Informatics, PhD

The PhD in informatics emphasizes preparation for research, teaching, and scholarly endeavor 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 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 with a major 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 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:3210	Programming Languages and Tools	3
CS:3980	Topics in Computer Science I	3
GEOG:5055/ IGPI:5055	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
GEOG: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
GEOG:5540/ IGPI:5540	Geographic Visualization	3

Ethics

Course #	Title	Hours
This course:		
CS:5980	Topics in Computer Science III	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 also may 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

PhD/MD

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.

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.

Students applying to the PhD program who are not selected for admission are automatically considered for admission to the MS program if they do not already hold a master's degree.

Applicants must meet the admission requirements of the Graduate College; see the Manual of Rules and Regulations on the Graduate College website. They also must 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 endeavor 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		
STAT:4143 or BIOS:4120	Introduction to Statistical Methods or Introduction to Biostatistics	3
CS:5110	Introduction to Informatics	3
Elective course [b]		3
	Hours	**9**
Spring		
STAT:4540 or BAIS:6480	Statistical Learning or Knowledge Discovery	3
CS:3980 or GEOG:5055 or CS:3210	Topics in Computer Science I or Geospatial Programming or Programming Languages and Tools	3
CS:4400 or GEOG:4580	Database Systems or Introduction to Geographic Databases	3
CS:5980	Topics in Computer Science III [c]	1
	Hours	**10**
Second Year		
Any Semester		
Qualifying Exam [d]		
	Hours	**0**
Fall		
GEOG:5540 or CS:4510 or CS:4500	Geographic Visualization or Human-Computer Interaction for Computer Science or Research Methods in Human-Computer Interaction	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		
Comprehensive Exam [e]		
	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 [f]		
Elective course [b]		3
Elective course [b]		3
Elective course [b]		3
	Hours	**9**
Spring		
IGPI:6520	Research for Dissertation [b]	8
Final Oral Exam [g]		
	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 Typically completed during second year fall semester. See the General Catalog and department website for specifics.

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

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

g Dissertation defense.