HEALTH INFORMATICS (HI)

300 Level Courses

HI 308: *Public Health Informatics.* 3 credits.
Provide students with foundational principles, informatics tools, methodologies, data sources, terminologies, and policy issues as they relate to the emerging field of population health informatics. Students will review the historical and contemporary aspects of public health practice. Examines key concepts related to registries, electronic health records, epidemiological databases, biosurveillance, and quality reporting in population health management.Offered by Health Administration & Policy. Limited to three attempts.
Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale. (https://catalog.gmu.edu/policies/academic/grading/)

HI 318: *Introduction to IT Methods for Healthcare.* 3 credits.
Reviews computer hardware and software with applications in healthcare. Covers basic features of operating systems (Windows and Linux), reviews use of basic office applications and introduces their advanced features. Introduces advanced tools to access and analyze healthcare data. Introduces basic programming concepts.Offered by Health Administration & Policy. Limited to three attempts.
Recommended Prerequisite: IT 103 or IT 104 or equivalent.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale. (https://catalog.gmu.edu/policies/academic/grading/)

HI 360: *Introduction to Health Information Systems.* 3 credits.
An introduction to basic information management in health care service organizations. Provides an overview of health information systems for selected administrative functions and clinical care services, including electronic data interchange for billing and claims management, institutional approaches to ensuring data security and privacy, and information management and decision support for managers and clinicians.Offered by Health Administration & Policy. Limited to three attempts.
Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale. (https://catalog.gmu.edu/policies/academic/grading/)

HI 361: *Health Databases.* 3 credits.
Introduces students to the design and use of various health and healthcare databases, and provides hands-on experience with database design and use. Reviews database management systems. Examines the application of databases for both clinical and managerial purposes.Offered by Health Administration & Policy. Limited to three attempts. Equivalent to HAP 361.
Recommended Prerequisite: HI 360 or equivalent.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale. (https://catalog.gmu.edu/policies/academic/grading/)

400 Level Courses

HI 436: *Electronic Health Data in Process Improvement.* 3 credits.
Focuses on using electronic health records (EHRs) to improve health care processes. Compares means and rates of clinical & managerial processes. Uses EHRs in risk-adjusted statistical process control. Uses Excel to analyze data on patient satisfaction, wait time, mortality/morbidity, and cost of care.Offered by Health Administration & Policy. Limited to three attempts. Equivalent to HAP 436.
Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale. (https://catalog.gmu.edu/policies/academic/grading/)

HI 440: *Mobile Health.* 3 credits.
Introduces emerging technologies used in Mobile Health (mHealth). Students will examine the impact and potential of mobile devices on health. Students will conceptualize and design health apps that incorporate evidence-based guidelines and capitalize on the mobility, portability, and input and output capabilities of smartphones and tablets.Offered by Health Administration & Policy. Limited to three attempts. Equivalent to HAP 440.
Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale. (https://catalog.gmu.edu/policies/academic/grading/)

HI 455: *Computer Programming in Health Applications.* 3 credits.
Introduces concepts of computer programming of health applications with a focus on open source software. Students are provided with an introduction to open source software and introduced to open source EHR systems. Practical exercises in programming to customize and extend the capability of health information systems are explored, implemented and tested.Offered by Health Administration & Policy. Limited to three attempts. Equivalent to HAP 455.
Registration Restrictions:
Required Prerequisites: (HAP 318[C], HI 318[C], IT 106[C], 109[C], HAP 361[C], HI 361[C], IT 214[C], HAP 464[C] or HI 464[C]).
[C] Requires minimum grade of C.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale. (https://catalog.gmu.edu/policies/academic/grading/)

HI 456: *Health Data Mining and Analysis.* 3 credits.
Introduces students to data mining in health care. Emphasizes methods for mining health care databases and synthesizing task-oriented knowledge from computer data and prior knowledge. Topics include fundamental concepts of data mining, data preprocessing, classification and prediction, cluster analysis, and visualization. Provides students with an overview of practical tools for discovering knowledge from medical data.Offered by Health Administration & Policy. Limited to three attempts. Equivalent to HAP 456.
Recommended Prerequisite: HAP 318 or HI 318 or IT 106 or IT 109 or equivalent, HAP 361 or HI 361 or IT 214 and knowledge of SQL, Completed required math core, or permission of instructor

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale. (https://catalog.gmu.edu/policies/academic/grading/)

HI 458: *Clinical Informatics Applications in a Health Care Setting.* 3 credits.
Provides health informatics students with an overview of how various health professionals use data from various information systems to support clinical decision-making and improve patient outcomes. Leverages classes, laboratory simulation and field work in a health care setting. Introduces students to team-based working relationships/work in the health care environment and the use of health information in that setting. Exposes students to simulated and real health environments with the focus on the use of information technology to support clinical workflows, data collection and decision making. Teaches students to collaborate with healthcare professionals in order to promote patient care goals for safety, efficiency, effectiveness, timeliness, is patient-centered, and equitable.Offered by Health Administration & Policy. Limited to three attempts. Equivalent to HAP 458.
Registration Restrictions:
Required Prerequisites: HAP 318[C], HI 318[C], HAP 360[C] or HI 360[C].
[C] Requires minimum grade of C.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale. (https://catalog.gmu.edu/policies/academic/grading/)

HI 459: *Health Data Standards and Interoperability.* 3 credits.
Introduction to prevailing and emerging data standards applicable in health information technology. Students will learn about standard-making organizations, such as HL7 and Healthcare Information Technology Standards Panel (HITSP), and their standardization processes. The structure of and relationship between standard terminologies applicable in healthcare, such as International Classification of Diseases (ICD-10-CM), Logical Observation Identifiers Names and Codes (LOINC) and Systematized Nomenclature of Medicine--Clinical Terms (SNOMED-CT), will be explained.Offered by Health Administration & Policy. Limited to three attempts.
Recommended Prerequisite: HAP 301, HAP 361 or HI 361, or permission of instructor.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale. (https://catalog.gmu.edu/policies/academic/grading/)

HI 460: *Health Information Technology Project Management.* 3 credits.
Identifies methods and skills for managing health care information technology (IT) projects. Students learn tools such as critical path analysis, resource management, crashing projects, vendor selection, quality assessment, and risk analysis.Offered by Health Administration & Policy. Limited to three attempts. Equivalent to HAP 460.
Recommended Prerequisite: HI 360

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale. (https://catalog.gmu.edu/policies/academic/grading/)

HI 461: *Internet and Web Technology Applications for Healthcare.* 3 credits.
Introduces students to the major applications of Internet and Web technology in healthcare. Two major applications are studied: online promotion/marketing for consumer-oriented health web sites, and online Personal Health Records (PHR). Students will learn about Search Engine marketing and the practical skill of creating an online health marketing/promotion campaign. They also will learn to create and manage PHR. The technological challenges such as reliability, privacy, security and organizational barriers to adoption are discussed.Offered by Health Administration & Policy. Limited to three attempts. Equivalent to HAP 461.
Recommended Prerequisite: HI 360.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale. (https://catalog.gmu.edu/policies/academic/grading/)

HI 462: *Privacy and Security in Health Informatics.* 3 credits.
Health information security and privacy issues in the current healthcare system. Evaluates methods to achieve privacy and security. Discusses the important role of sound security policies and procedures; looks into technical solutions and non-technical solutions for achieving privacy and security.Offered by Health Administration & Policy. Limited to three attempts.
Recommended Prerequisite: HI 360.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale. (https://catalog.gmu.edu/policies/academic/grading/)

HI 464: *Electronic Health Record Configuration and Data Analysis.* 3 credits.
Demonstrates hands-on practice in development of prognostic indices, including Charlson Comorbidity Index, Multi-morbidity Index, and other measures of severity of illness. Includes measurement and analysis of data-driven patient safety indicators. Students analyze Electronic Health Records (EHRs) or Insurance databases to measure severity-adjusted outcomes of care. Includes analysis of role of rare diseases in healthcare performance measures.Offered by Health Administration & Policy. Limited to three attempts.
Recommended Prerequisite: HI 360.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale. (https://catalog.gmu.edu/policies/academic/grading/)

HI 467: *Advanced Information Technology Project Management.* 3 credits.
Teaches project management methods and techniques with focus on health IT projects. Covers knowledge, skills, and abilities associated with certification (Certified Associate in Project Management). Notes: Certification is not provided in this course.Offered by Health Administration & Policy. Limited to three attempts.
Recommended Prerequisite: HI 460 or HAP 417 or equivalent.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale. (https://catalog.gmu.edu/policies/academic/grading/)

HI 489: *Health Informatics Pre-Internship Seminar.* 3 credits.
Provides students with guidance and preparation for engaging in the internship.Offered by Health Administration & Policy. Limited to three attempts.
Recommended Prerequisite: HAP 301 and senior standing.

Schedule Type: Lecture

Grading:
This course is graded on the Undergraduate Regular scale. (https://catalog.gmu.edu/policies/academic/grading/)

HI 498: *Health Informatics Internship.* 4 credits.
Provides variety of applied management experiences in a health systems or related organization (field agency), under the direction of a HI faculty member and a preceptor in the field. Students integrate and apply critical-thinking, project-planning, and management and communication skills in the internship experience and toward completion of an approved internship project. Notes: Taken in last semester of studies. Capstone course involves a two-hour weekly seminar and a 12-hour internship in a health-related organization.Offered by Health Administration & Policy. Limited to three attempts.
Registration Restrictions:
Required Prerequisite: HI 489.

Schedule Type: Internship

Grading:
This course is graded on the Undergraduate Regular scale. (https://catalog.gmu.edu/policies/academic/grading/)

HI 499: *Independent Study in Health Informatics.* 1-6 credits.
Provides individual study of a particular problem area in health administration and policy research, theory development, or education under the direction of faculty.Offered by Health Administration & Policy. May be repeated within the term for a maximum 6 credits.
Specialized Designation: Topic Varies

Schedule Type: Independent Study

Grading:
This course is graded on the Undergraduate Regular scale. (https://catalog.gmu.edu/policies/academic/grading/)

600 Level Courses

HI 601: *E-Commerce and On-line Marketing for Health Services.* 3 credits.
Explores development of online health services; organization of online businesses; online marketing, financial, and clinical transactions; and venture capital and the IPO process. Explores creating and maintaining web pages and databases. Reviews literature on effect of computer services on patient care and health care organizations. Also reviews examples of both successful and bankrupt technology firms in health care. Student groups draft business plan and develop early version of service proposal.Offered by Health Administration & Policy. May not be repeated for credit. Equivalent to HAP 601.
Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Junior Plus, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale. (https://catalog.gmu.edu/policies/academic/grading/)

HI 613: *Project Management in Health Information Technology.* 3 credits.
Applies body of knowledge in project management to the implementation of information technology and systems in healthcare organizations. Examines how tasks such as needs assessment, project planning, project cost analysis, risk management, and management of personnel are readily included in the use of health information systems.Offered by Health Administration & Policy. May not be repeated for credit. Equivalent to HAP 713.
Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Junior Plus, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale. (https://catalog.gmu.edu/policies/academic/grading/)

HI 618: *Computational Tools in Health Informatics.* 3 credits.
Introduces computational tools used in health informatics. Reviews hardware and software needs and uses. Topics covered include operating systems, virtualization and high performance computing, basic programming in a scripting language, basic data analysis and data integration skills, and use of specialized software. All topics are covered in context of specific solutions used in health information systems.Offered by Health Administration & Policy. May not be repeated for credit. Equivalent to HAP 618.
Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Junior Plus, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale. (https://catalog.gmu.edu/policies/academic/grading/)

HI 622: *Healthcare Information Systems Analysis and Design.* 3 credits.
Introduces system analysis, modeling, design, and management of large-scale healthcare information systems. Describes both traditional and data-driven analysis and design methods. Different aspects of systems analysis and design are illustrated using examples from healthcare industry case studies applied to a group project.Offered by Health Administration & Policy. May not be repeated for credit. Equivalent to HAP 622.
Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Junior Plus, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale. (https://catalog.gmu.edu/policies/academic/grading/)

HI 655: *Computer Programming in Health Applications.* 3 credits.
Explores concepts of computer programming of health applications with a focus on open source software. Students are provided an overview of open source software and explore details of open source EHR systems. Practical exercises in programming to customize and extend the capability of health information systems are explored, implemented and tested.Offered by Health Administration & Policy. May not be repeated for credit. Equivalent to HAP 655.
Registration Restrictions:
Required Prerequisites: HAP 318[B], HI 318[B], HAP 618[B] or HI 618[B].
[B] Requires minimum grade of B.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Junior Plus, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale. (https://catalog.gmu.edu/policies/academic/grading/)

HI 670: *Introduction to Health Informatics.* 3 credits.
Examines applications of information technology in healthcare. Considers a wide range of technology applications – from enterprise application systems to EHR (Electronic Health Records), to current trends in information technology and related regulatory initiatives. Examines how these technologies enable the healthcare industry to manage information and knowledge resources most effectively and deliver superior services to its customers.Offered by Health Administration & Policy. May not be repeated for credit. Equivalent to HAP 670.
Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Junior Plus, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale. (https://catalog.gmu.edu/policies/academic/grading/)

HI 671: *Health Care Databases.* 3 credits.
Introduces students to design and query of health databases. Provides hands-on experience with design, maintain and make queries of databases. Explores uses of health record systems. Includes review and analysis of databases and database management systems. Examines application of databases to clinical and business transaction.Offered by Health Administration & Policy. May not be repeated for credit. Equivalent to HAP 671.
Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Junior Plus, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale. (https://catalog.gmu.edu/policies/academic/grading/)

HI 672: *Health Data: Vocabulary and Standards.* 3 credits.
Explores the challenges and possible solutions to ensure the interoperability between health information systems, representation of health data using standardized vocabulary and standards of communication. Covers topics such as data standards and semantics, policy, and theory and practice of standardization.Offered by Health Administration & Policy. May not be repeated for credit. Equivalent to HAP 672.
Recommended Prerequisite: HI 618 or HI 671 or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Junior Plus, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale. (https://catalog.gmu.edu/policies/academic/grading/)

HI 675: *Project in Health Data Analysis.* 1-4 credits.
Focuses on analysis of data from electronic health records. Includes instruction on preparation of data including (a) removing inaccurate information, (b) organizing the timing of events/variables, (c) summarizing time-based variables. Students will work on real data obtained by them from a practicum through an employer or real data supplied by instructor. Students will complete a literature review, describe methods used, present results, and discuss findings.Offered by Health Administration & Policy. May be repeated within the term for a maximum 4 credits. Equivalent to HAP 675.
Specialized Designation: Topic Varies

Recommended Prerequisite: HI 361 or HI 671 and HAP 602 or equivalent statistics and database courses.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Junior Plus, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Independent Study

Grading:
This course is graded on the Graduate Special scale. (https://catalog.gmu.edu/policies/academic/grading/)

HI 677: *Health Care Security Policy.* 3 credits.
Focuses on health security and privacy policy and compliance issues. Students will develop policies for the type of threats faced by facilities. The legal and business policies for facility, personnel, travel, information, and patient security will be discussed.Offered by Health Administration & Policy. May not be repeated for credit. Equivalent to HAP 745.
Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Junior Plus, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:

This course is graded on the Graduate Special scale. (https://catalog.gmu.edu/policies/academic/grading/)

700 Level Courses

HI 717: *Population Health Informatics.* 3 credits.
Provides students with foundational principles, informatics tools, methodologies, data sources, terminologies, and policy issues related to the emerging field of population health informatics. Examines key concepts such as registries, electronic health records, epidemiological databases, and quality reporting. Employs specific health informatics tools throughout the course, with many opportunities for gaining practical experience.Offered by Health Administration & Policy. May not be repeated for credit. Equivalent to HAP 717.
Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Junior Plus, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale. (https://catalog.gmu.edu/policies/academic/grading/)

HI 718: *Consumer Health Informatics.* 3 credits.
Exposes students to the emerging subfield of health informatics, which is at the intersection of public and community health, health education, and more traditional informatics areas. Demonstrates the use of technology to increase awareness and improve population health. Reviews issues involved in consumer health informatics, and explores hands-on informatics tools and applications.Offered by Health Administration & Policy. May not be repeated for credit. Equivalent to HAP 718.
Recommended Prerequisite: HI 618, graduate-level statistics course, or permission from instructor

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Junior Plus, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale. (https://catalog.gmu.edu/policies/academic/grading/)

HI 719: *Advanced Statistics for Health Informatics.* 3 credits.
Covers principles and methods of statistical data analysis and inference. Emphasizes the use and application of various data analysis techniques and their assumptions. Computer outputs will be used to demonstrate the application of statistical techniques in analyzing health related data sets.Offered by Health Administration & Policy. May not be repeated for credit. Equivalent to HAP 719.
Recommended Prerequisite: HAP 602 or GCH 601 or an equivalent statistics course.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Junior Plus, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale. (https://catalog.gmu.edu/policies/academic/grading/)

HI 720: *Health Data Integration.* 3 credits.
Students learn to manipulate large databases, create link table queries, write SQL application programs, understand sources of data conflicts, and identify methods of integrating ODBC databases with legacy data. Covers data warehousing, methods of analyzing large databases, including Bayesian belief networks and machine learning in health care context.Offered by Health Administration & Policy. May not be repeated for credit. Equivalent to HAP 720.
Recommended Prerequisite: HI 618 or equivalent, and HI 671 or equivalent.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Junior Plus, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale. (https://catalog.gmu.edu/policies/academic/grading/)

HI 725: *Statistical Process Control in Healthcare.* 3 credits.
Provides students with hands-on experience with data from electronic health records. Introduces students to causal analysis of observational data, including propensity scoring and stratification. Provides students with access to simulated data from electronic health records. Exposes students to trends that influence the quality management system and drivers for change, including measures used by CMS to strengthen value based payment.Offered by Health Administration & Policy. May not be repeated for credit. Equivalent to HAP 725.
Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Junior Plus, Non-Degree or Senior Plus.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale. (https://catalog.gmu.edu/policies/academic/grading/)

HI 730: *Health Care Decision Analysis.* 3 credits.
Students analyze practice patterns and find optimal methods of improving them. Uses decision analysis and failure mode analysis in health care settings. Students integrate scientific evidence, patients' preferences, and experts' opinions to identify optimal alternatives.Offered by Health Administration & Policy. May not be repeated for credit. Equivalent to HAP 730.
Recommended Prerequisite: Graduate-level statistics course.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale. (https://catalog.gmu.edu/policies/academic/grading/)

HI 770: *Medical Decision Making and Decision Support Systems.* 3 credits.
Introduces the complex subject of medical decision making. Examines systematic approaches to decision making. Explores principles governing the design, application, and maintenance of clinical decision support systems. Laboratory time provides learning experience in various applied situations.Offered by Health Administration & Policy. May not be repeated for credit. Equivalent to HAP 770.
Recommended Prerequisite: HI 670, HI 671, HI 618, or permission of instructor

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale. (https://catalog.gmu.edu/policies/academic/grading/)

HI 774: *Artificial Intelligence in Health.* 3 credits.
Reviews artificial intelligence (AI) methods in the context of health applications. Covers AI approaches to problem solving, uncertain reasoning, human-computer interaction, machine learning, intelligent optimization and simulation. Students are provided with theory and practical exercises in the context of Electronic Health Records and intelligent devices used in health.Offered by Health Administration & Policy. May not be repeated for credit. Equivalent to HAP 774.
Recommended Prerequisite: HI 618, a graduate-level statistics course, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale. (https://catalog.gmu.edu/policies/academic/grading/)

HI 777: *Health Data Visualization.* 3 credits.
Introduces the principles and techniques of data visualization with special focus on applications in healthcare. Students will learn practical skills to make visually appealing graphics on web browsers to present their data using a publicly available JavaScript library D3 (Data-driven documents). Notes: Assumes that students have baisc knowledge of the web, browsers, HTML, CSS, and JavaScript programming.Offered by Health Administration & Policy. May not be repeated for credit. Equivalent to HAP 777.
Recommended Prerequisite: HI 618

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale. (https://catalog.gmu.edu/policies/academic/grading/)

HI 780: *Data Mining in Health Care.* 3 credits.
An introductory course to data mining and knowledge discovery in health care. Methods for mining health care databases and synthesizing task-oriented knowledge from computer data and prior knowledge are emphasized. Topics include fundamental concepts of datamining, data preprocessing, classification and prediction (decision trees, attributional rules, Bayesian networks), constructive induction, cluster and association analysis, knowledge representation and visualization, and an overview of practical tools for discovering knowledge from medical data. These topics are illustrated by examples of practical applications in health careOffered by Health Administration & Policy. May not be repeated for credit. Equivalent to HAP 780.
Recommended Prerequisite: Graduate-level statistics course.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Special scale. (https://catalog.gmu.edu/policies/academic/grading/)

HI 786: *Workshop in Health Informatics.* 3 credits.
Links material learned in the informatics courses with industry needs. Students work on a common challenge/problem in health informatics that can be addressed with material covered in the core courses of the program. All students work on the same problem in small groups of 2-3 people. The instructor has arranged access to data, and lectures on solutions to the problem. Students are expected to implement the solution, reports its performance, and communicate their findings.Offered by Health Administration & Policy. May not be repeated for credit. Equivalent to HAP 786.
Registration Restrictions:
Required Prerequisites: (HAP 618[B-], HI 618[B-], HAP 671[B-], HI 671[B-], HAP 672[B-] or HI 672[B-]).
[B-] Requires minimum grade of B-.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Special scale. (https://catalog.gmu.edu/policies/academic/grading/)

HI 795: *Health Informatics Pre-Capstone.* 0 credits.
Students work to satisfy a required checklist to qualify for enrolling in the Capstone in this no-credit prerequisite for the Health Informatics Capstone (HI 796). Students finalize their professional profile and career goals, work on communication with employers to identify organizations

to conduct their practicum projects, run interviews, initiate on-boarding, and administrative requirements. Capstone is a vital part of the program, failure to satisfy these requirements checklist in this class will result in inability to register for the Capstone (HI 796).Offered by Health Administration & Policy. May not be repeated for credit. Equivalent to HAP 795.
Registration Restrictions:
Required Prerequisite: HAP 786[*B-].
[*] May be taken concurrently.
[B-] Requires minimum grade of B-.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Special scale. (https://catalog.gmu.edu/policies/academic/grading/)

HI 796: *Health Informatics Capstone Practicum.* 3 credits.
Enables students to apply the skills and knowledge they acquired throughout the program in a real-world professional environment. Students function as an integral member of an organizational entity to work on a project that provides a well-rounded experience under the joint direction of a faculty member and a preceptor. Students are expected to select from a wide variety of organizations to conduct their field practicum. Students are expected to independently identify an organization to conduct their field practicum and secure faculty approval.Offered by Health Administration & Policy. May not be repeated for credit. Equivalent to HAP 796.
Registration Restrictions:
Required Prerequisites: HAP 786[B-], HI 786[B-], HAP 795[B-] or HI 795[B-].
[B-] Requires minimum grade of B-.

Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Fieldwork

Grading:
This course is graded on the Graduate Special scale. (https://catalog.gmu.edu/policies/academic/grading/)

HI 797: *Radiology Informatics.* 3 credits.
Provides an overview of technologies used in radiological informatics, including radiology related information acquisition, storage, retrieval, processing, communication, and the use of this information in an efficient and effective manner to improve the quality of patient care. Designed for health informatics students without strong background in mathematics, physics, or biomedical engineering.Offered by Health Administration & Policy. May not be repeated for credit. Equivalent to HAP 797.
Recommended Prerequisite: HI 681, HI 780, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate or Non-Degree.

Students in a Non-Degree Undergraduate degree may **not** enroll.

Schedule Type: Lecture

Grading:
This course is graded on the Graduate Special scale. (https://catalog.gmu.edu/policies/academic/grading/)

800 Level Courses

HI 823: *Causal Analysis & Comparative Effectiveness.* 3 credits.
Apply knowledge of discovery and data science methods to create network models of health data to predict population and public health outcomes. Analyze massive, high-dimensional data, using repeated and chained LASSO regressions, to create Causal Networks, and understand competing effects of multiple causes and mediators.Offered by Health Administration & Policy. May not be repeated for credit. Equivalent to HAP 823.
Registration Restrictions:
Required Prerequisites: HAP 671[B-], HI 671[B-], HAP 719[B-] or HI 719[B-].
[B-] Requires minimum grade of B-.

Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Special scale. (https://catalog.gmu.edu/policies/academic/grading/)

HI 830: *Generative AI Applications in Health.* 3 credits.
Applies Generative AI (artificial intelligence) to create conversational decision aids for diagnosis or treatment of patients. Creates bias-free, accurate, and empathetic clinical decision aids for patients and health care providers that complies with all Food and Drug Administration (FDA) regulations.Offered by Health Administration & Policy. May not be repeated for credit. Equivalent to HAP 830.
Registration Restrictions:
Required Prerequisites: HAP 719[B-], HI 719[B-], HAP 618[B-] or HI 618[B-].
[B-] Requires minimum grade of B-.

Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Special scale. (https://catalog.gmu.edu/policies/academic/grading/)

HI 850: *Health Informatics Research.* 3 credits.
Introduces technical research methods in the field of health informatics. Reviews quantitative, qualitative and mixed research methods applied to study health informatics problems. Contrasts research methods used in health informatics to those traditionally used in health services research and health sciences. Provides students concrete examples of health informatics research. Allows students to work on research projects individually and in groups.Offered by Health Administration & Policy. May not be repeated for credit. Equivalent to HAP 850.
Recommended Prerequisite: HI 719 or HAP 819, HAP 761, HI 780

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Schedule Type: Seminar

Grading:

This course is graded on the Graduate Special scale. (https://catalog.gmu.edu/policies/academic/grading/)

HI 880: *Advanced Health Data Mining.* 3 credits.
Provides the knowledge and skills needed to analyze health data using modern tools. Describes analytics of administrative and clinical data. Covers concepts and tools for big data analvtics and NoSQL data analytics.Offered by Health Administration & Policy. May not be repeated for credit. Equivalent to HAP 880.
Recommended Prerequisite: HI 618, HI 719, HI 780, or permission of instructor.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy or Graduate.

Schedule Type: Seminar

Grading:
This course is graded on the Graduate Special scale. (https://catalog.gmu.edu/policies/academic/grading/)