THE OHIO STATE UNIVERSITY
COLLEGE OF PUBLIC HEALTH

THE OHIO STATE UNIVERSITY
COLLEGE OF MEDICINE

Effective Summer 2024

2024-2025 Curriculum Guide for Master of Science degree program with a specialization in BIOMEDICAL INFORMATICS

The Master of Science (MS) degree is intended for students whose interests in Biomedical Informatics (BMI) are academically oriented rather than directed toward professional practice. The MS degree is a natural entry point for students who are qualified to pursue a PhD degree which requires broader scope and depth of content via additional didactic courses and more intensive research emphasis. To reflect this research and academic orientation, the MS degree requires preparation and defense of a hypothesis-based thesis. The MS degree typically can be completed within two years.

Students admitted to the MS degree program are assigned a faculty advisor who will provide guidance throughout the program. This document serves as a resource to be used by the student and the advisor in planning a program with a specialization in Biomedical Informatics, but is not inclusive of all important degree, college, and university requirements. This is not considered an on-line degree program; however, students will enroll in a combination of courses designed for on-campus in-person delivery (IP), distance learning (DL), or hybrid (HY). All students are expected to be familiar with the College of Public Health (CPH) Graduate Student Handbook: http://cph.osu.edu/students/graduate/handbooks the Graduate School Handbook: https://gradsch.osu.edu/handbook and the CPH competencies: https://go.osu.edu/cphcompetencies.

PROGRAM OF STUDY

The MS-BMI curriculum requires 48 credit hours.

Required Foundation Courses (9 credit hours)

PUBHLTH 6010	Essentials of Public Health	3 credit hours
PUBHBIO 6210	Applied Biostatistics I	3 credit hours
PUBHEPI 6410	Principles of Epidemiology	3 credit hours

Required Specialization Courses (23-24 credit hours)

PUBHBIO 6211	Applied Biostatistics II	3 credit hours
PUBHBIO 6000+	Advanced Coursework in Biostatistics	3 credit hours
PUBHEPI 7410	Epidemiology II & Lab	4 credit hours
BMI 5710	Introduction to Biomedical Informatics	3 credit hours
BMI 5760	Public Health Informatics	3 credit hours
BMI 7891	Seminars in Biomedical Informatics	2 credit hours
BMI 7000+	Advanced Coursework in Biomedical Informatics	3 credit hours

Ethics course requirement - select one course:

BIOETHIC 6010	Biomedical Research Ethics	3 credit hours
BIOPHRM 7510	Professional and Ethical Issues in Biomedical Sciences	2 credit hours
NURSING 7781	Responsible Conduct of Research	3 credit hours
SURGERY 8814	Responsible Conduct of Research: Human Participants and the Use of Animals in Biomedical Research	2 credit hours

Recommended Electives** (9-10 credit hours)

BMI 5551	Survey of AI/ML in Digital Health	3	BMI 7530	Proteomics Data Analysis	3
BMI 5552	AI/ML Applications in Medical Imaging	3	BMI 7810	Research Design & Method Approaches	3
BMI 5553	Predictive Analytics in Electronic Health Records	3	BMI 7830	Systems Biology	3

BMI 5554	Natural Language Processing in Biomedical Research	3	BMI 8030	Special Topics in Comp. Biol	Varies
BMI 5730	Introduction to Bioinformatics	3	BMI 8130.01	Analysis and Applications of Genome-Scale Data	3
BMI 5740	Introduction to Research Informatics	3	BMI 8140	Measuring patient experiences and preferences	3
BMI 5780	Programming for Biomedical Informatics	3	BMI 8150	Rigorous and Reproducible Design & Data Analysis	3
BMI 5750	Methods in Biomedical Informatics	3	PUBHBIO 6250	Regression Methods for the Health Sciences	3
BMI 5770	Health Analytics: Data to Discovery to Dissemination	3	PUBHBIO 6270	Intro to SAS for Pub Hlth Students	2
BMI 5780	Programming for BMI	3	PUBHEHS 6310	Principles of Envi Health Science	3
BMI 7040	Clinical Informatics	3	PUBHHMP 7678	Approaches to Health Services Research	3
BMI 7050	Meta-Analysis in Health Science Research	3	PUBHHMP 7682	Info Sys for Health Service Org	3
BMI 7235	Applications if Machine Learning for Bioinformatics	3	CSE 5231	Software Engineering Techniques	2
PUBHEPI 6412	Prin Clinical & Transl. Science	2	CSE 5241	Introduction to Database Systems	2
PUBHEPI 6413	Conduct & Comm Research in CTS	2	CSE 5521	Survey of Artificial Intel I: Basic Tech	2
PUBHEPI 6431	Design & Implement Health Surveys	3	CSE 5522	Survey of Artificial Intel II: Adv Tech	3
PUBHEPI 7430	Epidemiology III	4			

**. Students should work with staff and faculty academic advisors in the Department of Biomedical Informatics to identify suitable electives.

Thesis (6 credit hours)

BMI 7999 Research in Biomedical Informatics 6 credit hours

Sample 2-year Curriculum Plan for the Master of Science in Biomedical Informatics [1]

TERM	COURSE	COURSE TITLE	CREDIT HOURS	TERM(S) OFFERED	DELIVERY MODE
Year 1 Autumn	PUBHBIO 6210	Applied Biostatistics I	3	AU, SP	DL
	PUBHEPI 6410	Principles of Epidemiology	3	AU	DL
	BMI 5710	Introduction to Biomedical Informatics	3	AU	DL
	ELECTIVE		3		
Year 1 Spring	PUBHBIO 6211	Applied Biostatistics II	3	AU, SP	DL, IP
	PUBHEPI 7410	Epidemiology II & Lab	4	SP	IP
	ELECTIVE		3		
	PUBHLTH 6010	Essentials of Public Health	3	SP	IP
	BMI 7891	Seminar in Biomedical Informatics	1	AU, SP	DL
Year 1 Summer	ELECTIVE		2-3		
Year 2 Autumn	PUBHBIO 6000+		3	AU, SP	DL, IP
	BMI 5760	Public Health Informatics	3	AU	DL
	BMI 7999	Research in Biomedical Informatics (Thesis)	6		
	BMI 7891	Seminar in Biomedical Informatics	1	AU, SP	DL
Year 2 Spring	BMI 7000+	Advanced Biomedical Informatics Coursework	3	AU, SP	DL, IP
	ETHICS COURSE		2-3	AU, SP	DL, IP

Grade Policy:

In addition to the general Graduate School requirements of a cumulative grade point average of 3.0 or higher, students must meet specific college policies regarding grades in Foundation and specialization courses. Students should familiarize themselves with Section 11 of the College of Public Health Graduate Student Handbook.

College of Public Health - Office of Academic Programs and Student Services (OAPSS)

OAPSS staff are available to provide assistance with College, Graduate School and University policies and procedures. (614) 292-8350/100 Cunz Hall/1841 Neil Ave/Columbus, Ohio/ 43210/cph.osu.edu. Questions regarding the student's program of study should be directed to their advisor.

[1] A sample 3 year program is available by request from the Department of Biomedical Informatics. Please contact bmi.education@osumc.edu