanities, and Social Sciences (15 cr.)

Informatics students must have basic training in the arts, humanities, and social sciences, which will assist them in their lives and give them a broader perspective from which to approach the applications of information technology. The requirements are as follows: (15 cr.):

- Five courses in arts and humanities and social and historical studies, as defined by the College of Arts and Sciences. Topics courses will count as one of the required courses in each area. At least two courses must be taken in each area.
- One of the five courses must be a course in ethics:
 - PHIL-P 140 Introduction to Ethics (3 cr.)
 - PHIL-P 242 Applied Ethics (3 cr.)
 - PHIL-P 340 Classics in Ethics (3 cr.)
 - PHIL-P 342 Problems of Ethics (3 cr.)
 - REL-R 170 Religion, Ethics, and Public Life (3 cr.) or an approved professional ethics course

General Electives

Courses for the remaining credits will be decided by the individual student, in consultation with an advisor, to fulfill additional career and/or personal interests. Students may take a maximum of 4 HPER-E credit hours and 10 MUS-X credit hours below the 100 level to count towards the total hour requirement.

Dual Baccalaureate Degree

In certain circumstances, students may be permitted to pursue a B.S. in Informatics and complete an undergraduate degree in another degree-granting school of the university. Check with your academic advisor for more details and approval.

Second Baccalaureate Degree

In certain cases, the dean may admit bachelor's degree holders to candidacy for a second bachelor's degree. When such admission is granted, the candidates must earn at least 60 additional credit hours and meet the requirements of the School of Informatics and Computing. Students seeking second degree candidacy should review the guidelines available from the School of Informatics and Computing office. Students with a bachelor's degree who wish to further their education should also consider becoming qualified for admission to a graduate program.

Biology Cognate

Required:

- BIOL-L 211 Molecular Biology
- BIOL-L 311 Genetics
- BIOL-L 312 Cell Biology
- BIOL-L 318 Evolution
- BIOL-L 473 Ecology

Business Cognate

Required:

- BUS-A 200 Foundations of Accounting
- OR (A 100 Basics Accounting Skills and A 201 Introduction to Financial Accounting)
- OR (A 100 Basic Accounting Skills and A 202 Introduction to Managerial Accounting)
- BUS-K 201 The Computer in Business (minimum grade of C required)
- BUS-L 201 Legal Environments of Business OR BUS-L 350 Online Law

Select 6 credit hours from the following list:

- BUS-F 300 Introduction to Finance
- BUS-G 300 Introduction to Managerial Economics
- BUS-J 306 Strategic Management
- OR BUS-Z 302 Managing and Behavior in Organizations
- BUS-M 300 Introduction to Marketing
- BUS-P 300 Introduction to Operations Management
- BUS-W 300 Small Business Management

Students are advised to pursue the entrepreneurship minor or the business minor by taking additional courses beyond the 15 credit hours required for the cognate. If students plan to pursue the entrepreneurship minor, they should elect to take BUS-M 300 and BUS-W 300.

Students planning to pursue the business minor should elect to take BUS-G 300, BUS-J 306 or BUS-Z 302, BUS-M 300, or BUS-F 300. BUS-W 300 will not apply to the business minor.

Chemistry Cognate

Required:

- CHEM-C 117 Principles of Chemistry and Biochemistry I
- CHEM-C 118 Principles of Chemistry and Biochemistry II
- CHEM-C 341 Organic Chemistry Lectures I
- CHEM-C 342 Organic Chemistry Lectures II
- INFO-I 371 Chemical Informatics I
- INFO-I 372 Molecular Modeling **OR** CHEM-C 372 Chemical Informatics II
- CHEM-C 483 Biological Chemistry (3 cr.)

Cognitive Science Cognate

Required:

- COGS-Q 240 Philosophical Foundations of the Cognitive and Information Sciences
- COGS-Q 270 Experiments and Models in Cognition
- COGS-Q 301 Brain and Cognition
- COGS-Q 320 Computation in the Cognitive and Information Services

Communication and Culture Cognate

Required:

- CMCL-C 205 Introduction to Communication and Culture
- CMCL-C 190 Introduction to Media
- CMCL-C 202 Media in the Global Context **OR** CMCL-C 413 Global Villages
- CMCL-C 337 New Media
- CMCL-C 410 Media Theory

Computer Science Cognate

Option I: Information Technology

Required:

- CSCI-C 211 Introduction to Computer Science
- CSCI-A 338 Network Technologies and Administration
- CSCI-A 348 Mastering the World Wide Web
- CSCI-B 351 Introduction to Artificial Intelligence and Computer Simulation

Option II: Computer Science

Required:

- CSCI-C 211 Introduction to Computer Science
- CSCI-C 335 Computer Structures
- CSCI-C 343 Data Structures

Select one of the following courses:

- CSCI-A 348 Mastering the World Wide Web
- CSCI-B 351 Introduction to Artificial Intelligence and Computer Simulation
- CSCI-C 311 Programming Languages

Economics Cognate

Required:

- ECON-E 201 Introduction to Microeconomics
- ECON-E 202 Introduction to Macroeconomics
- ECON-E 321 Intermediate Microeconomic Theory
- ECON-E 327 Game Theory **OR** BUS G300 Introduction to Managerial Economics
- ECON-E 382 The Digital Economy (3 cr.)

Fine Arts Cognate

Required:

- FINA-N 110 Introduction to Studio Art for Nonmajors
- FINA-S 250 Introduction to Design Practice
- FINA-D 210 (T 230) Digital Art: Survey and Practice

Select three courses from one of the following areas:

Option I: Computer Art

- FINA-D 310 (T 330) Interactive Media
- FINA-D 318 (T 340) 3D Computer Graphics
- FINA-D 410 (T 430) Advanced Multimedia
- FINA-D 418 (T 440) Computer Graphical Environments

Option II: Graphic Design

- FINA-S 351 Typography and Integration Imagery
- FINA-S 352 Production for the Graphic Designer
- FINA-S 451 Graphic Design Problem Solving

Students also may consider computer-based courses in printmaking, photography, and video. All courses selected for the cognate must be approved by the School of Fine Arts. Students are cautioned to review prerequisite requirements for upper-level courses.

Geography Cognate

Students must complete 15 credit hours from the following list of courses:

- GEOG-G 250 Computer Methods in Geography
- GEOG-G 237 Cartography and Geographic Information
- GEOG-G 338 Geographic Information Systems
- GEOG-G 438 Advanced Geographical Information Systems
- GEOG-G 450 Undergraduate Readings and Research in Geography
- GEOG-G 460 Geography Internship
- GEOG-G 488 Applied Spatial Statistics

Human-Centered Computing Cognate

Must complete 5 courses from the following:

- CSCI-A 216 Digital Multimedia Concepts and Technologies
- INFO-I 303 Organizational Informatics
- INFO-I 310 Multimedia Arts and Technology
- INFO-I 330 Legal and Social Informatics of Security
- INFO-I 356 Globalization, Where We Fit In
- INFO-I 441 Human-Computer Interaction Design I
- INFO-I 453 Computer and Information Ethics
- Approved topic in INFO-I 399 or I 400

Journalism Cognate

Required:

- JOUR-J 110 Foundations of Journalism and Mass Communications
- JOUR-J 200 Reporting, Writing, and Editing I
- JOUR-J 201 Reporting, Writing, and Editing II
- JOUR-J 210 Visual Communications

Electives: Select at least two courses from the following list:

- JOUR-J 360 Topics (Online Journalism)
- JOUR-J 460 Topics (Information Graphics)
- JOUR-J 463 Graphic Design I
- JOUR-J 465 Graphic Design II

Linguistics Cognate

Required:

- LING-L 303 Introduction to Linguistic Analysis
- LING-L 306 Phonetics

Any two of the following courses:

- LING-L 307 Phonology
- LING-L 308 Morphology
- LING-L 310 Syntax
- LING-L 325 Semantics
- LING-L 431 Field Methods

One of the following courses:

- LING-L 445 Introduction to Computational Linguistics
- LING-L 485 Topics in Linguistics
- MATH-M 385 Mathematics from Language, or any course from outside the Department of Linguistics with sufficient computational content, subject to approval by the Linguistics Undergraduate Advisor.

Mathematics Cognate

Students must complete at least 16 credit hours including MATH-M 211 and M 212, and three of the following:

- MATH-M 301 Linear Algebra & Applications **OR** MATH-M 303 Linear Algebra for Undergrad
- MATH-M 371 Elementary Computational Methods
- MATH-M 385 Mathematics from Language
- MATH-M 447 Mathematical Models and Applications I

Psychology Cognate

Required:

- PSY-P 101 Introduction to Psychology **OR** PSY-P 151 Introduction to Psychology I for Majors
- PSY-P 329 Sensation and Perception
- PSY-P 335 Cognitive Psychology
- PSY-P 350 Human Factors/Ergonomics
- COGS-Q 270 Experiments and Models in Cognition
- COGS-Q 301 Brain and Cognition

Public and Environmental Affairs Cognate

Required:

- SPEA-E 418 Vector-Based GIS **OR** V450 GIS in Public Management
- SPEA-V 461 Computer Application in Public Affairs
- SPEA-V 475 Database Management Systems

In addition, students must select a focus area from one of the following:

Option I: Environmental Issues

Required:

- SPEA E418 Vector-Based GIS
- Select two courses from the following;

- SPEA-E 325 Computing for Environmental Scientists
- SPEA-E 363 Environmental Management
- SPEA-E 419 Applied Remote Sensing
- SPEA-E 466 International and Comparative Environmental Policy
- SPEA-E 476 Environmental Law and Regulation

Option II: Health Issues

Required:

- SPEA-H 320 Health Systems Administration
- At least one of the following:
- SPEA-H 316 Environmental Health
- SPEA-H 402 Hospital Administration
- SPEA-H 411 Long-Term Care Administration

Option III: Urban Affairs

Select two courses from the following:

- SPEA-V 340 Urban Government Administration
- SPEA-V 368 Managing Government Operations
- SPEA-V 372 Government Finance and Budgets
- SPEA-V 421 Metropolitan Development

Option IV: Public Policy Analysis

Select two courses from the following:

- SPEA-V 348 Management Science
- SPEA-V 370 Research Methods and Statistical Modeling
- SPEA-V 386 Case Studies for Policy Analysis
- SPEA-V 401 Finance and Cost Benefit Analysis

Option V: Public Finance

Required:

SPEA V372 Government Finance and Budgets

Select one of the following:

SPEA-V 346 Introduction to Government Accounting and Financial Reporting
 SPEA-V 361 Financial Management
 SPEA-V 401 Financial and Cost-Benefit Analysis
 SPEA-V 441 Topics in Financial Management and Policy

Capstone Experience:

SPEA-V 461 System Analysis and Design will serve as a capstone experience and should be taken as the last course in the cognate sequence. This is a project-oriented course, in which students select projects related to their focus areas. A SPEA faculty member with expertise in that particular area will direct this project.

Public Health Cognate

Required:

- HPER-C 366 Community Health
- HPER-C 403 Techniques in Public Health Education
- HPER-H 311 Human Diseases and Epidemiology
- HPER-H 391 Introduction to Health Information and Statistics
- HPER-H 494 Research and Evaluation Methods in Health and Safety

Security Cognate

Required:

- INFO-I 130 Introduction to Cybersecurity
- INFO-I 230 Analytical Foundations of Security

- INFO-I 231 Math Foundation of Cybersecurity

Select three courses from the following:

- INFO-I 330 Legal and Social Informatics of Security
- INFO-I 400 Topics in Informatics—when security relate, approval required
- INFO-I 430 Security for Networked Systems
- INFO-I 433 Protocol Design and Analysis

Other courses may be substituted with permission of the Director for Undergraduate Studies in Informatics.

Telecommunications Cognate

Option I: Applications

This cognate area focuses on video and multimedia production using computers. The applications option requires the completion of 18 credit hours.

Required:

- TEL-T 101 Media Life
- TEL-T 206 Introduction to Design and Production
- TEL-T 283 Introduction to Production Techniques and Practices **OR** TEL-T 284 Introduction to Interactive Media Design

Plus at least 9 credit hours from the following:

- TEL-T 351 Video Field and Post Production
- TEL-T 353 Audio Production
- TEL-T 354 Program Graphics and Animation
- TEL-T 361 Flash for Games and Interactive Media
- TEL-T 364 Introduction to 3-D Digital Modeling and Animation
- TEL-T 461 Advanced Flash for Games and Interactive Media
- TEL-T 464 Advanced 3-D Digital Modeling and Animation

Option II: Implications

The implications cognate area allows students to tailor their studies to issues of particular interest.

Required:

- TEL-T 101 Media Life
- TEL-T 205 Introduction to Media and Society

Plus 9 credit hours from the following list:

- TEL-T 311 Media History
- TEL-T 312 Politics and the Media
- TEL-T 316 Media Ethics and Professional Responsibility
- TEL-T 317 Children and the Media
- TEL-T 424 Telecommunications and the Constitution
- TEL-T 427 International Telecommunications

Option III: Foundations

The Foundations cognate area focuses specifically on the development and operation of advanced telecommunications networks.

Required:

- TEL-T 101 Media Life
- TEL-T 207 Introduction to Telecommunications Industry and Management
- TEL-T 322 Telecommunications Networks
- TEL-T 326 Network Design
- TEL-T 327 Data Communications

Bachelor of Science in Computer Science

The Department of Computer Science offers B.S. degree, a strong departmental honors program, a professional master's program combining the B.S. and M.S. in five years of study, and undergraduate minors in computer science and in information technology. In addition, the department offers a spectrum of courses (labeled A) for students not majoring in computer science, ranging from the foundational to the practical.

- General Requirements
- General Education Requirements
- International Dimension Courses

Specializations

- Artificial Intelligence
- Data and Search
- Foundations
- Programming Languages
- Systems

General Requirements

Students must successfully complete a minimum of 122 credit hours to graduate. Students must complete the specific degree requirements of the School of Informatics and Computing as follows:

1.
 - Students must have a minimum cumulative grade point average of 2.0 (C) in order to graduate. Any course taken to satisfy the requirements of the major must be completed with a minimum grade of C- and the grade point average of all courses taken in the major must be at least 2.0 (C).
 - Students must complete a minimum of 30 credit hours in courses at the 300-400 (junior-senior) level for the B.S. degree.
 - Every degree candidate must complete at least 26 credit hours of the work in senior status in residence on the Bloomington campus of Indiana University. At least 12 credit hours of course work in the major field of study must be completed on the Bloomington campus.

General Education Requirements

English Composition (3 cr.)

This part of the writing requirement may be fulfilled in any one of the following ways:

1. Exemption without credit. Students scoring 670 or higher on the SAT Critical Reading test, or 32 or above on the ACT English Composition section, or 4 to 5 on the Advanced Placement English Composition section, are exempt from English composition.
2. Exemption with credit. A student will be granted 2 credit hours of ENG-W 143 if the student has:
 - a score of 670 or above on the SAT Critical Reading test, or 32 or above on the ACT English Composition section, or 4 to 5 on the Advanced Placement English Composition section, plus

- a score of 660 or higher on the SAT Writing Test, and if the student applies to the Department of English in Ballantine Hall 442. Students should also see "Special Note" under "Credit by Examination" in this Bulletin.

3. Completion of any of the following options with a grade of C or higher:
 - ENG-W 131 (3 cr.)
 - ENG-W 170 (3 cr.)
 - ENG-L 141 and L 142 (4/4 cr.)
 - AAAD-A 141 and A 142 (4/4 cr.)
 - Two semesters of ENG-W 143 (1 cr.), combined with two introductory courses, CMLT-C 145, C 146 (3/3 cr.)
 - A combination of any two course options from (c), (d), and (e) above.

Note: Courses taken under these options, except for ENG-W 131, W 143, and W 170, may, if they are so designated, be applied toward distribution requirements.

Intensive Writing (3 cr.)

This part of the writing requirement may be fulfilled by completing one intensive writing course at or above the 200 level after completing the English composition requirement. Intensive writing courses are defined by the College of Arts and Sciences. Students must check the listings for courses in the online Schedule of Classes each semester to make certain the course section they have chosen fulfills the requirement.

International Dimension (6-11 cr.)

The international dimension may be fulfilled in any of the following three ways:

Note: Courses taken to fulfill this International Dimension may not be counted as Arts & Humanities and Social & Historical

- Two courses from an approved list that involve either the study of a culture other than the student's own or the study of the global context of informatics; See Appendix II or the Computer Science advisor for a list of approved International Dimension courses.
- Three semesters in the same language, or equivalent proficiency;
- An approved international experience.

Language Placement Tests

Students who wish to continue at Indiana University a foreign language begun in high school or at another university must take a foreign language placement test. Contact the Evaluation Services and Testing office at (812) 855-1595 or foreign language departments for more information.

Special Credit as a Result of Placement Tests

Students placing at the second semester may be eligible for special credit for the first semester. Students placing at the third semester may be eligible for special credit for both the first and second semesters. Students who are eligible for such credit in French, German, Hebrew, Italian, or Spanish will automatically receive credit if the placement test is taken at Indiana University or if the student's CEEB test score is sent to Indiana University. For special credit in other foreign languages and for

special credit above the first-year level, students should check directly with the foreign language departments.

International Students

Students whose native language is not English may demonstrate required proficiency in their language. They may not, however, earn credit for any courses at the first- or second-year level in their native language.

Arts & Humanities and Social & Historical (15 cr.)

Students are required to take five courses in arts and humanities and social and historical studies, as defined by the College of Arts and Sciences. At least two courses must be taken in each area.

Natural Science (12 cr.)

Twelve credit hours chosen from PSY-P 106, PSY-P 211, COGS-Q 270 and/or any natural and mathematical science course from: AST, BIOL, CHEM, GEOL, and PHYS.

Major Course Requirements (effective Fall 2009)

Students must complete the following:

- Core courses: C 211, C 212, C 241 and C 343. Honors versions (labeled H) of each core course are available in selected semesters.
- One approved specialization (see 5 approved specializations below)
- 45 hours including (1) and (2) with the remaining courses drawn from the following list – at least 26 of the 45 hours must be at the 300 level or above.
 - CSCI C, P, H and B courses numbered 200 and above
 - CSCI-Y 390, 391, 399 and 499 (at most 6 hours)
 - CSCI-H 498 (at most 1 hour)
 - MATH-M 471 and 472
 - INFO-I 101 (if completed before or concurrently with CSCI-C 212)
 - INFO-Y 395
 - INFO-I 494 and 495
- MATH-M 211 (or equivalent proficiency) and at least two of the following courses: MATH-M 212, MATH-M 213, MATH-M 301, MATH-M 303, MATH-M 311, MATH-M 312, MATH-M 343, MATH-M 348, MATH-M 384, MATH-M 365, MATH-M 371, MATH-M 391, MATH-M 405, MATH-M 409, or PHIL-P 251, PHIL-P 350, or PHIL-P 352. Mathematics courses cross listed with CS and taken to satisfy (1), (2) or (3) above are excluded.

Major Course Requirements 2008

Students must complete the following:

- The six core courses of the computer science undergraduate curriculum (labeled C) provide a solid general foundation in computer science. These are C 211, C 212, C 241, C 311, C 335, and C 343. Honors versions (labeled H) of each core course are available in selected semesters.
- MATH-M 211 (or equivalent proficiency) and at least two of the following courses: MATH-M 212, MATH-M 213, MATH-M 301, MATH-M 303, MATH-M 311, MATH-M 312, MATH-M 343, MATH-M 348, MATH-M 384, MATH-M 365, MATH-M 371, MATH-M 391,

MATH-M 405, MATH-M 409, or PHIL-P 251, PHIL-P 350, or PHIL-P 352.

- Seven advanced computer science courses, including at least 12 hours taken on the Bloomington campus, to include the following:
 - One of the advanced courses must be CSCI-B 401, B 403, or P 415.
 - Two advanced courses must be labeled "P".

Computer science courses numbered 300 level or higher and of at least 3 credit hours, excluding Y398 and A courses, are considered "advanced computer science courses." Mathematics M471-M472 may be applied to the computer science major as 400-level courses.

International Dimension Courses

African Studies

- AFRI-L 231 African Civilization (3 cr.)
- AFRI-L 232 Contemporary Africa (3 cr.)

Anthropology

- ANTH-E 110 Indians of Mexico: Ancient and Modern (3 cr.)
- ANTH-E 240 Southwestern American Indian Ritual and Belief (3 cr.)
- ANTH-E 310 Introduction to the Cultures of Africa (3 cr.)
- ANTH-E 312 African Religions: Myth, Ritual, and Art (3 cr.)
- ANTH-E 319 American Indian Religions (3 cr.)
- ANTH-E 320 Indians of North America (3 cr.)
- ANTH-E 321 Peoples of Mexico
- ANTH-E 322 Peoples of Brazil (3 cr.)
- ANTH-E 323 Indians of Indiana (3 cr.)
- ANTH-E 324 Native American Art (3 cr.)
- ANTH-E 327 Native Amazonians and the Environment (3 cr.)
- ANTH-E 329 Indians in the United States in the Twentieth Century (3 cr.)
- ANTH-E 330 Indians of South America (3 cr.)
- ANTH-E 340 Indians of Mexico and Central America (3 cr.)
- ANTH-E 370 Peasant Society and Culture (3 cr.)
- ANTH-E 397 (CEUS-U 397/NELC-N 397) Peoples and Cultures of the Middle East (3 cr.)
- ANTH-E 398 (CEUS-U 398) Peoples and Cultures of Central Asia (3 cr.)
- ANTH-E 417 African Women (3 cr.)
- ANTH-E 418 Globalization and Consumer Culture (3 cr.)
- ANTH-E 475 Law and Culture (3 cr.)
- ANTH-L 318 Navajo Language and Culture

Business

- BUS-D 301 The International Business Environment (3 cr.)
- BUS-D 302 International Business: Operations of International Enterprises (3 cr.)
- BUS-L 411 International Business Law (3 cr.)
- BUS-F 494 International Finance (3 cr.)
- BUS-G 494 Public Policy and the International Economy (3 cr.)

- BUS-M 401 International Marketing (3 cr.)

Central Eurasian Studies

- CEUS-U 253 Modern Turkey: Development and Culture (3 cr.)
- CEUS-U 254 Introduction to the Ancient Near East and Central Asia (3 cr.)
- CEUS-U 284 The Civilization of Tibet (3 cr.)
- CEUS-U 311 Prophets, Poets, and Kings: Iranian Civilization (3 cr.)
- CEUS-U 350 Turkish Literature in Translation (3 cr.)
- CEUS-U 372 Persian Literature in Translation (3 cr.)
- CEUS-U 373 Persian Mystical Literature in Translation (3 cr.)
- CEUS-U 390 Shamanism in Inner Asia (3 cr.)
- CEUS-U 392 Shrine and Pilgrimage in Central Asian Islam (3 cr.)
- CEUS-U 393 The Yasavi Sufis and Central Asian Islam (3 cr.)
- CEUS-U 394 Islam in the Soviet Union and Successor States (3 cr.)
- CEUS-U 395 Central Asian Politics and Society (3 cr.)
- CEUS-U 397 (ANTH-E 397/NELC-N 397) Peoples and Cultures of the Middle East (3 cr.)
- CEUS-U 398 (ANTH-E 398) Peoples and Cultures of Central Asia (3 cr.)
- CEUS-U 427 Hungary from 1945 to Present (3 cr.)
- CEUS-U 450 Turkish Oral Literature (3 cr.)
- CEUS-U 459 Seminar in Turkish Studies (3 cr.)
- CEUS-U 483 Introduction to the History of Tibet (3 cr.)
- CEUS-U 489 Tibet and the West (3 cr.)
- CEUS-U 490 Sino-Tibetan Relations (3 cr.)
- CEUS-U 497 Inner Asian Peoples and Nationality Policy in the People's Republic of China (3 cr.)

Communication and Culture

- CMCL-C 202 Media in the Global Context (3 cr.)
- CMCL-C 422 Performance, Culture, and Power in the Middle East and North Africa (3 cr.)
- CMCL-C 430 Native American Communication and Performance (3 cr.)

Comparative Literature

- CMLT-C 147 Images of the Self: East and West (3 cr.)
- CMLT-C 257 Asian Literature and the Other Arts (3 cr.)
- CMLT-C 261 Introduction to African Literature (3 cr.)
- CMLT-C 262 Cross-cultural Encounters (3 cr.)
- CMLT-C 265 Introduction to East Asian Poetry (3 cr.)
- CMLT-C 266 Introduction to East Asian Fiction (3 cr.)
- CMLT-C 291 Studies in Non-Western Film (3 cr.)
- CMLT-C 340 Women in World Literature (3 cr.)
- CMLT-C 360 Diasporic Literatures (3 cr.)
- CMLT-C 361 African Literature and Other Arts (3 cr.)
- CMLT-C 365 Japanese-Western Literary Relations (3 cr.)
- CMLT-C 370 Arabic-Western Literary Relations (3 cr.)

- CMLT-C 375 Chinese-Western Literary Relations (3 cr.)
- CMLT-C 377 Topics in Yiddish Literature (3 cr.)
- CMLT-C 378 Topics in Yiddish Culture (3 cr.)

East Asian Languages and Cultures

- EALC-E 100 East Asia: An Introduction (3 cr.)
- EALC-E 101 The World and East Asia (3 cr.)
- EALC-E 110 Popular Culture in East Asia (3 cr.)
- EALC-E 180 Cross-Cultural Experiences of War: East Asia and the United States (3 cr.)
- EALC-E 201 Issues in East Asian Literature (3 cr.)
- EALC-E 202 Issues in East Asian Traditions and Ideas (3 cr.)
- EALC-E 203 Issues in East Asian Cultural History (3 cr.)
- EALC-E 204 Issues in East Asian Society (3 cr.)
- EALC-E 231 Japan: The Living Tradition (3 cr.)
- EALC-E 232 China Past and Present: Culture in Continuing Evolution (3 cr.)
- EALC-E 233 Survey of Korean Civilization (3 cr.)
- EALC-E 252 (HIST-H 207) Modern East Asian Civilization (3 cr.)
- EALC-E 256 Land and Society in East Asia (3 cr.)
- EALC-E 270 Japanese Language and Society (3 cr.)
- EALC-E 271 Twentieth-Century Japanese Culture (3 cr.)
- EALC-E 300 Studies in East Asian Literature (3 cr.)
- EALC-E 301 Chinese Language and Culture (3 cr.)
- EALC-E 302 Geographic Patterns in China (3 cr.)
- EALC-E 303 Korean Folk and Elite Cultures (3 cr.)
- EALC-E 305 Korean Language and Culture (3 cr.)
- EALC-E 321-E 322 Japanese Literature I-II (3-3 cr.)
- EALC-E 331-E 332 Chinese Literature I-II (3-3 cr.)
- EALC-E 333 Studies in Chinese Cinema (3 cr.)
- EALC-E 350 (HIST-G 380) Studies in East Asian Society (3 cr.)
- EALC-E 351 Studies in East Asian Thought (3 cr.)
- EALC-E 352 Studies in East Asian History (3 cr.)
- EALC-E 354 Society and Education in Japan (3 cr.)
- EALC-E 384 East Asian Nationalism and Cultural Identity (3 cr.)
- EALC-E 386 United States-East Asian Relations (3 cr.)
- EALC-E 390 Contemporary Chinese Politics (3 cr.)
- EALC-E 392 Chinese Foreign Policy (3 cr.)
- EALC-E 393 China's Political Economy (3 cr.)
- EALC-E 394 Business and Public Policy in Japan (3 cr.)
- EALC-E 395 Japan in World Trade and Politics (3 cr.)
- EALC-E 471 Twentieth-Century Chinese Literature (3 cr.)
- EALC-E 472 Modern Japanese Fiction (3 cr.)
- EALC-E 473 History of Japanese Theatre and Drama (3 cr.)
- EALC-E 497 Overseas Study Tour (3 cr.)
- EALC-J 491 Humanities Topics in Japanese (3 cr.)
- EALC-J 492 Historical and Cultural Topics in Japanese (3 cr.)

Economics

- ECON-E 303 Survey of International Economics (3 cr.)
- ECON-E 331 International Trade (3 cr.)
- ECON-E 332 International Monetary Economics (3 cr.)
- ECON-E 337 Economic Development (3 cr.)
- ECON-E 386 Soviet-Type Economies in Transition (3 cr.)

French and Italian

- FRIT-M 222 Topics in Italian Culture (3 cr.)

History

- HIST-A 310 Survey of American Indians I (3 cr.)
- HIST-A 311 Survey of American Indians II (3 cr.)
- HIST-B 324 Zionism and the State of Israel (3 cr.)
- HIST-D 302 The Gorbachev Revolution and the Collapse of the Soviet Empire (3 cr.)
- HIST-D 309 Russia in World War II: Battles and People (3 cr.)
- HIST-D 310 Russian Revolutions and the Soviet Regime (3 cr.)
- HIST-D 320 Modern Ukraine (3 cr.)
- HIST-D 329 Eastern Europe in the First Half of the Twentieth Century (3 cr.)
- HIST-D 330 Eastern Europe in the Second Half of the Twentieth Century (3 cr.)
- HIST-E 332 African History from Colonial Rule to Independence (3 cr.)
- HIST-E 333 Conflict in Southern Africa (3 cr.)
- HIST-E 334 History of Western Africa (3 cr.)
- HIST-E 336 History of East Africa (3 cr.)
- HIST-E 338 History of Muslim West Africa (3 cr.)
- HIST-F 336 Modern Central American History (3 cr.)
- HIST-F 343 Modern Brazil Since 1850 (3 cr.)
- HIST-F 346 Modern Mexico (3 cr.)
- HIST-G 101 East Asia in World History (3 cr.)
- HIST-G 369 Modern Japan (3 cr.) HIST-G 372 Modern Korea (3 cr.)
- HIST-G 385 Modern China (3 cr.)
- HIST-G 387 Contemporary China (3 cr.)
- HIST-H 102 The World in the Twentieth Century II (3 cr.)

India Studies

- INST-I 300 Passage to India: Emperors, Gurus, and Gods (3 cr.)
- INST-I 368 Philosophies of India (3 cr.)

Informatics

- INFO-I 399 Topic: Globalization (3 cr.)
- INFO-I 400 Topic: Globalization (3 cr.)

Latin American Studies

- LTAM-L 300 The Latin American Experience (3 cr.)
- LTAM-L 301 Contemporary Problems in Latin America (3 cr.)
- LTAM-L 400 Contemporary Mexico (3 cr.)
- LTAM-L 402 Contemporary Brazil (3 cr.)
- LTAM-L 403 Contemporary Central America (3 cr.)
- LTAM-L 420 New Latin American Cinema (3 cr.)

Linguistics

- LING-L 481 Languages in Africa (3 cr.)

Near Eastern Languages and Cultures

- NELC-N 205 Topics in Near Eastern Languages and Cultures (Topics: Poetry and Society; The Arabic Ode in Comparative Contexts; In Praise of the Prophet Muhammad; The Arabic Novel, from Center to Periphery)
- NELC-N 305 Topics in Near Eastern Studies (3 cr.)
- NELC-N 350 Modern Iran (3 cr.)
- NELC-N 380 Topics in Persian Literature in Translation (3 cr.)
- NELC-N 385 Persian Mystical Literature in Translation (3 cr.)
- NELC-N 397 (ANTH-E 397/CEUS-U 397) Peoples and Cultures of the Middle East (3 cr.)

Political Science

- POLS-Y 331 British Politics (3 cr.)
- POLS-Y 332 Russian Politics (3 cr.)
- POLS-Y 333 Chinese Politics (3 cr.)
- POLS-Y 334 Japanese Politics (3 cr.)
- POLS-Y 335 West European Politics (3 cr.)
- POLS-Y 337 Latin American Politics (3 cr.)
- POLS-Y 338 African Politics (3 cr.)
- POLS-Y 339 Middle Eastern Politics (3 cr.)
- POLS-Y 340 East European Politics (3 cr.)
- POLS-Y 347 German Politics (3 cr.)

Slavic Languages and Literatures

- SLAV-C 223 Introduction to Czech Culture (3 cr.)
- SLAV-C 363 History of Czech Literature and Culture (3 cr.)
- SLAV-C 364 Modern Czech Literature and Culture (3 cr.)
- SLAV-C 365 Seminar in Czech and Central European Literatures and Cultures (3 cr.)
- SLAV-P 223 Introduction to Polish Culture (3 cr.)
- SLAV-P 363-364 Survey of Polish Literature and Culture I-II (3-3 cr.)
- SLAV-R 223 Introduction to Russian Culture (3 cr.)
- SLAV-R 264 Tolstoy to Solzhenitsyn (3 cr.)
- SLAV-R 334 Tolstoy and Dostoevsky (3 cr.)
- SLAV-R 345 Jewish Characters in Russian Literature (3 cr.)
- SLAV-R 349 Myth and Reality: Women in Russian Literature and in Life (3 cr.)
- SLAV-R 352 Russian and Soviet Film (3 cr.)
- SLAV-R 353 Central European Cinema (3 cr.)
- SLAV-S 223 Introduction to Balkan and South Slavic Cultures (3 cr.)
- SLAV-S 363-364 Literature and Culture of the South Slavs I-II (3-3 cr.)

Spanish and Portuguese

- HISP-P 290 Topics in Luso-Brazilian Culture (Topics: Afro-Portuguese Culture: Angola and Mozambique; Jorge Amado: A Portrait of Brazil; A Regional View of Brazil: The Northeast)
- HISP-P 405 Literature and Film in Portuguese (3 cr.)
- HISP-P 410 Brazilian Cinema (3 cr.)

- HISP-P 412 Brazil: the Cultural Context (3 cr.)
- HISP-P 470 Poetry in Portuguese (3 cr.)
- HISP-P 475 Theater in Portuguese (3 cr.)
- HISP-S 260 Introduction to Hispanic Film (3 cr.)
- HISP-S 275 Introduction to Hispanic Culture (3 cr.)
- HISP-S 284 Women in Hispanic Culture (3 cr.)
- HISP-S 331-332 The Hispanic World I-II (3-3 cr.)
- HISP-S 333 The Hispanic World (3 cr.)
- HISP-S 412 Spanish America: The Cultural Context (3 cr.)

Western European Studies

- WEUR-W 405 Special Topics in West European Studies (Topic: History of Political Thought I) (3 cr.)

Artificial Intelligence

1. CSCI-B 351 Introduction to AI
2. One of
 - CSCI-B 355 Autonomous Robots
 - INFO-I 441 Human Computer Interaction Design
 - LING-L 445 The Computer and Natural Language
 - INFO-I 400 (or H equivalent) Topics in Informatics (approved topics)
 - INFO-I 485 Bioinspired Computing
 - INFO-I 486 Artificial Life
3. One of
 - CSCI-B 403 Algorithms
 - CSCI-P 415 Verification
4. One CSCI P course (may be P 415)
5. INFO-I 427 Search Informatics

Note: P 415 can satisfy #3 and #4 simultaneously

Data and Search

1. INFO-I 211 Information Infrastructure
2. CSCI-B 403 Algorithm Design and Analysis
3. CSCI-B 461 Database Concepts
4. One of
 - CSCI-B 534 Distributed Systems
 - INFO-I 427 Search Informatics: Google Under the Hood
5. May take one additional course from:
 - INFO-I 453 Computer and Information Ethics
 - INFO-I 427 Search Informatics: Google Under the Hood

Foundations

1. CSCI-B 401 Fundamentals of Computing Theory
2. CSCI-B 403 Introduction to Algorithm Design and Analysis
3. One of
 - CSCI-P 415 Introduction to Verification
 - CSCI-B 461 Database Concepts
4. Two of (in addition to BS math requirement)
 - CSCI-C 311 Introduction to Programming Languages
 - CSCI-P 423 Compilers
 - MATH-M 453 Cryptography
 - MATH-M 455 Quantum Computing

- MATH-M 301 or MATH-M 303 Linear Algebra
- MATH-M 360 Elements of Probability
- MATH-M 365 Introduction to Probability and Statistics
- MATH-M 471 Numerical Analysis
- MATH-M 584 Recursion Theory
- STAT-S 320 Introduction to Statistics

Programming Languages

1. CSCI-C 311 Introduction to Programming Languages
2. Two of
 1. CSCI-C 335 Computer Structures
 2. CSCI-P 423 Compilers (Recommended)
 3. CSCI-P 436 Operating Systems
 4. CSCI-B 441 Digital Design
 5. CSCI-B 443 Computer Architecture
 6. CSCI-B 490 Seminar (approved programming languages topic)
3. One of
 1. CSCI-B 401 Fundamentals of Computing Theory
 2. CSCI-B 403 Introduction to Algorithm Design and Analysis
 3. CSCI-P 415 Introduction to Verification

Systems

1. CSCI-C 335 Computer Structures
2. One of the following combinations
 - CSCI-P 436 Operating Systems, CSCI-P 438 Networks
 - CSCI-P 436 Operating Systems, CSCI-B 441 Digital Design
 - CSCI-B 441 Digital Design, CSCI-P 442 Digital Design
 - CSCI-B 441 Digital Design, CSCI-P 545 Real Time Systems
3. One of
 - CSCI-B 401 Fundamentals of Computing Theory
 - CSCI-B 403 Introduction to Algorithm Design and Analysis
 - CSCI-P 415 Introduction to Verification

Professional Master's Degree in Computer Science

The Professional Master's degree in Computer Science is designed to enable students to complete a graduate degree in five years. It requires more graduate-level courses than the combined total of the B.S. and M.S., but fewer total credit hours than the sum total of the B.S. and M.S. when taken individually.

Decisions to admit students to the Professional Master's degree in Computer Science program can be made following the freshman year, at the time of enrollment in the School of Informatics and Computing. Students planning to apply to the program should contact the undergraduate office in Computer Science for details on admissions and advising.

Students in the program are normally classified as undergraduates until the end of the first semester in which 122 or more hours of credit toward graduation have been earned. During this semester, students in good standing, defined as having a GPA of at least 3.0 overall and 3.0 in computer science, must submit the standard application to the Graduate School (which includes a processing fee) and initiate the transition to graduate status; if the transition to graduate status is delayed beyond this time, professional master's status will normally revert to undergraduate B.S. status. Students are advised to check on the effect the transition to graduate status may have on existing undergraduate funding; the possibility of graduate funding is conditional upon transition to graduate status. Those not in good standing at this time are dropped from the program and reclassified as undergraduate B.S. students.

Students in the Professional Master's Program in Computer Science must complete at least 15 hours of course work while registered in graduate status. Normally, this would encompass no fewer than two semesters.

Students in the program may receive a B.S., optionally with honors (B.S.H.), when they complete the requirements for that degree. Students in the program are encouraged to pursue the B.S.H. Students should be aware that the application for the bachelor's degree must be completed to be eligible for the master's degree, and that the degrees may be taken either sequentially or simultaneously.

General Requirements

Degree Programs

Awards & Scholarships

Certificates & Minors

The undergraduate minor or certificate allows a student majoring in another subject to get appropriate training in informatics and obtain certification as someone who knows how to apply informatics tools to that subject area.

Equivalent honors versions of regular informatics or computer science courses may substitute throughout the certificate or minor.

Certificate in Informatics

Students may obtain an area certificate in Informatics by successfully completing 8 courses. A grade of C or higher in each course and an overall certificate GPA of 2.0 is required.

Required Courses:

- INFO-I 101 Introduction to Informatics (4 cr.)
- INFO-I 201 Mathematical Foundations of Informatics (4 cr.)
- INFO-I 202 Social Informatics (3 cr.)
- INFO-I 210 Information Infrastructure I (4 cr.)
- INFO-I 211 Information Infrastructure II (4 cr.)
- INFO-I 300 Human Computer Interaction (3 cr.)
- INFO-I 308 Information Representation (3 cr.)

In addition, students must take one course from the list of informatics electives. CSCI majors may not count upper

level CSCI courses in this certificate if used in major requirements.

Minor in Informatics

Students may obtain a minor in Informatics by successfully completing a minimum of 15 credit hours. A grade of C or higher in each course and an overall minor GPA of 2.0 is required.

Students are required to take three courses from the following list of lower division courses:

- INFO-I 101 Introduction to Informatics (4 cr.)
- INFO-I 201 Mathematical Foundations of Informatics (4 cr.)
- INFO-I 202 Social Informatics (3 cr.)
- INFO-I 210 Information Infrastructure I (4 cr.)
- INFO-I 211 Information Infrastructure II (4 cr.)
- INFO-I 300 Human Computer Interaction (3 cr.)
- INFO-I 308 Information Representation (3 cr.)

In addition, students must take two courses from the list of informatics electives. CSCI majors may not count upper level CSCI courses in this minor if used in major requirements.

Minor in Human-Centered Computing

Students may obtain a minor in Human-Centered Computing by successfully completing a minimum of 15 credit hours. A grade of C- or higher in each course and an overall minor GPA of 2.0 is required.

The minor introduces students with little or no background in computing to the social, cultural, ethical and organizational dimensions of computing and information technology, as well as the role of design in the creation of new technology. For students pursuing the B.S. in Informatics, the human-centered computing minor is a superset of the cognate requirements.

Required Courses:

For Informatics Majors:

Must complete 5 courses from the following:

- CSCI-A 216 Digital Multimedia Concepts and Technologies (3 cr.)
- INFO-I 303 Organizational Informatics (3 cr.)
- INFO-I 310 Multimedia Arts and Technology (3 cr.)
- INFO-I 330 Legal and Social Informatics of Security (3 cr.)
- INFO-I 356 Globalization, Where We Fit In (3 cr.)
- INFO-I 441 Human-Computer Interaction Design I (3 cr.)
- INFO-I 453 Computer and Information Ethics (3 cr.)
- Approved topic in INFO-I 399 or I 400 (3 cr.)

For non-Informatics Majors:

Must complete:

- INFO-I 101 Introduction to Informatics (4 cr.)
- OR**
- CSCI-A 110 Intro to Computers and Computing (3 cr.)
- AND**
- INFO-I 202 Social Informatics (3 cr.)
- INFO-I 300 Human-computer Interaction Design and Programming (3 cr.)

Must complete 2 courses from the following:

- CSCI-A 216 Digital Multimedia Concepts and Technologies (3 cr.)
- INFO-I 303 Organizational Informatics (3 cr.)
- INFO-I 310 Multimedia Arts and Technology (3 cr.)
- INFO-I 330 Legal and Social Informatics of Security (3 cr.)
- INFO-I 356 Globalization, Where We Fit In (3 cr.)
- INFO-I 441 Human-Computer Interaction Design I (3 cr.)
- INFO-I 453 Computer and Information Ethics (3 cr.)
- Approved topic in INFO-I 399 or I 400 (3 cr.)

Minor in Information Technology

Computer Science majors may not claim this minor.

Students may obtain a minor in Information Technology by successfully completing a minimum of 15 credit hours. A grade of C- or higher in each course and an overall minor GPA of 2.0 is required.

- CSCI-A 201 Introduction to Programming I (4 cr.)
 - CSCI-A 202 Introduction to Programming II (4 cr.)
- OR**
- CSCI-C 211 Introduction to Computer Science (4 cr.)
 - CSCI-C 212 Introduction to Software Systems (4 cr.)
- AND**
- CSCI-A 338 Network Technologies and Administration (4 cr.)

In addition student must complete

- CSCI-A 346 User-Interface Programming (3 cr.)
- OR**
- CSCI-A 348 Mastering the World Wide Web (4 cr.)

Minor in Security Informatics

Students may obtain a minor in Security Informatics by successfully completing a minimum of 16 credit hours. A grade of C- or higher in each course and an overall minor GPA of 2.0 is required.

The minor is an appropriate addition for students (Informatics and Computer Science majors) interested in gaining significant exposure to issues, challenges and techniques relevant to computer based security. For students pursuing the B.S. in Informatics, the security informatics minor is a superset of the cognate requirements.

Preparatory Courses:

For Informatics Majors:

- INFO-I 101 Introduction to Informatics (4 cr.)
- INFO-I 201 Math Foundations of Informatics (4 cr.)
- INFO-I 210 Information Infrastructure I (4 cr.)
- INFO-I 211 Information Infrastructure I (4 cr.)

For Computer Science Majors:

- CSCI-C 211 Introduction to Computer Science (4 cr.)
- CSCI-C 212 Introduction to Software Systems (4 cr.)
- CSCI-C 241 Discrete Structures for Computer Science (3 cr.)

Required Courses:

- INFO-I 130 Introduction to Cybersecurity (1 cr.)
- INFO-I 230 Analytical Foundations of Security (3 cr.)

- INFO-I 231 Math Foundations of Cybersecurity (3 cr.)

In addition, students must take three courses from the following list:

- INFO-I 330 Legal and Social Informatics of Security (3 cr.)
- INFO-I 400 Topics in Informatics when security related, approval required (3 cr.)
- INFO-I 430 Security for Networked Systems (3 cr.)
- INFO-I 433 Systems and Protocol Security and Information Assurance (3 cr.)
- INFO-I 453 Computer and Information Ethics (3 cr.)

Minor in Computer Science

Students may obtain a minor in Computer Science by successfully completing a minimum of 15 credit hours. A grade of C- or higher in each course and an overall minor GPA of 2.0 is required.

Students pursuing the B.S. in Informatics may obtain a minor in computer science by successfully completing a minimum of 15 credit hours that include the following requirements:

- CSCI-C 211 Introduction to Computer Science (4 cr.)
- CSCI-C 212 Introduction to Software Systems (4 cr.)
- CSCI-C 241 Discrete Structures for Computer Science (3 cr.)
- CSCI-C 335 Computer Structures (4 cr.), or CSCI-C 343 Data Structures (4 cr.)

The minor in Computer Science is administered through the College of Arts and Sciences.

Outside Minors

Students may pursue minors and certificates in other schools by contacting the Undergraduate Recorder's office in the school the minor or certificate is offered and consulting the advisor in the School of Informatics and Computing. Many cognates complete minor requirements; please see respective Recorder's office to declare the minor.

Business Minors

Important Note: The School of Informatics requires a grade of C- or higher in each course (except for K 201, which requires a grade of C or higher) and an overall minor GPA of 2.0. All 300- and 400-level course work must be completed on the Bloomington campus. None of the course work may be taken by independent study/ correspondence, distance education, or "Courses to Go."

BUS-K 201 note: Computer Science majors may substitute CSCI-C 211 for K 201.

Minor in Business

- Complete 26 or more credit hours of college course work that counts toward graduation and be admitted to a degree-granting school.
- Successfully complete the following courses:
 - BUS-A 200 or A 201 or A 202 (3 cr.)
 - BUS-K 201 (3 cr.) minimum C grade required
 - BUS-L 201 (3 cr.)
- Successfully complete four of the following elective courses:

- BUS-F 300 (3 cr.)
- BUS-G 300 (3 cr.)
- BUS-M 300 (3 cr.)
- BUS-P 300 (3 cr.)
- BUS-Z 302 or J 306 (3 cr.)

Minor in Entrepreneurship and Small Business Management

- Complete 26 or more credit hours of college course work that counts toward graduation and be admitted to a degree-granting school.
- Successfully complete the following courses:
 - BUS-A 200 or A 201 or A 202 (3 cr.)
 - BUS-K 201 (3 cr.) minimum C grade required
 - BUS-L 201 or L 311 (3 cr.)
 - BUS-W 212 (3 cr.)
 - BUS-M 300 (3 cr.)
 - BUS-W 300 (3 cr.)
- Successfully complete one of the following elective courses:
 - BUS-F 300 (3 cr.)
 - BUS-G 300 (3 cr.)
 - BUS-P 300 (3 cr.)
 - BUS-Z 302 or J 306 (3 cr.)

Minor in Marketing

- Complete 26 or more credit hours of college course work that counts toward graduation and be admitted to a degree-granting school.
- Successfully complete the following courses:
 - BUS-A 200 or A 201 or A 202 (3 cr.)
 - BUS-K 201 (3 cr.) minimum C grade required
 - BUS-L 201 (3 cr.)
 - BUS-M 300 (3 cr.)
 - BUS-M 311 or M 312 (3 cr.)
- Successfully complete two of the following elective courses:
 - BUS-M 311 or M 312 (3 cr.) if not used for required course above
 - BUS-F 300 (3 cr.)
 - BUS-G 300 (3 cr.)
 - BUS-P 300 (3 cr.)
 - BUS-Z 302 or J 306 (3 cr.)

Courses

Key to Course Codes

AAAD	African American and African Diaspora Studies (COLL)
AMID	Apparel Merchandising and Interior Design (COLL)
AMST	American Studies Program (COLL)
ANAT	Anatomy (Medical Sciences Program)
AST	Astronomy (COLL)
BIOL	Biology (COLL)

BUS	Business (Kelley School of Business)
CHEM	Chemistry (COLL)
CLAS	Classical Studies (COLL)
COLL	College of Arts and Sciences
COGS	Cognitive Science Programs (COLL)
CMLT	Comparative Literature (COLL)
CJUS	Criminal Justice (COLL)
CSCI	Computer Science (COLL and INFO)
ECON	Economics (COLL)
EDUC	Education (School of Education)
ENG	English (COLL)
FINA	Fine Arts (COLL)
GEOG	Geography (COLL)
GEOL	Geological Sciences (COLL)
GNDR	Gender Studies (COLL)
HIST	History (COLL)
HPER	School of Health, Physical Education, and Recreation
HPSC	History and Philosophy of Science (COLL)
HON	Honors (COLL)
INFO	Informatics (School of Informatics)
JOUR	Journalism (School of Journalism)
LAMP	Liberal Arts and Management Program (COLL)
LING	Linguistics (COLL)
MATH	Mathematics (COLL)
MUS	Music (COLL)
NEWM	New Media (School of Informatics)
NURS	Nursing (School of Nursing)
PHIL	Philosophy (COLL)
PHSL	Physiology (Medical Sciences Program)
PHYS	Physics (COLL)
POLS	Political Science (COLL)
PSY	Psychology (COLL)
REL	Religious Studies (COLL)
SLIS	School of Library and Information Science
SOC	Sociology (COLL)
SPEA	School of Public and Environmental Affairs
SPHS	Speech and Hearing Sciences (COLL)
TEL	Telecommunications (COLL)
THTR	Theatre and Drama (COLL)
UDIV	University Division

Informatics

INFO-I 101 Introduction to Informatics (4 cr.) Problem solving with information technology; introductions to information representation, relational databases, system design, propositional logic, cutting-edge technologies: CPU, operation systems, networks; laboratory emphasizing information technology including Web page design, word processing, databases, using tools available on campus. Credit given for only one of INFO-I 101 or H 101.

INFO-H 101 Introduction to Informatics, Honors (4 cr.) Honors version of# INFO-I 101. Credit given for only one of INFO-H 101 or I 101.

INFO-I 110 Basic Tools of Informatics I—Programming Concepts (1.5 cr.) P: CSCI-A 110, A 111, or equivalent computing experience. Introduction to programming for users of computer systems. Emphasis on problem-solving techniques. An eight-week lecture and laboratory course. Cross-listed with CSCI-A 112. Credit given for only one of the following: INFO-I 110 or CSCI-A 112.

INFO-I 111 Basic Tools of Informatics II—Introduction to Databases (1.5 cr.) P: CSCI-A 110, A 111, or equivalent computing experience. Introduction to database design concepts. Entering and modifying data, accessing data using visual tools and SQL, and building database applications using forms and application development tools. Emphasis on problem-solving techniques. An eight-week lecture and laboratory course. Cross-listed with CSCI-A 114. Credit given for only one of the following: INFO-I 111 or CSCI-A 114.

INFO-I 130 Introduction to Cybersecurity (1 cr.) P: INFO-I 101. C: INFO-I 101. This course introduces students to cybersecurity. The course will primarily focus on introduction to three core areas (technical aspects of security, organizational aspects of security, and legal aspects of security). Through examples of security problems in real life, this course will illuminate fundamental ideas and concepts of information security. An eight-week course.

INFO-I 201 Mathematical Foundations of Informatics (4 cr.) P: INFO-I 101 and MATH-M 118, MATH-A 118, MATH-S 118, or MATH-D 116-117. An introduction to methods of analytical, abstract, and critical thinking; deductive reasoning; and logical and mathematical tools used in information sciences. The topics include propositional and predicate logic, natural deduction proof system, sets, functions and relations, proof methods in mathematics, mathematical induction, and graph theory. Credit given for only one INFO-I 201 or INFO-H 201.

INFO-H 201 Mathematical Foundations of Informatics, Honors (4 cr.) P: INFO-I 101, and MATH-M 118, MATH-A 118, or MATH-S 118. Honors version of INFO-I 201. Credit given for only one of INFO-H 201 or I 201.

INFO-I 202 Social Informatics (3 cr.) P: INFO-I 101. Introduction to key social research perspectives and literatures on the use of information and communication technologies. Discusses current topics such as information ethics, relevant legal frameworks, popular and controversial uses of technology (for example, peer-

to-peer file sharing), digital divides, and so on. Outlines research methodologies for social informatics. Credit given for only one of #INFO-I 202 or H 202.

INFO-H 202 Social Informatics, Honors (3 cr.) P: INFO-I 101. Honors version of INFO-I 202. Credit given for only one of INFO-H 202 or I 202.

INFO-I 210 Information Infrastructure I (4 cr.) P: INFO-I 201. The software architecture of information systems. Basic concepts of systems and applications programming. Credit given for only one of the following: #INFO-I 210 or H 210.

INFO-H 210 Information Infrastructure I, Honors (4 cr.) P: INFO-I 201. Honors version of INFO-I 210. Credit given for only one of INFO-H 210 or I 210.

INFO-I 211 Information Infrastructure II (4 cr.) P: INFO-I 210. The systems architecture of distributed applications. Advanced programming, including an introduction to the programming of graphical systems. Credit given for only one of the following: INFO-I 211 or H 211.

INFO-H 211 Information Infrastructure II, Honors (4 cr.) P: INFO-I 210. Honors version of #INFO-I 211. Credit given for only one of INFO-H 211 or I 211.

INFO-I 230 Analytical Foundations of Security (3 cr.) P: INFO-I 130. This course will enable students to reevaluate and conceptualize material learned in discrete courses to consider the topics from their perspective of security. For example, computer system basics such as hardware (CPUs, memory) and software are reconsidered from the perspective of how their interactions create vulnerabilities. Vulnerabilities that combine standard hardware and software configurations will be examined because they illuminate both security and computer networks. Operating systems and file systems are examined from the perspective of access control, permissions, and availability of system services.

INFO-I 231 Computational Foundations of Cybersecurity (3 cr.) The goal of this course is for students to be introduced to the basic mathematical tools used in modern cybersecurity. The course covers introductory mathematical material from a number of disparate fields including probability theory, analysis of algorithms, complexity theory, number theory, and group theory.

INFO-I 300 Human-Computer Interaction Design and Programming (3 cr.) P: INFO-I 101, I 202. The analysis of human factors and the design of computer application interfaces. A survey of current HCI designs with an eye toward what future technologies will allow. The course will emphasize learning HCI based on implementation and testing interfaces. Credit given for only one of INFO-I 300 or H 300.

INFO-H 300 Human-Computer Interaction Design and Programming, Honors (3 cr.) P: INFO-I 101, I 202. Honors version of INFO-I 300. Credit given for only one of INFO-H 300 or I 300.

INFO-I 303 Organizational Informatics (3 cr.) P: INFO-I 101. Examines the various needs, uses, and consequences of information in organizational contexts. Topics include organizational types and characteristics, functional areas and business processes, information-

based products and services, the use of and redefining the role of information technology, the changing character of work life and organizational practices, sociotechnical structures, and the rise and transformation of information-based industries.

INFO-I 308 Information Representation (3 cr.) P: INFO-I 101, I 201 and I 210. The basic structure of information representation in digital information systems. Begins with low-level computer representations such as common character and numeric encodings. Introduces formal design and query languages through Entity Relationship Modeling, the Relational Model, XML, and XHTML. Laboratory topics include SQL and XPath querying. Credit given for only one of INFO-I 308 or H 308.

INFO-H 308 Information Representation, Honors (3 cr.) P: INFO-I 101, I 201 and I 210. Honors version of #INFO-I 308. Credit given for only one of INFO-H 308 or I 308.

INFO-I 310 Multimedia Arts and Technology (3 cr.) P: INFO-I 300. The study of the evolution of media arts and underlying principles of communication. Application development paradigms in current practice.

INFO-I 320 Distributed Systems and Collaborative Computing (3 cr.) P: INFO-I 211. An introductory treatment of distributed systems and programming. Topics range from the distributed and object models of computation to advanced concepts such as remote method invocations, object brokers, object services, open systems, and future trends for distributed information systems.

INFO-I 330 Legal and Social Informatics of Security (3 cr.) P: INFO-I 230, or consent of instructor. This course examines that set of ethical and legal problems most tightly bound to the issues of information control. The interaction and technology changes, but the core issues have remained: privacy, intellectual property, Internet law, concepts of jurisdiction, speech anonymity versus accountability, and ethical decision making in the network environment.

INFO-I 356 Globalization, Where We Fit In (3 cr.) Globalization changes how we work, what we buy, and who we know. Globalization involves people working eighty hour weeks in China and receiving free state-of-the-art drugs in Africa. Learn about the past, present and future of globalization, and what it means for you, your job, and your community.

INFO-I 371 Chemical Informatics I (1 cr.) Presents basic concepts of information representation, storage, and retrieval as they pertain to chemistry. The course is designed to give an overview of the techniques that make modern chemical informatics systems work. Looks at some of the coding techniques that form the basis for chemical information retrieval by structures, nomenclature, and molecular formulas. Examines various methods of coding for visualization of chemical structures and chemical data. In addition, some of the major algorithms and techniques used in the modern pharmaceutical industry to enhance their research efforts are presented in INFO-I 371.

INFO-I 372 Molecular Modeling (1 cr.) P: CHEM-C 341. Molecular modeling and computational chemistry;

application of quantum mechanics and molecular mechanics to drive structural and energetic information about molecules; conformational analysis; quantitative structure activity relationships (QSAR) and related methods for drug design.

INFO-I 391 Internship in Informatics Professional Practice (1-3 cr.) P: Approval of dean and completion of 100- and 200-level requirements in informatics. Students gain professional work experience in an industry or research organization setting, using skills and knowledge acquired in informatics course work. May be repeated for a maximum of 3 credit hours. S/F grading.

INFO-I 399 Current Topics in Informatics (1-3 cr.) Variable topic course. Emphasis is on new developments and research in informatics. May be repeated twice with different topic.

INFO-I 400 Topics in Informatics (3 cr.) P: At least junior standing or permission of instructor. Variable topic. Emphasis is on new developments and research in informatics. May be repeated twice for credit for any combination of INFO-I 400 and H 400 when topic varies. Subject to approval of the dean.

INFO-H 400 Topics in Informatics, Honors (3 cr.) P: At least junior standing or permission of instructor. Honors version of INFO-I 400. Variable topic. Emphasis is on development and research in informatics. May be repeated twice for credit for any combination of INFO-H 400 and I 400 when topic varies. Subject to approval of the dean.

INFO-I 421 Applications of Data Mining (3 cr.) P: INFO-I 308. The course explores the use of data mining techniques in different settings, including business and scientific domains. The emphasis will be on using techniques instead of developing new techniques or algorithms. Students will select, prepare, visualize, analyze, and present data that leads to the discovery of novel and actionable information.

INFO-I 427 Search Informatics (3 cr.) Techniques and tools to automatically crawl, parse, index, store, and search Web information, organizing knowledge that can help meet the needs of organizations, communities and individual users. Social and business impact of search engine technology. As a project, students will build a real search engine and compare it with Google.

INFO-I 430 Security for Networked Systems (3 cr.) P: INFO-I 230, I 231 and (I 211 or C 212). This course is an extensive survey of network security. The course materials cover threats to information confidentiality, integrity, and availability in different Internet layers, and defense mechanisms that control these threats. The course also provides a necessary foundation on network security, such as cryptographic, primitives/protocols, authentication, authorization and access control technologies; and hands-on experiences through programming assignments and course projects.

INFO-I 433 Systems & Protocol Security & Information Assurance (3 cr.) P: INFO-I 230, I 231 and (I 211 or C 212). This class covers the fundamentals of computer security by looking at how things can go wrong, and how people can abuse the system. This is a matter of creative cheating; to find loopholes and exploit them. After

students learn how to attack the system, it is possible to propose ways to make the system secure. Students will gain a basic overview of existing security problems and be exposed to methods that can be used to secure against such problems. The course should be taken by any one designing, selecting, or using applications in which security or privacy plays a role.

INFO-I 441 Human-Computer Interaction Design I (3 cr.) Human-computer interaction design (HCID) describes the way a person or group accomplishes tasks with a computer—what the individual or group does and how the computer responds; what the computer does and how the individual or group responds. This course is organized around a collection of readings and three design projects applying human-computer interaction principles to the design, selection, and evaluation of interactive systems.

INFO-I 453 Computer and Information Ethics (3 cr.) Ethical and professionalization issues that arise in the context of designing and using networked information technologies and information resources. Examines frameworks for making ethical decisions, emergent technologies and their ethical implications, information/computer professionalism. Topics include privacy, intellectual property, cybercrime, games, social justice, and codes of professional ethics.

INFO-I 485 Bioinspired Computing (3 cr.) P: INFO-I 211 or CSCI-C 212. Biological organisms cope with the demands of their environments using solutions quite unlike the traditional human-engineered approaches to problem solving. Biological systems tend to be adaptive, reactive, and distributed. Bio-inspired computing is a field devoted to tackling complex problems using computational methods modeled after design principles encountered in nature.

INFO-I 486 Artificial Life (3 cr.) Artificial Life is a broad discipline encompassing the origins, modeling, and synthesis of natural and artificial living entities and systems. Artificial Intelligence, as a discipline, tries to model and understand intelligent systems and behavior, typically at the human level.

INFO-I 490 Professional Practicum/Internship for Undergraduates (0 cr.) P: Approval of the dean. Provides for participation in professional training and internship experience.

INFO-I 491 Capstone Project Internship (1–6 cr.) P: Approval of dean and completion of all required core informatics courses. Students put their informatics education in practice through the development of a substantial project while working in a professional information technology environment. May be repeated for a maximum of 6 credit hours.

INFO-I 492 Senior Thesis (3 cr.) P: Senior standing and approval of the dean. The senior student prepares and presents a thesis: a substantial, typically multichapter paper based on a well-planned research or scholarly project, as determined by the student and a sponsoring faculty member.

INFO-I 493 Senior Thesis (3 cr.) P: Senior standing and approval of the dean. The senior student prepares and presents a thesis: a substantial, typically multichapter

paper based on a well-planned research or scholarly project, as determined by the student and a sponsoring faculty member.

INFO-I 494 Design and Development of an Information System (3 cr.) P: Approval of the dean and completion of required core informatics courses. Students work on capstone projects in supervised teams. They select an appropriate project (preferably based on cognate) and then learn to develop a plan that leads to success. Teamwork, communication, and organizational skills are emphasized in a real-world-style environment. Credit given for only one of INFO-I 494 or H 494. Credit given for only one of INFO-I 495 or H 495.

INFO-I 495 Design and Development of an Information System (3 cr.) P: Approval of the dean and completion of required core informatics courses. Students work on capstone projects in supervised teams. They select an appropriate project (preferably based on cognate) and then learn to develop a plan that leads to success. Teamwork, communication, and organizational skills are emphasized in a real-world-style environment. Credit given for only one of INFO-I 494 or H 494. Credit given for only one of INFO-I 495 or H 495.

INFO-H 494 Design and Development of an Information System, Honors (3 cr.) P: Approval of the dean and completion of required core informatics courses. Honors version of INFO-I 494/495. Credit given for only one of INFO-H 494 or I 494. Credit given for only one of INFO-H 495 or I 495.

INFO-H 495 Design and Development of an Information System, Honors (3 cr.) P: Approval of the dean and completion of required core informatics courses. Honors version of INFO-I 494/495. Credit given for only one of INFO-H 494 or I 494. Credit given for only one of INFO-H 495 or I 495.

INFO-H 498 Honors Seminar (1–3–6 cr.) P: Junior or senior major in INFO with GPA at least 3.3 or permission of instructor. A survey of faculty research in computer related fields with different professors discussing their research each week. May be repeated up to a total of 6 credit hours.

INFO-I 499 Readings and Research in Informatics (1–3 cr.) P: Consent of instructor and completion of 100- and 200-level requirements in informatics. Independent readings and research related to a topic of special interest to the student. Written report required. May be repeated up to a total of 6 credit hours for any combination of #INFO-I 499 and H 499.

INFO-H 499 Readings and Research in Informatics, Honors (1–3 cr.) P: Consent of instructor and completion of 100- and 200-level requirements in informatics. Honors version of INFO-I 499. Independent readings and research related to a topic of special interest to the student. Written report required. May be repeated up to a total of 6 credit hours for any combination of INFO-H 499 and I 499.

INFO-T 100 Topics in Informatics Technology (1–3 cr.) Variable topic. The course serves as an introduction to a specific information technology in a hands-on setting. Emphasis is on problem solving techniques using technology. Credit hours may not be applied toward satisfying major requirements in the School of Informatics.

INFO–Y 100 Exploring Informatics and Computer Science (1 cr.) Technology is everywhere and how it relates to the world today is very important to the future. The objective of this course is to offer students an opportunity to explore the many tracks within the fields of Informatics and Computer Science, while also learning about the multiple careers available to students majoring in the fields. Emphasis will be placed on the various ways technology affects the work world and how students can tailor a major to their individual interests. The course will promote a hands-on, interactive and self-reflective course environment. An eight-week course.

INFO–Y 395 Career Development for Informatics Majors (1 cr.) Helps students develop skills and knowledge to successfully pursue a career search, both at the time of graduation and as they progress through their careers. The course covers techniques and strategies to make the job search more efficient and effective. An eight-week course.

Computer Science

CSCI–A 110 Introduction to Computers and Computing (3 cr.) P: One year of high school algebra or MATH-M 014. **N & M** Basic principles of computers and software. Social and lifestyle effects of information technology. Emphasis on problem-solving techniques. Productivity software skills are taught using real-world projects. Lecture and laboratory. Credit given for only one of CSCI-A 106, A 110, or A 111.

CSCI–A 111 A Survey of Computers and Computing (1.5 cr.) P: One year of high school algebra or MATH-M 014, and some prior computing experience. Survey of computing concepts, with emphasis on problem-solving techniques. Experience in a variety of popular applications software for tasks such as word processing, Web browsing, spreadsheet calculations, and databases. Lecture and laboratory. An eight-week course. Credit given for only one of CSCI-A 106, A 110, or A 111.

CSCI–A 112 Programming Concepts (1.5 cr.) P: CSCI-A 110, A 111, or equivalent computing experience. Introduction to programming for users of computer systems. Emphasis on problem-solving techniques. Lecture and laboratory. An eight-week course. Crosslisted with INFO-I 110. Credit given for only one of CSCI-A 112 or INFO-I 110.

CSCI–A 113 Data Analysis Using Spreadsheets (1.5 cr.) P: CSCI-A 110, A 111, or equivalent. An introduction to data analysis using spreadsheets, including both scientific and business applications. Elementary statistical concepts and their applications to data analysis. Emphasis on problem-solving techniques. Lecture and laboratory. An eight-week course.

CSCI–A 114 Introduction to Databases (1.5 cr.) P: CSCI-A 110, A 111, or equivalent. Introduction to database design concepts. Entering and modifying data, accessing data using visual tools and SQL, building database applications using forms and application development tools. Emphasis on problem-solving techniques. Lecture and laboratory. An eight-week course. Crosslisted with INFO-I 111. Credit given for only one of CSCI-A 114 or INFO-I 111.

CSCI–A 201 Introduction to Programming I (4 cr.) P: Two years of high school mathematics or MATH-M 014. **N & M** Fundamental programming constructs, including loops, arrays, and files. General problem-solving techniques. Emphasis on modular programming and developing good programming style. Not intended for computer science majors. Credit given for only one of CSCI-A 201 and A 597.

CSCI–A 202 Introduction to Programming II (4 cr.) P: CSCI-A 201 or A 304. **N & M** Advanced programming techniques: user-defined functions and types, recursion vs iteration, parameter-passing mechanisms; Classic abstract data types and algorithms. Programming style. Object-oriented programming. Web Programming.

CSCI–A 216 Digital Multimedia Concepts and Technologies (3 cr.) P: CSCI-A 110, A 111, or equivalent computing experience. **N & M** In-depth introduction to the technologies of digital hardware and software relevant to efficient multimedia communication methods. Lectures focus on computational foundations, underlying concepts, and digital methods. Laboratory provides direct experience with concepts presented in lecture, using latest available digital tools to create direct and Web-based multimedia content. Lecture and laboratory.

CSCI–A 290 Tools for Computing (1-2-6 cr.) Exploration of topics in computing. Common topics include tools for power users. Prerequisites vary by topic. Lecture and laboratory format. Three A 290 courses will count as one of seven advanced elective courses for majors. May be repeated up to a total of 6 credit hours.

CSCI–A 304 Introductory C++ Programming (2 cr.) P: Programming experience. Topics include aspects of C++ that are not object-oriented, basic data structures, standard libraries, and UNIX tools for project management.

CSCI–A 306 Object-Oriented Programming in C++ (2 cr.) P: CSCI-A 201, A 304, A 597, or C 212. Topics include objects, classes, encapsulation, inheritance, polymorphism, templates, and exceptions.

CSCI–A 321 Computing Tools for Scientific Research (4 cr.) P: MATH-M 118 or higher required; MATH-M 211 recommended. **N & M** Introduction to computer-based tools useful for analysis and understanding of scientific data. Basic methods of computation, data processing, and display in systems such as Matlab combined with elementary practical C/C++ programming. Techniques to support customized scientific research tasks, with particular emphasis on biological, neural, and behavioral sciences. Lecture and laboratory.

CSCI–A 338 Network Technologies and Administration (4 cr.) P: CSCI-A 110, EDUC-W 200, or equivalent computer literacy. Lab fee. Introduction to network principles and current network technology, both hardware and software. Network administration tools and techniques. Laboratory provides practical experience. Credit given for only one of CSCI-A 247 and A 338. Lab fee.

CSCI–A 346 User-Interface Programming (3 cr.) P: CSCI-A 202, A 306, A 597, C 212, or equivalent experience. Lab fee. Learn to prototype and build graphical user interfaces for computer applications.

Contemporary software design methodology. Students design and implement prototype interfaces to applications provided by the instructor. Extensive use is made of both commercial and experimental software tools. Lab fee.

CSCI-A 348 Mastering the World Wide Web (3–4 cr.) P: Two semesters of programming experience, or equivalent, and some knowledge of operating systems. Lab fee. Project-oriented course leading to ability to maintain a fully functional Web site. Topics include Internet network protocols and Web programming, server administration, protocols, site design, and searching and indexing technologies. Lab fee.

CSCI-C 102 Great Ideas in Computing (3 cr.) Survey of great ideas in computing in the modern world. Explores how people use computing tools to realize their ideas. Emphasis on the impact of modern technology and the use of hardware and software to create solutions to everyday problems. Lecture and laboratory.

CSCI-C 211 Introduction to Computer Science (4 cr.) P: High school precalculus math. **N & M** A first course in computer science for those intending to take advanced computer science courses. Introduction to programming and to algorithm design and analysis. Using the Scheme programming language, the course covers several programming paradigms. Credit given for only one of CSCI-C 211 or H 211. Lecture and laboratory.

CSCI-H 211 Introduction to Computer Science, Honors (4 cr.) P: High school precalculus math. **N & M** Honors version of CSCI-C 211. Credit given for only one of CSCI-H 211 or C 211.

CSCI-H 212 Introduction to Software Systems, Honors (4 cr.) P: CSCI-C 211. **N & M** Honors version of CSCI-C 212. Credit given for only one of CSCI-H 212 or C 212.

CSCI-C 212 Introduction to Software Systems (4 cr.) P: CSCI-C 211. **N & M** Design of computer software systems and introduction to programming in the environment of a contemporary operating system. Topics include a modern object-oriented programming language; building and maintaining large projects; and understanding the operating system interface. Lecture and laboratory. Credit given for only one of CSCI-C 212 or H 212.

CSCI-C 241 Discrete Structures for Computer Science (3 cr.) P: CSCI-C 211. MATH-M 211 recommended. **N & M** Induction and recursive programs, running time, asymptotic notations, combinatorics and discrete probability, trees and lists, the relational data model, graph algorithms, propositional and predicate logic. Credit given for only one of CSCI-C 241 or H 241.

CSCI-H 241 Discrete Structures for Computer Science, Honors (3 cr.) P: CSCI-C 211. MATH-M 211 recommended. **N & M** Honors version of CSCI-C 241. Credit given for only one of CSCI-H 241 or C 241.

CSCI-C 290 Tools in Computing (1-3–6 cr.) P: Prerequisites vary by topic. Exploration of topics in computing and computer science. Common topics include tools for power users. Prerequisites vary by topic. Lecture and laboratory format. May be repeated up to a total of 6 credit hours.

CSCI-C 295 Leadership and Learning (1–6 cr.) P: CSCI-C 211 or A 201 or INFO-I 210. Students work

within the community to foster interest, knowledge, and appreciation of the computing sciences by preparing and leading presentations and hands-on activities for children in middle and secondary schools. Not for major credit. May be repeated up to a total of 6 credit hours.

CSCI-C 311 Programming Languages (4 cr.) P: CSCI-C 212. C: CSCI-C 241. **N & M** Systematic approach to programming languages. Relationships among languages, properties and features of languages, and the computer environment necessary to use languages. Lecture and laboratory. Credit given for only one of CSCI-C 311 or H 311.

CSCI-H 311 Programming Languages, Honors (4 cr.) P: CSCI-C 212. C: CSCI-C 241. **N & M** Honors version of CSCI-C 311. Credit given for only one of CSCI-H 311 or C 311.

CSCI-C 322 Object-Oriented Software Methods (4 cr.) P: CSCI-C 212. Design and implementation of complex software systems and applications exploiting the object-oriented paradigm. Selection and effective utilization of object-oriented libraries and interfaces.

CSCI-C 335 Computer Structures (4 cr.) P: CSCI-C 212. CSCI-C 241. C: CSCI-C 241. Lab fee. **N & M** Structure and internal operation of computers. The architecture and assembly language programming of a specific computer are stressed, in addition to general principles of hardware organization and low-level software systems. Lecture and laboratory. Credit given for only one of CSCI-C 335 or H 335. Lab fee.

CSCI-H 335 Computer Structures, Honors (4 cr.) P: CSCI-C 212. CSCI-C 241. C: CSCI-C 241. Lab fee. **N & M** Honors version of CSCI-C 335. Credit given for only one of CSCI-H 335 or C 335. Lab fee.

CSCI-C 343 Data Structures (4 cr.) P: CSCI-C 212. CSCI-C 241. C: CSCI-C 241. **N & M** Systematic study of data structures encountered in computing problems, structure and use of storage media, methods of representing structured data, and techniques for operating on data structures. Lecture and laboratory. Credit given for only one of CSCI-C 343 or H 343.

CSCI-H 343 Data Structures, Honors (4 cr.) P: CSCI-C 212. CSCI-C 241. C: CSCI-C 241. **N & M** Honors version of CSCI-C 343. Credit given for only one of CSCI-H 343 or C 343.

CSCI-B 351 Introduction to Artificial Intelligence and Computer Simulation (3 cr.) P: CSCI-C 211. **N & M** A survey of techniques for machine intelligence and their relation to human intelligence. Topics include modeling techniques, neural networks and parallel processing systems, problem-solving methods, vision, heuristics, production systems, speech perception, and natural language understanding. Credit given for only one of CSCI-B 351 or COGS-Q 351.

CSCI-B 355 Two semesters of computer programming or consent of instructor. (3 cr.) Introduction to the design, construction, and control of autonomous mobile robots. This course covers basic mechanics, electronics and programming for robotics, as well as the applications of robots in cognitive science. Credit given for only one of CSCI-B 355 or COGS-Q 360.

CSCI-Y 390 Undergraduate Independent Study (1–3 cr.) P: Instructor's permission. Independent research based on existing literature or original work. A report, in the style of a departmental technical report, is required. May be repeated but credit not given for more than 6 credit hours of any combination of CSCI-Y 390, Y 391, Y 398, Y 399, Y 499, C 390, and C 391.

CSCI-Y 391 Undergraduate Independent System Development (1–3 cr.) P: Instructor's permission. The student designs, programs, verifies, and documents a project assignment. Prior to enrolling, the student must arrange for an instructor to supervise the course activity. May be repeated but credit not given for more than 6 credit hours of any combination of CSCI-Y 390, Y 391, Y 398, Y 399, Y 499, C 390, and C 391.

CSCI-Y 398 Internship in Professional Practice (3 cr.) P: Sophomore standing and approval of the department. Students receive credit for selected career-related, full-time work. Evaluation by employer and faculty member. Does not count toward distribution requirements. May not be repeated for credit; credit may not exceed 6 credit hours for any combination of CSCI-Y 390, Y 391, Y 398, Y 399, Y 499, C 390, and C 391.

CSCI-Y 399 Project in Professional Practice (3 cr.) P: Two of CSCI-C 311, C 335, C 343 and approval of the department. The student designs, programs, verifies, and documents a project assignment selected in consultation with an employer and the department. May be repeated but credit not given for more than 6 credit hours of any combination of CSCI-Y 390, Y 391, Y 398, Y 399, Y 499, C 390, and C 391.

CSCI-B 401 Fundamentals of Computing Theory (3 cr.) P: CSCI-C 241. CSCI-C 212. C: CSCI-C 212. **N & M** Fundamentals of formal language theory, computation models and computability, the limits of computability and feasibility, and program verification.

CSCI-B 403 Introduction to Algorithm Design and Analysis (3 cr.) P: CSCI-C 241, C 343 and MATH-M 216 or M 212. **N & M** Algorithm design methodology. General methods for analysis of algorithms. Analysis of the performance of specific algorithms, such as those for searching and sorting.

CSCI-B 441 Digital Design (4 cr.) P: CSCI-C 335. **N & M** Organization and logic design of digital systems. Course presents a structured design philosophy, emphasizing hardwired and microprogrammed control. Boolean algebra, hardware building blocks, circuit synthesis, microprogramming. In the laboratory, students build, study, and debug a working minicomputer from elementary hardware components. Lecture and laboratory.

CSCI-B 443 Introduction to Computer Architecture (3 cr.) P: CSCI-C 335 and C 343. **N & M** Principles of processors, control units, and storage systems. Registers, buses, microprogramming, virtual storage. Relationship between computer architecture and system software.

CSCI-B 461 Database Concepts (3 cr.) P: CSCI-C 241 and C 343. **N & M** Introduction to database concepts and systems. Topics include database models and systems: hierarchical, network, relational, and object-oriented; database design principles; structures for efficient data access; query languages and processing;

database applications development; views; security; concurrency; recovery. Students participate in a project to design, implement, and query a database, using a standard database system. Credit given for only one of CSCI-B 461 or B 561.

CSCI-B 481 Interactive Graphics (4 cr.) P: CSCI-C 343 and MATH-M 301 or M 303. **N & M** Computer graphics techniques. Introduction to graphics hardware and software. Two-dimensional graphics methods, transformations, and interactive methods. Three-dimensional graphics, transformations, viewing geometry, object modeling, and interactive manipulation methods. Basic lighting and shading. Video and animation methods. Credit given for only one of #CSCI-B 481 or B 581.

CSCI-B 490 Seminar in Computer Science (1–3–6 cr.) Special topics in computer science. May be repeated up to a total of 6 credit hours.

CSCI-P 415 Introduction to Verification (3 cr.) P: CSCI-C 311. **N & M** Tools and techniques for rigorous reasoning about software and digital hardware. Safety, reliability, security, and other design-critical applications. Decision algorithms. Projects involving the use of automated reasoning, such as model checkers, theorem provers, and program transformation.

CSCI-P 423 Compilers (4 cr.) P: CSCI-C 311. **N & M** Compiler design and construction, including lexical analysis, parsing, code generation, and optimization. Extensive laboratory exercises.

CSCI-P 436 Introduction to Operating Systems (4 cr.) P: CSCI-C 335 and #C 343. **N & M** Organization and construction of computer systems that manage computational resources. Topics include specification and implementation of concurrency, process scheduling, storage management, device handlers, mechanisms for event coordination. Lecture and laboratory.

CSCI-P 438 Introduction to Computer Networks (4 cr.) P: CSCI-C C 335. Foundations of computer networks. Networking hardware technology such as Ethernet, ATM, wireless. Networking protocols (TCP/IP), routing, error correcting. Network services such as DNS, Web servers, virtual private networks (VPN), open SSL. Credit given for only one of CSCI-P 438 and P 538.

CSCI-P 442 Digital Systems (4 cr.) P: CSCI-B 441. Lab fee. **N & M** Elements of computer architecture construction of hardware systems, emphasizing a combination of components to form systems, and applications of general principles of computing to digital implementation. Lecture and laboratory. Lab fee.

CSCI-P 465 Software Engineering for Information Systems I (3 cr.) P: CSCI-C 343. CSCI-B 461. C: CSCI-B 461. Lab fee. **N & M** Analysis, design, and implementation of information systems. Project specification. Data modeling. Software design methodologies. Software quality assurance. Supervised team development of a real system for a real client.

CSCI-P 466 Software Engineering for Information Systems II (3 cr.) P: CSCI-C 343. CSCI-B 461. C: CSCI-B 461. Lab fee. **N & M** Analysis, design, and implementation of information systems. Project specification. Data modeling. Software design methodologies. Software

quality assurance. Supervised team development of a real system for a real client.

CSCI-H 498 Honors Seminar (1-3-6 cr.) P: Junior or senior major in computer science or informatics with a GPA of at least 3.3, or permission of instructor. A survey of faculty research in computer-related fields with different professors discussing their research each week. May be repeated up to a total of 6 credit hours.

CSCI-Y 499 Honors Research (1-12 cr.) P: Approval of departmental honors committee. May be repeated but credit not given for more than 6 credit hours of any combination of CSCI-Y 390, Y 391, Y 398, Y 399, Y 499, C 390, and C 391.

CSCI-P 462 Database Application Design and Implementation (3 cr.) P: CSCI-B 461 This course deals with practical issues in the design and implementation of database application systems. Topics include database modeling design, query languages, communication with data, transaction management, concurrency control techniques, security, database design procedures, and some advanced database applications, such as data warehousing, data mining, semi-structured data and semantic web.

Centers & Institutes

<<This section of the site should be a list of pages titled with the center and/or institute name...then each page will have information about the corresponding center/institute>>

Informatics Research Institute

Research and theory in informatics move rapidly to application and development. The faculty who teach in the School of Informatics participate in research activities and new applications of technology. As a result, faculty can transmit state-of-the-art knowledge to their students. Indiana University is capitalizing on this great research strength in informatics at both IUB and IUPUI with the formation of the Informatics Research Institute (IRI). The IRI conducts research in areas of emphases shared with the School of Informatics, including fundamental research in human-computer interaction; fundamental research in capturing, managing, analyzing, and explaining information and making it available for its myriad uses; and expanding research into policy and socioeconomic issues arising from information technology.

Center 2

Student Organizations & Services

<<This section of the site should be a list of pages titled with the organization/service names...then each page will have information about the specific org/service>>

Academic Policies & Procedures

Academic Regulations

- Absences
- Academic Probation
- Academic Standing

- Academic Warning
- Credit for Correspondence Courses
- Dean's Honor List
- Degree Application
- Degrees Awarded with Distinction
- Dismissal
- Readmission
- Semester Load
- Statute of Limitations

Absences

From Final Examinations: Students are required to adhere to the policies regarding final examinations, as published in the Enrollment and Student Academic Information Bulletin or the Registration Guide and Academic Information.

From Scheduled Classes: Illness is usually the only acceptable excuse for absence from class. Other absences must be explained to the satisfaction of the instructor, who will decide whether omitted work may be made up.

Academic Probation

Students will be placed on academic probation if their semester grade point average or cumulative grade point average is below 2.0, they have had an academic warning before and/or their cumulative grade point average is below 2.5. Students will be instructed to schedule an appointment at the Student Academic Center for assessment and to meet with their School of Informatics & Computing advisor. After one probation semester, students who fail to return to good academic standing will be dismissed.

Academic Standing

A student is in good academic standing for an Indiana University bachelor's degree when his or her semester grade point average is a minimum of 2.0 (C) for the last semester's course work and when his or her cumulative grade point average is at least 2.0 (C). Students must be in good academic standing to graduate.

Class Standing

Class standing is based on the number of credit hours completed:

- Freshman, fewer than 26 credits
- Sophomore, 26 to 55 credits
- Junior, 56 to 85 credits
- Senior, 86 or more credits

Academic Warning

Students will receive an academic warning letter if their semester grade point average is below 2.0, but their cumulative grade point average is above 2.5. Students will receive only one academic warning, any future semester of a gpa below 2.0 will result in academic probation or dismissal.

Credit for Correspondence Courses

With prior permission from the dean, the School of Informatics and Computing will accept a maximum of 2 courses by correspondence study. These courses may only count as general electives.

Dean's Honor List and Recognition Award

The School of Informatics and Computing recognizes exceptional academic performance in baccalaureate degree programs. The Dean's Honor List contains the names of students who have achieved a GPA semester index of 3.5 or higher during any semester in which the student completes 12 or more graded credit hours.

Degree Application

Candidates for graduation must file an application with the school by October 1 for December graduation and by March 1 for May or August graduation to be included in the graduation ceremony program.

Degrees Awarded with Distinction

The School of Informatics and Computing awards bachelor's degrees with three levels of distinction: Distinction (3.5 GPA); High Distinction (3.75 GPA); and Highest Distinction (3.9 GPA). The level of distinction is determined by the overall Indiana University grade point average. Students must have taken 60 graded credit hours at Indiana University.

The level of distinction is printed on both the final transcript and the diploma.

Dismissal

Students will be dismissed if they fail to return to good academic standing after one semester on probation. Students will be notified in writing that they have been dismissed and will be withdrawn from classes for which they have registered.

Readmission

Dismissed students must petition the dean of the School of Informatics and Computing for readmission. A Petition for Readmission must be filed by July 15 for fall, November 15 for spring, and April 15 for summer readmission. A student who has been dismissed is eligible to return to school after being out of school for one regular semester (summer sessions do not count) and having petitioned successfully. A third dismissal is final. Dismissed students whose petitions are denied will not be allowed to register.

Semester Load

A typical full-time academic load is 12 to 17 credit hours per semester, with the average load being approximately 15 credit hours. Students who expect to carry more than 17 credit hours a semester should have a cumulative grade point average of at least 3.0 (B) and have approval from an academic advisor or dean.

Statute of Limitations

Candidates for the bachelor's degree in the School of Informatics and Computing have the right to complete the degree requirements specified by the bulletin in effect at the time they entered Indiana University, provided that the required courses are available and that no more than eight calendar years have elapsed since the date of entry.

Grading Policies

The School of Informatics and Computing follows the official grading system of Indiana University, which is as follows:

A+	= 4.00	C+	= 2.30
A	= 4.00	C	= 2.00
A-	= 3.70	C-	= 1.70
B+	= 3.30	D+	= 1.30
B	= 3.00	D	= 1.00
B-	= 2.70	D-	= 0.70
		F	= 0.00

The following grades carry no grade points: I (Incomplete), NC (No Credit), NR (No Report Filed by Instructor), P (Passing), R (Deferred), S (Satisfactory), W (Withdrawal).

- Change of Grade
- Extended-X Option
- Grade Point Average
- Incomplete Courses
- Pass/Fail Option
- R Grade
- Withdrawals

Change of Grade

A student desiring a change of grade should discuss the situation with the instructor. A change of grade must be justified. If the instructor agrees, the faculty member will file a Grade Change Authorization Form. If the instructor and student do not agree on a changed grade, or if the instructor cannot be located, the student should discuss the matter with the chairperson or director of the department offering the course. Appeals unresolved at this level may be referred to the academic deans. Appeals of grades or requests for other actions will not be considered after one calendar year from the end of the semester in which the course in question was taken.

Extended-X Option

The School of Informatics and Computing does not recognize Extended-X grades for internal purposes and degree requirements. Grades of FX calculate as grades of F (D-X grades as grades of D-, DX grades as grades of D, etc.). This calculation will apply to all categories of academic standing (good standing, probation, and dismissal); class rank; and all grade point average requirements in the degree, including cumulative, semester, and major concentrations.

A student may exercise this option for no more than 3 courses, totaling no more than 10 credit hours. A student may use the Extended-X option on the transcript only once for a given course.

Only courses attempted during or after the fall 2001 term will be eligible for replacement under the Extended-X policy. The following grades cannot be replaced under the Extended-X policy: S, P, W, I, R, NC.

Grade Point Average

The cumulative grade point average is computed by dividing the total number of grade points earned by the total number of credit hours completed in which grades of A through F are assigned. Credit earned at another

institution may be applied toward degree requirements, but the grades earned at other institutions will not be calculated in the Indiana University cumulative grade point average.

Incomplete Courses

A temporary grade of Incomplete (I) on the transcript indicates that the course work is mostly completed, generally 75 to 80 percent, and of passing quality.

It is the student's responsibility to contact the instructor to have a grade of Incomplete assigned. The instructor specifies the work to be done to remove the grade of Incomplete and the period of time allowed for completion. If the student fails to remove the Incomplete within one calendar year, the Office of the Registrar will change the grade to an F. The dean (or instructor) authorizes adjustments of this period in exceptional circumstances. A student who has received a grade of Incomplete should not register for the course a second time but should arrange with the instructor to have the grade changed to a letter grade upon completion of requirements, provided that it is done within the year.

Pass/Fail Option

Students in the School of Informatics and Computing may elect to take a maximum of 12 credit hours total under the Pass/Fail option. The procedure for declaring this option can be found in the Enrollment and Student Academic Information Bulletin or the Registration Guide and Academic Information. Special regulations affecting the Pass/Fail option for School of Informatics students are as follows:

- Only one course per semester or one course per summer session can be taken under the Pass/Fail option.
- School of Informatics students may take only university elective courses or general elective courses on a Pass/Fail basis. The Pass/Fail option may not be used for any course that satisfies the requirements for a minor or certificate.
- A grade of P is not counted in the grade point average; a grade of F is included. Grades of P cannot be changed to any other letter grade.
- Pass/Fail forms are available in the School of Informatics Office and the Computer Science Office.

R Grade

The R grade (Deferred) on the final report indicates that the nature of the course is such that the work of the student can be evaluated only after two or more terms. Courses in which an R grade is assigned will be announced as deferred grade courses in the online enrollment system and *Registration Guide and Academic Information*.

Withdrawals

A grade of W (Withdrawal) is given automatically to the student who withdraws from courses during the automatic withdrawal period as specified in the Enrollment and Student Academic Information Bulletin or the Registration Guide and Academic Information. After the automatic withdrawal period, a student may withdraw only with the permission of the dean. This approval is given only for urgent reasons related to extended illness or equivalent

distress. The desire to avoid a low grade is not an acceptable reason for withdrawal from a course.

A grade of W does not affect the overall grade point average. A grade of F will be recorded on the official transcript if a student stops attending but does not officially withdraw from class. Students who alter their schedules, whether at their own initiative or by departmental directive, must follow withdrawal procedures. Students who do not assume this responsibility are jeopardizing their records because they will incur a failing grade in a course not properly dropped and will not receive credit for work done in a course not properly added.

Students who wish to cancel their Bloomington campus registrations for a future semester must notify the Office of the Registrar in writing prior to the first day of classes.

Students who are forced to discontinue all studies during the semester (even if enrolled in only one course) and withdraw from the university must contact the Student Advocates Office in Eigenmann #1121 to complete the withdrawal process.

At IUB, if a student withdraws after the first week of classes, the courses in which the student was enrolled will be retained on the student's record with a grade of W or F (as appropriate) and a notation of the date of withdrawal. To qualify for a grade of W after the deadline, a student must be passing the course(s) on the date of withdrawal. If the student is failing, the grade on the date of withdrawal will be F.

Academic Misconduct

Cheating

Cheating is dishonesty of any kind with respect to course assignments, alteration of records, or examinations. It is the student's responsibility not only to abstain from cheating, but also to avoid the appearance of cheating and to guard against making it possible for others to cheat. Any student who helps another student cheat is as guilty of cheating as the student assisted. The student also should do everything possible to induce respect for the examining process and for honesty in the performance of assigned tasks in or out of class.

Plagiarism

Plagiarism is assuming credit for someone else's work, words, or ideas—whether or not the ideas are expressed in the borrower's own words. Honesty requires that any ideas or materials taken from another source for either written or oral use must be fully acknowledged. Plagiarism includes language or ideas taken from isolated formulas, sentences, or paragraphs; entire articles copied from books, periodicals, or speeches; the writings or created works of other students; and materials assembled or collected by others in projects or collections without acknowledgment.

A faculty member who has evidence that a student is guilty of cheating or plagiarism will initiate the process of determining the student's guilt or innocence. No penalty will be imposed until the student has been informed of the charge and of the evidence on which it is based, and has been given an opportunity to present a defense. If the faculty member finds the student guilty, the faculty member assesses a penalty within the course and promptly reports the case in writing to the dean of the

school or comparable head of the academic unit. The report should include the names of any other students who may be involved in the incident and recommendations for further action. The dean, in consultation with the faculty member if the latter so desires, will initiate any further disciplinary proceedings and inform the faculty member of any action taken. In every case, a record of the offenses remains on file.

For further regulations, please refer to the *IU Code of Student Rights, Responsibilities, and Conduct*.

Student Grievance Procedures

All academic personnel (faculty, part-time instructors, and advisors) are expected to conform to the Code of Academic Ethics published in the [Indiana University Academic Handbook](#). Students who feel that they have been treated unfairly by a faculty member may lodge a complaint by following these steps:

1. Discuss the matter with the faculty member or instructor.
2. If step 1 fails to resolve the situation, discuss the matter with the chairperson of the department or the coordinator of the program in which the faculty member is employed. The departmental chairperson will discuss it with the faculty member and seek some resolution.
3. If step 2 fails, the student may discuss the matter or file a written, signed complaint with the dean. Anonymous complaints will not be entertained. A copy of any written complaint will be forwarded to the faculty member, who may respond in writing.
4. When warranted, the dean may refer a written complaint and the faculty member's response to the Faculty Affairs Committee for further investigation and review.
5. The Faculty Affairs Committee will evaluate the complaint on the basis of university policy and may recommend to the dean that the instructor be sanctioned. If the committee finds the complaint to be unfounded, a letter to that effect may be placed in the student's file.

Faculty

Core Faculty

- Baik, Mu-Hyun, Ph.D. (*University of North Carolina, 2000*), Assistant Professor of Informatics; Assistant Professor of Chemistry
- Bardzell, Jeffrey, Ph.D. (*Indiana University, 2004*), Assistant Professor of Informatics
- Bardzell, Shaowen, Ph.D. (*Indiana University, 2004*), Assistant Professor of Informatics
- Beer, Randall, Ph.D. (*Case Western Reserve University, 1989*), Professor of Cognitive Science, Computer Science, and Informatics
- Blevis, Eli, Ph.D. (*Queen's University at Kingston, 1990*), Associate Professor of Informatics and Cognitive Science
- Bramley, Randall, Ph.D. (*University of Illinois at Urbana-Champaign, 1989*), Professor of Computer Science
- Brown, Geoffrey, Ph.D. (*University of Texas at Austin, 1987*), Professor of Computer Science
- Camp, Jean, Ph.D. (*Carnegie Mellon University, 1996*), Associate Professor of Informatics; Adjunct Associate Professor of Computer Science; Adjunct Associate Professor of Telecommunications; Associate Director, Center for Applied Cybersecurity Research
- Chauhan, Arun, Ph.D. (*Rice University, 2003*), Assistant Professor of Computer Science
- Connelly, Kay, Ph.D. (*University of Illinois, 2003*), Assistant Professor of Computer Science; Associate Director of the Center for Applied Cybersecurity Research
- Dalkilic, Mehmet, Ph.D. (*Indiana University, 2000*), Associate Professor of Informatics; Coordinator Life Sciences; Associate Center For Genomics and Bioinformatics; Adjunct Assistant Professor Computer Science
- Dunn, J. Michael, Ph.D. (*University of Pittsburgh, 1966*), Former Dean of Informatics; Emeritus Oscar R. Ewing Professor of Philosophy; Emeritus Professor of Informatics and Computer Science; Founding Member, Cognitive Science Program
- Dybvig, R. Kent, Ph.D. (*University of North Carolina at Chapel Hill, 1987*), Professor of Computer Science
- Flammini, Alessandro, Ph.D. (*International School for Advanced Studies, 1966*), Assistant Professor of Informatics; Adjunct Assistant Professor of Physics; Affiliated Researcher in the Biocomplexity Institute
- Fox, Geoffrey C., Ph.D. (*Cambridge University [United Kingdom], 1967*), Distinguished Scientist, Community Grids Laboratory; Professor of Computer Science, Physics, and Informatics
- Friedman, Daniel P., Ph.D. (*The University of Texas at Austin, 1973*), Professor of Computer Science
- Gannon, Dennis, Ph.D. (*University of California, Davis, 1974; University of Illinois, 1980*), Professor of Computer Science
- Gasser, Michael E., Ph.D. (*University of California at Los Angeles, 1988*), Associate Professor of Computer Science and Cognitive Science; Adjunct Associate Professor of Linguistics
- Groth, Dennis, Ph.D. (*Indiana University, 2002*), Associate Dean, Undergraduate Studies; Associate Professor of Informatics and Cognitive Science; Adjunct Associate Professor of Computer Science
- Guha, Rajarshi, Ph.D. (*Penn State University, 2005*), Visiting Assistant Professor of Informatics
- Gupta, Minaxi, Ph.D. (*Georgia Institute of Technology, 2004*), Assistant Professor of Computer Science
- Haghverdi, Esfandiar, Ph.D. (*University of Ottawa, 2000*), Associate Professor of Informatics and Mathematics
- Hahn, Matthew, Ph.D. (*Duke University University, 2003*), Assistant Professor of Informatics and Biology
- Hakken, David, Ph.D. (*American University, Washington D.C., 1978*), Professor of Informatics; Adjunct Professor of Anthropology
- Hanson, Andrew J., Ph.D. (*Massachusetts Institute of Technology, 1971*), Chair and Professor of Computer Science

- Haynes, Christopher T., Ph.D. (*University of Iowa, 1982*), Associate Professor of Computer Science; Adjunct Associate Professor of Informatics
- Hill, Raquel, Ph.D. (*Harvard University, 2002*) Assistant Professor of Computer Science and Informatics
- Hofstadter, Douglas, Ph.D. (*University of Oregon, 1975*), Distinguished Professor; College Professor of Cognitive Science and Computer Science; Adjunct Professor of Comparative Literature; Director, Center for Research on Concepts and Cognition
- Johnson, Steven D., Ph.D. (*Indiana University, 1983*), Professor of Computer Science
- Kim, Sun, Ph.D. (*University of Iowa, 1997*), Associate Professor of Informatics; Associate Director of Bioinformatics Programs; Affiliated Researcher, Biocomplexity Institute; Adjunct Assistant Professor of Computer Science; INGEN Investigator, Center of Genomics, Proteomics and Bioinformatics
- Leake, David, Ph.D. (*Yale University, 1990*), Associate Dean of Graduate Studies, School of Informatics; Professor of Computer Science
- Leivant, Daniel, Ph.D. (*University of Amsterdam [Netherlands], 1975*), Professor of Computer Science; Adjunct Professor of Philosophy and Mathematics
- Lumsdaine, Andrew, Ph.D. (*Massachusetts Institute of Technology, 1992*), Professor of Computer Science
- McRobbie, Michael A., Ph.D. (*Australian National University, 1979*), President of Indiana University; Professor of Computer Technology, Purdue School of Engineering and Technology; Professor of Computer Science; Professor of Philosophy; Adjunct Professor of Information Science; Vice President for Research; Professor of Informatics; and Adjunct Professor of Cognitive Science
- Medina, Eden Miller, Ph.D. (*Massachusetts Institute of Technology, 2005*), Assistant Professor of Informatics; Adjunct Assistant Professor of History
- Menczer, Filippo, Ph.D. (*University of California at San Diego, 1998*), Associate Professor of Informatics, Computer Science and Cognitive Science; and Adjunct Associate Professor of Physics
- Mills, Jonathan W., Ph.D. (*Arizona State University, 1988*), Associate Professor of Computer Science
- Myers, Steven, Ph.D. (*University of Toronto [Canada], 2004*), Assistant Professor of Informatics; Adjunct Assistant Professor of Computer Science; and Research Affiliate, Center for Applied Cybersecurity Research
- Paolillo, John, Ph.D. (*Stanford University, 1992*), Associate Professor of Informatics; Associate Professor of Information Science; Adjunct Associate Professor of Linguistics
- Plale, Beth, Ph.D. (*State University of New York at Binghamton, 1998*), Associate Professor of Computer Science; Associate Dean of Research
- Prosser, Franklin, Ph.D. (*Pennsylvania State University, 1961*), Professor Emeritus of Computer Science
- Purdom, Paul W., Ph.D. (*California Institute of Technology, 1966*), Professor of Computer Science
- Radivojac, Predrag, Ph.D. (*Temple University 2003*), Assistant Professor of Informatics
- Raphael, Christopher, Ph.D. (*Brown University, 1991*), Associate Professor of Informatics and Cognitive Science; Adjunct Associate Professor of Music Theory
- Rawlins, Gregory J.E., Ph.D. (*University of Waterloo [Canada], 1987*), Associate Professor of Computer Science; Adjunct Associate Professor of Informatics
- Robertson, Edward L., Ph.D. (*University of Wisconsin - Madison, 1970*), Professor of Computer Science and Informatics
- Rocha, Luis Mateus, Ph.D. (*State University of New York at Binghamton, 1997*), Associate Professor of Informatics and Cognitive Science; Adjunct Associate Professor of Computer Science
- Sabry, Amr, Ph.D. (*Rice University, 1994*), Professor of Computer Science; Graduate Program Director of Computer Science
- Scheutz, Mattias, Ph.D. (*University of Vienna, 1995; Indiana University, 1999*), Associate Professor of Cognitive Science, Computer Science, and Informatics
- Schnabel, Robert, Ph.D. (*Cornell University, 1977*), Dean of Informatics; Professor of Computer Science; Professor of Informatics
- Shankar, Kalpana, Ph.D. (*University of California at Los Angeles, 2002*), Assistant Professor of Informatics; Adjunct Assistant Professor of Information Science
- Siegel, Martin A., Ph.D. (*University of Illinois, 1973*), Chair of Department of Informatics; Professor of Informatics, Cognitive Science and Instructional Systems Technology
- Springer, George, Ph.D. (*Harvard, 1949*), Emeritus Professor of Computer Science and Mathematics
- Stolterman, Erik, Ph.D. (*Umea University [Sweden], 1991*), Professor of Informatics; Director of Human-Computer Interaction Design
- Tang, Haixu, Ph.D. (*Shanghai Institute of Biochemistry [China], 1998*), Assistant Professor of Informatics; Adjunct Assistant Professor of Computer Science; Affiliated Researcher in the Center for Genomics and Bioinformatics
- Todd, Peter M., Ph.D. (*Stanford University, 1992*), Professor of Informatics and Cognitive Science; Professor of Psychological and Brain Sciences
- Van Gucht, Dirk, Ph.D. (*Vanderbilt University, 1985*), Professor of Computer Science
- Vespignani, Alessandro, Ph.D. (*University of Rome [Italy], 1993*), Professor of Informatics; Professor of Cognitive Science; Adjunct Professor of Physics; Adjunct Professor of Statistics; Affiliated Researcher, Biocomplexity Institute
- Wang, XiaoFeng, Ph.D. (*Carnegie Mellon University, 2004*), Assistant Professor of Informatics; Adjunct Assistant Professor of Computer Science; Affiliated Researcher in the Center for Applied Cybersecurity Research
- Wild, David, Ph.D. (*Sheffield University [United Kingdom], 1994*), Assistant Professor of Informatics
- Winkel, David E., Ph.D. (*Iowa State University, 1957*), Professor Emeritus of Computer Science

- Wise, David S., Ph.D. (*University of Wisconsin—Madison, 1971*), Professor of Computer Science
- Wu, Yuqing, Ph.D. (*University of Michigan, Ann Arbor, 2004*), Assistant Professor of Informatics, Adjunct Assistant Professor of Computer Science
- Wyss, Catharine M., Ph.D. (*Indiana University, 2002*), Assistant Professor of Informatics and Computer Science
- Yaeger, Larry, M.S. (*Polytechnic Institute of New York, 1974*), Professor of Informatics and Cognitive Science
- Ye, Yuzhen, Ph.D. (*Shanghai Institute of Biochemistry, China, 2001*), Assistant Professor of Informatics; Adjunct Assistant Professor of Computer Science

Special Faculty

- Agrafiotis, Dimitris, Ph.D. (*Imperial University of London [United Kingdom], 1988*), Adjunct Professor of Informatics; Senior Research Fellow Johnson & Johnson
- Antolovic, Danko, Adjunct Professor of Computer Science
- Barnard, John, Ph.D. (*University of Sheffield [United Kingdom], 1983*), Adjunct Professor of Informatics
- Börner, Katy, Ph.D. (*University of Kaiserslautern [Germany], 1997*), Adjunct Associate Professor of Informatics; Core Member of Cognitive Science Program; Assistant Professor of Information Science
- Bucy, Erik P., Ph.D. (*University of Maryland, 1998*), Assistant Professor of Telecommunications; Adjunct Associate Professor of Informatics
- Byrd, Donald, Ph.D. (*Indiana University, 1984*), Adjunct Associate Professor on Informatics and Music
- Cherbas, Peter, Ph.D. (*Harvard University, 1973*), Professor of Biology; Senior Fellow, Institute for Molecular and Cellular Biology; Adjunct Professor of Informatics
- Clark, Robert D. Ph.D. (*Cornell University*), Adjunct Professor of Informatics; Vice President of Research, Tripos Inc.
- Eberle, Ruth, Ph.D. (*Indiana University, 1995*), Adjunct Assistant Professor of Informatics and Cognitive Science
- Gasteiger, Johann, Ph.D. (*University of Munich, 1971*), Adjunct Professor of Informatics, Founder, Molecular Newtworks GmbH
- Glazier, James, Ph.D. (*University of Chicago, 1989*), Adjunct Professor of Informatics; Professor of Physics; Director, Institute of Biocomplexity
- Gyssens, Marc, Ph.D. (*University of Antwerp [Belgium], 1985*), Adjunct Professor of Computer Science
- Jones, Scott, B.S. (*Indiana University, 1984*), Adjunct Professor of Informatics
- Kirkley, Sonny, Ph.D. (*Indiana University, 2003*), Adjunct Professor of Informatics
- McCarty, David C., D.Phil. (*Oxford University [United Kingdom], 1985*), Associate Professor of Philosophy; Adjunct Associate Professor of Computer Science
- McMullen, Donald, Ph.D. (*Indiana University, 1982*), Director of Indiana University Center for

Innovative Computer Applications; Adjunct Professor of Computer Science

- Moss, Lawrence S., Ph.D. (*University of California at Los Angeles, 1984*), Professor of Mathematics; Adjunct Professor of Computer Science, Informatics, Linguistics, and Philosophy; Director of Logic Program, College of Arts and Sciences
- Ortoleva, Peter J., Ph.D. (*Cornell University, 1970*), Distinguished Professor of Arts and Sciences; Adjunct Professor of Informatics
- Rosenbaum, Howard S., Ph.D. (*Syracuse University, 1996*), Associate Professor of Library and Information Science; Adjunct Associate Professor of Informatics
- Trosset, Michael, Adjunct Professor of Computer Science
- Wallace, Steven, Adjunct Professor of Computer Science
- Wernert, Eric, Adjunct Professor of Computer Science
- Yu, Chen, Adjunct Professor of Computer Science
- Zhang, Faming, Ph.D. (*Institute of Biochemistry, China*), Adjunct Associate Professor of Informatics; Associate Professor of Chemistry

Lecturers

- German, Dan-Adrian, M.S. (*Indiana University, 1994*), Lecturer of Computer Science
- Hottell, Mathew, M.S. (*Indiana University, 2003*), Lecturer of Informatics
- Menzel, Suzanne, M.S. (*Rutgers University, 1983*), Senior Lecturer of Computer Science
- Onesti, Nina, M.S. (*Indiana University, 2008*), Lecturer of Informatics
- Pope, Charles E., B.S. (*Ambassador University, 1993*), CSCI A110 Course Coordinator; Lecturer of Computer Science
- Whitmer, Jeffrey M., M.A. (*Indiana University, 1986*), Lecturer of Computer Science