HEALTH AND BIOMEDICAL INFORMATICS

Degree Types: MS

The Master of Science (MS) in Health and Biomedical Informatics (HBMI) offers students a unique opportunity to gain expertise in a rapidly evolving field that blends healthcare, data science, and information technology. Unlike other programs that focus on using existing tools, the MS in HBMI program emphasizes the development of novel methods tailored to complex biomedical challenges. While students gain some programming skills, the core curriculum goes beyond computer science to focus on domain-specific informatics solutions.

This program is ideal for doctorally-prepared researchers or professionals looking to deepen their knowledge in HBMI. Students complete rigorous coursework alongside those in doctoral programs and are required to complete and defend a master's thesis under the guidance of a faculty committee.

Key benefits of the program include:

- Opening doors to careers in healthcare, tech, data analysis, clinical informatics, and bioinformatics
- Equipping graduates with in-demand skills to navigate AI, digital health, data science, and personalized medicine
- Preparing students for advanced research or PhD programs in biomedicine and public health
- Meeting growing industry demand for professionals who understand both health science and information systems

Graduates are well-positioned for roles such as:

- Clinical Informaticist
- Health Data Analyst
- Bioinformatics Specialist
- Health IT Project Manager
- Public Health Information Analyst
- Pharmaceutical Data Scientist

Individuals interested in Health IT and Operational Informatics are encouraged to look into the MS in Health Informatics (MHI) program (https://sps.northwestern.edu/masters/health-informatics/). Individuals interested in a PhD should look into the Informatics track of the Health Sciences Integrated PhD Program (HSIP (https://www.feinberg.northwestern.edu/sites/hsip/)) or Driskill Graduate Program in Life Sciences (DGP (https://www.feinberg.northwestern.edu/sites/dgp/)).

Additional resources:

- Department website (https://www.preventivemedicine.northwestern.edu/divisions/health-and-biomedical-informatics/)
- Program handbook(s)

Degree Offered

- Health and Biomedical Informatics MS (https://catalogs.northwestern.edu/tgs/health-biomedical-informatics/health-biomedical-informatics-ms/)

Health and Biomedical Informatics Courses

HBMI 421-0 American Healthcare System (1 Unit)
The course provides knowledge of the key components of health care in the United States-the policy, economic, and societal forces that shape health care delivery. The course serves as an introduction to elements of the American health care system, including the provider components, the financing of health care, the basic structure of public policy making and public health systems, a comparative analysis of the American system to health care systems of other countries, and the legal and regulatory framework within the American health care system functions. In addition to the structural components of the system, the course reviews current issues within the American health care system, including public health, preparedness, quality of health care, health reform, payment mechanisms, and consumerism.

HBMI 422-0 Introduction to Clinical Thinking (1 Unit)
This course provides an introduction to the clinical environment throughout the health center. It is designed for students not previously involved in clinical medicine and those trained in medicine outside the United States. The course features problem-based learning and traditional medical informatics task domains and covers medical terminology and basic pathophysiology. Topics include the clinical setting, eliciting information from patients, synthesizing the history and physical examination, establishing diagnosis, treatment planning, integrating evidence-based medicine, and using an intelligent medical record in a complex environment. This is a technologist-track course for students with little clinical experience.

HBMI 423-0 Decision Support Systems and Health Care (1 Unit)
This course provides an introduction to clinical decision support systems in health information technology. Instruction is given in formal decision analysis techniques as they apply to decisions in the medical domain. Clinical decision support systems are introduced and issues relating to their design and implementation discussed. The mathematical foundations upon which they are based will be examined. Evidence-based guidelines and performance measurement techniques will be presented. A framework for designing and implementing clinical decision support systems will be introduced. Principles learned from this framework will be applied in writing a final paper that describes a prototype decision support system, including justification for its use and a description of steps followed in its design, implementation and performance measurement.

HBMI 499-0 Health and Biomedical Informatics (HBMI) Independent Study (1 Unit)
Independent Study and Research.