

# Informatics, B.A.

## Requirements

The Bachelor of Arts with a major in informatics requires a minimum of 120 s.h., including at least 43-51 s.h. of work for the major. Students must maintain a g.p.a. of at least 2.00 in all courses for the major and in all UI courses for the major. A cumulative g.p.a. of at least 2.00 is required for graduation. Students also must complete the College of Liberal Arts and Sciences GE CLAS Core.

The program combines foundational informatics coursework with coursework in a cognate area. The major offers the cognate areas of art, economics, geoinformatics, health informatics, human-computer interaction, linguistics, media, music, social informatics, and individualized cognates. Required credit for the major depends on a student's choice of cognate area.

Coursework for the major includes the informatics core, one elective, a statistics course, and a set of courses in a chosen cognate area. Work for the major may not be taken pass/nonpass. Students are expected to have taken MATH:1005 College Algebra or the equivalent.

Students majoring in informatics may not earn a second major in computer science, business analytics and information systems, or computer science and engineering. They may, however, earn a minor in computer science.

## Departmental Residency Requirement

Students must complete at least four courses (minimum of 12 s.h.) at the University of Iowa from the following: CS:3910 Informatics Project and three additional courses numbered CS:2500-CS:4999; these courses are requirements for the B.A. in informatics as listed below.

## Program Requirements

The B.A. with a major in informatics requires the following coursework. Many courses for the major require a minimum grade of C-minus in prerequisite courses.

Code	Title	Hours
	Informatics Core Courses	19
	Informatics Electives	3
	Statistics Course	3-4
	Cognate Courses	18-25
<b>Total Hours</b>		<b>43-51</b>

## Informatics Core

The informatics core consists of six required computing courses (19 s.h.) that emphasize data manipulation, databases, and networking. It provides more applications-oriented content than the traditional computer science curriculum yet is designed to offer students a sound basis in underlying computer science themes and techniques.

Code	Title	Hours
All of these:		
CS:1110	Introduction to Computer Science	3
CS:2110	Programming for Informatics	4

CS:2420	Analyzing Data for Informatics	3
CS:2520	Human-Computer Interaction for Informatics	3
CS:2620	Server-Side Development for Informatics	3
CS:3910	Informatics Project	3

## Informatics Electives

Students must complete at least one course (3 s.h.) from a list of approved computing informatics electives. Course selection must be approved by an informatics advisor. In addition to the courses listed below, students may have additional choices from the Department of Electrical and Computer Engineering and the Department of Business Analytics; consult an informatics faculty advisor for additional choices.

Code	Title	Hours
BAIS:4220	Advanced Database Management and Big Data	3

A computer science course (prefix CS) numbered 3000-4999, including CS:3990 for 3 s.h., but excluding CS:3910 and CS:4510

## Statistics Course

Students must complete one introductory statistics course. Some cognates require a specific statistic course. Students should consult with their advisors to choose a statistics course appropriate for their cognate area.

Code	Title	Hours
One of these:		
PSY:2811	Research Methods and Data Analysis in Psychology I	3
SOC:2160	Applied Statistics for Social Scientists	3
STAT:1020	Elementary Statistics and Inference	3
STAT:1030	Statistics for Business	4
STAT:2010	Statistical Methods and Computing	3
STAT:2020	Probability and Statistics for the Engineering and Physical Sciences	3
STAT:3120	Probability and Statistics	4
STAT:3510	Biostatistics	3
STAT:4143	Introduction to Statistical Methods	3

## Cognates

Students must complete all requirements listed under one of the cognate areas below: art, economics, geoinformatics, health informatics, human-computer interaction, linguistics, media, music, social informatics, or an individualized cognate.

### Art

The informatics major with the art cognate requires a minimum of 47 s.h. of work for the major, including 22 s.h. in cognate courses. Students learn about the design and maintenance of web services, applications of modern computerized artistic tools, and benefits and limitations of computers as a digital medium. They also gain insight into computerized tool design that is guided by knowledge of an

artist's requirements. The art cognate may lead to careers in web development, technology coordination for artistic productions, development of digital artistic tools, and artistic or technical development for entertainment companies. Cognate courses are primarily in art history, design, elements of art, and photography.

Some courses listed below are open only to students majoring in art, so they are appropriate choices only for students with a double major in art and informatics. Non-art majors should work with an informatics faculty advisor to develop an individual set of art cognate courses.

Code	Title	Hours
All of these:		
ARTS:1510	Basic Drawing	3
ARTS:1520	Design Fundamentals	3
DSGN:2500	Graphic Design I	3
DSGN:2600	Graphic Design II	3
DSGN:3500	Graphic Design III	4
Any art history course (prefix ARTH) numbered at the 1000 or 2000 level		
One of these, to complete 22 s.h. for the art cognate:		
CS:2800	Digital Arts: An Introduction	3
DSGN:3600	Graphic Design IV	4
MUSM:3125	Museums in a Digital World	3
SCLP:3840	Robotic Art Studio	4
SCLP:4830	Motion and Mechanisms	4
SCLP:4835	Electronic Objects and Spaces	4
SCLP:4840	Air, Actuators, and Motors	4

## Economics

The informatics major with the economics cognate requires a minimum of 49 s.h. of work for the major, including 24 s.h. in cognate courses, which are primarily from economics. The economics cognate is intended for students interested in working with economic, financial, or demographic data. It may lead to careers in administration, business, or government or to graduate study in management or policy areas.

Code	Title	Hours
All of these:		
ECON:1100	Principles of Microeconomics	4
ECON:1200	Principles of Macroeconomics	4
ECON:3100	Intermediate Microeconomics	3
ECON:3150	Intermediate Macroeconomics	3
MATH:1350	Quantitative Reasoning for Business	4

Additional 6 s.h. in economics courses (prefix ECON) numbered 3000 or above

## Geoinformatics

The informatics major with the geoinformatics cognate requires a minimum of 48 s.h. of work for the major, including 23 s.h. in cognate courses, which are primarily from geographical and sustainability sciences. The geoinformatics cognate is intended for students interested in geographic information systems (GIS) and spatial aspects of data. It may

lead to careers in business, government, or public health or to graduate study in geography, public health, or policy areas.

Code	Title	Hours
All of these:		
GEOG:1020	The Global Environment	3
GEOG:1021	The Global Environment Lab	1
GEOG:1050	Foundations of GIS	4
Two of these:		
GEOG:1070	Contemporary Environmental Issues	3
GEOG:2110	Seven Billion and Counting: Introduction to Population Dynamics	3
GEOG:2910	The Global Economy	3
One of these:		
GEOG:3520	GIS for Environmental Studies	3
GEOG:3570	Light Detection and Ranging (LiDAR): Principles and Applications	3

And:

Two geographical and sustainability sciences courses (prefix GEOG) numbered 3500 or above (at least 6 s.h.)

## Health Informatics

The informatics major with the health informatics cognate requires a minimum of 46 s.h. of work for the major, including 21 s.h. in cognate courses. The health informatics cognate is intended for students interested in applications of computing to health care, especially in public health. It may lead to careers in medical or health-related areas or to graduate and professional degree programs in public health, health informatics, and medical informatics. Cognate courses are selected primarily from public health, geography, and global health studies.

Once students complete the required courses in each of the four sets below, they must select additional courses from the sets to complete 21 s.h. of credit for the cognate.

Code	Title	Hours
One of these:		
CPH:1400	Fundamentals of Public Health	3
GHS:3720	Contemporary Issues in Global Health	3
At least two of these:		
GEOG:1050	Foundations of GIS	4
GEOG:3110	Geography of Health	3
GEOG:4150	Health and Environment: GIS Applications	3
Any geographical and sustainability sciences course (prefix GEOG) numbered 3500 or above		
At least two of these:		
GHS:3720	Contemporary Issues in Global Health	3
GHS:3850	Promoting Health Globally	3
GHS:4100	Topics in Global Health	1-3
GHS:4600	Global Health and Human Rights	2-3
JMC:3150	Media and Health	3

One of these:

EPID:4400	Epidemiology I: Principles	3
HMP:4000	Introduction to the U.S. Health Care System	3

## Human-Computer Interaction

The informatics major with the human-computer interaction cognate requires a minimum of 46 s.h. of work for the major, including at least 21 s.h. in cognate courses. The human-computer interaction cognate is intended for students interested in designing useful and usable technologies. It can lead to careers in interaction design, web design, implementation of user interfaces, and evaluation of human-computer interactions as well as provide valuable skills for graduate study in human-computer interaction.

The cognate's courses provide an interdisciplinary foundation including psychology, sociology, and studio arts, together with an understanding of research methods in human-computer interaction and relevant software development skills. This cognate requires more advanced courses in computer science than other cognates.

Code	Title	Hours
This course:		
CS:4500	Research Methods in Human-Computer Interaction	3
Either both psychology courses or both sociology courses:		
PSY:1001 & PSY:2601	Elementary Psychology - Introduction to Cognitive Psychology	6
SOC:1010 & SOC:2130	Introduction to Sociology - Sociological Theory	6-7
One art course from these:		
ARTS:1020	Elements of 3D Design	3
ARTS:1070	Elements of Graphic Design (recommended)	3
Three of these:		
ISE:3400	Human Factors	3
PSY:2401	Introduction to Developmental Science	3
PSY:2501	Introduction to Social Psychology	3
PSY:2701	Introduction to Behavioral Neuroscience	4

Any computer science course (prefix CS) numbered 3000 or above, except CS:4510 and CS:5990, with 4000-level human-computer interaction themed courses recommended

Most courses in this list have prerequisites, which students must complete before they may register for the course. Most of the psychological and brain science courses (prefix PSY) require PSY:1001 Elementary Psychology as a prerequisite. Students should review prerequisites carefully before making their selections.

## Linguistics

The informatics major with the linguistics cognate requires a minimum of 47 s.h. of work for the major, including at least 22 s.h. in cognate courses. Linguistics, the scientific study of human languages, is directly related to psychology, anthropology, and computer science as well as to more

applied fields such as second language acquisition or speech and hearing science. The cognate focuses on computational representations of syntax and semantics for processing natural language. Cognate courses are drawn primarily from linguistics.

Code	Title	Hours
All of these:		
CSD:3112	Anatomy and Physiology of Speech Production	4
CSD:3116	Basic Neuroscience for Speech and Hearing	3
LING:3001	Introduction to Linguistics	3
LING:3005	Articulatory and Acoustic Phonetics	3
LING:3010	Syntactic Analysis	3
LING:3020	Phonological Analysis	3
LING:3080	History of the English Language	3

## Media

The informatics major with the media cognate requires a minimum of 48 s.h. of work for the major, including 23 s.h. in cognate courses. This cognate is intended for students interested in working in media industries. Data-specific occupations in these industries include, but are not limited to, data/communication analyst, data mining expert, strategic analyst, data journalist, web developer, information graphics specialist, app developer, and multimedia journalist.

The courses, JMC:2010 Journalistic Reporting and Writing and JMC:2020 Introduction to Multimedia Storytelling, are corequisites and must be taken during the same semester. Students are responsible for completing the prerequisites for JMC:2010.

Code	Title	Hours
Both of these:		
JMC:2010	Journalistic Reporting and Writing	4
JMC:2020	Introduction to Multimedia Storytelling	4
One of these:		
JMC:1300	Principles of Strategic Communication	3
JMC:1400	Principles of Journalism	3
One of these:		
JMC:3610	Graphic Design	3-4
JMC:3640	Information and Data Visualization	3-4

And:

At least three journalism and mass communication courses (prefix JMC) numbered 3400 or above to complete 23 s.h. for the media cognate

## Music

The informatics major with the music cognate requires a minimum of 48 s.h. of work for the major, including 23 s.h. in cognate courses. The music cognate is intended for students interested in audio recording, manipulation of sound, and digital media. It may help students prepare for careers in the entertainment industry. Cognate courses are primarily from music, with some from cinematic arts and theatre arts.

Entering students must possess basic musicianship skills; an audition may be required for admission.

When students begin work on this cognate, they should enroll in MUS:1201 Musicianship and Theory I and they must take the Placement Exam A, which is administered online during the summer before fall semester begins, to determine readiness for the Musicianship and Theory course sequence. See Musicianship and Theory Placement on the School of Music website for more information. Advanced placement in School of Music courses does not reduce the number of semester hours required for the cognate.

Code	Title	Hours
All of these:		
MUS:1200	Fundamentals of Music for Majors	0
MUS:1201	Musicianship and Theory I	4
MUS:1202	Musicianship and Theory II	4
MUS:1211	Group Instruction in Piano I	1
MUS:1212	Group Instruction in Piano II	1
MUS:3780	Audio Recording I	3
MUS:3781	Audio Recording II	3
One of these:		
MUS:1310	World Music	3
MUS:1720	History of Jazz	3
MUS:2301	History of Western Music I	3
MUS:2302	History of Western Music II	3
MUS:2311	Music of Latin America and the Caribbean	3
At least one of these, to complete 23 s.h. for the music cognate:		
CS:2800	Digital Arts: An Introduction	3
CINE:4841	Film/Video Production: Sound Design	4
MUS:1007	Garage Band: The Basics	2
MUS:1010	Recital Attendance for Nonmajors	1
THTR:3260	Sound Design for the Theatre	3

## Social Informatics

The informatics major with the social informatics cognate requires a minimum of 45 s.h. of work for the major, including 20 s.h. in cognate courses, all from the Department of Sociology and Criminology.

Code	Title	Hours
All of these:		
SOC:1010	Introduction to Sociology	3-4
SOC:2130	Sociological Theory	3
SOC:2170	Research Methods	3
At least 11 s.h. from these:		
CRIM:1410	Introduction to Criminology	3
CRIM:3420	Juvenile Delinquency	3
CRIM:3450	Criminal Legal System	3
CRIM:4400	Internship in Criminal Justice and Corrections	3

Any sociology course (prefix SOC) numbered 1020 or above

## Individualized Cognates

Students interested in developing individualized cognates may work with an informatics faculty advisor. Individualized cognates may be drawn primarily from one department or an appropriate mix of departments; they require an approved set of cognate courses totaling 18-25 s.h.

## Early Admission to the Graduate College

Undergraduate informatics students who have 6 s.h. or less to earn toward graduation may apply for early admission to the Graduate College. Early admission allows students in their final undergraduate semester to take courses for graduate credit in addition to the courses they need to complete their bachelor's degrees.