

# HEALTHCARE SYSTEMS ENGINEERING, MASTER OF SCIENCE

## Admission Requirements

General admission requirements for master's degree candidates and others seeking graduate status are as follows: applicants must be in the last semester of undergraduate study or hold a bachelor's degree from a regionally accredited college or university.

In addition, applicants for the Master of Science in Healthcare Systems Engineering must have a prior educational experience that includes an undergraduate major in engineering, the sciences, or in healthcare. Admitted students typically have earned a grade point average of at least 3.0 on a 4.0 scale (B or above) in the latter half of their undergraduate studies. Transcripts from all college studies must be submitted. When reviewing an application, the candidate's academic and professional background will be considered. Applicants will typically have at least two years of experience in engineering or the healthcare field. A detailed professional experience résumé must be submitted.

## Program Requirements

In order to earn a Master of Science in Healthcare Systems Engineering, the student must complete 30 credits within five years. The curriculum consists of seven required core courses (21 credits) and three elective courses (9 credits). Students must take EN.655.662 Intro to Healthcare Systems Engineering first and should take EN.655.771 Healthcare Systems either concurrently or immediately after. The remaining core courses should be taken in sequential order and must be completed prior to taking an elective. In rare circumstances, a student may take a course out of sequential order with advisor approval. Subject to advisor approval, an elective may be substituted for a core course if the student has previously completed an equivalent graduate-level course. Students are advised to take EN.655.800 Healthcare Systems Engineering Capstone Project after all other core and elective courses have been completed. A student may take EN.655.800 in the same term as their final elective course with advisor approval. Course selections outside of the core and elective courses listed below must be approved by an advisor prior to selection. Only one grade of C can count toward the master's degree.

## Courses

### Core Courses

| Code                                       | Title   | Credits |
|--|---|---------|
| <b>Required Core Courses (21 credits):</b> |   |         |
| EN.655.662                                 | Intro to Healthcare Systems Engineering         | 3       |
| EN.655.667                                 | Management of Healthcare Systems Projects       | 3       |
| EN.655.767                                 | Healthcare System Conceptual Design             | 3       |
| EN.655.768                                 | Healthcare System Design & Integration          | 3       |
| EN.655.769                                 | Healthcare System Test and Evaluation           | 3       |
| EN.655.771                                 | Healthcare Systems                              | 3       |
| EN.655.800                                 | Healthcare Systems Engineering Capstone Project | 3       |

### Electives

| Code | Title | Credits |
|------|-------|---------|
|------|-------|---------|

Select 9 credits from the following:

*Healthcare Systems Engineering*

|  |   |   |
|--|---|---|
| EN.655.705   | Transformational Capabilities in Health                       | 3 |
| <i>Applied Biomedical Engineering</i>                                  |   |   |
| EN.585.613   | Medical Sensors & Devices                                     | 3 |
| EN.585.619   | Regulation of Medical Devices                                 | 3 |
| EN.585.770   | Global Health Engineering                                     | 3 |
| <i>Systems Engineering</i>   |   |   |
| EN.645.631   | Introduction to Model Based Systems Engineering               | 3 |
| EN.645.650   | Foundations of Human Systems Engineering                      | 3 |
| EN.645.651   | Integrating Humans and Technology                             | 3 |
| EN.645.742   | Management of Complex Systems                                 | 3 |
| EN.645.755   | Methods in Human-System Performance Measurement and Analysis  | 3 |
| EN.645.757   | Foundations of Modeling and Simulation in Systems Engineering | 3 |
| EN.645.761   | Systems Architecting  | 3 |
| EN.645.764   | Software Systems Engineering                                  | 3 |
| EN.645.771   | System of Systems Engineering                                 | 3 |
| EN.645.781   | Systems Thinking and Systems Dynamics                         | 3 |
| <i>Bloomberg School of Public Health online offerings</i> <sup>1</sup> |   |   |
| (3 BSPH credits = 2 EP credits and 4 BSPH credits = 3 EP credits)      |   |   |
| PH.140.611   | Statistical Reasoning in Public Health I                      | 3 |
| PH.140.612   | Statistical Reasoning in Public Health II                     | 3 |
| PH.140.621   | Statistical Methods in Public Health I                        | 4 |
| PH.140.622   | Statistical Methods in Public Health II                       | 4 |
| PH.309.631   | Population Health Informatics                                 | 3 |
| PH.309.730   | Patient Safety and Medical Errors                             | 3 |
| PH.312.633   | Health Management Information Systems                         | 3 |
| PH.315.700   | Health Information Systems: Design to Deployment              | 3 |
| PH.315.707   | Introduction to Biomedical and Public Health Informatics      | 3 |
| PH.315.708   | HIT Standards and Systems Interoperability                    | 3 |
| <i>School of Medicine</i> <sup>2</sup>                                 |   |   |

<sup>1</sup> Credits shown to the right reflect BSPH credits. To convert to EP credits, use the following relationship (3 BSPH credits = 2 EP credits and 4 BSPH credits = 3 EP credits).

<sup>2</sup> An additional elective in the School of Medicine is ME.250.950 - Health Information Systems: Design to Deployment. Please see the School of Medicine offerings.

Please refer to the course schedule ([ep.jhu.edu/schedule](https://apps.ep.jhu.edu/schedule) (<https://apps.ep.jhu.edu/schedule/search/>)) published each term for exact dates, times, locations, fees, and instructors.