Informatics, M.S.

Requirements

The Master of Science program in informatics requires a minimum of 31-33 s.h. of graduate credit, depending on a student's choice of subprogram: the bioinformatics and computational biology subprogram requires a minimum of 31 s.h. of credit, the geoinformatics subprogram requires a minimum of 32 s.h. of credit, and the information science subprogram requires a minimum of 33 s.h. of credit. Students working toward a Doctor of Philosophy in informatics may be granted a Master of Science degree upon completion of the M.S. requirements.

Credit required for the M.S. includes foundations of informatics coursework and at least 9 s.h. in disciplinary applications of informatics.

Students select an advisor from their subprogram's affiliated faculty members. In consultation with their advisor, students prepare a study plan, which is reviewed at least once a year. A final master's degree examination, either oral or written, is required for the geoinformatics subprogram.

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

Bioinformatics and Computational Biology

Bioinformatics and computational biology students complete the following coursework.

Core Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>This course:</td>
<td>Engineering Ethics</td>
<td>1</td>
</tr>
<tr>
<td>ENGR:7270</td>
<td>Bioinformatics</td>
<td>4</td>
</tr>
<tr>
<td>IGPI:4213/</td>
<td>Introduction to Informatics</td>
<td>3</td>
</tr>
<tr>
<td>BIOC:4213/</td>
<td>Genes, Genomes, and the Human Condition Graduate Lecture</td>
<td>3</td>
</tr>
<tr>
<td>GENE:4213/</td>
<td>Bioinformatics Techniques</td>
<td>1</td>
</tr>
<tr>
<td>IGPI:5110/</td>
<td>Computational Biochemistry</td>
<td>3</td>
</tr>
<tr>
<td>CS:4310/</td>
<td>Computational Genomics</td>
<td>3</td>
</tr>
<tr>
<td>BIOC:4310/</td>
<td>Bioinformatics</td>
<td>3</td>
</tr>
<tr>
<td>BME:5320/</td>
<td>Mathematical Statistics</td>
<td>3</td>
</tr>
<tr>
<td>ECE:5210</td>
<td>Bioinformatics Techniques</td>
<td>3</td>
</tr>
<tr>
<td>BME:5330/</td>
<td>Mathematical Statistics</td>
<td>3</td>
</tr>
<tr>
<td>BIOL:5320/</td>
<td>Bioinformatics</td>
<td>3</td>
</tr>
<tr>
<td>ECE:5320/</td>
<td>Bioinformatics</td>
<td>3</td>
</tr>
<tr>
<td>GENE:5173/</td>
<td>Bioinformatics</td>
<td>3</td>
</tr>
</tbody>
</table>

Electives

Students complete 6 s.h. in approved statistical coursework; consult advisor.

Geoinformatics

Geoinformatics students complete the following coursework.

Core Informatics Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>IGPI:5110/</td>
<td>Introduction to Informatics</td>
<td>3</td>
</tr>
<tr>
<td>CS:3210</td>
<td>Programming Languages and Tools (when topic is programming with C++ or when topic is programming with Java)</td>
<td>3</td>
</tr>
<tr>
<td>GEOG:3050</td>
<td>Introduction to Geospatial Programming</td>
<td>3</td>
</tr>
<tr>
<td>IGPI:3200/</td>
<td>Applied Linear Regression</td>
<td>3</td>
</tr>
<tr>
<td>STAT:3200</td>
<td>Applied Linear Regression</td>
<td>3</td>
</tr>
<tr>
<td>IGPI:4480</td>
<td>Introduction to Geographic Databases</td>
<td>3</td>
</tr>
<tr>
<td>IGPI:5119/</td>
<td>Applied Statistics I</td>
<td>4</td>
</tr>
<tr>
<td>STAT:5400</td>
<td>Database Management</td>
<td>3</td>
</tr>
<tr>
<td>IGPI:6100/</td>
<td>Database Management</td>
<td>3</td>
</tr>
<tr>
<td>SLS:6100</td>
<td>Knowledge Discovery</td>
<td>3</td>
</tr>
<tr>
<td>ECE:4480</td>
<td>Knowledge Discovery</td>
<td>3</td>
</tr>
</tbody>
</table>

Core Geoinformatics Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>IGPI:5110/</td>
<td>Geographic Information Systems and Science</td>
<td>3</td>
</tr>
<tr>
<td>IGPI:3010</td>
<td>Geographic Information Systems and Science</td>
<td>9</td>
</tr>
</tbody>
</table>

Electives

Students complete 11 s.h. of elective coursework (consult advisor).

Health Informatics

Health informatics students complete the following coursework.

Core and Foundation Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>IGPI:5110/</td>
<td>Introduction to Informatics</td>
<td>3</td>
</tr>
</tbody>
</table>
Informatics, M.S.

IGPI:5200/ HMP:5370/ ISE:5860/ MED:5300/ SLIS:5900

Informatics

IGPI:5220/ EPID:5200

Principles of Public Health Informatics

Health Informatics

IGPI:5321/ BME:5320/ ECE:5210

Bioinformatics Techniques

One of these:

IGPI:5200/ HMP:5370/ ISE:5860/ MED:5300/ SLIS:5900

Informatics

IGPI:5321/ BME:5320/ ECE:5210

Bioinformatics Techniques

One of these:

IGPI:4220/ BAIS:4220

Advanced Database Management and Big Data

IGPI:4220/ BAIS:4220

Advanced Database Management and Big Data

One of these:

IGPI:6100/ SLIS:6100

Database Management

IGPI:5321/ BME:5320/ ECE:5210

Bioinformatics Techniques

One of these:

IGPI:4220/ BAIS:4220

Advanced Database Management and Big Data

IGPI:6100/ SLIS:6100

Database Management

One of these:

IGPI:3120/ STAT:3120

Probability and Statistics

IGPI:5120/ BIOS:5120/ STAT:5610

Regression Modeling and ANOVA in the Health Sciences

IGPI:5001/ POLI:5001

Introductory Methodology

One of these:

IGPI:5200/ HMP:5370/ ISE:5860/ MED:5300/ SLIS:5900

Informatics

IGPI:5321/ BME:5320/ ECE:5210

Bioinformatics Techniques

One of these:

IGPI:4220/ BAIS:4220

Advanced Database Management and Big Data

IGPI:6100/ SLIS:6100

Database Management

One of these:

IGPI:3120/ STAT:3120

Probability and Statistics

IGPI:5001/ POLI:5001

Introductory Methodology

Electives

Students complete 14 s.h. of approved elective coursework (consult advisor).

Information Science

Information science students complete the following coursework.

Core Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>All of these:</td>
<td>Introduction to Informatics</td>
<td>3</td>
</tr>
<tr>
<td>IGPI:5110/ CS:5110</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BAIS:4480/CS:4480/ ECE:4480</td>
<td>Knowledge Discovery</td>
<td>3</td>
</tr>
<tr>
<td>CS:3210</td>
<td>Programming Languages and Tools (when topic is programming with C++ or when topic is programming with Java)</td>
<td>3</td>
</tr>
</tbody>
</table>

One of these:

IGPI:6120/ SLIS:6120

Natural Language Processing

CS:4980

Topics in Computer Science II (consult advisor)

One of these:

IGPI:6100/ SLIS:6100

Database Management

BAIS:4220/ IGPI:4220

Advanced Database Management and Big Data

CS:4400

Database Systems

One of these:

IGPI:3120/ STAT:3120

Probability and Statistics

IGPI:5001/ POLI:5001

Introductory Methodology

Combined Programs

M.S. (Health Informatics Subprogram)/Pharm.D.

The College of Pharmacy and the Graduate College offer the combined Doctor of Pharmacy/Master of Science in informatics with a health informatics subprogram. The combined degree program requires completion of 32 s.h. beyond the bachelor's degree. Students who complete the program are granted both degrees.

The Pharm.D./M.S. program assists students to develop special expertise in information technology, including management of electronic health records, health information exchange standards, electronic prescribing, medication management, decision support, as well as other competencies. Graduates will be prepared for employment in industry or academic institutions with skills to address pharmacotherapy issues as well as information technology management.

Separate application to each degree program is required. Applicants must be admitted to both programs before they may be admitted to the combined degree program. It is recommended that students apply to the Graduate College for admission to the M.S. program before entering the spring semester of their first year in the pharmacy program. For more information, see Doctor of Pharmacy, Pharm.D. in the College of Pharmacy section of the Catalog.

Admission

Applicants to the M.S. program should apply to the degree subprogram of their choice; the subprograms make independent admission decisions.

Applicants must meet the admission requirements of the Graduate College; see the Manual of Rules and Regulations of the Graduate College on the Graduate College website. They also must meet the admission requirements of the informatics subprogram they want to enter; see Admission Information M.S. and Ph.D. on the program's website.

Career Advancement