

SIE Undergraduate Minors

Prior to Fall 2025

If you declared an SIE major in Fall 2025 or after, please view the newer catalog requirements that will be [linked here](#).

These course requirements are for **non-SIE majors only**. If you are an SIE major, please refer to your minor course guide or contact SIE advising for different minor course requirements related to your major.

Systems Engineering Minor

Required:

- SIE 250 – Intro to Systems & Industrial Engineering (prerequisite: MATH 129, fall, spring)
- SIE 277 – Object-Oriented Modeling and Design (prerequisite: ECE 101 or CSC 110, fall, spring)
- SIE 305 – Intro to Engineering Probability and Statistics (prerequisite: MATH 129, fall, spring, summer)
- SIE 431 – Simulation Modeling and Analysis (prerequisite: SIE 305, fall, spring, summer)

Choose 2 courses from:

- SIE 370 – Embedded Computer Systems (prerequisite: PHYS 241, spring only)
- SIE 406 - Quality Engineering (prerequisite: SIE 305, fall only)
- SIE 408 - Reliability Engineering (prerequisite: SIE 305, pending)
- SIE 410A - Human Factors & Ergonomics in Design (corequisite: SIE 305, fall, spring)
- SIE 432 - Sports Analytics (prerequisite: SIE 305, summer only)
- SIE 433 - Fundamentals of Data Science for Engineers (prerequisite: SIE 305, spring only)
- SIE 454A - The Systems Engineering Process (fall, spring)
- SIE 455 – Sensor Systems Engineering (prerequisite: SIE 305, spring only)
- SIE 458 – Model Based Systems Engineering (prerequisite: SIE 454A, spring only)
- SIE 471 – Systems Cyber Security Engineering (prerequisite: ECE 101 or CSC 110, fall only)
- SIE 477 - Introduction to Biomedical Informatics (prerequisite: ECE 101 or CSC 110, fall)

Approved amendment options for 2 course electives (as of 10/22/2024):

- SIE 452 – Space Systems Engineering (spring only)
- SIE 466 – Life Cycle Analysis for Sustainable Design and Engineering (spring only)
- SIE 492 or 493 – Directed Research or Internship (requires director approval, 3 units max)

Industrial Engineering Minor

Required:

- SIE 305 – Intro to Engineering Probability and Statistics (prerequisite: MATH 129, fall, spring, summer)
- SIE 340 – Deterministic Operations Research (prerequisite: SIE 270, fall, summer)
- SIE 410A - Human Factors & Ergonomics in Design (prerequisite: SIE 305, fall, spring)
- SIE 431 – Simulation Modeling and Analysis (prerequisite: SIE 305, fall, spring, summer)

Choose 2 courses from:

- SIE 321 – Probabilistic Models in Operations Research (prerequisite: SIE 305, spring only)
- SIE 330R – Engineering Experiment Design (prerequisite: SIE 305, spring only)
- SIE 377 – Software for Engineers (prerequisite: ECE 101 or CSC 110, fall only)
- SIE 383 - Integrated Manufacturing Systems (spring only)
- SIE 406 - Quality Engineering (prerequisite: SIE 305, spring only)
- SIE 408 - Reliability Engineering (prerequisite: SIE 305, pending)
- SIE 432 - Sports Analytics (prerequisite: SIE 305, summer only)
- SIE 433 - Fundamentals of Data Science for Engineers (prerequisite: SIE 305, spring only)
- SIE 440 - Survey of Optimization Methods (prerequisite: SIE 340, spring only)
- SIE 462 - Production Systems Analysis (prerequisites: SIE 305 & SIE 340, spring only)
- SIE 465 - Supply Chain Management (prerequisites: SIE 305 & SIE 340, spring only)

Approved amendment options for 2 course electives (as of 10/22/2024):

- SIE 410A - Human Factors & Ergonomics in Design (prerequisite: SIE 305, fall, spring)
- SIE 449 - Optimization for Machine Learning (prerequisite: SIE 340 or SIE 270 (SIE 305 encouraged), spring only)
- SIE 481 – Design for Additive Manufacturing (prerequisites: SIE 383, spring only)
- SIE 482 – Lean Engineering (prerequisites: SIE 305, spring only)
- SIE 492 or 493 – Directed Research or Internship (requires director approval, 3 units max)

Engineering Management Minor

Required:

- SIE 265 - Engineering Management I (prerequisite: MATH 122B, fall, spring)
- SIE 305 – Intro to Engineering Probability and Statistics (prerequisite: MATH 129, fall, spring, summer)
- SIE 457 – Project Management (fall, spring)

Choose 3 courses from:

- SIE 367 - Engineering Management II (no longer offered. Previously earned credit can apply)
- SIE 406 – Quality Engineering (prerequisite: SIE 305, fall only)
- SIE 408 – Reliability Engineering (prerequisite: SIE 305, pending)
- SIE 414 – Law for Engineers and Scientists (spring only)
- SIE 415 – Technical Sales and Marketing (fall, spring)
- SIE 422 – Engineering Decision Making Under Uncertainty (prerequisite: SIE 305, fall only)
- SIE 431 – Simulation Modeling and Analysis (prerequisite: SIE 305, fall, spring, summer)
- SIE 432 - Sports Analytics (prerequisite: SIE 305, summer only)
- OR SIE 433 - Fundamentals of Data Science for Engineers (prerequisite: SIE 305, spring only)
- SIE 462 – Production Systems Analysis (prerequisite: SIE 305 & SIE 340, spring only)
- SIE 464 – Cost Estimation (prerequisite: SIE 305, spring only)
- SIE 465 – Supply Chain Management (prerequisite: SIE 305 & SIE 340, spring only)

Approved amendment options for 3 course electives (as of 10/22/2024):

- SIE 449 - Optimization for Machine Learning (prerequisite: SIE 340 or SIE 270 (SIE 305 encouraged), spring only)
- SIE 452 – Space Systems Engineering (spring only)
- SIE 481 – Design for Additive Manufacturing (prerequisites: SIE 383, spring only)
- SIE 482 – Lean Engineering (prerequisites: SIE 305, spring only)
- SIE 492 or 493 – Directed Research or Internship (requires director approval, 3 units max)

Questions? Contact SIE Advising!

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