



Global 30: Future Global Leadership (FGL)

2018 Academic Year
(October 2018 Enrollment)

Application Guidelines for International Graduate Programs in Engineering International Mechanical and Aerospace Engineering Course (IMAC-G)

Master's Degree Program
Doctoral Degree Program

TOHOKU
UNIVERSITY

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Graduate School of Engineering
Tohoku University

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1. Admissions Policy

• Master's Course

The Graduate School of Engineering welcomes prospective students who share our educational objectives and goals. They should have the following academic skills and abilities that are necessary to acquire knowledge and skills outlined in the curriculum policy:

1. Basic academic skills needed to learn engineering;
2. Logical thinking ability to solve problems; and
3. Linguistic proficiency to adapt to and leverage a global educational and research environment.

◦ Educational Objectives and Goals

Staying true to the Tohoku University's traditional spirit of "Research First," "Open Doors," and "Practice-Oriented Research and Education," the Graduate School of Engineering is committed to achieving its educational objectives. One of these objectives is to develop researchers who act based on profound knowledge and broad perspective about nature and human beings, perform their research in an ethical, purposeful, and self-directed way to build safe, secure, and affluent society, and possess abundant creativity and high research skills that enable them to play a leading role in the future development and innovation of scientific technologies. Another educational objective of the School is to produce core technical experts who are equipped with not only a high-level of technical expertise but also a long-term vision and global viewpoint, and capable of making contributions to the sustainable development of our society.

Specifically, the educational goal of the Master's Degree Program is to endow students with a broad range of basic academic and language skills that are needed for the performance of research, as well as abilities to develop their research subjects by using unique ideas and present research theses at a public occasion. They are also expected to have basic skills and advanced techniques to perform a research or provide a research and technical guidance in their field of expertise.

◦ Diploma Policy

The Graduate School of Engineering, Tohoku University will award a master's degree in engineering to students who pass a review of master's thesis or research results on a particular subject as well as the final examination. Students are also required to remain enrolled for a specific period of time, study a set of subjects that are offered in accordance with the School's educational objectives and goals, earn a specified number of credits, and demonstrate a high-level of ethical awareness and sense of responsibility, in addition to the following knowledge and skills:

1. A broad range of basic knowledge and academic skills that help students understand and explore the essence of their research subjects;

2. Profound knowledge about their fields of expertise;
3. Interdisciplinary knowledge relating to their fields of expertise;
4. System design skills obtained through the integration of knowledge outside their fields of expertise;
5. Skills to determine a research subject and solve issues;
6. Advanced skills to perform, apply, and develop their research;
7. Linguistic proficiency necessary to perform their research; and
8. Basic skills to provide research or technical guidance.

◦ **Curriculum Policy**

The Graduate School of Engineering, Tohoku University, provides education according to the following policy to ensure that its students can acquire knowledge and skills required under the diploma policy:

1. Help students acquire a broad range of knowledge, advanced technical expertise, and interdisciplinary knowledge relating to their field of expertise that are necessary to understand the essence of their research subjects and perform their research;
2. Enable students to acquire advanced skills to work on their research subjects and develop the subjects by using unique ideas; and
3. Provide students with linguistic skills that are necessary to perform their research and make a presentation of the research results.

● **Doctoral Course**

The Graduate School of Engineering welcomes prospective students who share our educational objectives and goals. They should have the following academic skills and abilities that are necessary to acquire knowledge and skills outlined in the curriculum policy:

1. A broad range of basic engineering knowledge, advanced expertise on their own research fields, and ability to develop them in a flexible manner; and
2. Ability to logically present and discuss the significance and outcome of their research.

◦ **Educational Objectives and Goals**

Staying true to the Tohoku University's traditional spirit of "Research First," "Open Doors," and "Practice-Oriented Research and Education," the Graduate School of Engineering is committed to achieving its educational objectives. One of these objectives is to develop researchers who act based on profound knowledge and broad perspective about nature and human beings, perform their research in an ethical, purposeful, and self-directed way to build safe, secure, and affluent society, and possess

abundant creativity and high research skills that enable them to play a leading role in the future development and innovation of scientific technologies. Another educational objective of the School is to produce core technical experts who are equipped with not only a high-level of technical expertise but also a long-term vision and global viewpoint, and capable of making contributions to the sustainable development of our society.

The educational goal of the doctoral program is to nurture human resources performing not only subjective research in the relevant specialized field but also self-enlightenment to active worldwide as a leader in the future.

They are also expected to have a bird's eye view based on social and international demands, having the ability to develop research project with their own ideas to summarize international level papers and to discuss and present at international conferences etc.

◦ **Diploma Policy**

The Graduate School of Engineering, Tohoku University will award a doctoral degree in engineering to students who pass a review of doctoral thesis and the final examination. Students are also required to remain enrolled for a specific period of time, study a set of subjects that are offered in accordance with the School's educational objectives and goals, earn a specified number of credits, and demonstrate a high-level of ethical awareness and sense of responsibility, in addition to the following knowledge and skills:

1. Skills to embark on a new research subject and perform a research from a panoramic perspective that takes social needs into account;
2. Skills to solve issues with unique ideas;
3. Thinking skills that allow for interdisciplinary application;
4. Linguistic proficiency sufficient to make presentations at international academic conferences, etc., research paper writing skills, and debating and communication skills;
5. Skills to provide research guidance; and
6. Basic skills to manage a research or project.

◦ **Curriculum Policy**

The Graduate School of Engineering, Tohoku University, provides education according to the following policy to ensure that its students can acquire knowledge and skills required under the diploma policy:

1. Enable students to acquire skills to explore research subjects and perform researches from a panoramic perspective that takes social and international needs into account, skills to develop such research subjects by using unique ideas and compile the results into a world-class research paper, and thinking skills that allow for interdisciplinary applications;

2. Provide students with linguistic proficiency as well as debating and communication skills that are sufficient to make presentations and participate in discussions at international academic conferences, etc.; and
3. Equip students with skills that allow them to provide research guidance in their field of expertise.

○ **International Mechanical and Aerospace Engineering Course (IMAC-G)**

The graduate program in the International Mechanical and Aerospace Engineering Course (IMAC-G) was established in October 2009. This course is one of the courses offered under the Global 30 program at Tohoku University, and is organized by the Graduate School of Engineering. The main aim of IMAC-G is to cultivate global-minded engineers and leaders who can take up active roles in the development of cutting-edge technologies based on mechanical engineering.

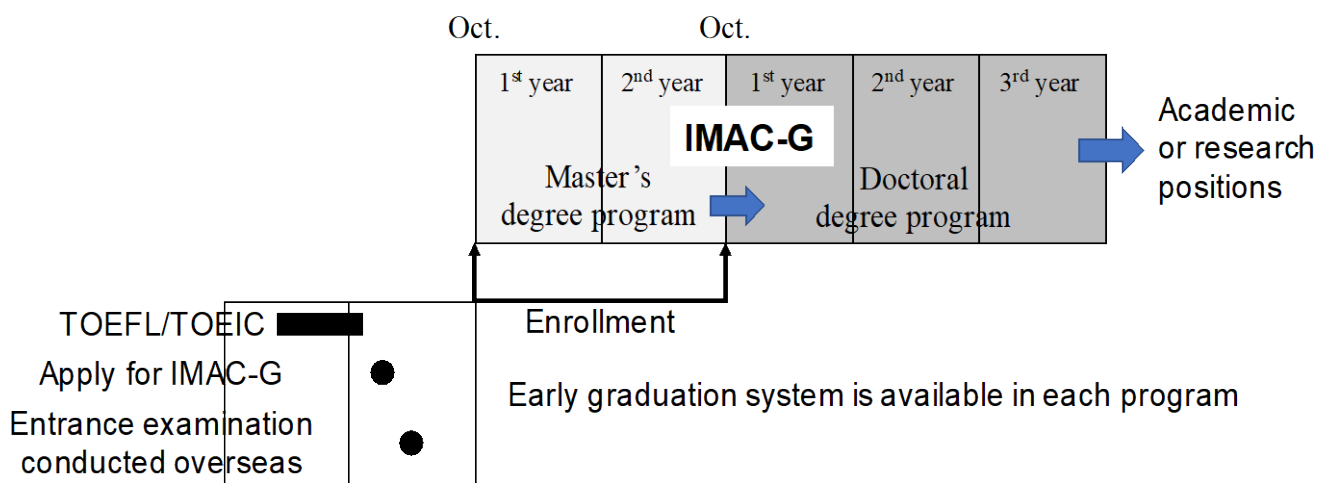
2. Outline of IMAC-G

The IMAC-G is one of the Future Global Leadership (FGL) Programs that were launched in fall, 2009, with the support of the “Global 30” project that was a Ministry of Education, Culture, Sports, Science and Technology (MEXT) program to further promote the internationalization of core Japanese higher education institutions and to turn them into world-class international education and research centers.

The IMAC-G is aiming at enthusiastic global-minded international students who aspire to assume key international leadership roles in the future. All lectures in the IMAC-G program are conducted in English.

The schematic career-path in IMAC-G is shown in the figure below. The academic calendar of IMAC-G starts in October. Students are screened via an entrance examination held in June in the enrollment year. The examination is held not only in Japan but overseas as well. This makes the application procedure more accessible for students outside of Japan.

Students can enroll in the IMAC-G master’s or doctoral program. As the master’s program directly connects to the doctoral program in IMAC-G, students have the opportunity to conduct cutting-edge research throughout both graduate programs.



IMAC-G Program Career-path

The following five departments are participating in IMAC-G. Candidates will choose one department to enroll in from the five departments listed below:

- Mechanical Systems Engineering
- Finemechanics
- Robotics
- Aerospace Engineering
- Quantum Science and Energy Engineering

The total number of annually accepted students is approximately ten.

3. Qualifications for Admission

- Those who have received a university education in Japan as international students or in an overseas university are eligible to apply for the International Graduate Programs in Engineering.
- Applicants for the **Master's Degree Program** must fulfill one of the following requirements.

The applicant must:

- (1) Have graduated from university or expect to graduate by September 2018.
- (2) Have received a bachelor's degree under Article 104 Paragraph 4 of the School Education Law of Japan, or expect to receive such a degree by September 2018.
- (3) Have completed at least 16 years of school education overseas, or expect to complete such education by September 2018.
- (4) Have completed at least 16 years of school education in Japan by taking correspondence courses offered by schools outside Japan, or expect to complete such education by September 2018.
- (5) Have completed a university education by taking courses designated by the Minister of Education, Culture, Sports, Science and Technology in an educational institution in Japan recognized as adopting the educational system of a foreign country and having the curriculum of that country (only when the person completing that education is regarded as having completed 16 years of that country's education), or expect to complete such education by September 2018.
- (6) Have been conferred a degree equivalent to a bachelor's degree upon completion of a curriculum that has a course term of three years or longer at a university or other school (limited to schools whose overall educational and research activities have been evaluated by the relevant country's government or a government-approved individual, or are designated separately as having met this requirement by the Minister of Education) in a foreign country (including cases in which the student completed the curriculum by taking subjects conducted by said school via distance learning while the student resided in Japan, and cases in which the

student has completed a curriculum at an educational facility that is positioned within that country's educational system as per the previous item).

- (7) Have completed a specialized course of a special training school designated by the Minister of Education, Culture, Sports, Science and Technology (only when the schooling is at least four years in length and other criteria stipulated by the Minister are met), on or after the date stipulated by the Minister, or expect to complete such a course by September 2018.
- (8) Have been designated as eligible by the Minister of Education, Culture, Sports, Science and Technology under ministerial ordinance No. 5 of 1953.
- (9) Have completed 15 years of school education in a foreign country, or have completed 15 years of school education in Japan by taking correspondence courses offered by schools outside Japan; or have completed a university education by taking courses designated by the Minister of Education, Culture, Sports, Science and Technology in an educational institution in Japan recognized as adopting the educational system of a foreign country and having the curriculum of that country (only when the person completing that education is regarded as having completed 15 years of that country's education), and is recognized by this Graduate School of Engineering as having obtained the necessary credits with excellent grades.
- (10) Have been admitted to the graduate school of another university in accord with Article 102 Paragraph 2 of the School Education Law and be recognized by this Graduate School as having suitable academic ability for study in this program.

- Applicants applying for the Doctoral Degree Program must meet either one of the following requirements.

The applicant must:

- (1) Have a Master's degree, or be a Master's student who expects to obtain a Master's degree by September 2018. The Master's degree acquired or to be acquired must be equivalent to the Master of Engineering degree awarded by Tohoku University, which includes both research and thesis components.
- (2) Have been involved in research for a minimum of two years in an internationally accredited College, University or Research Institute after acquiring a Bachelor's degree from a Japanese accredited College or University, or have an equal or higher level of academic ability to a Master's degree holder.

Note: Applicants who do not satisfy any of the above qualifications should contact the Graduate Academic Affairs Section (see 13. Contact Information).

4. Requirements for Admission

All applicants must satisfy the following two requirements:

- (1) Applicants must have taken one of the following on or after July 1, 2016: TOEFL iBT®, TOEFL® PBT, TOEIC® or IELTS (Academic Module).

By the time of their application, applicants must have obtained a score equal to or greater than that required by the school of engineering as shown below.

TOEFL®	iBT	79 or higher
	PBT	550 or higher
TOEIC®		730 or higher
IELTS		6.0 or higher

The applicants whose native tongue is considered to be English must make a contact with Graduate Academic Affairs Section (See section 13) in advance, if they want to omit the submission of English proficiency test score. The evidence that the applicants have received formal education in English may be required for the application.

- (2) Applicants must have earned an evaluation point of 2.30 or higher as calculated based on coursework grades in their latest submitted transcripts, as shown below.

Scale	Grade				
	4 Scale Evaluation	A		B	C
100-80		79-70	69-60	59-	
5 Scale Evaluation	S	A	B	C	F
	A	B	C	D	F
	100-90	89-80	79-70	69-60	59-
Evaluation Point	3	3	2	1	0
Total Credits	N4	N3	N2	N1	N0

$$\text{Evaluation Point} = \frac{(N4+N3) \times 3 + N2 \times 2 + N1 \times 1 + N0 \times 0}{N4+N3+N2+N1}$$

Note:

1. Applicants for the Master's Degree Program

The evaluation point is calculated based on the undergraduate transcript.

2. Applicants for the Doctoral Degree Program

The evaluation point is calculated based on graduate school (Master's course) transcripts.

5. Period for Submission of Applications

(1) Deadline: April 20, 2018.

(2) Submission

(a) By mail or in person

All application documents should be received by the deadline at the address below. Applicants who intend to submit their applications in person should go to the office during office hours from 9:00 a.m. to 4:30 p.m. (the office is closed from 11:45 a.m. to 1:00 p.m.).

Mailing Address:

Graduate Academic Affairs Section
Graduate School of Engineering
Tohoku University
6-6-04 Aramaki Aza Aoba, Aoba-ku, Sendai, Miyagi 980-8579, Japan
tel. +81-22-795-5820 (for mail and delivery service only)

6. Application Procedures

- Applicants applying for the **Master's Degree Program** should prepare the following documents in English or Japanese and submit them by the above deadline.

*** Submit original copies of all certification documents. Copies, digital files, or printouts of digital files are not considered to be original documents.**

Required documents	Notes
Application for admission (Application Form 1~3)	Use an official application form for the International Graduate Programs in Engineering.
Letter of acceptance (Application Form 4)	Obtain a letter of acceptance from an expected supervisor.
Selection vote of the oral	Please fill in necessary information.

examination, examination admission ticket, and address labels (Application Form 5~6)	
Undergraduate transcript	Issued by the dean of the university from which the applicant has graduated. (Not required if already enrolled in the Tohoku University School of Engineering.)
Original TOEFL [®] , TOEIC [®] or IELTS score sheets Valid tests: TOEFL [®] PBT, TOEFL iBT [®] , TOEIC [®] Public Test, IELTS-Academic Module	Submitted original TOEFL [®] , TOEIC [®] and IELTS score sheets will not be returned. The TOEFL [®] “Examinee Score Report” can be returned on the day of the entrance examination if requested at the time of application. The applicants whose native tongue is considered to be English must make a contact with Graduate Academic Affairs Section (See section 13) in advance, if they want to omit the submission of English proficiency test score. The evidence that the applicants have received formal education in English may be required for the application.
Certificate of (expected) completion or of degree conferral	Issued by the dean of the university from which the applicant has graduated.
Photo ID	Photo (5cm high×4cm wide) must show upper body, facing front with no hat, and have been taken within three months of application. Attach photo to application Form1.
Examination fee	This must be paid at the time of enrollment. (See 9.Enrollment Procedures etc.)
Written recommendation	Prepared by a supervising faculty member or equivalent from the applicant’s university.
Other reference materials, if any	Academic publications demonstrating academic ability.

- Applicants applying for the **Doctoral Degree Program** should prepare the following documents in

English or Japanese and submit them by the above deadline.

*** Submit original certification documents. Copies, digital files, or printouts of digital files are not considered to be original documents.**

Required documents, etc	Notes
Application for admission (Application Form 1~3)	Use an official application form for the International Graduate Programs in Engineering.
Letter of acceptance (Application Form 4)	Obtain a letter of acceptance from an expected supervisor.
Selection vote of the oral examination, examination admission ticket, and address labels (Application Form 5~6)	Please fill in necessary information.
Graduate school transcript	Issued by the dean of the graduate school from which the applicant has graduated. (Not required if resident in the School of Engineering of this university.)
Original of TOEFL [®] , TOEIC [®] or IELTS score sheets Valid tests: TOEFL [®] PBT, TOEFL iBT [®] , TOEIC [®] Public Test, IELTS-Academic Module	Submitted original TOEFL [®] , TOEIC [®] and IELTS score sheets will not be returned. The TOEFL [®] "Examinee Score Report" can be returned on the entrance examination day if requested at the time of application. The applicants whose native tongue is considered to be English must make a contact with Graduate Academic Affairs Section (See section 13) in advance, if they want to omit the submission of English proficiency test score. The evidence that the applicants have received formal education in English may be required for the application.
Certificate of (expected) completion or of degree conferral	Issued by the dean of the university from which the applicant has graduated.

Undergraduate transcript	Issued by the dean of the university from which the applicant has graduated. (Not required if already enrolled in the Tohoku University School of Engineering.)
Duplicate of master's thesis	If thesis cannot be submitted, summary of research (approximately 2,000 characters, 2 A4-size pages) is acceptable.
Photo ID	Photo (5cm high×4cm wide) must show upper body, facing front with no hat, and have been taken within three months of application. Attach it to application Form1.
Examination fee	This must be paid at the time of enrollment. (See 9.Enrollment Procedures etc.)
Written recommendation	Prepared by an academic or equivalent from applicant's university.
Other reference materials, if any	Academic publications demonstrating academic ability.

Applicants who live outside Japan should pay attention to the following notes.

* Acquiring VISA for Examination (Temporary Visitor VISA) *

Applicants who live outside Japan wishing to take the examination in Sendai and who need to acquire a "Temporary Visitor VISA (for the examination)" should receive an "examination permit" which our university will issue after we receive your application. Those who require us to issue an "examination permit" should include a request letter (any format) and send the letter with the application documents. Applicants are also required to send a photo (5cm high ×4cm wide) in addition to the photo for the "photo ID". Please write your name and the name of the department to which you have chosen to apply on the reverse side of the photo.

Mailing Address

Graduate Academic Affairs Section, Graduate School of Engineering, Tohoku University
6-6-04 Aramaki Aza Aoba, Aoba-ku, Sendai, Miyagi 980-8579, Japan

7. Examination and Selection

Examination Dates: One day around a week from June 18 or June 22, 2018

Examination Venues: (Details will be sent directly to each applicant)

In Japan: Graduate School of Engineering, Tohoku University, Sendai, Japan

Outside of Japan: The school will designate the locations of examination taking account of the place of applicants' residence and the number of applicants from their respective countries.

Selection Method:

Preliminary screening will be made on the basis of the submitted documents and applicants will be notified of the result prior to the technical presentation and the oral examination. Only those who have passed the preliminary screening are eligible to make the presentation and to take the oral examination. Successful applicants will be selected based on their overall scores in the technical presentation and the oral examination, language proficiency, and the submitted documents.

8. Announcement of Results

Results are scheduled to be posted around 5:00 p.m. on Wednesday, July 4, 2018, on the website (<http://g30.eng.tohoku.ac.jp/imac>) .

Notification of results will also be mailed to applicants on the above date. Please note that results cannot be given in response to telephone inquiries.

9. Enrollment Procedure's etc.

(1) Details of the enrollment procedures will be announced when the acceptance letter is mailed in early September, 2018.

(2) Fees to be paid at the time of enrollment

- (a) Examination fee: 30,000 yen
- (b) Admission fee: 282,000 yen (provisional)
- (c) Tuition (first semester): 267,900 yen (annual 535,800 yen) (provisional)

Note 1: (b) and (c) are provisional. Should admission or tuition fees be revised, the new fees will become applicable from the time of change.

Note 2: Information on the waiving of admission or tuition fees, or permission to defer payment to a later date, etc., will be provided in the enrollment procedure documents sent after notification of results.

10. Financial Support

Employment as a research assistant (RA) and teaching assistant (TA)

There are employment opportunities for the students in the doctoral program to be employed as RAs, and those in the master's program to be employed as TAs. The details will be announced after enrollment.

11. Handling of Personal Information

- (1) The Tohoku University Graduate School of Engineering handles personal information in strict compliance with regulations stipulated in the “Act on the Protection of Personal Information Held by Incorporated Administrative Agencies” and the “National University Corporation Tohoku University - Policy on the Protection of Personal Information”, and takes every precaution to protect personal information.
- (2) Examination results and other personal information obtained in the application process will be used for the selection of students for admission, enrollment procedures, follow-up surveys, and student support after enrollment (e.g., scholarships, tuition waiver, health care), student guidance and other academic purposes, as well as in collection of tuition fees, etc.
- (3) After enrollment, the Graduate School may outsource administrative work in educational affairs to third-party companies and provide them, depending on needs, with some or all of the student's personal information in compliance with the “National University Corporation Tohoku University - Policy on the Protection of Personal Information”.

12. Important Notes

- (1) Applications by post are to be sent via means whereby you can retain a record of sending (From Japan: Registered Express Mail, from overseas: FedEx, EMS, UPS, DHL etc.).
- (2) Notification of the receipt of the application will not be provided automatically. Those desiring notification of receipt of their application should make the appropriate request to the office via e-mail.
- (3) Submitted application documents and examination fees cannot be returned.
- (4) If you do not receive your examination admission ticket by ten days prior to the examination date, please contact the Graduate Academic Affairs Section, Graduate School of Engineering (See 13.Contact Information).
- (5) All other inquiries regarding application for admission should be made to the Graduate Academic Affairs Section, Graduate School of Engineering.
- (6) Applicants desiring consultation regarding the need for special assistance or other considerations in taking the examination or conducting their studies should create a written application indicating the items listed below (no special format). Be assured that such a request will in no way prejudice the outcome of the selection process, as all applicants will be treated fairly. * Deadline for consultation: As a rule, no later than Friday, March 23, 2018.

* Information to be indicated in creating the application:

- A) Name, address and phone number of applicant

- B) University, etc. from which the applicant has graduated
- C) Any special consideration desired regarding taking the examination
- D) Any special consideration desired in the study environment
- E) Nature of any special consideration provided up to now
- F) Other relevant information about daily life circumstances
- G) Reference materials (if currently receiving medical treatment, enclose a medical certificate issued by your physician)

13. Contact Information

Graduate Academic Affairs Section, Graduate School of Engineering, Tohoku University

6-6-04 Aramaki Aza Aoba, Aoba-ku, Sendai, Miyagi 980-8579, Japan

e-mail: eng-in@grp.tohoku.ac.jp

Homepage: <http://g30.eng.tohoku.ac.jp/>