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 28 credits and 9AU** (applicable to students entering KAIST in 2014 and thereafter; for those who have entered KAIST in 2013 and before, refer to the Course Completion Requirements by Year of Admission)

○ Mandatory General Course

Academic Year	Credits	Required Courses
In 2014 and thereafter	7 credits and 9AU	English Presentation & Discussion(1), Advanced English Listening(1), Advanced English Reading(1), Advanced English Writing(1), Writing(3), Physical Education(4AU), Humanity/Leadership(2AU), Ethics and Safety II(1AU), Happy College Life(1AU), Exciting College Life(1AU)
Between 2011 and 2013	6 credits and 9AU	English Communication(1), Critical Thinking in English(2), Writing(3), Physical Education(4AU), Humanity/Leadership(2AU), Ethics and Safety II(1AU), Happy College Life(1AU), Exciting College Life(1AU)
Between 2009 and 2010	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)
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
Between 1998 and 2006	7 credits and 9AU	English I(2), English II(2) Writing(4AU), Community Service(2AU), Humanity/Leadership(2AU), Ethics and Safety II(1AU) * English I → English Communication * English II → Critical Thinking in English

○ Elective General Course in Humanities & Social Science : at least 21 credits

- Take (6 credits) 1 course of each of the following 2 categories among 3 categories: Humanity, Society and Literature and Arts; the rest can be chosen regardless of the category. (applicable to students entering KAIST in 2009 and thereafter; for those who have entered KAIST in 2008 and before, refer to the Course Completion Requirements by Year of Admission)
- Students entering KAIST between 2007 and 2010 should earn at least 9 credits through lectures in English 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 between 2007 and 2010 should take 6 credits through lectures in English.)

※ The requirement of taking lectures in English as Elective General Courses in Humanities & Social Science is not applied to students entering KAIST in 2011 and thereafter.

C. Completion of Basic Courses: at least 32 credits (applicable to students entering KAIST in 2012 and thereafter; for those who have entered KAIST in 2011 and before, refer to the Course Completion Requirements by Year of Admission)

○ Mandatory Basic Courses: 23 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)

- Students having entered KAIST in 2007 or before : 23 credits (①~⑨)
- Students having entered KAIST between 2008 and 2011: 26 credits((①~⑨), Freshman Design Course: Introduction to Design and Communication)(3))

○ Elective Basic Courses: at least 9 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

※ MAS250 can be regarded as the elective major course for students in Department of Mathematical Sciences (Including double major students)

D. Major Course Requirements : At least 42 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)

○ The courses of other departments listed below can be regarded as major courses up to 9 credits.

- PH212 Mathematical Methods in Physics II, PH221 Classical Mechanics I, PH301 Quantum Mechanics I
- MAE220 Fluid Mechanics or MAE221 Fluid Mechanics, MAE230 Solid Mechanics or MAE231 Solid Mechanics
- IE331 Operations Research I, IE341 Engineering Statistics II, IE342 Regression Analysis and Experimental Designs
- EE202 Signals and Systems, EE204 Electromagnetics or PH231 Electormagnetism I, EE321 Communication Engineering
- CS206 Data Structure, CS300 Introduction to Algorithms

※ MAS250 can be regarded as the elective major course for students in Department of Mathematical Sciences (Including double major students)

○ 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: (3 Credits) (Students should take 3 credits from the following courses.)

- o MAS490 Research in Mathematics (3 Credits)
- o MAS491 Introduction to Contemporary Mathematics(2 Credits)
- o MAS495 Individual Study(1 Credit)
- o INT485 National Internship Program III (Graduation Research)(3 Credits)
- o INT484 National Internship Program II (Graduation Research)(2 Credits)
- o INT483 National Internship Program I (Graduation Research)(1 Credit)

Note that if one take MAS495 more than one times, department acknowledges only 1 credit toward research credits, and the rest are considered as elective courses.

※ Students having a double major are exempt.

F. Elective Courses :

G. English Proficiency Requirements upon Graduation

- ○ Before entering or during studying at KAIST, students should obtain the minimum required score or higher from one of the following: TOEFL, TOEIC, TEPS and IELTS.
- ○ Students who have hearing impairment level 3 or above should obtain the minimum required score or higher, excluding listening.

1) Students who have submitted past scores for TOEIC (before April 2006) or TEPS (before February 28, 2007)

- Students admitted in 2008 or later

Classification	iBT TOEFL	PBT TOEFL	CBT TOEFL	TOEIC	TEPS	IELTS
General qualification score	83	560	220	775	690	6.5
Qualification score for hearing impairment level 3 or above	62	372	146	387	414	4.8

- Students admitted in 2007 or earlier

Classification	iBT TOEFL	PBT TOEFL	CBT TOEFL	TOEIC	TEPS	IELTS
General qualification score	83	560	220	760	670	6.5
Qualification score for hearing impairment level 3 or above	62	372	146	380	402	4.8

2) Students who have submitted NEW TOEIC score taken after May 2006 or TEPS score taken after March 1, 2007

Classification	iBT TOEFL	PBT TOEFL	CBT TOEFL	TOEIC	TEPS	IELTS
General qualification score	83	560	220	720	599	6.5
Qualification score for hearing impairment level 3 or above	62	372	146	360	359	4.8

H. Graduation Requirements for Foreign Students: TOPIK (Test of Proficiency in Korean)

- ○ Undergraduate foreign students are required to obtain level 2 or higher score in TOPIK before entering or during studying at KAIST.

※ Applies to students entering KAIST in 2013 and thereafter

I. Requirements for Double Major and Minor

- ○ 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 should refer to the Course Completion Requirements by Year of Admission.

❒ Master's Programs

1) Thesis Master's Degree

Mandatory General	Mandatory Major	Elective	Research	Total
3 + 1AU	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, CC513, CC530, CC532
- ○ CC010 Special Lecture on Leadership(non-credit, this applies to students entering KAIST in 2002 and thereafter; general scholarship students, foreign students are excluded)
- ○ CC020 Ethics and Safety I(1AU)

C. Elective Course: 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

Mandatory General	Mandatory Major	Elective	Research	Total
3 + 1AU	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, CC513, CC530, CC532
- ○ CC010 Special Lecture on Leadership(non-credit, this applies to students entering KAIST in 2002 and thereafter; general scholarship students, foreign students are excluded)
- ○ CC020 Ethics and Safety I(1AU)

C. Elective Course: 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

Mandatory General	Mandatory Major	Elective	Research	Total
3 + 1AU	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, CC513, CC530, CC532
- ○ CC020 Ethics and Safety I(1AU) (If having taken "CC020 Ethics and Safety I" in Master's Program, it is not necessary to take it again.)

C. Elective Course: 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.

❒ The Integrated Master's and Doctoral Degree Program

Mandatory General	Mandatory Major	Elective	Research	Total
3 + 1AU	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, CC513, CC530, CC532
- ○ CC010 Special Lecture on Leadership(non-credit, this applies to students entering KAIST in 2002 and thereafter; general scholarship students, foreign students are excluded)
- ○ CC020 Ethics and Safety I(1AU) (If having taken "CC020 Ethics and Safety I" in Master's Program, it is not necessary to take it again.)

C. Elective Course: 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 MAS966 seminar or MAS986 seminar and 1 credit for MAS967 'How to Teach Mathematics I.(M.S.)' or MAS987 'How to Teach Mathematics I.(Ph.D.)'. Foreign students are exempt from MAS967 or MAS987 requirement.

※ If course A can be replaced by course B, then only one of A and B should be taken.

❒ Interim Accommodations

A. Undergraduate Course

- ○ This course completion requirement is applicable to undergraduate students entered in and after 2012.
  Those who entered before 2012 can choose either this or requirement of admission year.

B. Master's and Doctoral Programs

- ○ This course completion requirement is applicable to students entered in 2015 Spring.
  For those who entered before 2015 should meet one of reformed one or requirement of admission year.