

# HEALTH INFORMATICS (HI)

## HI 41095 SPECIAL TOPICS IN HEALTH INFORMATICS 1-3 Credit Hours

(Repeatable for credit) Topics could include current or emerging issues in health informatics. Topics will be announced in schedule of classes.

Offered irregularly as resources and opportunities permit.

**Prerequisite:** None.

**Schedule Type:** Lecture

**Contact Hours:** 1-3 lecture

**Grade Mode:** Standard Letter

## HI 41096 INDIVIDUAL INVESTIGATION IN HEALTH INFORMATICS 1-3 Credit Hours

(Repeatable for credit) Research or individual investigation in areas not covered in the existing curriculum for baccalaureate level students at or above the junior level. In-progress (IP) mark permissible.

**Prerequisite:** Special approval.

**Schedule Type:** Individual Investigation

**Contact Hours:** 3-9 other

**Grade Mode:** Standard Letter-IP

## HI 60401 HEALTH INFORMATICS MANAGEMENT 3 Credit Hours

Covers the areas encompassing health informatics management including the planning, selection, deployment, and management of electronic medical records (EMR), management decision-support and tracking systems (DSS), and other health information technologies (HIT).

**Prerequisite:** Graduate standing.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

## HI 60402 LEGAL ISSUES IN HEALTH INFORMATICS 3 Credit Hours

(Slashed with HI 80402) Introduction to the fundamentals of law for Health Informatics and Information Management. Elements of the course include general legal principles and healthcare; legal electronic medical records (EMR); Health Insurance Portability and Accountability Act (HIPAA) privacy rules and security rules; access, requests and disclosure of health information; required reporting and mandatory disclosure laws; risk management and quality improvement; compliance; workforce overview; related ethics and social issues.

**Prerequisite:** Graduate standing.

**Pre/corequisite:** HI 60401.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

## HI 60403 HEALTH INFORMATION SYSTEMS 3 Credit Hours

(Slashed with HI 80403) Introduction to information systems and their applications in healthcare used for managerial and clinical support. Study the fundamentals of information systems, including Electronic Medical Records (EMR), information security. Understand the role of standardized codes, vocabularies and terminologies used in health information systems. Analysis of management and enterprise systems, identify the key elements to manage information resources effectively and the trends affecting the development of health information systems and networks.

**Prerequisite:** Graduate standing.

**Pre/corequisite:** HI 60401.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

## HI 60410 HEALTH RECORDS MANAGEMENT 3 Credit Hours

(Slashed with HI 80410) Conceptual foundations and practicum for health records management, including the planning, implementation and operation of electronic medical records (EMR); the management of EMR in management and enterprise systems; identifying, selecting and evaluating EMR and health information systems, applications, and repositories; and issues of data quality, integrity, migration, and interoperability.

**Prerequisite:** Graduate standing.

**Pre/corequisite:** HI 60401.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

## HI 60411 CLINICAL ANALYTICS 3 Credit Hours

(Slashed with HI 80411) The use of well-defined and well-integrated clinical analytics throughout the healthcare value chain can be transformative. Through careful implementation of health analytics, hospitals can transform unwieldy amalgamations of data into information that can: improve patient outcomes, increase safety, enhance operational efficiency and support public health. Given the immense size of the data challenge, the distinctness and geographic spread of many healthcare-related activities, and the fact that so many healthcare activities are conducted by different entities which must interact with each other, there is really no other way to provide operations management tools necessary to deliver personalized medicine and to control spiraling costs. Since clinical analytics is an immature discipline, we carefully examine the practices of those institutions who are standard setters in the industry.

**Prerequisite:** Graduate standing.

**Pre/corequisite:** HI 60401.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

## HI 60412 CLINICAL DECISION SUPPORT 3 Credit Hours

Provides a practical survey of clinical decision support systems that collect clinical data and enable the transition to clinical knowledge in real world applications intended to improve quality and safety of patient care. Students become familiar with the basic requirements for clinical decision support systems and the challenges associated with the development and deployment of new applications within the healthcare setting.

**Prerequisite:** HI 60401; and graduate standing.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

## HI 60413 CHANGE MANAGEMENT IN HEALTH INFORMATICS 3 Credit Hours

(Slashed with HI 80413) Designed to cover the process of change management in large healthcare organizations in light of current trends. Topics related to technology requirements, technology implementations, risk assessment and buy-in are among those covered.

**Prerequisite:** HI 60401; and graduate standing.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**HI 60414 HUMAN FACTORS AND USABILITY IN HEALTH INFORMATICS 3 Credit Hours**

(Slashed with HI 80414) Provides students with the foundational principles of usability and human factors as applied to safety and quality in health informatics technology. Course readings and materials review the concepts of human factors, usability and the cognitive consequences of health information technology on clinical performance and decision making. Attention is given to the role of mobile computing in health care, as well as information visualization.

**Prerequisite:** Graduate standing.

**Pre/corequisite:** HI 60401.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**HI 60415 HEALTH INFORMATICS INQUIRY AND ASSESSMENT 3 Credit Hours**

(Slashed with HI 80415) Provides a foundation for understanding research in health informatics with a focus on user and experience design research. Through lectures, readings, discussions and assignments, students review user research methods, data collection techniques and communication strategies within the healthcare context. Students then apply this knowledge to creating a research plan for assessing health information technology and communicating results to key organizational stakeholders.

**Prerequisite:** HI 60401 with a minimum C grade; and graduate standing.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**HI 60416 HEALTH INFORMATICS ISSUES: POLICY, POLITICS AND ETHICS 3 Credit Hours**

This course uses a policy analysis lens to critically examine issues related to the use of information technology in healthcare from an ethical, political and regulatory perspective. The primary focus will be on the United States, but international approaches will also be discussed. Legislation affecting Health Information Technology area will be examined including the American Reinvestment and Recovery Act, HITECH section; Affordable Care Act and Health Insurance Portability and Accountability Act (HIPAA) of 1996. Topics and issues related to Health Informatics including structure of health administrative and delivery systems, assessment of population health, models of health care delivery, access and quality of care will also be discussed.

**Prerequisite:** HI 60401; and graduate standing.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**HI 60417 PUBLIC HEALTH INFORMATICS 3 Credit Hours**

Public Health Informatics (PHI) is an emergent, interdisciplinary field that focuses on the systematic management and dynamic application of information resources to enhance public health practice, education and research. As an emerging subset of Health Informatics, PHI is practiced by individuals, governmental and nongovernmental organizations at the international, national, regional, state and local levels. PHI deals with the collection and analysis of vital statistics data through surveillance; information creation; information storage and retrieval; visualization and graphics; dissemination; use of information for policy, decision making and trend tracking. The purpose of this course is to provide students with an introductory overview of the vast and dynamic field of PHI, including definitions, approaches, competencies, applications and informatics principles applied in public health settings.

**Prerequisite:** HI 60401 or HI 80401; and graduate standing.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**HI 60418 CLINICAL ANALYTICS II 3 Credit Hours**

As the volume and complexity of health data continues to grow, analysis of that data requires more advanced tools to transform that data into meaningful information for clinical decisions. Not only is data from electronic medical records (EMRs) growing at a rapid pace but new types of data are available for analysis, such as, genomic data and patient generated data. These advanced analytic tools break down into three areas, each of which will be examined in this course: new data warehousing techniques to manage big data, new analytic tools including cognitive computing and predictive analytics and new ways to visualize the data. All of these techniques transform the raw data into use cases, such as, population health, precision medicine and clinical decision support using artificial intelligence and machine learning which will also be addressed in this course.

**Prerequisite:** HI 60411; and graduate standing.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**HI 60636 STANDARDIZED TERMINOLOGIES IN HEALTHCARE 3 Credit Hours**

Introduce various types of standardized healthcare terminologies (controlled vocabularies) used in the Electronic Health Records (EHR) and Health Information Exchange (HIE). Present the benefits of using standardized terminologies, as well as the interoperability and Meaningful Use (MU) requirements and standards. Explain the purposes, structures, components, and application of the most widely implemented standardized terminologies such as ICD, CPT, SNOMED CT, LOINC, RxNorm, ICNP, and UMLS.

**Prerequisite:** Graduate standing.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**HI 60691 SEMINAR IN HEALTH INFORMATICS 1-3 Credit Hours**

(Repeatable for credit). Advanced research by students who are qualified to examine problems of certain special areas related to concentrations of study in health informatics.

**Prerequisite:** Graduate standing.

**Schedule Type:** Seminar

**Contact Hours:** 1-3 other

**Grade Mode:** Standard Letter

**HI 60693 VARIABLE TITLE WORKSHOP IN HEALTH INFORMATICS****1-3 Credit Hours**

(Repeatable for credit). Intensive examination of special topics of interest to those involved in health informatics program. Maximum workshop credit for the health informatics program is 4 credit hours.

**Prerequisite:** Graduate standing.

**Schedule Type:** Workshop

**Contact Hours:** 1-3 other

**Grade Mode:** Satisfactory/Unsatisfactory

**HI 60792 ELECTIVE INTERNSHIP IN HEALTH INFORMATICS 2-3****Credit Hours**

Supervised work experience in health informatics of a professional nature of not less than 100 clock hours (for 2 credit hours) or 150 clock hours (for 3 credit hours) with directed preparation of a reflection paper.

**Prerequisite:** Graduate standing; and special approval.

**Schedule Type:** Practical Experience

**Contact Hours:** 2-3 other

**Grade Mode:** Satisfactory/Unsatisfactory-IP

**HI 61095 SPECIAL TOPICS IN HEALTH INFORMATICS 1-3 Credit****Hours**

(Repeatable for credit) Offered irregularly as resources and or opportunities permit. Topics could include current or emerging issues in health informatics. Specific topics are announced in the Schedule of Classes.

**Prerequisite:** Graduate standing.

**Schedule Type:** Lecture

**Contact Hours:** 1-3 lecture

**Grade Mode:** Standard Letter

**HI 61096 INDIVIDUAL INVESTIGATION IN HEALTH INFORMATICS****1-3 Credit Hours**

(Repeatable for credit) Research or individual investigation in areas not covered by the existing curriculum for master's level students. Maximum 6 credit hours towards the health informatics major within the Master of Science degree.

**Prerequisite:** Graduate standing; and special approval.

**Schedule Type:** Individual Investigation

**Contact Hours:** 3-9 other

**Grade Mode:** Standard Letter-IP

**HI 66092 MASTER'S INTERNSHIP IN HEALTH INFORMATICS 3****Credit Hours**

Supervised work experience of an advanced professional nature that concentrates on developing skills in areas of health informatics and integrates their knowledge from all HI courses and experiences. Students must have completed a minimum of 30 credit hours towards the health informatics major within the master of science degree.

**Prerequisite:** HI 60401, HI 60402, HI 60403, HI 60410, HI 60411, KM 60301 and LIS 60636; and minimum 3.000 overall GPA; and special approval.

**Schedule Type:** Practical Experience

**Contact Hours:** 10 other

**Grade Mode:** Satisfactory/Unsatisfactory-IP

**HI 66098 MASTER'S PROJECT IN HEALTH INFORMATICS 3 Credit Hours**

Provides a means for the application of the knowledge, research and competencies learned through study in health informatics to the development of an information system, product, setting or service. Students must have completed a minimum 30 credit hours towards the MS-HI program prior to registration.

**Prerequisite:** HI 60401, HI 60402, HI 60403, HI 60410, HI 60411, KM 60301 and LIS 60636; and minimum overall 3.000 GPA; and special approval.

**Schedule Type:** Master's Project

**Contact Hours:** 3 other

**Grade Mode:** Satisfactory/Unsatisfactory-IP

**HI 66198 MASTER'S RESEARCH PAPER IN HEALTH INFORMATICS 3 Credit Hours**

Under the advisement of a faculty member, students will complete a research paper that serves as a culminating experience for the M.S.-HI degree. Cumulative GPA of 3.000 is required prior to enrolling in the course. Students must have completed a minimum of 30 credit hours the MS-HI program prior to registration.

**Prerequisite:** HI 60401, HI 60402, HI 60403, HI 60410, HI 60411, KM 60301 and LIS 60636; and minimum 3.000 overall GPA; and graduate standing; and special approval.

**Schedule Type:** Master's Project

**Contact Hours:** 3 other

**Grade Mode:** Satisfactory/Unsatisfactory-IP

**HI 66199 THESIS I 2-6 Credit Hours**

Thesis students must register for a total of 6 hours, 2 to 6 hours in a single semester distributed over several semesters if desired. Students must have completed a minimum 30 credit hours towards the MS-HI program prior to registration.

**Prerequisite:** HI 60401, HI 60402, HI 60403, HI 60410, HI 60411, KM 60301 and LIS 60636; and minimum 3.000 overall GPA; and graduate standing; and special approval.

**Schedule Type:** Masters Thesis

**Contact Hours:** 2-6 other

**Grade Mode:** Satisfactory/Unsatisfactory-IP

**HI 66299 THESIS II 2 Credit Hours**

Thesis students must continue registration each semester until all degree requirements are met.

**Prerequisite:** HI 66199; and graduate standing; and special approval.

**Schedule Type:** Masters Thesis

**Contact Hours:** 2 other

**Grade Mode:** Satisfactory/Unsatisfactory-IP

**HI 80401 HEALTH INFORMATICS MANAGEMENT 3 Credit Hours**

Covers the areas encompassing Health informatics management including the planning, selection, deployment, and management of electronic medical records (EMR), management decision-support and tracking systems (DSS), and other health information technologies (HIT).

**Prerequisite:** Doctoral standing.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**HI 80402 LEGAL ISSUES IN HEALTH INFORMATICS 3 Credit Hours**  
(Slashed with HI 60402) Introduction to the fundamentals of law for Health Informatics and Information Management. Elements of the course include general legal principles and healthcare; legal electronic medical records (EMR); Health Insurance Portability and Accountability Act (HIPAA) privacy rules and security rules; access, requests and disclosure of health information; required reporting and mandatory disclosure laws; risk management and quality improvement; compliance; workforce overview; related ethics and social issues.

**Prerequisite:** HI 80401; and doctoral standing.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**HI 80403 HEALTH INFORMATION SYSTEMS 3 Credit Hours**  
(Slashed with HI 60403) Introduction to information systems and their applications in healthcare used for managerial and clinical support. Study the fundamentals of information systems, including Electronic Medical Records (EMR), information security. Understand the role of standardized codes, vocabularies and terminologies used in health information systems. Analysis of management and enterprise systems, identify the key elements to manage information resources effectively and the trends affecting the development of health information systems and networks.

**Prerequisite:** HI 80401; and doctoral standing.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**HI 80410 HEALTH RECORDS MANAGEMENT 3 Credit Hours**  
(Slashed with HI 60410) Conceptual foundations and practicum for health records management, including the planning, implementation and operation of electronic medical records (EMR); the management of EMR in management and enterprise systems; identifying, selecting and evaluating EMR and health information systems, applications, and repositories; and issues of data quality, integrity, migration, and interoperability.

**Prerequisite:** HI 80401; and doctoral standing.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**HI 80411 CLINICAL ANALYTICS 3 Credit Hours**  
(Slashed with HI 60411) The use of well-defined and well integrated clinical analytics throughout the healthcare value chain can be transformative. Through careful implementation of health analytics, hospitals can transform unwieldy amalgamations of data into information that can: Improve patient outcomes, increase safety, enhance operational efficiency and support public health. Given the immense size of the data challenge, the distinctness and geographic spread of many healthcare-related activities, and the fact that so many healthcare activities are conducted by different entities which must interact with each other, there is really no other way to provide operations management tools necessary to deliver personalized medicine and to control spiraling costs. Since clinical analytics is an immature discipline, we carefully examine the practices of those institutions who are standard setters in the industry.

**Prerequisite:** HI 80401; and doctoral standing.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**HI 80412 CLINICAL DECISION SUPPORT 3 Credit Hours**  
(Slashed with HI 60412) Provides a practical survey of clinical decision support systems that collect clinical data and enable the transition to clinical knowledge in real world applications intended to improve quality and safety of patient care. Students become familiar with the basic requirements for clinical decision support systems and the challenges associated with the development and deployment of new applications within the healthcare setting.

**Prerequisite:** HI 80401; and doctoral standing.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**HI 80413 CHANGE MANAGEMENT IN HEALTH INFORMATICS 3 Credit Hours**  
(Slashed with HI 60413) Designed to cover the process of change management in large healthcare organizations in light of current trends. Topics related to technology requirements, technology implementations, risk assessment, end user computing and buy-in are among those covered.

**Prerequisite:** HI 80401 with a minimum C grade; and doctoral standing.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**HI 80414 HUMAN FACTORS AND USABILITY IN HEALTH INFORMATICS 3 Credit Hours**  
(Slashed with HI 60414) Provides students with the foundational principles of usability and human factors as applied to safety and quality in health informatics technology. Course readings and materials review the concepts of human factors, usability, and the cognitive consequences of health information technology on clinical performance and decision making. Attention is given to the role of mobile computing in health care, as well as information visualization.

**Prerequisite:** HI 80401 with a minimum grade of C; and doctoral standing.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**HI 80415 HEALTH INFORMATICS INQUIRY AND ASSESSMENT 3 Credit Hours**  
(Slashed with HI 60415) This course will provide a foundation for understanding research in health informatics with a focus on user and experience design research. Through course lectures, readings, discussions and assignments, students will review user research methods, data collection techniques and communication strategies within the healthcare context. Students will then apply this knowledge to creating a research plan for assessing health information technology and communicating results to key organizational stakeholders.

**Prerequisite:** HI 80401 with a minimum C grade; and doctoral standing.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**HI 80417 PUBLIC HEALTH INFORMATICS 3 Credit Hours**

Public Health Informatics (PHI) is an emergent, interdisciplinary field that focuses on the systematic management and dynamic application of information resources to enhance public health practice, education and research. As an emerging subset of Health Informatics, PHI is practiced by individuals, governmental and nongovernmental organizations at the international, national, regional, state and local levels. PHI deals with the collection and analysis of vital statistics data through surveillance; information creation; information storage and retrieval; visualization and graphics; dissemination; use of information for policy, decision making and trend tracking. The purpose of this course is to provide students with an introductory overview of the vast and dynamic field of PHI, including definitions, approaches, competencies, applications and informatics principles applied in public health settings.

**Prerequisite:** HI 60401 or HI 80401; and doctoral standing.

**Schedule Type:** Lecture

**Contact Hours:** 3 lecture

**Grade Mode:** Standard Letter

**HI 80691 SEMINAR IN HEALTH INFORMATICS 1-3 Credit Hours**

(Repeatable for credit) Advanced research by students who are qualified to examine problems of certain special areas related to concentrations of study in health informatics.

**Prerequisite:** Doctoral standing.

**Schedule Type:** Seminar

**Contact Hours:** 1-3 other

**Grade Mode:** Standard Letter

**HI 81095 SPECIAL TOPICS IN HEALTH INFORMATICS 1-3 Credit Hours**

(Repeatable for credit) Offered irregularly as resources and or opportunities permit. Topics could include current or emerging issues in health informatics. Specific topics are announced in the Schedule of Classes.

**Prerequisite:** Doctoral standing.

**Schedule Type:** Lecture

**Contact Hours:** 1-3 lecture

**Grade Mode:** Standard Letter

**HI 81096 INDIVIDUAL INVESTIGATION IN HEALTH INFORMATICS 1-3 Credit Hours**

Research or individual investigation for doctoral level students.

**Prerequisite:** Doctoral standing; and special approval.

**Schedule Type:** Individual Investigation

**Contact Hours:** 3-9 other

**Grade Mode:** Standard Letter-IP