# Wheaton College - Northern Illinois University (NIU) Program Plan

***THIS PROGRAM PLAN IS FOR GUIDANCE ONLY. GRADUATION REQUIREMENTS ARE FOUND IN CATALOGS.***

Engineering Major
General Education

## *Industrial & Systems Engineering*

Fall Semester

| Sem | Code | Name | Hrs. |
|---|---|---|---|
| 1 | MATH 235 | Calculus I | 4 |
| | PHYS 231 | Introductory Physics I | 4 |
| | ENGR 101 | Introduction to Engineering | 1 |
| | CORE 101 | First Year Seminar | 4 |
| | ENGW | Writing (0-4) | 4 |
| | | *Total* | 17 |
| 3 | MATH 237 | Calculus III | 4 |
| | ENGR 334 | Computer Modeling of Physical Systems | 2 |
| | ENGR 351 | Analog Electronics (w/lab) | 2 |
| | LANG | World Languages | 4 |
| | SELECT | Thematic Core (1 of 3) | 4 |
| | | *Total* | 16 |
| 5 | CHEM 231 | General Chemistry I | 4 |
| | PSYC 101 | Introduction to Psychology | 4 |
| | SELECT | Visual & Performing Arts (1 of 2) | 2 |
| | SELECT | Thematic Core (3 of 3) | 4 |
| | | *Total* | 14 |
| | | *years 1 - 3 credit hours =* | *95* |

Spring Semester

| Sem | Code | Name | Hrs. |
|---|---|---|---|
| 2 | MATH 236 | Calculus II | 4 |
| | PHYS 232 | Introductory Physics II | 4 |
| | ENGR 132 | Engineering Graphics and CAD | 3 |
| | COMM | Oral Communication (0-2) | 2 |
| | BITH | Old Testament Literature | 4 |
| | | *Total* | 17 |
| 4 | MATH 333 | Differential Equations | 4 |
| | ENGR 214 | Innovative Design in Engineering (NIU Tech. Elective 1) | 3 |
| | SELECT | Thematic Core (2 of 3) | 4 |
| | BITH | New Testament Literature | 4 |
| | | *Total* | 15 |
| 6 | ECON 211 | Principals of Microeconomics | 4 |
| | ENGR 494 | Engineering Ethics Capstone | 2 |
| | BITH | Christian Thought | 4 |
| | CORE 3xx | Advanced Seminar (with 1 Thematic Core tag) | 4 |
| | SELECT | Visual & Performing Arts (2 of 2) | 2 |
| | | *Total* | 16 |

All courses below this line are based on completion at NIU

| | | | |
|---|---|---|---|
| 7 | ISYE 250 | Intro. To lean systems engineering | 2 |
| | ISYE 335 | Prob & Stats for Engineers | 3 |
| | ISYE 350 | Principals of manufacturing processes | 3 |
| | ISYE 370 | Operations research: deterministic models | 3 |
| | MEE 209 | Engineering Mechanics - Statics and Dynamics | 3 |
| | TE | Technical elective 2 | 3 |
| | | *Total* | 17 |
| 9 | ISYE 410 | Human factors engineering | 3 |
| | ISYE 440 | Production planning and control | 3 |
| | ISYE 460 | Facilities planning and design | 3 |
| | ISYE 480 | Simulation modeling and analysis | 3 |
| | ISYE 492 | Industrial and systems engineering senior design project | 1 |
| | TE | Technical elective 3 | 3 |
| | | *Total* | 16 |
| | | *years 4 - 5 credit hours =* | 60 |
| | | *TOTAL credit hours =* | 155 |

| | | | |
|---|---|---|---|
| 8 | ISYE 220 | Engineering economy | 3 |
| | ISYE 310 | Work measurement and work design | 3 |
| | ISYE 371 | Operations research: Probabilistic models | 3 |
| | ISYE 430 | Quality control | 3 |
| | ISYE 435 | Experimental design for engineers | 3 |
| | | *Total* | 15 |
| 10 | ISIYE 450 | Lean manufacturing systems | 3 |
| | ISIYE 495 | Senior design project | 3 |
| | TE | Technical Elective 4 | 3 |
| | TE | Technical Elective 5 | 3 |
| | EXAM | Fundamentals of Engineering (Passing is not required) | |
| | | *Total* | 12 |

*last updated 3/8/2024*

Technical elective courses are ISYE 300 or 400 level.

Technical electives may come from outside of the ISYE list (see NIU catalog) - this includes Wheaton's ENGR 204

# Wheaton College - NIU
# Industrial and Systems Engineering

Updated March 2024

All courses after Semester 6 are taken at NIU.

Prerequisite →

Co-requisite ⇢

Credit Hours (xx)

**Entry**

Precalculus

**Sem. 1 (17)**

MATH 235 (4) Calculus I

PHYS 231 (4) Intro. to Physics I

ENGR 101 (1) Intro. to Engineering

**Sem. 2 (17)**

MATH 236 (4) Calculus II

PHYS 232 (4) Intro. to Physics II

ENGR 132 (3) Engr. Graphics & CAD

**Sem. 3 (16)**

MATH 237 (4) Calculus III

ENGR 334 (2) Computer Modeling of Physical Systems

ENGR 351 (2) Analog Electronics

**Sem. 4 (15)**

MATH 333 (4) Differential Equations

ENGR 214 (3) Innovative Design in Engineering (NIU TE 1)

**Sem. 5 (14)**

CHEM 231 (4) Gen. Chemistry I

PSYC 101 (4) Intro. to Psychology

**Sem. 6 (16)**

ECON 211 (4)

**Sem. 7 (17)**

ISYE 250 (2) Intro. to Lean Systems Engineering

ISYE 335 (3) Prob & Stats for Engineers

ISYE 350 (3) Principals of Manufacturing Processes

ISYE 370 (3) Operations research: Deterministic Models

MEE 209 (3) Engr. Mechanics: Statics & Dynamics

Tech Elective 2 (3)

**Sem. 8 (15)**

ISYE 220 (3) Engineering Economy

ISYE 310 (3) Work Measurement and Work Design

ISYE 371 (3) Operations Research: Probabilistic Models

ISYE 430 (3) Quality Control

ISYE 435 (3) Experimental Design for Engineers

**Sem. 9 (16)**

ISYE 440 (3) Production Planning and Control

ISYE 460 (3) Facilities Planning and Design

ISYE 480 (3) Simulation Modeling and Analysis

ISYE 492 (1) I&S Engineering Senior Design Project

ISYE 410 (3) Human Factors Engineering

Tech Elective 3 (3)

**Sem. 10 (12)**

ISYE 450 (3) Lean Manufacturing Systems

ISYE 495 (3) Senior Design Project

Tech Elective 4 (3)

Tech Elective 5 (3)

## Core Curriculum:

- 1st yr. seminar (4)
- Writing (4)
- Oral Comm. (2)
- Old Test. Lit. (4)
- Thematic Core 1 (4)
- World Languages (4)
- Thematic Core 2 (4)
- New Test. Lit. (4)
- Thematic Core 3 (4)
- V & P Arts 1 (2)
- Christian Thought (4)
- ENGR 494 Eth CS (2)
- Core 3xx Ad Sem (4)
- V & P Arts 2 (2)