Informatics, PhD

The PhD in informatics emphasizes preparation for research, teaching, and scholarly endeavors in academic settings or private, industrial, or governmental laboratories. Students focus on applying informatics research to a field of choice (e.g., health, biology, human-computer interaction, geography, design).

Learning Outcomes

Students will exhibit:

- broad, up-to-date knowledge of informatics topics including computational thinking, software development, data analytics, human-centered computing concepts, and professional ethics;
- domain-specific knowledge and skills related to the field of application of informatics research;
- fluency at reading, analyzing, synthesizing, and communicating research; and a
- thorough understanding of relevant research methods and ability to conduct original research that contributes to the field of informatics.

Requirements

The Doctor of Philosophy program in informatics requires at least 72 s.h. of graduate credit. A total of 19 s.h. of core courses are required plus an additional 12 s.h. of courses approved by a student's committee. The remaining 41 s.h. may be completed with additional coursework or through reading or research hours. Students must maintain a Graduate College major program grade-point average of at least 3.00.

It requires completion of coursework, satisfactory performance on the qualifying exam, comprehensive exam, and the proposal, plus the production and formal defense of a dissertation describing original research results.

Students select an advisor from among the program faculty. On the rare occasion when students choose a PhD advisor who is outside the program, a co-advisor from the program faculty must be designated.

The PhD in informatics requires the following coursework.

Core Courses

Students complete a total of 19 s.h. in core coursework. The student's advisor and the rest of the student's committee consisting of at least two other faculty select the remaining courses (12 s.h. minimum) for a total of at least 31 s.h. of coursework.

Programming

Course #	Title	Hours
This course:		
CS:5110/IGPI:5110	Introduction to Informatics	3
One of these:		
CS:3010	Software Engineering Fundamentals in Java	3
CS:3210	Programming Languages and Tools	3
CS:3980	Topics in Computer Science I	3
SEES:3050/ IGPI:3050	Geospatial Programming	3

Statistics

Course #	Title	Hours
One of these:		
BIOS:4120	Introduction to Biostatistics	3
STAT:4143/ PSQF:4143	Introduction to Statistical Methods	3

Data Science

Course #	Title	Hours
One of these:		
BAIS:6480/ IGPI:6480	Knowledge Discovery	3
STAT:4540/ BAIS:4540/ DATA:4540/ IGPI:4540	Statistical Learning	3

An additional course (consult advisor)

Databases

Course #	Title	Hours
One of these:		
CS:4400	Database Systems	3
SEES:4580/ IGPI:4581	Introduction to Geographic Databases	3

Human Factors

Course #	Title	Hours
One of these:		
CS:4500	Research Methods in Human-Computer Interaction	3
CS:4510	Human-Computer Interaction for Computer Science	3
SEES:3540/ IGPI:3540	Geographic Visualization	3

Ethics

Course #	Title	Hours
This course:		
CS:5980	Topics in Computer Science III (Responsible Conduct of Research)	1

Elective Core Coursework

Course #	Title	Hours
Coursework selected in consultation with advisor and committee		12

Electives

The remaining 41 s.h. may be completed with additional coursework or through reading or research hours.

Comprehensive Examination

PhD students must pass a comprehensive examination at or near completion of their coursework requirements. Students prepare a 20–30 page survey/discussion (along the lines of the introduction and literature review from an eventual thesis)

for distribution to their faculty committee, followed at least two weeks later by a 20–40 minute oral presentation, and a question/answer session.

Students may request that the MS be granted at the time of the comprehensive exam. The MS without thesis is awarded upon successful completion of the comprehensive exam but may, at the examination committee's discretion, be awarded even if students do not pass the exam. Students may also choose to complete the thesis requirements and be awarded an MS with thesis.

Dissertation

Students complete dissertation coursework in consultation with their advisor.

Upon successful completion of all requirements, including the dissertation and its oral defense, students are awarded the Doctor of Philosophy degree.

For more information about the Doctor of Philosophy requirements, see the Interdisciplinary Graduate Program in Informatics website.

Combined Programs

MD/PhD

Students may work toward the Doctor of Medicine degree and a PhD in informatics in a combined degree program offered by the Carver College of Medicine and the Graduate College. Applicants must be admitted to both programs before they may be admitted to the combined degree program. See the Medical Scientist Training Program (Carver College of Medicine) in the catalog.

Graduate Education

Graduate education prepares students with advanced knowledge and skills in specialized fields. At the University of Iowa, the Graduate College advocates for student-centered graduate education and supports equitable application of rules and policies across graduate programs.

Academics

University of Iowa graduate credentials are regulated by policies and requirements found in the Graduate College Manual of Rules and Regulations. This includes minimum grade-point average (GPA) requirements for academic standing and degree conferral. The Graduate College sets the minimum requirement. Individual graduate programs may establish higher GPA requirements.

Admissions

Graduate student applicants must meet admission requirements for both the Graduate College and the program to which they have applied. University of Iowa graduate admission requirements are published by the Graduate College and on the Graduate Admissions website.

Financial Support

Graduate students might be eligible for financial support. Several contingencies apply, including degree program and award type, satisfactory progress toward degree, satisfactory completion of all duties related to an appointment, and availability of funding. Graduate students should inquire directly with their program for more information about funding availability. The Graduate Student Employment Standards govern the employment relationship between the University of Iowa and all graduate teaching and research assistants in all matters except wages, which are covered by an existing collective bargaining agreement or the conditions of an applicable federal grant.

Admission

Students applying to the PhD program do not need a master's degree prior to admission. Students who hold a master's degree upon entering the PhD program may apply to use transfer credit from their master’s degree courses toward their PhD program requirements.

Applicants must meet the admission requirements of the Graduate College; see the Manual of Rules and Regulations on the Graduate College website. They must also meet the admission requirements of the informatics program; see PhD and MS Admission on the program's website.

Career Advancement

The program emphasizes preparation for research, teaching, and scholarly endeavors in academic settings or private, industrial, or governmental laboratories.

Academic Plans

Sample Plan of Study

Sample plans represent one way to complete a program of study. Actual course selection and sequence will vary and should be discussed with an academic advisor. For additional sample plans, see MyUI.

Informatics, PhD

Course	Title	Hours
Academic Career		
Any Semester		
72 s.h. must be graduate level coursework; maximum of 33 s.h. of graduate transfer credits allowed upon approval. More information is included in the General Catalog and on department website. [a]		
	Hours	**0**
First Year		
Fall		
BIOS:4120 or STAT:4143	Introduction to Biostatistics or Introduction to Statistical Methods	3
CS:5110	Introduction to Informatics	3
Elective course [b]		3
	Hours	**9**
Spring		
BAIS:6480 or STAT:4540	Knowledge Discovery or Statistical Learning	3
SEES:4580 or CS:4400	Introduction to Geographic Databases or Database Systems	3
CS:5980	Topics in Computer Science III [c]	1
Programming course [d]		3
	Hours	**10**

Second Year

Any Semester

Qualifying Exam [e]		
	Hours	**0**

Fall

CS:4500 or SEES:3540 or CS:4510	Research Methods in Human-Computer Interaction or Geographic Visualization or Human-Computer Interaction for Computer Science	3
Elective course [b]		3
Elective course [b]		3
	Hours	**9**

Spring

Elective course [b]		3
Elective course [b]		3
Elective course [b]		3
	Hours	**9**

Third Year

Any Semester

Exam: Doctoral Comprehensive Exam [f]		
	Hours	**0**

Fall

Elective course [b]		3
Elective course [b]		3
Elective course [b]		3
	Hours	**9**

Spring

Elective course [b]		3
Elective course [b]		3
Elective course [b]		3
	Hours	**9**

Fourth Year

Fall

Dissertation Proposal Defense [g]		
Elective course [b]		3
Elective course [b]		3
Elective course [b]		3
	Hours	**9**

Spring

IGPI:6520	Research for Dissertation [b]	8
Exam: Doctoral Final Exam [h]		
	Hours	**8**
	Total Hours	**72**

a Students must complete specific requirements in the University of Iowa Graduate College after program admission. Refer to the Graduate College website and the Manual of Rules and Regulations for more information.

b See the General Catalog and department website for specifics about elective coursework requirements; may be a combination of research for dissertation hours, directed readings, independent study, and graduate coursework.

c Typically this course is offered in spring semesters only. Check MyUI for course availability since offerings are subject to change.

d Choose from CS:3010, CS:3210, CS:3980, SEES:3050.

e Typically completed during second year fall semester. See the General Catalog and department website for specifics.

f Taken before the end of third year. See the General Catalog and department website for specifics.

g Typically completed six months prior to final oral exam (dissertation defense).

h Oral dissertation defense.