

**State University of New York at Binghamton**  
**Thomas J. Watson College of Engineering and Applied Science**  
**BS in Industrial and Systems Engineering: Four-Year Program**

Application Code: 1367

If undecided use: 0229

**FALL 2024**

**ENGINEERING DESIGN DIVISION**

***(The freshman year is common to all engineering majors)***

**Fall**

Math 224/225 Calculus I (M) (4)  
CHEM 111 Chemical Principles (4)  
EDD 103 Engineering Communications I (2)  
EDD 111 Intro to Engineering Design (2)  
General Education Elective (G, D, A, N, H) (4)  
Body/Wellness (Y, S, B) (1)

**Total Credits 17**

**Spring**

Math 226/227 Calculus II (Calc I) (4)  
PHYS 131 General Physics I (4)  
EDD 104 Engineering Communications II (EDD 103) (2)  
EDD 112 Intro to Engineering Analysis (EDD 111) (2)  
General Education Elective (G, D, A, N, H) (4)  
Body/Wellness (Y, S, B) (1)

**Total Credits 17**

*Note: the GenEd "J" Designation is earned after successful completion of EDD 111, 112, 103, 104*

**Final three years of Industrial and Systems Engineering Major**

**Year 2**

**Fall**

Math 324 Ordinary Diff Equations (Calc II) (4)  
**or**  
Math 323 Calculus III (Calc II) (4)  
PHYS 132 General Physics II (Phys I, Calc II) (4)  
ME 273 Statics (Phys I) (3)  
**ISE 231 Human Factors (Calc II) (4)**  
ISE 295 Seminar Course (1)

**Total Credits 16**

**Spring**

**ISE 211 Engineering Economics (Math 227, EDD 112) (4)**  
ISE 261 Probabilistic Systems I (Math 227 and EDD 112) (4)  
General Education Elective (G, D, A, N, H) (4)  
General Education Elective (G, D, A, N, H) (4)

**Total Credits 16**

**Year 3**

**Fall**

ISE 311 Enterprise Systems (ISE 211) (4)  
ISE 314 Computer Program for Engineers (4)  
**ISE 362 Probabilistic Systems II & DOE (ISE 261) (4)**  
MATH 304 Linear Algebra (Calc I) (4)

**Total Credits 16**

**Spring**

**ISE 212 Engineering Computing (EDD 112) (4)**  
ISE 320 Optimiz. & Operations Research I (MATH 304) (4)  
ISE 363 Quality Engineering (ISE 362) (4)  
General Education Elective (G, D, A, N, H) (4)

**Total Credits 16**

**Year 4**

**Fall**

ISE 470 Industrial Automation&Ctrl (ISE 311) (4)  
ISE 420 Optimiz & Operation Res II (ISE 320) (4)  
ISE 421 Modeling and Simulation (ISE 320, ISE 362) (4)  
**ISE 491 Systems Engineering Design (ISE 311, ISE 362) (4)**

**Total Credits 16**

**Spring**

**ISE 492 Systems Design Project (ISE 491) (4)**  
Technical Elective (3)  
Technical Elective (3)  
Technical Elective (3)

**Total Credits 13**

## **Industrial and Systems Engineering (ISE)**

We live in a complex society, but in the Systems Science and Industrial Engineering Department, we are doing our best to make it less complicated. We study complex systems and look for simplifying solutions. We work across all environments and fields of study including manufacturing, management, service industries, healthcare systems, and others. So, our time could be spent at a hospital developing ways to decrease wait times in emergency rooms, or you might find us in a manufacturing facility working on quality assurance issues or consulting at amusement parks, and beyond.

We have structured our BS ISE program so students will accomplish the following within a few years of graduation:

1. designing, developing, and managing both deterministic and nondeterministic complex processes and systems involving people, information, equipment, and financial and material assets, with special emphasis on using probabilistic methods, design of experiments, and simulation.
2. joining and contributing to industrial, government, and service organizations, and to operate effectively with a high level of professional and ethical standards.
3. independent learning, acquiring professional certifications and/or advanced degrees in reputable graduate schools in manufacturing, service, and enterprise systems.
4. communicating and contributing effectively in a diverse team environment.

The faculty members are committed to providing the students with an outstanding academic experience. Our curriculum also provides excellent preparation for graduate studies. For qualified undergraduates, we offer several combined-degree (accelerated five-year) programs that can lead to both a BS degree in ISE and an MS degree in either Industrial and Systems Engineering (MS ISE), Systems Science (MS SS), or Master of Business Administration (MBA).

For more information, visit: <http://www.ssie.binghamton.edu>