HEALTH INFORMATICS, MS

Banner Code: PH-MS-HINF

Academic Advising

Website: https://publichealth.gmu.edu/students/academic-advising

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.

Public Health Informatics Concentration

The Population Health Informatics Concentration provides students with the knowledge and skills needed to collect, analyze, and manage population-level data and understand electronic tools used in public and population health. It involves knowledge of organizations and individuals within a community and is viewed as a promising model to improve health outcomes and reduce cost. The concentration combines an understanding of public health concepts with hands-on data training.

Quality Informatics Concentration

The Quality Informatics Concentration prepares analysts who would work on quality of care, using electronic health records. In the recent decade, the data in electronic health records has become uniformly available. Analytical methods for measuring severity of illness in these electronic records have been clarified. Government agencies now use statistical process control tools to routinely report changes in quality of care across health care organizations. Recently, new analytical methods have been designed to conduct root cause analysis. The health care industry, specially Health Management Organizations (HMOs) and Hospitals are looking for analysts that understand health care concepts (insurance, severity of illness, case mix adjustments, etc.) and can analyze massive data available through electronic health records.

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 College of Public Health Admissions website (https://publichealth.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/#requirementspoliciestext) 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

Core Courses

Code	Title	Credits
HAP 618	Computational Tools in Health Informatics [1]	3
HAP 670	Introduction to Health Informatics	3
HAP 671	Health Care Databases	3
HAP 672	Health Data: Vocabulary and Standards	3
GCH 500	Foundations of Public Health [2]	3
Total Credits		9-15

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

2

GCH 500 Foundations of Public Health may be waived for students who have graduated with a CEPH-accredited public health degree.

Health Data Analytics Concentration (HDAN)

Code	Title	Credits
HAP 719	Advanced Statistics in Health Services Research I	3
HAP 780	Data Mining in Health Care	3
HAP 823	Comparative Effectiveness Analysis using Observational Data	3
Electives		**6**
Select two of the following:		
GCH 632	SAS for Health Research	
HAP 655	Computer Programming in Health Applications	
HAP 675	Project in Health Data Analysis [1]	
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 797	Radiology Informatics	
HAP 819	Advanced Statistics in Health Services Research II	
HAP 880	Advanced Health Data Mining	
Total Credits		15

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

Health Informatics Management Concentration (HINM)

Code	Title	Credits
HAP 602	Statistics in Health Services Management	3
HAP 713	Project Management in Health Information Technology	3
or SWE 625	Software Project Management	
HAP 745	Health Care Security Policy	3
Electives		**6**
Select two of the following:		
HAP 559	Cybersecurity for Hospital Executives	
HAP 601	E-Commerce and On-line Marketing for Health Services	
HAP 621	Leadership and Organizational Behavior	
HAP 622	Healthcare Information Systems Analysis and Design	
HAP 645	Introduction to Health Services Research	
HAP 647	Regulatory Requirements for Health Care Systems	
HAP 655	Computer Programming in Health Applications	
HAP 697	The Healthcare Quality Environment	
HAP 698	Quality Measurement and Evaluation	
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	
HAP 797	Radiology Informatics	
Total Credits		15

Public Health Informatics Concentration (PUHI)

Code	Title	Credits
HAP 717	Population Health Informatics	3
HAP 718	Consumer Health Informatics	3
HAP 719	Advanced Statistics in Health Services Research I	3
Electives		**6**
Select two of the following:		
GCH 712	Introduction to Epidemiology	
GCH 722	Infectious Disease Epidemiology	
GCH 726	Advanced Methods in Epidemiology I	

GCH 727	Advanced Methods in Epidemiology II
GCH 732	Chronic Disease Epidemiology
GCH 772	Social Epidemiology
GGS 650	Introduction to GIS Algorithms and Programming
HAP 655	Computer Programming in Health Applications
HAP 730	Health Care Decision Analysis
HAP 774	Artificial Intelligence in Health
HAP 780	Data Mining in Health Care
HAP 823	Comparative Effectiveness Analysis using Observational Data
Total Credits	15

Quality Analytics Concentration (HQA)

Code	Title	Credits
HAP 719	Advanced Statistics in Health Services Research I	3
Electives		**12**
Select four courses from the following:		
HAP 675	Project in Health Data Analysis	
HAP 725	Statistical Process Control in Healthcare	
HAP 730	Health Care Decision Analysis	
HAP 774	Artificial Intelligence in Health	
HAP 780	Data Mining in Health Care	
HAP 823	Comparative Effectiveness Analysis using Observational Data	
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.

Code	Title	Credits
Select one option from the following:		
Practicum Option		
HAP 786	Workshop in Health Informatics	3
HAP 795	Health Informatics Pre-Capstone	0
HAP 796	Health Informatics Capstone Practicum	3
Thesis Option		
HAP 799	Master's Thesis	6
Total Credits		6

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 College of Public Health elective)

Code	Title	Credits
HAP 670	Introduction to Health Informatics [1]	3
HAP 671	Health Care Databases [2]	3
HAP 672	Health Data: Vocabulary and Standards [3]	3
HAP 745	Health Care Security Policy [4]	3
HAP 713	Project Management in Health Information Technology [5]	3
Any 500, 600, or 700 level course listed in MSHI program. [6]		

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.
4. Substitutes *for* HAP 462 Privacy and Security in Health Informatics.

[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.