HEALTH INFORMATICS, MS

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 33-39 credit graduate degree program prepares students to become health information systems specialists, health data analysts, healthcare 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.

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 Information 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 accredited university or college. 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 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 (http://chhs.gmu.edu/admissions/graduate/deadlines.cfm).

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.

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 and college 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: 33-39

Core Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>HAP 618</td>
<td>Computational Tools in Health Informatics 1</td>
<td>3</td>
</tr>
<tr>
<td>HAP 678</td>
<td>Introduction to the U.S. Health System 2</td>
<td>3</td>
</tr>
<tr>
<td>Course Code</td>
<td>Course Title</td>
<td>Credits</td>
</tr>
<tr>
<td>------------</td>
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</tr>
<tr>
<td>HAP 700</td>
<td>Introduction to Health Informatics</td>
<td>3</td>
</tr>
<tr>
<td>HAP 701</td>
<td>Health Data: Vocabulary and Standards</td>
<td>3</td>
</tr>
<tr>
<td>HAP 709</td>
<td>Health Care Databases</td>
<td>3</td>
</tr>
<tr>
<td>HAP 752</td>
<td>Advanced Health Information Systems</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>Total Credits</strong></td>
<td><strong>12-18</strong></td>
</tr>
</tbody>
</table>

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

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

### Health Data Analytics Concentration (HDAN)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>HAP 725</td>
<td>Statistical Process Control in Healthcare</td>
<td>3</td>
</tr>
<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>
<tr>
<td>Elective</td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

Select one of the following:

- HAP 720 Health Data Integration
- HAP 721 Project in Data Analysis I
- HAP 730 Health Care Decision Analysis
- HAP 770 Medical Decision Making and Decision Support Systems
- HAP 777 Health Data Visualization
- HAP 880 Advanced Health Data Mining
- HAP 819 Advanced Statistics in Health Services Research II

**Total Credits**: **15**

1. HAP 721 is a variable-credit course. Three credits must be completed to fulfill the elective requirement.

### Health Informatics Management Concentration (HINM)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course 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 622</td>
<td>Healthcare Information Systems Analysis and Design</td>
<td>3</td>
</tr>
<tr>
<td>HAP 713</td>
<td>Project Management in Health Information Technology</td>
<td>3</td>
</tr>
<tr>
<td>or SWE 625</td>
<td>Software Project Management</td>
<td></td>
</tr>
<tr>
<td>HAP 745</td>
<td>Health Care Security Policy</td>
<td>3</td>
</tr>
<tr>
<td>Elective</td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

Select one of the following:

- HAP 601 E-Commerce and On-line Marketing for Health Services
- HAP 621 Organization Behavior and Healthcare Leadership
- HAP 645 Introduction to Health Services Research
- HAP 647 Regulatory Requirements for Health Care Systems
- HAP 686 Quality Improvement in Health Services
- HAP 715 Health Economics
- HAP 750 Legal Issues in Health Administration

**Total Credits**: **15**

### Population Health Concentration (HIP)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course 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>
<tr>
<td>Electives</td>
<td></td>
<td>6</td>
</tr>
</tbody>
</table>

Select two of the following:

- GGS 650 Introduction to GIS Algorithms and Programming
- HAP 730 Health Care Decision Analysis
- HAP 735 Fundamentals of Patient Safety and Risk Management
- 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.

Select one option from the following:

**Practicum Option**

- HAP 789 Pre-Capstone Professional Development Seminar
- HAP 790 Capstone Practicum in Health Systems Management

**Thesis Option**

- HAP 799 Master's Thesis

**Total Credits**: **6**

### Accelerated Master's

### Health Administration, BS/Health Informatics, Accelerated MS

#### Overview
Highly qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain both a BS in Health Administration (Health Informatics Concentration) and an MS in Health Informatics in an accelerated time frame after satisfactory completion of 147-159 credits. See AP.6.7 Bachelor's/Accelerated Master's Degrees for policies related to this option.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see the AP.6 Graduate Policies section of the catalog.

#### Application Requirements
Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Admissions. For additional application requirements
and information specific to the accelerated MS in Health Informatics, see Eligibility, Policies, and Deadlines on the departmental website.

Applicants must be enrolled in the BS in Health Administration, Health Informatics Concentration with an overall GPA of 3.25 and minimum GPA 3.5 in courses in the major. Applicants must have recommendations from two health informatics faculty.

**Accelerated Option Requirements**

Students complete six credits of graduate level courses in their senior year which may be applied towards BS degree. While undergraduate students, accelerated master’s students are able to apply two courses (6 credits) to both the Bachelor’s and Master’s degrees. These courses are considered advanced standing for the MS in Health Informatics. A minimum grade of B must be earned to be eligible to count as advanced standing. The courses are selected by an MS program adviser.

After completion of the BS portion of the curriculum, students in the accelerated program have also the option to replace selected core courses in the MS program with more advanced graduate level courses. This is allowed if the student received at least B+ in corresponding undergraduate courses and if approved by the adviser.