MASTER OF SCIENCE IN HEALTH INFORMATICS AND AI

Master of Science in Health Informatics and AI

The Master of Science in Health Informatics and AI prepares graduates to use healthcare data, manage information and apply technical knowledge to solve problems and improve overall health outcomes. Graduates of the program are equipped with knowledge of the healthcare industry and technology solutions, in conjunction with technical skills needed to succeed in this ever-changing field, preparing students to be able to effectively analyze complex health data, manage evolving health information systems and support the increased utilization of electronic health records. Our program provides a holistic understanding of the healthcare system and emphasizes the need for collaboration to improve healthcare delivery and patient outcomes.

This 30-credit graduate degree program incorporates experiential learning, working with our corporate partners and highly skilled faculty to solve critical and real problems in the healthcare field. Thus, our graduates are uniquely positioned to succeed in this fast-paced industry, preparing students to become health information systems specialists, health data analysts, health care managers and consultants that can be employed in a variety of healthcare settings.

Master of Science in Health Informatics and AI Degree Requirements:

Health Informatics and AI Required Courses:

ISA 500	Programming Foundations for Analytics	0
ISA 520	Data Visualization and Communication	3
HS 501	Introduction to Health Informatics and AI	3
HS 510	Population Health	3
HS 520	Healthcare Law, Privacy, and Ethics	3
HS 530	Healthcare Operations and Systems	3
or HS 540	Advanced Applications of Artificial Intelligence in Healthcare	
HS 610	Electronic Health Records and AI	3
HS 630	AI Health Analytics (R, Python, Tableau)	3
or ISA 530	Fundamentals of Machine Learning	
HS 640	Project Management	3
HS 650	Database Management for Healthcare	3
HS 690	Healthcare Informatics Capstone	3
or HS 691	Healthcare Informatics Internship	

A minimum of 30 credits is required for graduation. Depending on the student's background, completion of an online programming course may be required prior to joining the MSHA Program.

STUDENTS WHO BEGIN THE PROGRAM IN THE FALL

First Year		
First Semester		**Credit Hours**
HS 501	Introduction to Health Informatics and AI	3
HS 530 or 540	Healthcare Operations and Systems	3
ISA 520	Data Visualization and Communication	3
ISA 530 or HS 630	Fundamentals of AI and Machine Learning	3
	Term Credit Hours	**12**
Second Semester		
HS 520	Healthcare Law, Privacy, and Ethics	3
HS 610	Electronic Health Records and AI	3
HS 640	Project Management	3
	Term Credit Hours	**9**
Third Semester		
HS 510	Population Health	3
HS 650	Database Management for Healthcare	3
HS 690 or 691	Healthcare Informatics Capstone	3
	Term Credit Hours	**9**
	Total Credit Hours:	**30**

STUDENTS WHO BEGIN THE PROGRAM IN THE SPRING

First Year		
First Semester		**Credit Hours**
HS 501	Introduction to Health Informatics and AI	3
HS 610	Electronic Health Records and AI	3
HS 630 or ISA 530	AI Health Analytics (R, Python, Tableau)	3
	Term Credit Hours	**9**
Second Semester		
HS 520	Healthcare Law, Privacy, and Ethics	3
HS 530 or 540	Healthcare Operations and Systems	3
HS 650	Database Management for Healthcare	3
	Term Credit Hours	**9**
Third Semester		
HS 510	Population Health	3
HS 640	Project Management	3
HS 690 or 691	Healthcare Informatics Capstone	3
ISA 520	Data Visualization and Communication	3
	Term Credit Hours	**12**
	Total Credit Hours:	**30**

Courses

HS 501. Introduction to Health Informatics and AI. 3 Credit Hours.
This course introduces students to health informatics, the field devoted to the optimal use of data, information, and knowledge to advance individual health, health care, public health, and health-related research. The course provides an overview of the theory, processes, and applications of information systems and how they relate to health policy and management. It also provides a basic understanding of data standards and requirements, and the critical concepts and practice in mapping and interpreting health information.

HS 510. Population Health. 3 Credit Hours.
This course is intended to serve as an introduction to population health from both the vantage point of both public health and healthcare. We will examine the key components of community health needs assessments, how they are used, and how to compare population health assessments across subpopulations and time. Understanding health on a population level is an approach that seeks to improve the health of the whole population, unravel variations in health outcomes, and to identify effective strategies for reducing or eliminating inequities. The epidemiological sources and criteria by which to select high quality data sources will be explored to estimate population health indicators and to select evidence-based interventions to improve overall health of the population.
Corequisites: HS 501.

HS 520. Healthcare Law, Privacy, and Ethics. 3 Credit Hours.
In this course, students are provided opportunities to learn and apply knowledge of legal and ethical expectations on healthcare organizations and behaviors. Students are introduced to the major laws, regulations, professional and ethical principles, and industry standards governing health care structure, delivery, and reimbursement, as applied in health services management. Students will evaluate current healthcare issues and how health reform will affect healthcare organizations.
Pre/Corequisites: HS 501.

HS 530. Healthcare Operations and Systems. 3 Credit Hours.
Healthcare is a comprised of a complex ecosystem of stakeholders that must collaborate effectively given the limited resources to support the structure. Technology is continuously evolving how healthcare is delivered and, in the process, bringing together all of these groups of people to work together. This course examines the operations of the entire healthcare sector and its management, including the role of strategic planning and governance, clinical and nonclinical support services, quality improvement, environment-of-care and facilities management, personnel and staffing, finance, information technology, and marketing.
Pre/Corequisites: HS 501.

HS 540. Advanced Applications of Artificial Intelligence in Healthcare. 3 Credit Hours.
This course investigates cutting-edge AI methodologies and tools within the healthcare sector. Through theoretical study, practical exercises, and hands-on projects, students explore advanced techniques such as machine learning, deep learning, and natural language processing applied to disease diagnosis, treatment recommendation, medical imaging analysis, and patient monitoring. Ethical considerations, regulatory frameworks, and societal impacts of AI in healthcare are also addressed. By the end of the course, students gain the expertise to design, implement, and evaluate AI-driven solutions, preparing them for leadership roles in healthcare organizations and research institutions driving innovation in the field.

HS 610. Electronic Health Records and AI. 3 Credit Hours.
In this course students will understand the health IT ecosystem with a focus on the role of electronic health records (EHRs). This course also includes an introduction to database architecture, servers, and interfaces. In addition, students will understand the implementation and management of electronic health information using common electronic data interchange systems and maintaining the medical, legal, accreditation and regulatory requirements of the electronic health record.
Prerequisites: HS 501.

HS 630. AI Health Analytics (R, Python, Tableau). 3 Credit Hours.
Modernization and achieving innovation at scale are a critical imperative for healthcare. This course provides an in-depth look at the principles and techniques for acquisition and preparation of data used for analysis and modeling in the healthcare industry. The first component of the course uses Python to perform simple statistical analysis, prepare data for modeling, and create basic visualizations from the data. The second component of the course introduces students to R language and the use of tableau so that students are prepared to analyze and process data in order to create actionable insights to transform healthcare.
Prerequisites: HS 501.

HS 640. Project Management. 3 Credit Hours.
Knowing how to manage projects effectively is an essential skill for health informaticians. In this course, students will be introduced to the standard terminology in project management and serves to provide an overview of management and leadership in health care. This course provides students the opportunity to practice a key role of leadership: transforming organizational culture by effective implementation of change.
Prerequisites: HS 501.

HS 650. Database Management for Healthcare. 3 Credit Hours.
Students are introduced to categories of data collected and maintained by healthcare providers. Students are exposed to technologies used in the acquisition, delivery, and critical analysis of health data. The course emphasizes the use of electronic health records, data mining, statistical analysis of data, data management, report generation and presentation of data.
Prerequisites: HS 501.

HS 690. Healthcare Informatics Capstone. 3 Credit Hours.
Capstone course provides students with the opportunity to apply the knowledge and skills that they have acquired to realistic problems that involve large data sets in the healthcare industry. Students will participate in a one-semester internship with one of our community partners or prepare a thesis paper using available health data. Students will present the results of their analysis and recommendations to other students in the class and if appropriate to the client. Students are expected to create a professional presentation of their work and to deliver it confidently.
Pre/Corequisites: HS 520, HS 530
Prerequisites: HS 501.

HS 691. Healthcare Informatics Internship. 3 Credit Hours.
This internship is a practical learning experience that allows students to gain real world experience and develop professionally by working with a healthcare partner under the guidance of leaders in the fields of healthcare informatics and healthcare information technology. This experience affords the student an opportunity to apply her/his theoretical knowledge and technical skills in a real-world setting, allowing him/her to gain valuable training and insight, which will better equip the student to perform more confidently in the workforce.
Pre/Corequisites: HS 520, HS 530, HS 610, and (ISA 530 or HS 630)
Prerequisites: HS 501.