

# Pathology, MS

The MS program in pathology prepares postbaccalaureate science majors for a range of biomedical careers. Graduate-level coursework provides students with a foundation in cellular and molecular biology, as well as specialized knowledge in pathobiology. A laboratory-intensive thesis project equips trainees with cutting-edge research skills. Students typically complete the program in two and one-half years.

## Learning Outcomes

Graduates will be able to:

- demonstrate subject matter expertise in basic cell and molecular biology, biostatistics, and pathobiology/mechanisms of human disease;
- understand and apply scientific methods allowing for the appropriate development and testing of hypotheses, problem solving, and utilization of current literature and contemporary laboratory approaches;
- understand and apply the need to conduct research using a team-based approach, including ongoing input from the thesis mentor and committee as well as peers within the laboratory and departmental environment;
- understand and apply the key principles of carrying out research and interpreting results using the highest ethical standards; and
- acquire the ability to effectively communicate research goals, approaches, and results using both written and oral means.

## Requirements

The Master of Science program in pathology requires a minimum of 30 s.h. of graduate credit, including 21 s.h. of coursework and 9 s.h. of research leading up to the thesis. Students must maintain a Graduate College program grade-point average of at least 2.75.

The MS in pathology requires the following coursework.

## Required Coursework

Course #	Title	Hours
All of these:		
PATH:5270/ IGPI:5270/ MMED:5270	Pathogenesis of Major Human Diseases	3
PATH:6220	Seminar in Pathology (taken two semesters for 1 s.h. each)	2
BIOS:4120	Introduction to Biostatistics	3
BMED:5207	Principles of Molecular and Cellular Biology	3
BMED:7270	Scholarly Integrity/ Responsible Conduct of Research I	0
BMED:7271	Scholarly Integrity/ Responsible Conduct of Research II	0

Required coursework results in a basic understanding of molecular and cellular biology, a basic understanding of

biostatistics, and an advanced understanding of pathobiology and mechanisms of human disease.

## Electives

The remaining graduate-level coursework consists of electives focused on the area or topic related to a student's thesis project. The elective courses are offered by a range of departments on the biomedical campus.

## Thesis

The thesis project is carried out under the guidance of the mentor and thesis committee. The committee is composed of a student's mentor and two additional faculty members. In general, the thesis consists of four chapters with the first being a concise review of the literature; the second, materials and methods; and the last two, a scholarly description of the project results. The thesis must be defended before the committee prior to final approval.

For more information, view the Master of Science in Pathology on the Department of Pathology website.

## 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

Applicants must have a bachelor's degree in a science discipline from a regionally accredited American college or university, or an equivalent degree from another country

as determined by University of Iowa Admissions. Applicants must also have a minimum grade-point average of 3.00 on a 4.00 scale, or the international equivalent as determined by Admissions. In addition, laboratory-based research experience is highly desired. Graduate Record Examination (GRE) General Test scores are not required to apply.

A subset of applicants will be selected for interviews, conducted either in person or virtually. Admission decisions are determined based on academic performance, research experience, letters of recommendation, personal statements, and interviews.

Students who are applying must meet the admission requirements of the Graduate College; see the Manual of Rules and Regulations on the Graduate College website.

## Career Advancement

The MS program in pathology is designed for graduates to advance into research assistant or research scientist positions in academic and private sector laboratories, or to be competitive for advanced degree programs such as the PhD, MBA, or MD.

## 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.

### Pathology, MS

Course	Title	Hours
<b>Academic Career</b>		
<b>Any Semester</b>		
30 s.h. must be graduate level coursework. More information is included in the General Catalog and on department website. <sup>a, b</sup>		
Graduate College program GPA of at least 2.75 is required. <sup>c</sup>		
<b>Hours</b>		<b>0</b>
<b>First Year</b>		
<b>Fall</b>		
BMED:5207	Principles of Molecular and Cellular Biology	3
PATH:7211	Research in Pathology	2
Elective course <sup>d</sup>		3
<b>Hours</b>		<b>8</b>
<b>Spring</b>		
BIOS:4120	Introduction to Biostatistics	3
PATH:5270	Pathogenesis of Major Human Diseases	3
PATH:6220	Seminar in Pathology	1
PATH:7211	Research in Pathology	2
<b>Hours</b>		<b>9</b>
<b>Second Year</b>		
<b>Fall</b>		
BMED:7270	Scholarly Integrity/Responsible Conduct of Research I	0
PATH:7211	Research in Pathology	2

Elective course <sup>d</sup>		4
<b>Hours</b>		<b>6</b>
<b>Spring</b>		
BMED:7271	Scholarly Integrity/Responsible Conduct of Research II	0
PATH:6220	Seminar in Pathology	1
PATH:7211	Research in Pathology	1
Elective course <sup>d</sup>		3
<b>Hours</b>		<b>5</b>
<b>Third Year</b>		
<b>Fall</b>		
PATH:7211	Research in Pathology	2
Final Exam <sup>e</sup>		
<b>Hours</b>		<b>2</b>
<b>Total Hours</b>		<b>30</b>

- a Must include 21 s.h. of graduate level coursework, including electives focused on the area or topic related to a student's thesis project, and 9 s.h. of research leading to thesis; graduate transfer credits allowed upon approval.
- b 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.
- c Graduate College program GPA is comprised of all courses that are approved degree requirements. If a student takes more than the minimum required number of semester hours to complete the degree, but all courses taken are eligible to count toward the degree, those courses will be included in the Graduate College program GPA.
- d Work with faculty advisor to determine appropriate graduate elective coursework and sequence.
- e Thesis defense.