

HI-Health Informatics

HI 598. Professional Activity. 0 Hours.

Professional Development experiences associated with the MSHI degree program.

HI 599. Professional Development. 0 Hours.

Professional development experiences associated with the MSHI degree program.

HI 600. Analysis and Design of Health Information Systems. 4 Hours.

Requirements, concepts, methods, and tools in analyzing, modeling, and designing health information systems with emphasis on clinical systems.

HI 601. Databases and Data Modeling. 3 Hours.

Concepts of data modeling, data architectures, and data administration. Study of various models with application to current health information projects.

HI 602. Clinical and Administrative Systems. 3 Hours.

Foundations of clinical information use starting with information collection, processing (e.g., decision making) and recording. All aspects of clinical information use in inpatient and outpatient facilities. Special emphasis on the clinician's work to support enterprise-wide health care delivery.

HI 611. Introduction to Health Informatics and Healthcare Delivery. 3-4 Hours.

Overview of history and current status of health information technology (health IT) and health informatics within the US health care system, including approaches for planning, implementing and evaluating health IT and the legal and ethical issues involved in the use of health IT.

HI 613. Analysis and Design of Health Information Systems. 4 Hours.

Concepts, methods, approaches, standards, and tools in analyzing, modeling, designing, and implementing user centered health information systems.

HI 614. Clinical and Administrative Systems. 3 Hours.

Clinical and administrative systems with an emphasis on clinical decision support methods, tools, and systems. Types of methods, tools, and systems used in inpatient and outpatient settings, information flow across systems within healthcare settings, strategies for user centered design, implementation and evaluation of systems.

HI 617. Principles in Health Informatics. 3-4 Hours.

Underpinnings in Health Informatics policies, practices, and principles; Inter-and intra-organizational application of socio-technical information systems and data to enhance research and practice in healthcare.

HI 618. Research Methods in Health Informatics. 3 Hours.

Fundamental concepts, methods, and approaches of qualitative and quantitative data analysis, including statistical analysis and measurement techniques, for clinical and health informatics.

HI 619. Databases and Data Modeling. 3 Hours.

Concepts of data modeling, database design and administration, data architectures, and data querying for transactional and analytical data systems. Study of various data models with application to health information projects using SQL in current database management systems.

HI 620. Security and Privacy in Health Care. 3 Hours.

Security and privacy issues, legislation, regulations, and accreditation standards unique to the health care domain and relative to various group layers (individual, social, and society). Concepts, theories, methods, models, and tools related to technical security of data across networks, systems, databases and storage, audit mechanisms and controls.

HI 621. Strategic Planning Project Management and Contracting. 3 Hours.

Theory, practice, and processes needed for strategic planning of integrated health information systems. Assessing benefits of enterprise-wide information integration and tactics needed to realize these benefits. Steps needed for developing strategic plans and understanding drivers of information systems - corporate business alignment. Understanding key concepts of project management. Exposure to skills needed to negotiate contracts with vendors.

HI 622. Financial Management for Health Professionals. 3 Hours.

Financial statements, cost allocation, capital budgeting, time value analysis, reimbursement, financial risk and return, long-term debt financing, capital structure, cost of capital, and analysis of financial performance.

HI 624. Leadership Theory and Development. 2 Hours.

Exploration of leadership theory and development, and the role of leadership in internal and external advocacy. The emphasis is on the application of leadership theories to individuals and groups in healthcare settings.

HI 630. Strategic Planning and Contracting for Health Information Systems. 4 Hours.

Theory, practice, and processes needed for strategic planning of integrated health information systems. Assessing benefits of enterprise-wide information integration and tactics needed to realize these benefits. Steps needed for developing strategic plans that are aligned with goals of health care institutions using case studies and in team projects. Development of a Request for Proposal (RFP) based on strategic plans. Critique and practice of skills needed to negotiate contracts with vendors.

HI 632. Quantitative Methods for Health Informatics. 3 Hours.

Selected mathematical and statistical techniques and computer applications applied to decision making in hospitals and health care organizations. Introduction to selected analytic and visualization software and techniques used to measure and evaluate healthcare outcomes.

HI 640. Intro to Health Informatics and Health Care Delivery. 3-4 Hours.

History and current status of information systems in health care and health care information systems. Information architectures, administrative and clinical applications, strategic planning, security, and benefits realization.

HI 641. Healthcare Data Analytics Challenges, Methods, and Tools. 3 Hours.

Current factors, methods, and tools affecting data collection, management, analytics, integration, and reporting in healthcare, including use of various ontologies and standards, and healthcare challenges affecting data analytics.

HI 642. Advanced Data Management and Analytics for Healthcare. 3 Hours.

Automation of database management and basic Extract-Transform-Load (ETL) and data analytics tasks using advanced SQL. Creation and optimization of relational databases. Current data modeling and database architecture approaches and their uses in healthcare. Integration of data mining and analytics into database management platforms.

Prerequisites: HI 619 [Min Grade: C]

HI 643. Business Intelligence for Healthcare. 3 Hours.

Current concepts, methods and tools in Business Intelligence for healthcare. Approaches for data modeling for data warehouses, Extract-Transform-Load (ETL) processes, data marts, data integration, and data visualization.

Prerequisites: HI 619 [Min Grade: C] and HI 642 [Min Grade: C]

HI 646. Advanced Quantitative Methods for Health Informatics. 3 Hours.

Concepts, methods, and tools used in advanced quantitative data analytics to address a range of problems in health informatics, including prediction, classification, and pattern recognition across a variety of levels (individual, social group, and society).

Prerequisites: HI 618 [Min Grade: C]

HI 650. Foundations of Healthcare User-Based Design. 3 Hours.

Exploration of models of cognition and human performance and their application to healthcare information, patient safety, and technology.

HI 651. Foundations of Healthcare User-Based Research. 3 Hours.

Overview of interaction design research theories, implementation models and assessment of end-user mental models. Designing for healthcare teams, workflow considerations, contextual inquiry and distributed cognition models. Emphasis on analysis of modeling users, designing scenarios and requirements, and incorporating qualitative and quantitative research methods into the design of healthcare IT products and services; usability testing, heuristic evaluations, and web analytics.

HI 652. Design Thinking for Healthcare. 3 Hours.

Methodological approaches to principles of human-centered design, including quantifying end-user satisfaction with a healthcare-related device or interface, iterative prototyping, developing integrative thinking and empathy within a multi-disciplinary organization, contextual inquiry, brainstorming techniques and end-to-end walk-throughs.

HI 653. Managing the User-Centered Development Process. 3 Hours.

Methodological approaches to principles of human-centered design, including quantifying end-user satisfaction with a healthcare-related device or interface, iterative prototyping, developing integrative thinking and empathy within a multi-disciplinary organization, contextual inquiry, brainstorming techniques and end-to-end walk-throughs.

HI 654. Healthcare User Experience Capstone Project. 1-5 Hour.

Rigorous project that provides opportunity for focused investigation of User Experience problem in real-world setting and for application of problem solving methodologies for development and execution of solutions. Investigation and application of theory through practical implementation project.

HI 656. Human Factors in Healthcare IT Systems. 3 Hours.

Overview of the importance of human factors engineering in the function of healthcare IT systems and specialized challenges to user experience (UX) research in the context of the healthcare system. Application of user-centered theory, principles, data, and methods to the design of healthcare IT systems. Implementation of UX research methods to evaluate and understand the interactions between healthcare IT systems and their users.

HI 657. Human-centered Research Design Methods for Healthcare. 3 Hours.

Design Thinking methodology intensive. Discussion of the importance of qualitative user research. Understanding of discovery to enable Identification of proper user research approaches and establishing research goals. Overview tools and processes for deep research discovery. Students will select a healthcare context for the application of research methods.

HI 658. Development of User Centered Health Information Systems. 3 Hours.

Development approaches involving principles of human-centered design, leading to high fidelity health information system prototypes.

HI 659. Qualitative Synthesis for Healthcare Insights. 3 Hours.

Overview and execution of qualitative research methods and data gathering within the healthcare context to enable the delivery of solutions. Focus on the application of research theories, methods, and tools to deliver insights and qualitative and quantitative outputs. Understanding socio-technical factors relative to fundamental interface design elements and interface layouts across modalities. Journey mapping, concepting, user flows, and wireframing will be generated.

HI 660. Healthcare Requirements Analysis. 3 Hours.

Approach to, identification, documentation and presentation of common health informatics problems. A focus on identifying root problems and unambiguous metrics for post-evaluation to ensure final deliverable meets intended need. Exposure to project management methodologies and six sigma processes to facilitate the logic needed for troubleshooting data problems in healthcare.

HI 661. Advanced Database Design and SQL for Healthcare. 3 Hours.

Study of common healthcare data structures and environments. Creation of database components; in-depth SQL coding; data warehouse designs; tools such as TOAD, SQL Explorer, Management Studio.

HI 662. Healthcare Business Intelligence. 3 Hours.

Exposure to typical business intelligence (BI) tool sets and identification of business objects. Building of the metalayer involved in a business intelligence system and exposure to Business Objects, Crystal Reports, SSRS.

HI 664. Data Analytics Capstone Project. 1-5 Hour.

Rigorous project that provides opportunity for focused investigation of healthcare data problems in real-world settings and for application of problem-solving methodologies for development and execution of solutions. Investigation and application of theory through practical implementation project.

HI 671. Data Analytics Capstone Project I. 1 Hour.

Initiation of first steps in identifying and developing the HI Capstone Project; the Capstone project is a focused investigation of a health informatics problem in a real-world setting and application of problem solving methodologies for development and execution of solutions.

HI 672. User Experience Capstone Project I. 1 Hour.

Initiation of first steps in identifying and developing the HI Capstone Project; the Capstone project is a focused investigation of a health informatics problem in a real-world setting and application of problem solving methodologies for development and execution of solutions.

HI 673. Data Analytics Capstone Project II. 1 Hour.

Continuation course of the HI Capstone Project involving project execution, management, and dissemination; the Capstone project is a focused investigation of a health informatics problem in a real-world setting and application of problems solving methodologies for development and execution of solutions.

HI 674. User Experience Capstone Project II. 1 Hour.

Continuation course for the HI Capstone Project involving project proposal development; the Capstone project is a focused investigation of a health informatics problem in a real-world setting and application of problems solving methodologies for development and execution of solutions.

HI 675. Data Analytics Capstone Project III. 3 Hours.

Final course for the HI Capstone Project involving project execution, management, and dissemination; the Capstone project is a focused investigation of a health informatics problem in a real-world setting and application of problems solving methodologies for development and execution of solutions.

HI 676. User Experience Capstone Project III. 3 Hours.

Final course for the HI Capstone Project involving project execution, management, and dissemination; the Capstone project is a focused investigation of a health informatics problem in a real-world setting and application of problems solving methodologies for development and execution of solutions.

HI 677. Research Capstone Project I. 1 Hour.

Initiation of first steps in identifying and developing the HI Capstone Project: the capstone project is a focused investigation of health informatics problem in a real-world setting and application of problem solving methodologies for development and execution of solutions.

HI 678. Research Capstone Project II. 1 Hour.

Continuation course of the HI Capstone Project involving project execution, management, and dissemination; the Capstone project is a focused investigation of a health informatics problem in a real-world setting and application of problems solving methodologies for development and execution of solutions.

HI 679. Research Capstone Project III. 3 Hours.

Final course for the HI Capstone Project involving project execution, management, and dissemination; the Capstone project is a focused investigation of a health informatics problem in a real-world setting and application of problems solving methodologies for development and execution of solutions.

HI 685. Principles in Health Informatics. 3-4 Hours.

Underpinnings in health informatics policies, practices, and principles. Inter-and intra-organizational application of information systems and data to enhance research and practice in healthcare.

HI 686. Leadership Theory. 1 Hour.

Exploration of the theoretical nature of leadership. Emphasis is on the application of theories of leadership in healthcare settings.

HI 687. Leadership Development. 1 Hour.

Completion of a guided leadership inventory, guest lecturers from industry leaders across multiple disciplines in healthcare to provide context-specific insight on leadership topics.

HI 688. Leadership Advocacy. 1 Hour.

Understanding internal and external advocacy relationships, practices and resources in the field of health informatics and information management.

HI 690. Administrative Internship. 4-8 Hours.

Structured field experiences in health care or other enterprises associated with health care industry. Includes a mentoring relationship with a preceptor and an opportunity for application of information resource management theory and strategies. Foundation for professional development and assists in refining skills and behaviors necessary for successful practice in a complex professional, social, political, and technological environment.

HI 694. Special Topics in Health Informatics. 1-4 Hour.

Study of selected topics in health informatics. May be repeated for credit.

HI 695. Independent Study in Health Informatics. 1-4 Hour.

Opportunity to investigate, perform activities and/or conduct a project related to a narrow topic in Health Informatics that corresponds with the current research of HI faculty, including medical informatics, nursing informatics, computer and communication sciences, library science, etc. May be repeated for credit.

HI 698. Simulation Capstone/Non-thesis Research. 1-8 Hour.

Rigorous culminating project that provides the opportunity for focused investigation of simulation applications in a real-world setting. Investigation and application of theory through a practical project.

HI 699. Master's Level Thesis Research. 4-8 Hours.

Original research in health informatics and interpretation of results. Demonstrates student's acquaintance with literature of field and competency in proper selection and execution of research methodology. Recommended for students planning to pursue a doctoral degree. May be repeated for credit (8 hours maximum credit allowed).

Prerequisites: GAC M

HI 725. Information Systems Theory and Practice. 3 Hours.

Investigation of appropriate research methods to assess theoretical models involving interdependencies and relationships between Information technology, human behavior, and organizational and socio-technical contexts; review of qualitative and quantitative research methods using IS journal article exemplars.

HI 777. Mixed Methods Research I. 3 Hours.

Provide introduction to the field of mixed methods research: essence of mixed methods research, rationale for using it, its fundamental principles and key characteristics, major design applications, and means of assessing the quality of mixed methods inferences. Learn how the mixed methods research process is shaped by personal, interpersonal, and social contexts and how mixed methods intersects with other quantitative and qualitative research approaches and designs.