

Course Requirements

□ Undergraduate Courses

- A. Graduation Credits : at least 130 credits in total
- ※ A cumulative grade point average of 2.0 or higher out of a possible 4.3 in all coursework
- B. General Course : At least 27 credits and 9AU(applicable to students entering KAIST in 2009 and onward; for those who have entered KAIST before 2009, refer to the Course Completion Requirements by Year of Admission)
- Mandatory General Course
 - Students entering KAIST in 2009 and onward : 6 credits and 9AU
English Communication(1), Critical Thinking in English(2), Writing(3), Physical Education(4AU), Community Service(2AU), Humanity/Leadership(2AU), Ethics and Safety II (1AU)
 - Students entering KAIST between 2007 and 2008 : 7 credits and 9AU
English Communication I(1), English Communication II(1), English Reading&Writing(2), Writing(3), Physical Education(4AU), Community Service(2AU), Humanity/Leadership(2AU), Ethics and Safety II (1AU)
 - * English Communication I → English Communication
English Communication II → English Conversation
English Reading&Writing → Critical Thinking in English
 - Elective General Course in Humanities & Social Science : at least 21 credits
 - Students entering KAIST in 2009 and onward : at least 21 credits including at least 1 course in each of 2 divisions among 3 divisions(Humanity, Society, Culture & Art)
 - Students having entered KAIST before 2009 : at least 21 credits including at least 1 course in each of 2 divisions among 5 divisions(Science Technology; Literature and Art; History and Philosophy; Social Science; Foreign Language and Linguistics) or at least 1 course in each of 2 divisions among 3 divisions(Humanity, Society, Literature&Art)
 - Students entering KAIST in 2007 and onward should earn at least 18 credits through English lectures among the 21 credits required as Elective General Courses in Humanities & Social Science.
 - ※ Students having a double major take 12 credits without considering categories. (Students entering KAIST in 2007 and onward should take 12 credits through English lectures.)
- C. Completion of Basic Courses: at least 32 credits (applicable to students entering KAIST in 2008 and onward; for those who have entered KAIST before 2009, refer to the Course Completion Requirements by Year of Admission)
- Mandatory Basic Courses: 26 credits
 - ① 1 course among Fundamental Physics I (3), General Physics I (3), and Advanced Physics I (3)
 - ② 1 course among Fundamental Physics II (3), General Physics II (3), and Advance Physics II (3)
 - ③ 1 course of General Physics Lab I (1)
 - ④ 1 course of Basic Biology (3) or General Biology (3)
 - ⑤ 1 course of Calculus I (3) or Honor Calculus I (3)
 - ⑥ 1 course of Calculus II (3) or Honor Calculus II (3)
 - ⑦ 1 course among Basic Chemistry (3), General Chemistry I (3), and Advanced Chemistry (3)
 - ⑧ 1 course of General Chemistry Lab I (1) or Advanced Chemistry Lab (1)
 - ⑨ 1 course of Basic Programming (3) or Advanced Programming (3)
 - ⑩ Freshman Design Course : Introduction to Design and Communication (3)
 - ※ Students having entered KAIST in 2007 or before : 23 credits (①~⑨)
 - Elective Basic Courses: at least 6 credits (including at least two courses among MAS109, MAS201 and MAS202)

- ※ Students with a double major take 3 credits or above including at least one course between MAS201 and MAS202

D. Major Course Requirements : At least 40 credits.

- Must include 4 courses selected from the following courses:
Linear Algebra (3), Analysis I (4), Modern Algebra I (4), Introduction to Differential Geometry (4), Topology (4), Complex Variables (3), Probability and Statistics (3)
- A maximum of 12 credits may be taken in major courses from other departments.
(In the event that major courses and double-major/minor courses overlap, up to 9 credits can be applied to both courses of study.)
- Certificates (Optional)
 - If at least four courses on the list below are completed, 'Certificate in Financial Mathematics' is written in the transcript:
Mathematical Statistics, Introduction to Numerical Analysis, Introduction to Financial Mathematics, Lebesgue Integral Theory, Financial Mathematics and Stochastic Models, Computer Simulations in Financial Mathematics
 - If at least four courses on the list below are completed, 'Certificate in Applied Mathematics' is written in the transcript:
Applied Mathematics and Modeling, Elementary Probability Theory, Mathematical Statistics, Introduction to Numerical Analysis, Optimization Theory, Introduction to Partial Differential Equations
 - If at least four courses on the list below are completed, 'Certificate in Information Mathematics' is written in the transcript:
Discrete Mathematics, Modern Algebra II, Mathematical Statistics, Information Mathematics, Introduction to Cryptography
 - If Certificate requirements are met for more than one, then only one Certificate of the student's choice is written in the transcript.

E. Research Courses: At least 3 credits including 3 credit hours of graduation research

- ※ Students having a double major are exempt.

F. Elective Courses :

G. English Proficiency Requirements upon Graduation

- Students are required to meet one of the following requirements on English proficiency before entering KAIST or during their years of enrollment: 560 points in PBT TOEFL; 220 points in CBT TOEFL; 83 points in IBT TOEFL; 6.5 points in IELTS; 720 points or 760/775 points in TOEIC (see below); or 599 points or 670/690 points in TEPS (see below).
- ※ Criteria for TOEIC and TEPS scores
 - Students submitting scores from new TOEIC (held in May 2006 and onward) or TEPS held on March 1, 2007 and onward: 720 points in TOEIC; or 599 points in TEPS
 - Students submitting scores from old TOEIC (held before April 2006) or TEPS held before February 28, 2007:
 - Students entering KAIST in 2008 and onward: 775 points in TOEIC; or 690 points in TEPS
 - Students entering KAIST in 2007 or before: 760 points in TOEIC; or 670 points in TEPS
- ※ A student who is pursuing a major in another department may complete 40 credits including mandatory major courses
- ※ A minor may be completed by a student with a major in another department by earning at least 18 credits among the courses offered by the Department.

※ General and basic courses in undergraduate program are different from years of admission; therefore, students entering KAIST before 2009 should refer to the Course Completion Requirements by Year of Admission.

□ **Master's Programs**

1) Thesis Master's Degree

General Course	Major Course		Research	Total
	Mandatory	Elective		
3	0	21	12	36

A. Graduation Credits: at least 36 credits

B. Mandatory General Course : 3 credits and 1AU

- One course (3 credits) from CC500, CC510, CC511, CC513, CC530, CC532
- CC010 Special Lecture on Leadership(non-credit, this applies to students entering KAIST in 2002 and onward; general scholarship students, foreign students are excluded)
- CC020 Ethics and Safety I(1AU)

C. Major Course Requirements (Elective): at least 21 credits

Must include 4 courses selected from the following 8 courses:

Algebra I, Differential Geometry I, Algebraic Topology I, Real Analysis, Complex Function Theory, Probability Theory, Advanced Statistics, Numerical Analysis

D. Research Course Requirements: at most 12 credits, including 1 credit for MAS966 seminar and 1 credit for MAS967 'How to Teach Mathematics I. (M.S.)'. Foreign students are exempt from MAS967 requirement.

2) Coursework Master's Degree

General Course	Major Course		Research	Total
	Mandatory	Elective		
3	0	30	3	36

A. Graduation Credits: at least 36 credits

B. Mandatory General Course : at least 3 credits and 1AU

- One course (3 credits) from CC500, CC510, CC511, CC513, CC530, CC532
- CC010 Special Lecture on Leadership(non-credit, this applies to students entering KAIST in 2002 and onward; general scholarship students, foreign students are excluded)
- CC020 Ethics and Safety I(1AU)

C. Major Course Requirements (Elective): at least 30 credits

Must include 4 courses selected from the following 8 courses:

Algebra I, Differential Geometry I, Algebraic Topology I, Real Analysis, Complex Function Theory, Probability Theory, Advanced Statistics, Numerical Analysis

D. Research Course Requirements: at most 3 credits, including 1 credit for MAS966 seminar and 1 credit for MAS967 'How to Teach Mathematics I (M.S.)'. Foreign students are exempt from MAS967 requirement.

□ **Doctoral Program**

General Course	Major Course		Research	Total
	Mandatory	Elective		
3	0	33	30	66

A. Graduation Credits: at least 66 credits

B. Mandatory general Course : 3 credits (those students who completed the required common courses in the master's program do not need to repeat them)

- One course (3 credits) from CC500, CC510, CC511, CC513, CC530, CC532
- CC010 Special Lecture on Leadership(non-credit, this applies to students entering KAIST in 2002 and onward; general scholarship students, foreign students are excluded)

- CC020 Ethics and Safety I(IAU) (If having taken "CC020 Ethics and Safety I" in Master's Program, it is not necessary to take it again.)
- C. Major Course Requirements (Elective): at least 33 credits
Must include 4 courses selected from the following 8 courses:
Algebra I, Differential Geometry I, Algebraic Topology I, Real Analysis, Complex Function Theory, Probability Theory, Advanced Statistics, Numerical Analysis
- D. Research Course Requirements: at least 30 credits, including 2 credits for MAS986 seminar and 1 credit for MAS987 'How to Teach Mathematics I.(Ph.D.)'. Foreign students are exempt from MAS967 requirement.
 - Students who have taken MAS967 in the master's program may omit it in the Ph.D. program.
- ※ Credits(for general courses and major courses) earned in the master's program can be included in the doctoral program.
- ※ If course A can be replaced by course B, then only one of A and B should be taken.

□ Interim Accommodations

- A. Undergraduate Course
 - These requirements apply to all students of Department of Mathematical Sciences from 2007 academic year. Those who are students of Division of Mathematics or Division of Applied Mathematics before 2006 may choose to follow the then requirements.
 - Those who are students of Division of Applied Mathematics in December 2006 and are graduating by February 2008 may have 'Certificate in Applied Mathematics' written on their transcript.
 - If more than one mutually replaceable courses of Mathematical Sciences are taken before 2006, then only one of them is counted in major course requirements and the rest are counted as elective courses.
 - Students entering during the 2001 academic year or later must fulfill the research course requirement by taking graduation, seminar, or individual research. Those entering during the 2000 academic year or earlier may substitute credits from major courses for the research course requirement.
 - Certain courses existing prior to the 2007 academic year may be substituted for courses in the current curriculum as described below:
 - AM320 → MAS364
 - AM222 → CS202
 - AM451 → IE332
 - AM453 → EE321
 - AM455 → MAS455
 - Certain courses existing prior to the 1999 academic year may be substituted for courses in the current curriculum as described below:
 - MA201 Applied Mathematics I → MAS201 Differential Equations and Applications
 - MA202 Applied Mathematics II → MAS202 Applied Mathematical Analysis
 - MA241 Advanced Calculus I → MAS241 Analysis I
 - MA242 Advanced Calculus II → MAS242 Analysis II
 - MA441 Real Analysis I → MAS441 Lebesgue Integral Theory
 - MA240 Differential Equations may be substituted for MAS201 Differential Equations and Applications for those students who entered school prior to the 1999 academic year.
- B. Master's and Doctoral Programs
 - Graduation credit reduction (from 72 credits to 66 credits in the doctoral program) applies to those who entered the program in 2009 or thereafter.
 - These requirements apply to all students of Department of Mathematical Sciences from 2007 academic year. Those who are students of Division of Mathematics or Division of Applied Mathematics before 2006 may choose to follow the then requirements.

- Those who are PhD students of Division of Mathematics in December 2006 and have earned 2 credits for MA966 may omit MA986.
- ※ Request for other changes and accommodations must be approved by the department.