

MINOR IN HEALTH SYSTEMS

The objective of this minor is to provide students from across campus with an interdisciplinary understanding of health systems and the tools needed to analyze, design, and improve them. The curriculum introduces students to the structure, function, and challenges of health systems, emphasizing a systems-level perspective that spans healthcare delivery, population health, policy, and management. Students gain foundational training in data analytics, modeling, optimization, and statistical methods used to study and improve complex health systems, preparing them to address real-world challenges related to healthcare quality, access, efficiency, and equity.

Code	Title	Credit Hours
Core Health Systems Required Courses		
ISYE 4510	Public Health Systems	3
ISYE 4515	Intelligent Healthcare Delivery Systems	3
Core Courses (Choose one of the following)		3
ISYE/CEE 3770	Statistics and Applications	
BMED 2400	Introduction to Bioengineering Statistics	
ISYE 3030	Basic Statistical Methods	
ECE 3077	Prob/Stats for ECE	
ECON 2250	Statistics for Economists	
MGT 2250	Management Statistics	
PUBP 3120	Statistical Analysis for Public Policy	
Electives (Six credit hours with at least two courses) ¹		6
Health Systems Analytics & Modeling:		
ISYE 4031	Regression and Forecasting	
ISYE 4034	Decision and Data Analytics	
HS 4001	Introduction to Health Systems	
HS 6000	Introduction to Healthcare Delivery	
CP 4813/6850	Special Topics (Public Health and Built Env)	
ISYE 4803/CP 6543	Special Topics (Public Health Analytics)	
Health Policy, Economics & Management		
PUBP 3210	U.S. Health Policy	
PUBP 4813	Special Topics (Cost Benefit Analysis)	
ECON 4160	Economic Forecasting	
ECON 4510	Economics of Health and Health Care	
MGT 4052	Systems Analysis and Design	
MGT 4366	Service Operations Management	
MGT 4341	Management of Healthcare Operations	
MGT 3662	Management in the Healthcare Sector	
Environmental, Public Health & Bio-Inspired Systems		
CEE 4620	Environmental Impact Assessment	
CEE 4340	Environmental Modeling and Health Risk Analysis	
BIOS/BMED/ISYE/ME/MSE 4740	Biologically-Inspired Design	
Health Systems Modeling & Optimization		

ISYE 3133	Engineering Optimization
ISYE 3044	Simulation Analysis and Design
ISYE 4133	Advanced Optimization
ISYE 4232	Advanced Stochastic Systems
Machine Learning & Data Science for Health ²	
ISYE 4600 ³	Methods and Applications of Machine Learning
CS 4641	Machine Learning
ECE 4252	Fundamentals of Machine Learning (FunML)
BMED 3201	Introduction to Machine Learning for Biomedical Engineers
BMED 3211	Introduction to Bioinformatics
ECON 4161	Machine Learning for Economics
MGT 4655	Business Data Preparation and Visualization
MGT 4452	Machine Learning for Business
Total Credit Hours	
	15

- ¹ Electives for the Health Systems Minor are intentionally drawn from multiple schools and disciplines across campus to reflect the interdisciplinary nature of health systems challenges. These categories are intended as guidance to help students build a strong foundation. Students are encouraged to select electives from more than one category to gain breadth across health systems perspectives.
- ² Students are advised to take the ML course most aligned with their major and preparation.
- ³ ISYE 4600 is the preferred machine learning course, but students are allowed to take another machine learning course if it is more aligned with their major and preparation.

- In addition to the required course work, students may complete an experiential learning component that ensures application of classroom concepts to real-world health challenges. This may be satisfied through a project-based course or recognized high-impact practice (HIP), such as participation in the Senior Design Capstone, undergraduate research, or other practice-based opportunities (e.g., Serve-Learn-Sustain projects, Vertically Integrated Projects or 4699/4698 with a healthcare focus). Students whose primary capstone or project is not directly health-related will complete a structured addendum or supplemental project to explicitly link their work to health systems challenges. Note: Completion of the experiential learning component is not reflected on the official transcript. However, students may indicate completion on a resume or similar professional materials.
- The minor in Health Systems places no restrictions on double-counting courses toward both minor requirements and major degree requirements for any participating major except Biomedical Engineering (BME). BME students completing the minor may not double-count BME courses toward both the BME major and the Health Systems Minor, except for BMED 2400.