

BIOMEDICAL INFORMATICS, MSBMI

The MSBMI is designed to provide training for clinicians or those trained in computational, social, biological, and behavioral sciences, aiming to pursue a research-focused career. Students will become adept in applying biomedical informatics principles to advance research in areas such as precision medicine and predictive analytics, digital health, natural language processing, machine learning and artificial intelligence, and clinical data integration and intraoperatively. Graduates of the professional degree program will be equipped with the research skills and knowledge to address important research questions in clinical, translational, and public health.

The degree and major requirements displayed are intended as a guide for students entering in the Fall of 2026 and later. Students should consult with their academic program regarding final certifications and requirements for graduation.

The MSBMI will be a 12-course unit curriculum that fulfills the biomedical informatics competencies as established by the American Medical Informatics Association and accepted by the Commission on Accreditation for Health Informatics and Information Management Programs (CAHIIM). Appendix D demonstrates how the curriculum maps to the CAHIIM competencies.

MSBMI and MCI students would share a core of 4 courses (BMIN 5010, 5020, 5030, and 5110). Two additional core courses are designed for MSBMI students; BMIN 5130: Quantitative Research Methods and BMIN 6010: Seminar in Advanced Topics in Biomedical Informatics. Students will take 3 concentration-specific courses and one elective, and will be awarded 2 thesis credits upon successful defense of their thesis. Course syllabi descriptions are listed in Appendix C.

Students in the MSBMI will declare in one of three available concentrations: Clinical Science Informatics (CSI), Translational Bioinformatics (TBI), and Health Artificial Intelligence (HAI). The three concentrations differ in their course curriculum and in the domain focus of the master's thesis. Students will seek a thesis mentor with primary expertise in the declared concentration.

Code	Title	Course Units
Requirements		
BMIN 5010	Introduction to Biomedical and Health Informatics	1
BMIN 5020	Database and Data Integration in Biomedical Research	1
BMIN 5030	Data Science for Biomedical Informatics	1
BMIN 5110	Biomedical Informatics Methods for Learning Health Systems	1
BMIN 5130	Quantitative Methods for Learning Health Systems Science	1
BMIN 5200	Foundations of Artificial Intelligence in Health	1

BMIN 6010	Seminar in Advanced Topics in Biomedical Informatics	1
Elective chosen in consultation with advisor		1
Thesis fulfilled through: BMIN 9990		2
Concentration Requirements		2
<i>Clinical Science Informatics</i>		
BMIN 5060	Standards and Clinical Terminologies	
BMIN 5070	Human Factors	
<i>Translational Bioinformatics</i>		
BMIN 5210	Advanced Methods and Health Applications in Machine Learning	
BIOM 5350	Introduction to Bioinformatics	
<i>Health Artificial Intelligence</i>		
BMIN 5210	Advanced Methods and Health Applications in Machine Learning	
BMIN 5220	Natural Language Processing for Health	
Total Course Units		12

Sample Study Plans

Clinical Sciences Informatics Concentration

Full-time program (two years to completion):

First Year		Course Units
Fall		
BMIN 5010	Introduction to Biomedical and Health Informatics	1
BMIN 5030	Data Science for Biomedical Informatics	1
BMIN 5130	Quantitative Methods for Learning Health Systems Science	1
		Course Units 3.00
Spring		
BMIN 5020	Database and Data Integration in Biomedical Research	1
BMIN 5110	Biomedical Informatics Methods for Learning Health Systems	1
BMIN 5060	Standards and Clinical Terminologies	1
		Course Units 3.00

Second Year			
Fall			
BMIN 5070	Human Factors	1	
BMIN 5200	Foundations of Artificial Intelligence in Health	1	
BMIN 9990			
	Course Units	2.00	
Spring			
BMIN 6010	Seminar in Advanced Topics in Biomedical Informatics	1	
Elective		1	
BMIN 9990			
	Course Units	2.00	
	Total Course Units	10.00	

Part-time program (three years to completion):

First Year			
Fall			
BMIN 5010	Introduction to Biomedical and Health Informatics	1	
BMIN 5030	Data Science for Biomedical Informatics	1	
	Course Units	2.00	
Spring			
BMIN 5020	Database and Data Integration in Biomedical Research	1	
BMIN 5110	Biomedical Informatics Methods for Learning Health Systems	1	
	Course Units	2.00	
Second Year			
Fall			
BMIN 5130	Quantitative Methods for Learning Health Systems Science	1	

BMIN 5060	Standards and Clinical Terminology	1	
	Course Units	2.00	
Spring			
BMIN 5070	Human Factors	1	
Elective		1	
	Course Units	2.00	
Third Year			
Fall			
BMIN 5200	Foundations of Artificial Intelligence in Health	1	
BMIN 9990			
	Course Units	1.00	
Spring			
BMIN 6010	Seminar in Advanced Topics in Biomedical Informatics	1	
BMIN 9990			
	Course Units	1.00	
	Total Course Units	10.00	