

Major requirements for Industrial & Systems Engineering

(For undergraduate students admitted in 2015 or before)

- **Credit Requirement for Graduation:** Required to complete a total of more than 130 credits
 - **(Special Note) Other curricular requirement except for major or research course set by Department of Industrial & Systems Engineering:**
 - The students who entered in or after the 2010 academic year must take the basic course of MAS109 Introduction to Linear Algebra.
 - **Major:** at least 51 credits
 - **Mandatory Major Courses:** at least 24 credits
 - **Elective Major Courses:** at least 27 credits
 - Recognition Criteria for Elective Major Courses:
 1. Undergraduate Courses with IE Codes(400-level and below)
 2. Graduate Courses with IE/DS Codes(only courses mutually recognized between undergraduate and praduate programs; but all courses are recognized for Honor Students)
 3. Elective Major Courses offered by the College of Engineering(CoE Codes), with a maximum of 3 credits recognized.
 4. Designated courses from other departments, as posted on the Industrial and Systems Engineering department's website(including substitute courses), with a maximum of 9 credits recognized.
 - **Minor:** at least 18 credits
 - at least 18 credits in Industrial & Systems Engineering Major courses
 - ※ Up to 9 credits can be doubly recognized from any major courses of other departments.
 - **Double Major:** at least 40 credits
 - at least 40 credits from major courses, including 24 credits in mandatory major courses.
 - ※ A maximum of 9 credits can be doubly recognized from any major courses of other departments.
 - **Research Courses:** at least 4 credits
 - Graduation Research: 3 credits (mandatory)
 - IE Seminar : 1 credit (required), A foreign student doesn't need to take the seminar course.
 - Individual Study : up to 2 credits.
- © Up-to 21 credits required to earn from ISysE Co-op 1(INT482, INT495), a 24-week internship program, may be replaced with IE490 Graduation Research, IE436 Industrial and Systems Engineering Case Study, IE481 Special Topics in Industrial Engineering I <Understanding and Application of Industrial Intelligence Methodology>, and Elective Courses(12).
If IE490 B.S. Thesis, IE436 Case Studies for Industrial & Systems Engineering or

IE481 Special Topics in Industrial Engineering I <Understanding and Application of Industrial Intelligence Methodology> has been completed before participating in the 24-Week Internship Program <ISysE Co-op 1>, the corresponding credits can be recognized as Elective Courses.

In case of completing ISysE Co-op 2(INT492, INT495) additionally, up to 3 credits from free elective courses may be recognized towards the credits required for graduation.

Transitional Measures

- These requirements shall apply to all students enrolled.
- Students admitted in 2015 or before may choose to be governed by the completion requirements applicable to students admitted in 2016 and after if desired.
- Credit recognition for ISysE Co-op 1(INT482, INT495), ISysE Co-op 2(INT492, INT495), a 24-week internship program, shall apply to all students enrolled in ISysE, who participate in the Co-op program starting from the Spring Semester of 2023.
- However, for those students who have completed the ISysE Co-op 1(INT482, INT495) in 2022 Winter semester or before, it can be recognized as IE490 Graduation Research, IE436 Industrial and Systems Engineering Case Study, IE481 Special Topics in Industrial Engineering I <Understanding and Application of Industrial Intelligence Methodology>, in total of 9 credits. And credit recognition of ISysE Co-op 2(INT492, INT495) is same as above.
- The provision recognizing designated courses from other departments as elective major courses applies to students majoring, double majoring, or minoring in Industrial and Systems Engineering who enrolled after the spring semester of 2013.
- The recognition of IE and DS coded courses, as well as elective major courses offered by the College of Engineering(CoE codes), as elective major courses applies to all students majoring, double majoring, or minoring in Industrial and Systems Engineering.

Major requirements for Industrial & Systems Engineering

(For undergraduate students admitted in 2016 and after)

- **Credit Requirement for Graduation:** Required to complete a total of more than 136 credits
 - ※ Required to choose and complete at least one among Advanced Major, Double Major, Minor, and Individually Designed Major

- **(Special Note) Other curricular requirement except for major or research course set by Department of Industrial & Systems Engineering**

Students who entered in or after the 2010 academic year must take the basic course of MAS109 Introduction to Linear Algebra.

- **Major:** at least 45 credits
 - **Mandatory Major Courses:** at least 24 credits
 - **Elective Major Courses:** at least 21 credits
 - Recognition Criteria for Elective Major Courses:
 1. Undergraduate Courses with IE Codes(400-level and below)
 2. Graduate Courses with IE/DS Codes(only courses mutually recognized between undergraduate and praduate programs; but all courses are recognized for Honor Students)
 3. Elective Major Courses offered by the College of Engineering(CoE Codes), with a maximum of 3 credits recognized.
 4. Designated courses from other departments, as posted on the Industrial and Systems Engineering department's website(including substitute courses), with a maximum of 6 credits recognized.

- **Advanced Major:** at least 12 credits
 - at least 12 credits from elective major courses
 - *Only elective major courses with IE code shall be recognized.

- **Individually Designed Major:** at least 12 credits
 - Students must take 12 credits or more from major courses of more than two departments other than Industrial & Systems Engineering.

- **Minor:** at least 18 credits
 - at least 18 credits in Industrial & Systems Engineering Major courses.
 - ※ No credits from the same course will be doubly counted to satisfy major and minor department requirements.

- **Double Major:** at least 40 credits
 - at least 40 credits from major courses, including 24 credits in mandatory major courses
 - ※ Up to 6 credits may doubly count to satisfy both major department requirements.

■ Research Courses: at least 4 credits

- Graduation Research: 3 credits (mandatory)
- IE Seminar : 1 credit (mandatory), A foreign student doesn't need to take the seminar course.
- Individual Study : up to 2 credits

◎ Up-to 21 credits required to earn from ISysE Co-op 1(INT482, INT495), a 24-week internship program, may be replaced with IE490 Graduation Research, IE436 Industrial and Systems Engineering Case Study, IE481 Special Topics in Industrial Engineering I <Understanding and Application of Industrial Intelligence Methodology>, and Elective Courses(12).

If IE490 B.S. Thesis, IE436 Case Studies for Industrial & Systems Engineering or IE481 Special Topics in Industrial Engineering I <Understanding and Application of Industrial Intelligence Methodology> has been completed before participating in the 24-Week Internship Program <ISysE Co-op 1>, the corresponding credits can be recognized as Elective Courses.

In case of completing ISysE Co-op 2(INT492, INT495) additionally, up to 3 credits from free elective courses may be recognized towards the credits required for graduation.

□ Transitional Measures

- These requirements shall apply to all students enrolled
- Credit recognition for ISysE Co-op 1(INT482, INT495), ISysE Co-op 2(INT492, INT495), a 24-week internship program, shall apply to all students enrolled in ISysE, who participate in the Co-op program starting from the Spring Semester of 2023.
- However, for those students who have completed the ISysE Co-op 1(INT482, INT495) in 2022 Winter semester or before, it can be recognized as IE490 Graduation Research, IE436 Industrial and Systems Engineering Case Study, IE481 Special Topics in Industrial Engineering I <Understanding and Application of Industrial Intelligence Methodology>, in total of 9 credits. And credit recognition of ISysE Co-op 2(INT492, INT495) is same as above.
- The provision recognizing IE/DS-coded courses, elective major courses offered by the College of Engineering(CoE codes), and designated courses from other departments as elective major courses apply to all students majoring, double majoring, or minoring in Industrial and Systems Engineering.

Major requirements for Industrial & Systems Engineering

(For undergraduate students admitted in 2023 and after)

- **Credit Requirement for Graduation:** Required to complete a total of more than 138 credits
 - ※ Required to choose and complete at least one among Advanced Major, Double Major, Minor, and Individually Designed Major

- **(Special Note) Other curricular requirement except for major or research course set by Department of Industrial & Systems Engineering**

Students who entered in or after the 2010 academic year must take the basic course of MAS109 Introduction to Linear Algebra.

- **Major:** at least 45 credits
 - **Mandatory Major Courses:** at least 24 credits
 - **Elective Major Courses:** at least 21 credits
 - Recognition Criteria for Elective Major Courses:
 1. Undergraduate Courses with IE Codes(400-level and below)
 2. Graduate Courses with IE/DS Codes(only courses mutually recognized between undergraduate and praduate programs; but all courses are recognized for Honor Students)
 3. Elective Major Courses offered by the College of Engineering(CoE Codes), with a maximum of 3 credits recognized.
 4. Designated courses from other departments, as posted on the Industrial and Systems Engineering department's website(including substitute courses), with a maximum of 6 credits recognized.

- **Advanced Major:** at least 12 credits
 - at least 12 credits from elective major courses
 - *Only elective major courses with IE code shall be recognized.

- **Individually Designed Major:** at least 12 credits
 - Students must take 12 credits or more from major courses of more than two departments other than Industrial & Systems Engineering.

- **Minor:** at least 18 credits
 - at least 18 credits in Industrial & Systems Engineering Major courses.
 - ※ No credits from the same course will be doubly counted to satisfy major and minor department requirements.

- **Double Major:** at least 40 credits
 - at least 40 credits from major courses, including 24 credits in mandatory major courses

※ Up to 6 credits may doubly count to satisfy both major department requirements.

■ **Research Courses:** at least 4 credits

- Graduation Research: 3 credits (mandatory)
- IE Seminar : 1 credit (mandatory), A foreign student doesn't need to take the seminar course.
- Individual Study : up to 2 credits

◎ Up-to 21 credits required to earn from ISysE Co-op 1(INT482, INT495), a 24-week internship program, may be replaced with IE490 Graduation Research, IE436 Industrial and Systems Engineering Case Study, IE481 Special Topics in Industrial Engineering I <Understanding and Application of Industrial Intelligence Methodology>, and Elective Courses(12).

If IE490 B.S. Thesis, IE436 Case Studies for Industrial & Systems Engineering or IE481 Special Topics in Industrial Engineering I <Understanding and Application of Industrial Intelligence Methodology> has been completed before participating in the 24-Week Internship Program <ISysE Co-op 1>, the corresponding credits can be recognized as Elective Courses.

In case of completing ISysE Co-op 2(INT492, INT495) additionally, up to 3 credits from free elective courses may be recognized towards the credits required for graduation.

□ **Transitional Measures**

- These requirements shall apply to the students admitted in 2023 and after.
- Credit recognition for ISysE Co-op 1(INT482, INT495), ISysE Co-op 2(INT492, INT495), a 24-week internship program, shall apply to all students enrolled in ISysE, who participate in the Co-op program starting from the Spring Semester of 2023.
- However, for those students who have completed the ISysE Co-op 1(INT482, INT495) in 2022 Winter semester or before, it can be recognized as IE490 Graduation Research, IE436 Industrial and Systems Engineering Case Study, IE481 Special Topics in Industrial Engineering I <Understanding and Application of Industrial Intelligence Methodology>, in total of 9 credits. And credit recognition of ISysE Co-op 2(INT492, INT495) is same as above.
- The provision recognizing IE/DS-coded courses, elective major courses offered by the College of Engineering(CoE codes), and designated courses from other departments as elective major courses apply to all students majoring, double majoring, or minoring in Industrial and Systems Engineering.

Major requirements for Industrial & Systems Engineering (For Master's Program)

Thesis Master's Degree

Please check the common graduation requirements.

■ **Credit Requirement for Graduation:** Required to complete a total of more than 33 credits

■ **Mandatory General Courses:** 3 credits and Ethics and Safety

■ **Elective Courses:** at least 21 credits

- Required to take more than 21 credits including at least 15 credits from IE/DS courses
- A maximum of 9 credits may be recognized from courses numbered in the 400s or below. However, among them, any courses which are not mutually recognized at the undergraduate and graduate levels must be approved by the academic advisor and department head from Department of Industrial & Systems Engineering.
- For students enrolled in an interdisciplinary program who have completed more than 9 credits from IE/DS courses and a double degree program with a foreign university, the credits earned at the relevant double major department may be recognized as those earned from IE/DS courses, while the requirement of completing at least 6 credits from IE/DS courses is still effective.
- For IE481 Special Topics in Industrial Engineering I and IE801 Special Topics in Industrial Engineering II, up to 6 credits for the two courses shall be recognized if the subtitles are different.

■ **Research Courses:** At least 9 credits.

- Need to take 9 or more research credits including 1 credit in Seminar.
- Individual Study : up-to 3 credits.

□ **Transitional Measures**

- This requirement is applied to all students admitted in the Spring 2023 semester and later.
- KSE code courses completed before the Spring 2023 semester are considered as DS codes.
- Foreign students admitted in the 2022 and before are exempted from completing the seminar course if they have completed the HSS586 course.

Coursework Master's Degree

Please check the common graduation requirements.

Credit Requirement for Graduation: Required to complete a total of more than 36 credits

Mandatory General Courses: 3 credits and Ethics and Safety

Elective Courses: at least 27 credits

- Required to take more than 15 credits from IE/DS courses
- A maximum of 9 credits may be recognized from courses numbered in the 400s or below. However, among them, any courses which are not mutually recognized at the undergraduate and graduate levels must be approved by the academic advisor and department head from Department of Industrial & Systems Engineering.

Research Courses: at least 6 credits.

- Need to take 6 or more credits from Seminar or Individual study(M.S.)
- The students who have completed the internship, project report, or conducted research equivalent to KAIST Individual Study from the counterpart university of double degree program, such accomplishments can be substituted for and transferred for Individual Study at KAIST.

Application :

The Coursework Master's Degree can be applicable to the right case of double degree program which can grant KAIST degree to students from counterpart of agreed university by the power of agreement stricken.

Transitional Measures

- This requirement is applied to all students admitted in the Spring 2023 semester and later.
- KSE code courses completed before the Spring 2023 semester are considered as DS codes.

Major requirements for Industrial & Systems Engineering (For Doctoral Program)

Please check the common graduation requirements.

■ **Credit Requirement for Graduation:** Required to complete a total of more than 69 credits

■ **Mandatory General Courses:** 3 credits and Ethics and Safety

■ **Elective Courses:** at least 36 credits

- Required to take more than 24 credits from IE/DS courses
- Select at least 36 credits, including a minimum of 24 credits from IE/DS courses (whereas in case of students enrolled in an interdisciplinary program, a minimum of 9 credits must be included, and whereas in case of students graduated from other universities rather than KAIST or from other departments rather than Industrial & Systems Engineering Department at M.S. program, a minimum of 18 credits must be included)
- A maximum of 9 credits can be recognized from courses numbered in the 400s or below. However, among them, any courses which are not mutually recognized at the undergraduate and graduate levels must be approved by the academic advisor and department head from Department of Industrial & Systems Engineering.
- For IE481 Special Topics in Industrial Engineering I and IE801 Special Topics in Industrial Engineering II, up to 9 credits for the two courses shall be recognized if the subtitles are different.

■ **Research Courses:** at least 30 credits.

- Need to take 30 or more research credits including 1 credit in Seminar.
- Individual Study : up-to 3 credits.
- ※ The credits earned in the Master's course work may count towards requirements for the Doctoral degree (except research credits).
The credits earned from other universities rather than KAIST may be transferred to credits for KAIST doctoral course with submission of the completed form of 'Application for Credit Transfer(from other universities)' and appropriate approvals.

□ **Transitional Measures**

- This requirement is applied to all students admitted in the Spring 2023 semester and later.
- KSE code courses completed before the Spring 2023 semester are considered as DS codes.
- Foreign students admitted in the 2022 and before are exempted from completing the seminar course if they have completed the HSS586 course.

Major requirements for Industrial & Systems Engineering (For MS-PhD Integrated Program)

Please check the common graduation requirements.

■ **Credit Requirement for Graduation:** Required to complete a total of more than 69 credits

■ **Mandatory General Courses:** 3 credits and Ethics and Safety

■ **Elective Courses:** at least 36 credits

- Required to take more than 24 credits from IE/DS courses
- A maximum of 9 credits can be recognized from courses numbered in the 400s or below. However, among them, any courses which are not mutually recognized at the undergraduate and graduate levels must be approved by the academic advisor and department head from Department of Industrial & Systems Engineering.
- For IE481 Special Topics in Industrial Engineering I and IE801 Special Topics in Industrial Engineering II, up to 9 credits for the two courses shall be recognized if the subtitles are different.

■ **Research Courses:** at least 30 credits.

- Need to take 30 or more research credits including 1 credit in Seminar.
- Individual Study : up-to 3 credits.

※ The credits earned in the Master's course work may count towards requirements for the Doctoral degree (except research credits).

The credits earned from other universities rather than KAIST may be transferred to credits for KAIST doctoral course with submission of the completed form of 'Application for Credit Transfer(from other universities)' and appropriate approvals.

□ **Transitional Measures**

- This requirement is applied to all students admitted in the Spring 2023 semester and later.
- KSE code courses completed before the Spring 2023 semester are considered as DS codes.
- Foreign students admitted in the 2022 and before are exempted from completing the seminar course if they have completed the HSS586 course.