# SYSTEMS ENGINEERING

## Requirements

Systems Engineering is an engineering discipline whose responsibility is to create and execute an interdisciplinary process to ensure that all system stakeholders' needs are satisfied in a high-quality, trustworthy, cost-efficient, and schedule compliant manner throughout a system's entire life cycle. The field of systems engineering provides a broad spectrum of tools that can be used to help engineers manage complexity, predict and address risk, ensure safety, gather and manage information, and provide solutions with greater value to the intended stakeholders. The Minor in Systems Engineering aims to provide students with a broad exposure to systems engineering concepts and tools. Hence, they are better prepared to integrate knowledge and collaborate effectively across different disciplinary domains to create value for their systems and ensure long-term system success.

Students are required to take the following courses:

| Code | Title | Hours |
|---|---|---|
| EMGT E564 | Systems Architecture | 4 |
| EMGT 483 | Management Information Systems | 4 |
| EMGT 584 | Systems Thinking & Evaluation | 4 |

Additionally, students are required to attend three hours of systems-related seminars offered at Rose-Hulman or by an external organization. Examples of appropriate seminars would include INCOSE Great Lakes systems seminars, which are offered virtually every month and are open to students, seminars or presentations offered at Rose-Hulman, which address some aspect of the systems engineering process. Finally, students are required to document their attendance by writing a brief reflection about what they have learned. All three reflections must be reviewed and approved by the minor advisor prior to minor completion.

Students must take additional three courses from the following list of electives:

| Code | Title | Hours |
|---|---|---|
| EMGT E572 | Lean Manufacturing | 4 |
| EMGT E527 | Project Management | 4 |
| EMGT 567 | Economic Analysis of Engineering Projects | 4 |
| EMGT 497 | Special Topics in Engineering Management | 1-4 |
| EMGT 562 | Risk Analysis and Management | 4 |
| EMGT E589 | Manufacturing Systems | 4 |
| EMGT E561 | Failures of Engineered Systems | 4 |
| MA 444 | Deterministic Models in Operations Research | 4 |
| MA 445 | Stochastic Models in Operations Research | 4 |
| ECE 370 | Electric Machinery | 4 |
| ME 230 | Mechatronic Systems | 4 |

Other Engineering Management courses can be considered in completing the minor. Additionally, Special Topics Courses must be approved as SE Minor Electives by SE Minor Advisor and Department Head of Engineering Management.