# MASTER OF SCIENCE IN HEALTH SYSTEMS

The focus of the Health Systems is to develop, apply, and disseminate new knowledge with respect to the analysis, planning, implementation, demonstration, and evaluation of operational and managerial systems for the delivery of healthcare services to the public.

MS Health Systems Information

## Program Requirements

| Code | Title | Credit Hours |
| --- | --- | --- |
| **Core** | | |
| HS 6000 | Introduction to Healthcare Delivery | 3 |
| **Core Practice (Choose 1):** | | **3** |
| HS 6400 | Health Systems Practice | |
| ISYE 6320 | Public Impact Applications of Operations Research and Management Science | |
| **Core Practice (Choose 1):** | | **3** |
| HS 6200 | Healthcare Financial Management | |
| ISYE 6225 | Advanced Engineering Economy | |
| ISYE 6227 | Introduction to Financial Engineering | |
| MGT 6000 | Financial and Managerial Accounting I | |
| MGT 6060 | Financial Management | |
| **Core Methodology (Choose 3):** | | **9** |
| ISYE 6414 | Statistical Modeling and Regression Analysis | |
| ISYE 6421 | Biostatistics | |
| or BMED | Biostatistics | |
| ISYE 6644 | Simulation | |
| ISYE 6650 | Probabilistic Models and Their Applications | |
| ISYE 6669 | Deterministic Optimization | |
| ISYE 6679 | Computational Methods in Optimization | |
| **Technical Electives (Choose 3):** | | **9** |
| ARCH 6243 | Evidence-Based Design | |
| ARCH 6271 | Healthcare Design of the Future | |
| BIOL 6150 | Genomics and Applied Bioinformatics | |
| BMED 6507 | Medical Device Regulatory Requirements | |
| CS 6150 | Computing For Good | |
| CS 6440 | Information to Health Informatics | |
| CSE 6242 | Data and Visual Analytics | |
| CSE 6730 | Modeling and Simulation: Foundations and Implementation | |
| ECON 6150 | Cost-Benefit Analysis | |
| ECON 6510 | Economics of Health and Health Care | |
| HP 6601 | Industrial Hygiene | |
| HTS 6122 | History of Medicine | |
| ISYE 6202 | Warehousing Systems | |
| ISYE 6405 | Statistical Methods for Manufacturing Design and Improvement | |
| ISYE 6402 | Time Series Analysis | |
| ISYE 6404 | Nonparametric Data Analysis | |
| ISYE 6413 | Design and Analysis of Experiments | |
| or ISYE 7 | Advanced Design of Experiments | |
| ISYE 6416 | Computational Statistics | |
| ISYE 6420 | Introduction to Theory and Practice of Bayesian Statistics | |
| ISYE 6740 | Computational Data Analysis: Learning, Mining, and Computation | |
| ISYE 6805 | Reliability Engineering | |
| ISYE 7406 | Data Mining and Statistical Learning | |
| PUBP 6001 | Introduction to Public Policy | |
| **Free Elective** [1] | | **3** |
| **Total Credit Hours** | | **30** |

Up to six (6) credits of 4000-level courses may be used towards the degree, subject to the approval of the ISyE Director of Master's Programs.

[1] ISYE 6739 cannot be used toward Free Elective

## Predictive Health Track Requirements

| Code | Title | Credit Hours |
| --- | --- | --- |
| **Core** | | |
| Select 6 courses | | 18 |
| HS 6000 | Introduction to Healthcare Delivery | |
| ISYE 6669 | Deterministic Optimization | |
| ISYE 6650 | Probabilistic Models and Their Applications | |
| ISYE 6644 | Simulation | |
| ISYE 6414 | Statistical Modeling and Regression Analysis | |
| ISYE 7406 | Data Mining and Statistical Learning | |
| Select one course | | 3 |
| HS 6400 | Health Systems Practice | |
| ISYE 6320 | Public Impact Applications of Operations Research and Management Science | |
| Select one course | | 3 |
| MGT 6000 | Financial and Managerial Accounting I | |
| MGT 6060 | Financial Management | |
| ISYE 6225 | Advanced Engineering Economy | |
| ISYE 6227 | Introduction to Financial Engineering | |
| HS 6200 | Healthcare Financial Management | |
| **Health Systems Elective** | | **3** |
| ARCH 6243 | Evidence-Based Design | |
| ARCH 6271 | Healthcare Design of the Future | |
| BIOL 6150 | Genomics and Applied Bioinformatics | |
| BIOL 7023 | Bioinformatics | |
| BMED 6507 | Medical Device Regulatory Requirements | |
| ISYE 6421 | Biostatistics | |
| or BMED | Biostatistics | |
| BMED 6789 | Technology Ventures | |
| BMED 7411 | Mathematical Models in Biology & Medicine | |
| CS 6150 | Computing For Good | |
| CS 6440 | Information to Health Informatics | |
| ECON 6510 | Economics of Health and Health Care | |
| HP 6601 | Industrial Hygiene | |
| HTS 6122 | History of Medicine | |

| Free Elective [1] | | 3 |
|---|---|---|
| **Total Credit Hours** | | **30** |

[1]  ISYE 6739 cannot be used toward Free Elective

## Practicum Track Requirements

| Code | Title | Credit Hours |
|---|---|---|
| **Core** | | |
| HS 6000 | Introduction to Healthcare Delivery | 3 |
| **Core Practice (Choose 1):** | | **3** |
| HS 6400 | Health Systems Practice | |
| ISYE 6320 | Public Impact Applications of Operations Research and Management Science | |
| **Core Practice (Choose 1):** | | **3** |
| HS 6200 | Healthcare Financial Management | |
| ISYE 6225 | Advanced Engineering Economy | |
| ISYE 6227 | Introduction to Financial Engineering | |
| MGT 6000 | Financial and Managerial Accounting I | |
| MGT 6060 | Financial Management | |
| **Core Methodology (Choose 3):** | | **9** |
| ISYE 6414 | Statistical Modeling and Regression Analysis | |
| ISYE 6421 | Biostatistics | |
| or BMED | Biostatistics | |
| ISYE 6644 | Simulation | |
| ISYE 6650 | Probabilistic Models and Their Applications | |
| ISYE 6669 | Deterministic Optimization | |
| ISYE 6679 | Computational Methods in Optimization | |
| **Technical Electives (Choose 3):** | | **9** |
| ARCH 6243 | Evidence-Based Design | |
| ARCH 6271 | Healthcare Design of the Future | |
| BIOL 6150 | Genomics and Applied Bioinformatics | |
| BMED 6507 | Medical Device Regulatory Requirements | |
| CS 6150 | Computing For Good | |
| CS 6440 | Information to Health Informatics | |
| CSE 6242 | Data and Visual Analytics | |
| CSE 6730 | Modeling and Simulation: Foundations and Implementation | |
| ECON 6150 | Cost-Benefit Analysis | |
| ECON 6510 | Economics of Health and Health Care | |
| HP 6601 | Industrial Hygiene | |
| HTS 6122 | History of Medicine | |
| ISYE 6202 | Warehousing Systems | |
| ISYE 6405 | Statistical Methods for Manufacturing Design and Improvement | |
| ISYE 6402 | Time Series Analysis | |
| ISYE 6404 | Nonparametric Data Analysis | |
| ISYE 6413 | Design and Analysis of Experiments | |
| or ISYE 7 | Advanced Design of Experiments | |
| ISYE 6416 | Computational Statistics | |
| ISYE 6420 | Introduction to Theory and Practice of Bayesian Statistics | |
| ISYE 6740 | Computational Data Analysis: Learning, Mining, and Computation | |
| ISYE 6805 | Reliability Engineering | |
| ISYE 7406 | Data Mining and Statistical Learning | |
| PUBP 6001 | Introduction to Public Policy | |
| **Internship Preparation Elective [1]** | | **3** |
| ISYE 6320 | Public Impact Applications of Operations Research and Management Science | |
| **Practicum** | | |
| COOP/INTN/ISYE Practicum | | |
| **Total Credit Hours** | | **30** |

Up to six (6) credits of 4000-level courses may be used towards the degree, subject to the approval of the ISyE Director of Master's Programs.

[1]  ISYE Special Topics courses, as appropriate

## BS/MS OPTION

The BSMS Option allows eligible students to double count a maximum of 6 credit hours toward undergraduate and graduate requirements while still completing all other program requirements to earn both degrees.

BS in Industrial Engineering students with a GPA of 3.5 or higher who have taken ISYE 3133 and ISYE 3232 are eligible to apply to utilize the BSMS Option. BSIE students must also graduate with a GPA of 3.5 or higher in order to utilize the BSMS Option.

It is typical for students to use 6 hours from the BSIE concentration electives to count as Core Courses or Technical Electives for the MS in Health Systems degree. Students will need to consult with an advisor to indicate which courses are sharing with the graduate degree in DegreeWorks.