HEALTH INFORMATICS, MS

Banner Code: HH-MS-HINF

Academic Advising
Website: https://chhs.gmu.edu/students/academic-advising/graduate-advising#hap

The purpose of the degree is to provide students with a graduate education to advance careers as leaders and innovators in health informatics. The program combines healthcare, medical and information technology domains, and places particular emphasis on the interdisciplinary collaboration between these fields. We prepare health informatics professionals with knowledge of healthcare industry and technology solutions, in conjunction with practical skills needed in this dynamically evolving field. The program's goal is to prepare graduates to be able to effectively analyze complex health data, manage evolving health information systems (ranging from evaluation of information needs to design, development, acquisition, implementation, operation and improvement) and support the increased adoption and use of electronic health records.

This 30-36 credit graduate degree program prepares students to become health information systems specialists, health data analysts, health care managers and consultants. Graduates of the program may be employed in health information technology firms, health care/service organizations and their business partners, as well as public health entities. Students learn about emerging technologies likely to impact delivery of health services in the future. The program provides a basis for students who wish to continue their education toward a doctoral degree in health informatics or a related field. The program consists of three concentrations: Health Data Analytics, Health Informatics Management and Population Health Informatics.

The MS in Health Informatics degree is offered via a regular on-campus or premium priced all-online delivery format. The curriculum in both programs is the same, but students must matriculate through only one pathway. Separate application processes are used for online and on-campus programs. Most courses in the on-campus program are taught in the evening at Mason’s Fairfax Campus, with some courses available in hybrid or online formats. On-campus students can complete their degree at their own pace provided that they do so within six years of starting the program. The online premium-priced program is offered in a flexible, compressed schedule online format. In the all-online program, courses are taken one at a time, in an accelerated 8-week format, and follow a prescribed sequence.

Concentrations
Health Data Analytics Concentration
The Health Data Analytics Concentration provides students with deep understanding of health data, analytic methods, and data mining, as well as data science skills applied to clinical, administrative and consumer-generated health data.

Health Informatics Management Concentration
The Health Information Management Concentration provides students with knowledge and skills needed to manage evolving health information systems (ranging from evaluation of information needs to design, development, acquisition, implementation, operation and improvement) and support the increased adoption and use of electronic health records.

Population Health Informatics Concentration
The Population Health Informatics Concentration provides students with knowledge and skills needed to collect, analyze and manage population-level data, as well as understanding of electronic tools used in population health. Managing the health of populations requires the involvement of both organizations and individuals within a community and is viewed as a promising model to not only improve health outcomes but also reduce cost. The concentration content starts by addressing traditional public health information needs and then moves on to sophisticated business analytics and data governance to support the goals of accountable care organizations, integrated care networks, and value-based purchasing programs.

Admissions & Policies
Admissions
Requirements
Applicants must hold a BA or BS degree or equivalent from an institution of higher education accredited by a Mason-recognized U.S. institutional accrediting agency or international equivalent. Although the field or major is not a criterion for admission, the applicants are expected to have taken basic-level computer science/technology, mathematics, and statistics, and be familiar with these fields. Students who do not meet these requirements may be required to take additional prerequisite courses. Clinicians are encouraged to apply. An undergraduate grade point average of 3.25 (on a 4.0 scale) or above is preferred.

Applicants must meet the admission standards and application requirements specified in Graduate Admissions (http://catalog.gmu.edu/admissions/graduate-policies/) and must apply using the online Application for Graduate Admission (https://www2.gmu.edu/admissions-aid/). The application process is competitive, and applications are considered for the fall and spring semesters. For application deadlines and detailed application requirements, refer to the CHHS Admissions website (https://chhs.gmu.edu/admissions/graduate-admissions/standards-requirements-and-deadlines/).

Furthermore, although experience is not required, applicants with at least 1 year of professional work experience in a medical or health-related organization OR 1 year of work experience in information technology in any sector are preferred.

Policies
For policies governing all graduate degrees, see AP.6 Graduate Policies (http://catalog.gmu.edu/policies/academic/graduate-policies/).

Transfer of Credit
Students may transfer a maximum of 12 credits from graduate courses taken at other institutions or taken at Mason in non-degree status. Transfer credit is subject to university (http://catalog.gmu.edu/policies/academic/) and college (http://catalog.gmu.edu/colleges-schools/health-human-services/#requirementspolicies) text) policies and must be approved by the program director and the dean. Students who enroll initially through non-degree studies should seek course advising through
the department and should submit their application to the MS program in their first semester of study.

**Students with Undergraduate Program in Health Informatics**

Students coming from Health Informatics undergraduate programs may request substitution of selected courses with more advanced courses if they received at least B+ in equivalent undergraduate courses.

**Requirements**

**Degree Requirements**
Total credits: 30-36

<table>
<thead>
<tr>
<th>Core Courses</th>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>HAP 618</td>
<td>Computational Tools in Health Informatics</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>HAP 670</td>
<td>Introduction to Health Informatics</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>HAP 671</td>
<td>Health Care Databases</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>HAP 672</td>
<td>Health Data: Vocabulary and Standards</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>HAP 678</td>
<td>Introduction to the U.S. Health System</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

Total Credits: 9-15

1. HAP 618 Computational Tools in Health Informatics may be waived for student with strong computing skills and/or a degree in computer science.

2. HAP 678 may be waived for student with strong health administration background.

**Health Data Analytics Concentration (HDAN)**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>HAP 719</td>
<td>Advanced Statistics in Health Services Research I</td>
<td>3</td>
</tr>
<tr>
<td>HAP 780</td>
<td>Data Mining in Health Care</td>
<td>3</td>
</tr>
<tr>
<td>HAP 823</td>
<td>Comparative Effectiveness Analysis using Observational Data</td>
<td>3</td>
</tr>
</tbody>
</table>

**Electives**

Select two of the following:

- HAP 555 Computer Programming in Health Applications
- HAP 675 Project in Health Data Analysis
- HAP 720 Health Data Integration
- HAP 725 Statistical Process Control in Healthcare
- HAP 730 Health Care Decision Analysis
- HAP 770 Medical Decision Making and Decision Support Systems
- HAP 774 Artificial Intelligence in Health
- HAP 777 Health Data Visualization
- HAP 819 Advanced Statistics in Health Services Research II
- HAP 880 Advanced Health Data Mining

Total Credits: 15

1. HAP 675 is a variable-credit course. Three credits must be completed to fulfill the elective requirement.

**Health Informatics Management Concentration (HINM)**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>HAP 602</td>
<td>Statistics in Health Services Management</td>
<td>3</td>
</tr>
<tr>
<td>HAP 713</td>
<td>Project Management in Health Information Technology</td>
<td>3</td>
</tr>
<tr>
<td>HAP 745</td>
<td>Health Care Security Policy</td>
<td>3</td>
</tr>
</tbody>
</table>

**Electives**

Select two of the following:

- HAP 601 E-Commerce and On-line Marketing for Health Services
- HAP 621 Organization Behavior and Healthcare Leadership
- HAP 622 Healthcare Information Systems Analysis and Design
- HAP 645 Introduction to Health Services Research
- HAP 647 Regulatory Requirements for Health Care Systems
- HAP 704 Contemporary Issues in Health Systems Management
- HAP 705 Strategic Management and Marketing in Health Care
- HAP 715 Health Economics
- HAP 725 Statistical Process Control in Healthcare
- HAP 750 Legal Issues in Health Administration
- HAP 770 Medical Decision Making and Decision Support Systems

Total Credits: 15

**Population Health Concentration (HIP)**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>HAP 717</td>
<td>Population Health Informatics</td>
<td>3</td>
</tr>
<tr>
<td>HAP 718</td>
<td>Consumer Health Informatics</td>
<td>3</td>
</tr>
<tr>
<td>GCH 712</td>
<td>Introduction to Epidemiology</td>
<td>3</td>
</tr>
</tbody>
</table>

**Electives**

Select two of the following:

- GGS 650 Introduction to GIS Algorithms and Programming
- HAP 730 Health Care Decision Analysis
- HAP 774 Artificial Intelligence in Health
- HAP 780 Data Mining in Health Care

Total Credits: 15

**Practicum or Thesis**

After completing coursework, and with permission of advisor, students choose between the Capstone Practicum and Master's Thesis. Both options require two semesters to complete.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Practicum Option</td>
<td></td>
</tr>
</tbody>
</table>
Accelerated Master’s

Bachelor’s Degree (any)/Health Informatics, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor’s/accelerated master’s program and obtain a bachelor’s degree in any discipline and an MS in Health Informatics in an accelerated time-frame after satisfactory completion of a minimum of 141 credits.

See AP.6.7 Bachelor’s/Accelerated Master’s Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master’s degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (https://catalog.gmu.edu/policies/academic/graduate-policies/).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor’s/Accelerated Master’s Degree policies. For information specific to this accelerated master’s program, see department website (https://hap.gmu.edu/academics/health-informatics/health-informatics-ms/admissions/).

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits and students must submit two letters of recommendation from a faculty member.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master’s Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the MS program, if they have met the following criteria, as verified on the Bachelor’s/Accelerated Master’s Transition form:

- 3.25 overall GPA
- 3.50 GPA in major coursework
- Successfully meeting Mason’s requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing Courses: (substitutes are possible for major-specific BS Health Administration degree required courses, or as a required CHHS elective)

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>HAP 670</td>
<td>Introduction to Health Informatics</td>
<td>3</td>
</tr>
<tr>
<td>HAP 671</td>
<td>Health Care Databases</td>
<td>3</td>
</tr>
<tr>
<td>HAP 672</td>
<td>Health Data: Vocabulary and Standards</td>
<td>3</td>
</tr>
<tr>
<td>HAP 745</td>
<td>Health Care Security Policy</td>
<td>3</td>
</tr>
<tr>
<td>HAP 713</td>
<td>Project Management in Health Information Technology</td>
<td>3</td>
</tr>
<tr>
<td>Any 500, 600, or 700 level course listed in MSHI program</td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

1. Substitutes for HAP 360 Introduction to Health Information Systems
2. Substitutes for HAP 361 Health Databases.
3. Substitutes for HAP 459 Health Data Standards and Interoperability.
5. Substitutes for HAP 460 Information Technology Project Management.
6. Electives

Students can replace HAP 489 and HAP 498 with 7 credits of graduate courses approved by advisor if enrolled in the BS in Health Administration. Only 6 of the 7 credits are applied towards MS program.

Reserve credit courses:

Students may take 500, 600 and 700 level courses listed in MSHI program to be used for reserve credit with approval from their BAM advisor.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor’s/Accelerated Master’s Degree (https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7) policies.