

2018.2 | Ver.1.7.1

Leadership Development Program for Space Exploration and
Research Nagoya University Program for Leading Graduate Schools

Guidebook



What is the Leadership Development Program for Space Exploration and Research?

(1) Goal

This is a five-year education program (for doctoral course students) that will develop international leaders with a broad foundation and the ability to spearhead the expansion of space utilization and related industries.

(2) Notable attributes of this program

- ChubuSat Instrument Development Project, in which students work on microsatellite development, learning through experience (Chapter 7)
- Short courses and lecture courses related to the field of space science (Chapter 7)
- Encouragement of both international and corporate internships (Chapter 7)
- Emphasis on solid, professional English communication skills (Chapters 5, 7)
- Students are generally accepted in the spring of the first year (M1) (trial – admission period until the end of the first year). There is also a system to allow students to transfer into the Program for the second year (M2) and third year (D1) (a small number of international students and students with working experiences) (Chapter 3)
- Financial aids through scholarships. (Two types of 85,000 yen or 150,000 yen monthly depending on progress or achievement goal in the program from third (D1) year). Research fellows of the Japan Society for the Promotion of Science may also be employed as teaching assistants. Students accepted in the Special Category for International Students receive 200,000 yen monthly from the first year (Chapter 6)
- Program completion is recognized on diploma (Chapter 5)

(3) Frontier Space Program website:

<http://www.frontier.phys.nagoya-u.ac.jp/index.html>

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Note 1: This guidebook complies with the Nagoya University regulations and the rules and regulations of the Nagoya University Leading Graduate School Promotion Office. University rules and regulations shall take precedence, including matters not explicitly stated.

Note 2: This Program is in principle a 5-year integrated education program, and academic years are designated years 1–5. They correspond with the designations in Nagoya University Graduate School doctoral courses as shown below. The academic year designations of Nagoya University Graduate School are used in some places in this guidebook.

Academic year (this Program)	Nagoya University Graduate School
1	Master's course first year, (M1)
2	Master's course second year (M2)
3	Doctoral course first year (D1)
4	Doctoral course second year (D2)
5	Doctoral course third year (D3)

Fall transfer students are placed in the same framework as students who join the Program the following spring.

1. Message

1.1. Greetings from the Program Director and the Program Coordinator

The people on the surface of the earth are protected from particles, ultraviolet radiation, and X-rays from the space by a thin layer of atmosphere just 100km thick. Humanity acquired the tools to escape this atmosphere and enter space only 50 years ago. Ever since then, humanity has been surprised by the view of space only visible from outside the atmosphere. Earth observation, communications, and weightless experiments which can only be performed in space have become realities. Humanity's other dream, to expand beyond the Earth, has taken people not only to the space station, several hundred Km above the ground, but to the moon and Mars as well. Humanity has been captivated by the reality of space, scarcely imaginable from the Earth's surface. You, the reader, doubtlessly feel the same way.



However, we face steep hurdles, such as how to escape the clutches of the Earth gravity and how to withstand the harsh environment of space. What we are attempting to achieve is to impart to graduate students like yourself the difficulty of the challenges presented by space, and the joy that taking them on brings. The ChubuSat Instrument Development Project, a core coursework of our program, begins with considering our mission in space. The experiments and observations which can only be performed in space produce new creative potential that cannot be achieved through experiment on ground alone. The next step is creating a mission design which satisfies the requirements of the observation and experiments, while withstanding the tremendous vibration, shock, and sound pressure produced by launch. In this project, you will also create detailed designs and prototypes of equipment with an eye to the vacuum, zero gravity, and temperature variation in space orbit, and then perform environmental testing which simulates severe vibration and shock. We would then like to launch the instrument which survives in such harsh tests.

This program aims to provide students with a broad fundamental knowledge about space development, reinforce this knowledge through experimentation, and produce future personnel who can be active in space related industries and research organizations. The most important aspect of space development is achieving high levels of reliability, even in extreme environments, and this program will cultivate this spirit not only through classroom instruction but hands-on work as well. I have been involved in many onboard instruments myself, and hope to share that excitement with you.

Program director
Masayoshi Maeshima
Vice-president, Nagoya University
Professor, Graduate School of Bioagricultural Science
Division of Biodynamics

Space is considered to be the final frontier for humankind, however, it is already a part of the foundation of our modern society, with broadcasting, communications and GPS satellites. Already heavily dependent on space infrastructure, we are now indeed moving into an age in which the use of space will only increase further. It is therefore vital for us to advance our understanding of space including the solar-terrestrial environment surrounding our planet, on which both space infrastructure and the daily life of humankind are dependent. We also need to develop and make the best use of technologies designed to protect our social infrastructure and keep us safe and secure.



Taking advantage of proximity to the centre of the Japanese aerospace industry, the Leadership Development Program for Space Exploration and Research at Nagoya University aims to develop world-class leaders who can integrate advanced technologies and knowledge with broad visions and utilize them in industries. Creation of a network of such leaders in next-generation industries will advance and expand the utilization of space technologies and infrastructures that improve people's daily lives.

This program values self-development of students through their own experiences. A flagship of this program is the ChubuSat instrument development project where students engage in space development and utilization through the ChubuSat satellite, Nagoya University's industry-academia cooperative satellite project. In this activity, students do not merely follow predefined procedures, but work in student-led teams of 5 to 8 people in varying fields, competing among themselves and learning from their own failures as they plan and carry out projects. This promotes greater exchange between students in differing fields, and cultivates project planning and management skills, and problem-solving skills that are required of leaders in not only space-related industries but also a wide range of industries.

Additionally, students' global communication skills can be trained in global academic environments through the 3-6 months internship experiences at research institutions in foreign countries. Internship experiences in practical environments at companies will help students broadening their perspectives, acquiring execution skills, and finding their career paths.

We look forward to participation of enthusiastic students who want to develop their leadership skills and to take a lead of the world in space utilization.

Program coordinator
Professor Hiroyasu Tajima
Institute for Space-Earth Environmental Research
Project Manager, ChubuSat Project

1.2. To Program Students

Students participating in this program should note the following.

(1) Course plan

Participation in this Program is additional to the educational curriculum and research for a regular doctoral course (Master's program and Doctor's program). It also includes activities that extend over long periods, such as the ChubuSat Instrument Development Project and internships. Discuss the Program fully with your academic year advisor and doctoral advisor from the time you start participating in the Program, and prepare a solid course plan.

(2) Communication with your doctoral advisor and program faculty

We recommend that you report your status in the Program to your doctoral advisor from time to time. You should also make efforts to communicate with your academic year advisor in this Program, your mentor, and other program faculty members.

(3) English communication skills

Proficient English communication skills are essential to become a global leader. This program provides opportunities for you to improve your ability to communicate in English, including English proficiency tests and training, global leadership training, and international internships. However, just attending classes alone will not guarantee your English proficiency. Language skills depend above all on individual effort, and cannot be acquired overnight. If you feel that your English skills are lacking, we strongly recommend that you make a conscious effort to improve them from the time you start the program.

(4) Opinions and requests

Whenever you have a question about the Program or some problem occurs, inform your doctoral advisor and consult your academic year advisor, advisors in relevant offices, or faculty members. You can also submit opinions or requests (either with your name or anonymously) to the "Comment box" in the Members Only section of the Frontier Space website.

<http://www.frontier.phys.nagoya-u.ac.jp/jp/internal/>

1.3. To Doctoral Advisors and Related Faculty Members

Program students participate in the curriculum of this Leading Graduate School program in addition to the educational curriculum and dissertation research in their department. We ask for your understanding with regard to the purpose of this Program, and that you try to maintain close communication with your students.

This Program is one of the largest projects of the Japan Society for the Promotion of

Science to improve university research and education. We ask for your cooperation so that this Program can be advanced by all involved.

1.4. To Students Who Are Interested in the Program

This is the only space related Leading Graduate School program in Japan and concerns on science, engineering, and environmental science. In addition to deepening research in each field of specialty, the Program nurtures people through programs such as the ChubuSat Instrument Development Project and corporate and international internships to develop skills that enable them, after completion of their doctoral course, to act as international leaders in a range of fields including industry, international organizations, and governmental agencies. We encourage everyone to consider participating in the Leadership Development Program for Space Exploration and Research to take advantage of the opportunities it provides. Before starting the admissions process, it is recommended that you look over this guidebook to gain an understanding of what is needed.

(1) Admissions period

The selection period for most program students will be the spring of the first year of a master's course (M1) and the time of completion of M1. Program students who are admitted in the spring of M1 will be in a trial-admission period until the end of M1. During this trial admission period, program students may withdraw from the program based on decisions made by the student him- or herself or the admission office regarding the student's suitability.

Transferring in from a doctoral course is available mainly to students with working experience and international students, and only a small number will be admitted.

(2) Preadmission courses

Classes taken prior to becoming a Program student can be added to the student's program record when he or she enters the Program. Students who are considering applying to join the Program in M2 should note that there are classes for which taking a class as pre-registered (see 3.2 (6)) is a prerequisite for application to the Program. Be sure to also check the items in "3.2 (4) Selection Process."

Students who have had working experience or studying or living overseas prior to being admitted to the Program may in some cases, upon declaration, transfer those experiences for credit as corporate or international internships. (See "5.4 Certification of Record Prior to Program Participation.")

(3) Contact

Please contact the following to inquire about this Program:

LGS Frontier Administration Office (Science)
(Room C315, Graduate School of Science Building C)
Graduate School of Science, Nagoya University
Furo-cho, Chikusa-ku, Nagoya, 464-8602, Japan
Tel: +81-52-789-2930 Fax: +81-52-789-2931

Procedure for scholarship, RA, travel expense and others need to be administered at the office of student's affiliation. Other two office counters are also located as below.

LGS Frontier Administration Office (Institute for Space-Earth Environmental Research)
(Room 415, Research Institutes Building II)
,
Furo-cho, Chikusa-ku, Nagoya, 464-8601, Japan
Tel: +81-52-747-6533

LGS Frontier Administration Office (Engineering)
(Room 341, School of Engineering Building 2)
School of Engineering, Nagoya University
Furo-cho, Chikusa-ku, Nagoya, 464-8603, Japan
Tel: +81-52-788-6041 Fax: +81-52-789-3132

2. Program Overview

2.1. Program for Leading Graduate Schools, Japan Society for the Promotion of Science
The Program for Leading Graduate Schools (LGS) works to advance the establishment of university graduate schools of the highest caliber by supporting the drastic reform of their education programs in such a way that they will institute degree programs recognized as top quality around the world. To foster excellent students who are both highly creative and internationally attuned and who will play leading roles in the academic, industrial and governmental sectors across the globe, the program brings top ranking faculty and students together from both in and outside Japan and enlists participation from other sectors in its planning and execution, while creating continuity between master's and doctoral courses and implementing curricula that overarches fields of specialization (from a booklet issued by the Japan Society for the Promotion of Science, Ministry of Education, Culture, Sports, Science and Technology).

The Leadership Development Program for Space Exploration and Research was adopted in the 2012 academic year as an LGS multidisciplinary program (cross-disciplinary themes). It is a seven-year program that will conclude in 2018 (assuming that continuation is approved in an interim evaluation conducted in 2015).

2.2. Program Purpose and the Type of Leaders We Aim to Develop

The aim of the Program is to develop international leaders who can blaze new paths in the space frontier. These leaders will have broad knowledge and vision that enables them to comprehensively assess related fields based on deep learning and acquired skills in their field of specialty, combined with the ability to lead internationally competitive projects.

Developing such leaders requires the cultivation of solid expertise and a broad perspective, together with project planning, execution, management, problem-solving and global communication skills. Leaders with broad-based, diverse experiences are also demanded in today's industry. This Program develops people who bring together these abilities, cultivating international leaders who can play crucial roles in the expansion of space utilization and the development of related technologies to advance the space industry.



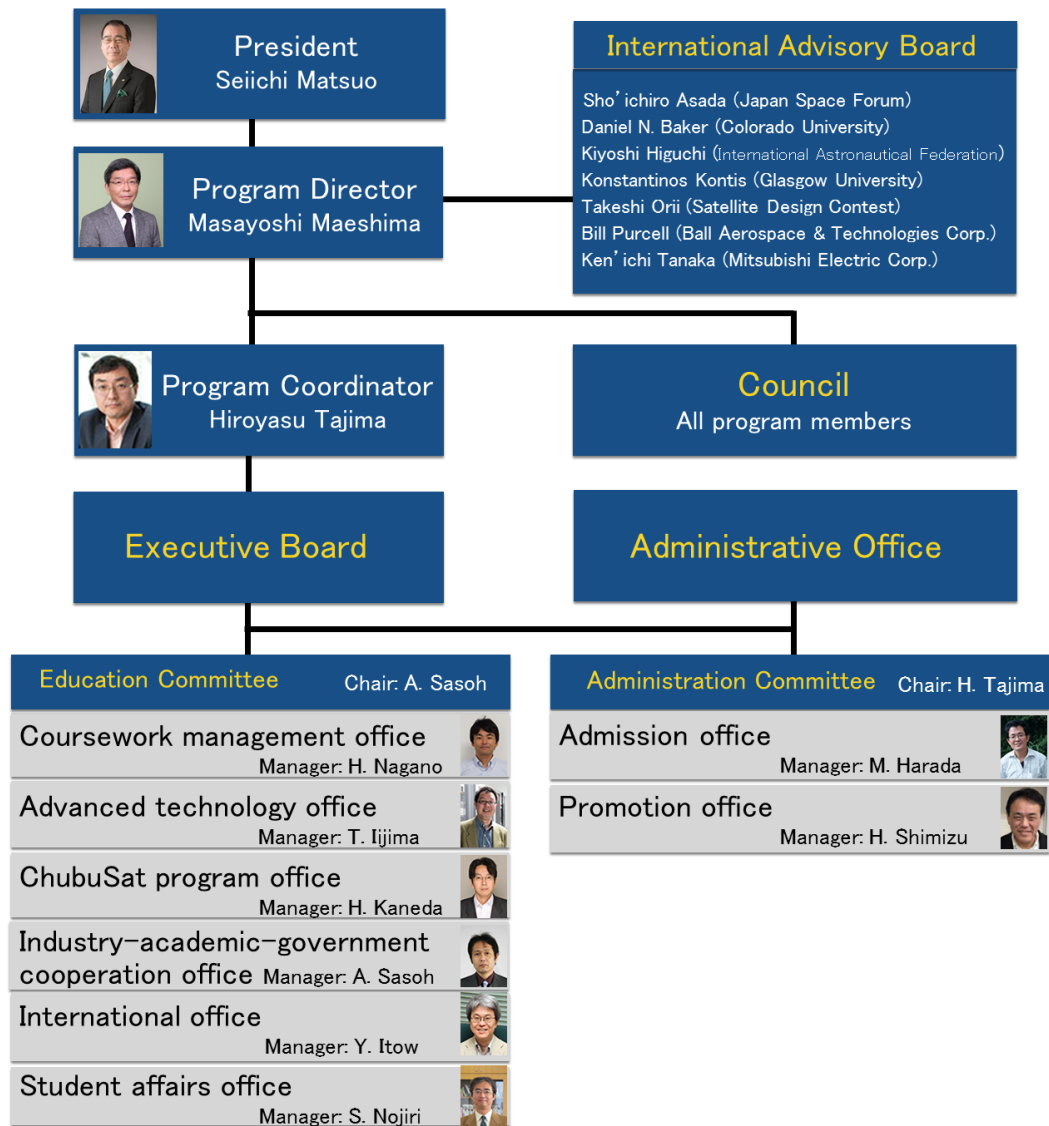
2.3. Hallmarks of the Program

The hallmarks of the Program are briefly summarized with the following three points.

- (1) It is the only LGS for space in Japan. However, the Program is not limited to the development of space instruments and space science. Rather, with space utilization as a key concept, it will contribute to advances with cooperation between wide-ranging fields.
- (2) It has an educational environment and system that combine the sciences, engineering, and environmental science
- (3) It is a practical education program (ChubuSat Instrument Development Project, Global Leadership Training Seminars, Long-Term Corporate Internships, etc.) based on coordination between industry, academia and government (including people with experience in industry)

2.4. Organization

2.4.1. Management structure



2.4.2. Members

Program Director Masayoshi MAESHIMA
 Program Coordinator Hiroyasu TAJIMA
 Deputy Coordinator Toru IIJIMA, Akihiro SASOH

Program Members

© 【Intra University Member】

Division of Biodynamics, Graduate School of Bioagricultural Sciences
 Masayoshi MAESHIMA

Kobayashi-Maskawa Institute for the Origin of Particles and the Universe
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Division of Particle and Astrophysical Science, Graduate School of Science
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Jiro KASAHARA (Department of Aerospace Engineering),
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Hosei NAGANO (Department of Mechanical Systems Engineering),
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Akihiro SASOH (Department of Aerospace Engineering),
Eiji SHAMOTO (Department of Aerospace Engineering),
Yasuhiro TANABE (Department of Material Design Innovation Engineering),
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Yasushi YAMAGUCHI (Department of Earth and Environmental Sciences)

Graduate School of Mathematics

Hiroaki KANNO, Yoshifumi KIMURA

Institute of Materials and Systems for Sustainability

Masaaki KATAYAMA

Mitsuhiro NAKAMURA

National Composites Center

Takashi ISHIKAWA

◎ **【Outer university member】**

Setsuko AOKI (Graduate School of Law, Keio University),
Junji HABA (Detector Technology Project, High Energy Accelerator Research Organization (KEK)),
Yoshifumi INATANI, Takanori IWATA (Japan Aerospace Exploration Agency (JAXA)),
Satoshi IWASE (Department of Physiology, School of Medicine, Aichi Medical University),
Tarik KAYA (Mechanical and Aerospace Engineering, Carleton University),
Yoshikatsu KURODA, Yasutaka NARUSAWA (Aerospace Systems, Mitsubishi Heavy Industries, Ltd.),
Hironori MATSUMOTO (Graduate School of Science, Osaka University)
Saburo MATSUNAGA (Department of Mechanical Engineering, School of Engineering, Tokyo Institute of Technology),
Akiko MATSUO (Department of Mechanical Engineering, Keio University),
Takahiko MATSUBARA (Institute of Particle and Nuclear Studies, High Energy Accelerator Research Organization)
Kanao SEKI (Department of Earth and Planetary Science, Tokyo University)
Katsuhiko YAMADA (Department of Mechanical Engineering, Graduate School of Engineering, Osaka University),
Naoko YAMAZAKI (Committee of National Space Policy, Cabinet Office, Government of Japan),
Shoji YOSHIKAWA (Advanced Technology R&D Center, Mitsubishi Electric Corporation)

Specially Appointed Staff

Student Affairs Office: Shinji SAITO

Promotion Office: Katsuya HIROTA, Takahiro MORISHIMA

Industry-Academic-Government Cooperative Office: Hiroshi AOKI, Tetsuo YAMAGUCHI

International Office: Hiroaki MENJO

Advanced Technology Office: Kazuhito SUZUKI

ChubuSat Program Office: Daisuke ISHIHARA, Keisuke TAMURA, Hidetaka TANAKA

Coursework Management Office: Janet Nora HENDERSON, Ichiro NISHIMOTO,
Masaki NISHINO, Hidetaka TANAKA

Program Coordinator Secretary: Kazutaka YAMAOKA

Admission Office: Minoru KOBAYASHI

Student Support Staff (Mentor)

Henny BOTTINI, Esin CAKIR, Yoshinori SASAI, Bianca SZASZ,

Administrative Staff

Akiko AKUTSU, Satomi KAWASE, Yoshiko KUBO, Yoko MIZUNO, Miyuki SEKI ,
Chiyoko TANIMIZU

2.4.3. Executive Board

The Executive Board deliberates and makes decisions of important issues (framework, regulation, budget, personnel affairs of the program), proposals from Administration committee and Education Committee, and requests from Leading Graduate Schools Promotion Office.

Hiroyasu TAJIMA, Toru IJIMA, Akihiro SASOH,

Masayasu HARADA, Yoshitaka ITOW, Hidehiro KANEDA, Masaaki KATAYAMA,
Hiroaki KATSURAGI, Hosei NAGANO, Shin'ichi NOJIRI, Eiji SHAMOTO, Hirohiko
SHIMIZU,

2.4.4. Administration Committee

The Administration Committee transversely manages the execution of administration duties in the program not directly related to education such as finance, public outreach, admission, recruitment, etc.

Chairperson: Hiroyasu TAJIMA

Committee Members: Masayasu HARADA, Katsuya HIROTA, Minoru KOBAYASHI,
Takahiro MORISHIMA, Eiji SHAMOTO, Hirohiko SHIMIZU,
Kazutaka YAMAOKA

(1) Promotion Office

Manager: Hirohiko SHIMIZU

Deputy Manager: Junji HISANO, Satoshi MASUDA

Members: Katsuya HIROTA, Takahiro MORISHIMA, Akira MIZUNO,
Akira URITANI

(2) Admission Office:

Manager: Masayasu HARADA,

Deputy Manager: Noriyasu OHNO, Kanya KUSANO

Members: Junji HISANO, Shuichiro INUTSUKA, Joji ISHIZAKA, Yoshifumi KIMURA,
Makoto KOBASHI, Minoru KOBAYASHI, Hosei NAGANO, Takashi SHIBATA, Kazuo
SHIOKAWA

2.4.5. Education Committee

The Education Committee hold weekly or biweekly meeting and coordinate educational matters across offices. Executive Board members and Program members participate in if necessary.

Committee President: Akihiro SASOH

Vice-committee President: Shin'ichi NOJIRI

Chairperson: Hiroshi AOKI

Vice-chairperson: Katsuya HIROTA

Members: Henny BOTTINI, Esin CAKIR, Daisuke ISHIHARA, Ichiro NISHIMOTO,
Minoru KOBAYASHI, Hiroaki MENJO, Masaki NISHINO, Shinji SAITO,
Yoshinori SASAI, Kazuhito SUZUKI, Bianca SZASZ, Keisuke TAMURA,
Hidetaka TANAKA, Kazutaka YAMAOKA, Tetsuo YAMAGUCHI

(1) Student Affairs Office:

Manager: Shin'ichi NOJIRI

Deputy Manager: Jiro KASAHARA, Kazuo SHIOKAWA

Members: Tsuyoshi INOUE, Hiroaki KANNO, Takahiko MATSUBARA, Hironori
MATSUMOTO, Takahiro MORISHIMA, Tomohide NIIMI, Shinji SAITO,
Makoto TOMOTO, Seiichiro WATANABE

(2) Coursework Management Office

Manager: Hosei NAGANO

Deputy Manager: Shin'ichi NOJIRI

Basic Coursework: Shinji SAITO, Kanako SEKI, Shinichi NOJIRI

Overview of Space Exploration and Research: Toru IJIMA, Yoshifumi INATANI,

Tsuyoshi INOUE, Takashi ISHIKAWA, Takanori IWATA, Hidehiro KANEDA, Masahiro KITO, Hideyo KUNIEDA, Akiko MATSUO, Mitsuhiro NAKAMURA, Ichiro NISHIMOTO, Akihiro SASOH, Kazuo SHIOKAWA, Yasushi YAMAGUCHI, Koji YAMANAKA, Shoji YOSHIKAWA

Lecture & Short Courses on Space Science and Technology: Toru IJIMA, Tarik KAYA, Saburo MATSUNAGA, Hosei NAGANO, Masaki NISHINO, Kazuhito SUZUKI

Global Leadership Training I (Global Communication): Reiko FURUYA, Susumu HARA, Janet Nora HENDERSON, Hiroaki MENJO, Akihiro SASOH

Global Leadership Training II (Space Law • Space Business • Project Simulation): Setsuko AOKI, Jiro KASAHARA, Akihiro SASOH, Hidetaka TANAKA, Naoko YAMAZAKI,

Leadership Development Seminar: Katsuya HIROTA, Toru IJIMA, Satoshi IWASE, Ichiro NISHIMOTO, Norimi MIZUTANI, Hosei NAGANO, Shinji SAITO, Kanako SEKI, Kazuhito SUZUKI, Hiroyasu TAJIMA, Yasushi YAMAGUCHI

(3) Industry-Academic-Government Cooperative Office

Manager: Akihiro SASOH

Deputy Manager: Yoshikatsu KURODA, Hidehiro KANEDA,

Members: Hiroshi AOKI, Hiroaki KATSURAGI, Yutaka MATSUMI, Mitsuhiro NAKAMURA, Yasushi YAMAGUCHI, Shoji YOSHIKAWA,

(4) International Office:

Manager: Yoshitaka ITOW

Deputy Manager: Yasuhiro TANABE, Masaharu TANABASHI,

Members: Yasuo FUKUI, Reiko FURUYA, Emanuel LELEITO, Satoshi MASUDA, Hiroaki MENJO, Yoshizumi MIYOSHI, Tsutomu TAKEUCHI, Yasushi YAMAGUCHI,

(5) Advanced Technology Office:

Manager: Toru IJIMA

Deputy Manager: Noritsugu UMEHARA, Akira MIZUNO

Members: Junji HABA, Yasuhiro HIRAHARA, Kenji INAMI, Hiroaki KATSURAGI, Eiji SHAMOTO, Kazuhito SUZUKI, Munetoshi TOKUMARU, Akira URITANI

(6) ChubuSat Program Office

Manager: Hidehiro KANEDA,

Deputy Manager: Hosei NAGANO,

Members: Henny BOTTINI, Esin CAKIR, Masafumi HIRAHARA, Takaya INAMORI,
Daisuke ISHIHARA, Masaaki KATAYAMA, Hironori MATSUMOTO, Hirohiko
MASUNAGA, Kikuko MIYATA, Yasutaka NARUSAWA, Masaki NISHINO,
Yoshinori SASAI, Bianca SZASZ, Hiroyasu TAJIMA, Keisuke TAMURA,
Hidetaka TANAKA, Katsuhiko YAMADA

3. Program Student Admissions Examination

3.1. Important Notes on Applying to the Program

Being a graduate student at Nagoya University is a requirement for this Program, but the university's entrance examination is conducted independently of selection for the Program. Applying to this Program does not automatically constitute an application for the graduate school entrance examination; students must apply to take the graduate school entrance examination separately and pass that examination.

3.2. Student Application Process

(1) Eligibility

The Program is open to M1 graduate students of Nagoya University who have committed to pursuing a doctoral degree (third-year (D1) Transfer Category excepted).

Students in the Program must be able to make a definite commitment to remain in the Program until completing their degree or until expiration of the term (for instance, students enrolled in the Program may not leave, even if accepted for any DC1 or DC2 JSPS Research Fellowship).

(2) Number of Students to be Admitted and Application period

· Twenty students from each class year are admitted. Note that fall entrants are grouped in the same category as those entering the Program the following April. International students are not limited to applications for M1-P, D1-P in Table 3-1, but are accepted in all categories. For more details on the content of the table, please refer to the descriptions in (3)–(6) below.

Category	Title	Application Period	Interview Period	Admission Period	7Number of Students to be Accepted	Departmental Priority Category ¹⁾	Remarks
M1-P D1-P	M1/D1 International Student Pre-Admission ²⁾	Before graduate school entrance examination for academic year student plans to attend	In principle, from time of application until Prior to graduate school entrance examination	April (Spring entrants) October (Fall entrants)	Five students (within M1-S, M1-W, D1-F, D1-S); of these, top students (up to 3) accepted under the special international student category		Acceptance or denial based on student passing graduate school entrance examination Applications no longer accepted once quota is filled Trial-basis during M1 period
M1-S	M1 Spring application	April	May	June	10 students	Science and Mathematics: 5 students Engineering: 5 students Environmental Studies: 1 student	Trial admission during M1 term
M1-W	M1 Winter application	January of M1 term	February of M1 term	April of M2 term	8 students		Must take prescribed classes and complete coursework as pre-registered student by March of the year of application
D1-F	D1 Fall transfer entry	July in year of entry	August-September in year of entry	October	2 students		Students with working experience and international students are given priority. Internal transfer admission must take prescribed classes and complete coursework as a pre-registered student by the end of March of the year of application. Internal transfer admission students accepted as a trial-admission students must take prescribed classes and complete course work by the end of the D1 term.
D1-S	D1 Spring transfer entry	January in year of entry	February in year of entry	April			

1) To ensure a diversity of students, each department includes a reserved admission category through M1-S and M1-W.

2) Available to foreign nationals who graduated high school abroad.

(3) Application Process

Refer to the website for instructions on each application. Be sure to obtain the consent of your supervisor about participation in the leadership program before applying.

Documents to be submitted

- Application form for Leadership Development Program for Space Exploration and Research
- Appointed Supervisor's Reference
- Copy of transcript (for last school attended)
- Other required documents (indicated in the application announcements)

(4) Selection Process

Applicants will be selected on the basis of their aspirations detailed in the application form, the reference of the applicant's supervisor, and the outcome of their interview.

Applicants are evaluated on the following points: motivation to participate in this Program; prospects for broadly exercising international leadership in space-related industries after acquiring the doctoral degree; applicants' own vision of leadership; basic academic skills; logic, simplicity, and persuasiveness of explanations; communication skills; and English language proficiency.

[M1-P/D1-P] Notes on M1/D1 International Student Pre-Admission Category

- In order to acquire excellent students living abroad, we will only accept foreign students who graduated high school overseas in this category.
- In principle, applicants are to take the Program student recruitment examination prior to the school's entrance examination.
- Of the international students accepted for pre-admission entry, those recognized as being exceptional (maximum of three students in each academic year) will receive generous financial assistance (refer to "6.1 Financial Aid").
- Students not admitted under the special international student category may still receive the same financial aid as that provided to regular students.
- For more detailed information on financial assistance, refer to "6.1 Financial Aid."

[M1-W] Notes on M1 Winter Applications

The following courses (refer to 7.1 "Coursework") must be successfully completed by March of the year of application as a prerequisite for admission.

- /Basics for Space Science and Engineering (online course)

- Video Lectures on Space Science and Engineering: total of four video lectures for the desired course affiliation (refer to 3.3 “Course Affiliation”) and at least two elective video lectures in other courses
- A total of at least two credits from Satellite Systems lecture courses and Satellite Development and Applications short courses

However, the status of completion in Overview of Space Exploration and Research as well as Global Leadership Training and other courses required for standard scholarships (refer to 6.1 “Financial Aid”) are also considered in determining admission.

When the individual becomes a Program student, credit and grades for coursework taken prior to admission are transferred as is (refer to “5.4 Certification of Record Prior to Program Participation”).

Those who wish to take the basic coursework in this Program, including the coursework described above, must register as pre-registered students before attending classes.

[D1-F, D1-S] Notes on D1 Transfers

In order to accept a diverse group of students, the Program includes a reserved admission category giving priority to students with working experience and international students. These students are exempt from certain courses based on their experience and academic history prior to transferring (authorized on a case-by-case basis). For internal transfer-admissions, successful completion of the following coursework before the D1 year starts (for the Spring-transfers (D1-S): before March of the year of Spring-transfer application, for the Fall-transfers (D1-F): before September of the year of Fall-transfer Application) is a prerequisite for admission.

- Basics for Space Science and Engineering (online course)
- Video Lectures on Space Science and Engineering
Total of four video lectures for the desired course affiliation and at least two elective video lectures in other courses
- A total of at least two credits from Satellite Systems lecture courses and Satellite Development and Applications short courses

However, completion of coursework in Overview of Space Exploration and Research and in Global Leadership Training and other courses for meriting scholarship (refer to “6.1 Financial Aid”) is also considered in determining admission.

Furthermore, when the individual becomes a Program student, credit and grades for coursework taken prior to application are transferred as is (refer to “5.4 Certification of Record Prior to Program Participation”).

Those who wish to take the basic coursework in this Program, including the coursework described above, must register as trial students before attendance in classes.

(5) Trial-admission Period

Program students accepted as M1-P and M1-S admissions undergo a trial-admission period lasting to the end of the M1 term.

At the end of the M1 term, student achievement level in the courses taken is reviewed, and regarding student's qualification on advancement to a doctoral program and propriety of prospect to cope with this program are asked to one's doctoral advisor.

Once this is done, the student is granted full-admission status upon advancement to the second year (M2). During the trial-admission period, the student may be allowed to leave the Program while the term is in progress should the student and admission office deem it proper.

(6) Pre-registered Students

Students who have not yet been admitted to the Program but express and interest in it and plan to or are considering taking the Program entrance examination may take required courses prior t

o admission to the Program after filing their application. However, no financial assistance is furnished by the Program for any separate expenses incurred in participating in and attending classes. Pre-registered students who wish to attend classes in the Program's basic coursework must register by providing the required information on the pre-registered registration page shown below.

<https://www.frontier.phys.nagoya-u.ac.jp/websystem/registration/form/?id=106>

By registering in the Program, applicants will be registered to a mailing list so that students can receive various notices related to the Program. However, even those not planning on or considering becoming fully admitted Program students who still wish to participate partially in the Program are permitted to take classes if they register and are admitted as pre-registered students. In this case, they can choose not to register to a mailing list.

The period until proceeding right before M2 will be the trial-admission period when accepted at M1, students will be granted full-admission after their achievement through courses, has been confirmed. Students may leave the Program during the trial admission period (this does not apply to Winter M1 Application Entry and Transfer for D1 Application Entry).

- Coursework that may be taken (no pre-registered student registration required)

- Overview of Space Exploration and Research (application for credit requires separate class registration with the research faculty)
- Coursework that may be taken (pre-registered student registration required)
- Basics for Space Science and Engineering, Video Lectures on Space Science and Engineering, Satellite Systems lecture courses, Monozukuri (Manufacturing) lecture courses, Satellite Development Applications short courses, Satellite Applications training courses (Micro-Satellite Development & Applications training course, Thermal Design & Analysis training course, Structural Design & Analysis training course), Monozukuri (Manufacturing) training courses, Leadership seminars, Global Leadership training courses (prerequisite: minimum IELTS 5.5 or equivalent; refer to 7.2.1 Eiken English Language Proficiency Examination Table 7-3 Eiken Score Conversion Table)
- Coursework that may not be taken
English training, overseas English training

3.3. Course Affiliation

Program students select and become affiliated with one of four courses: “Space Fundamentals,” “Space Development,” “Space Utilization,” and “Advanced Technologies.” Please note that the restrictions for selecting the Video Lectures on Space Science and Engineering differ for each course.

3.4. Post-Admission Online Registration

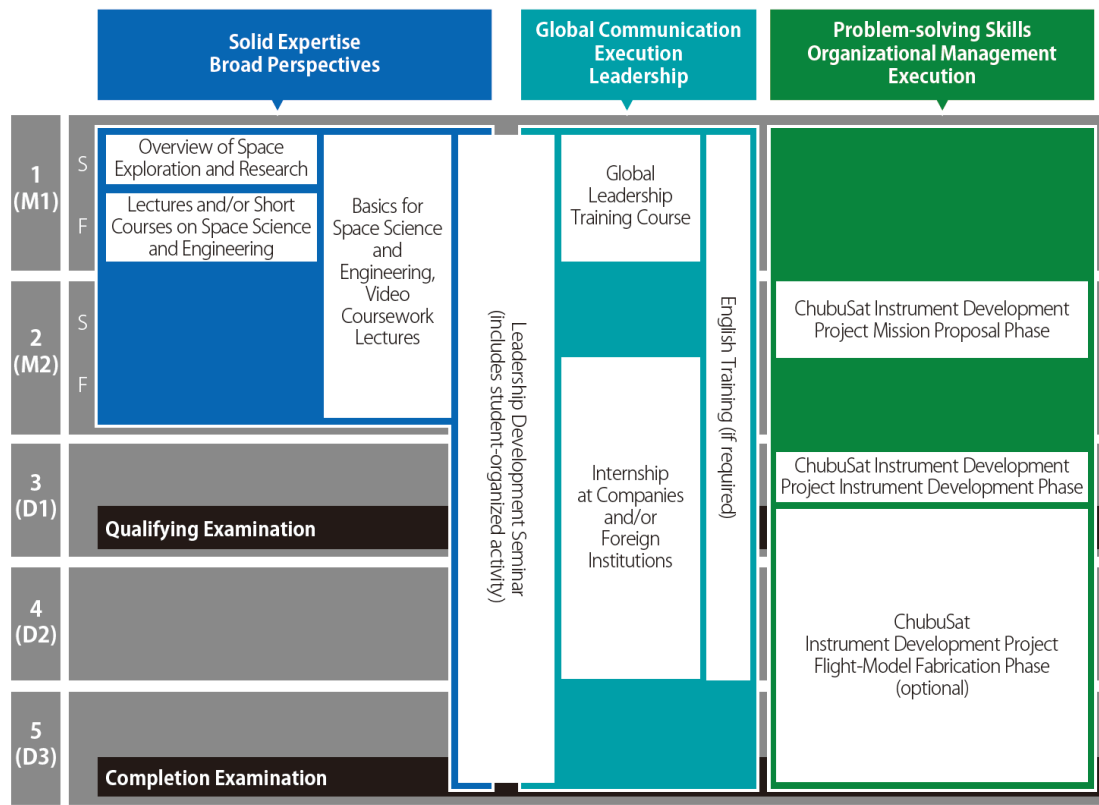
Program students must register within two weeks after receiving their notice of acceptance at the following web page:

<http://www.frontier.phys.nagoya-u.ac.jp/websystem/registration/form/?id=6>

4. Curriculum

4.1. Course List and Schedule

Table 4-1 shows a list of available courses and schedule for the program.



Curriculum overview

4.2. Curriculum Outline

【Curriculum to cultivate solid expertise and broad perspectives】

- **Basics for Space Science and Engineering**

Study the basics of space science and technology (classical mechanics, electromagnetism, statistical thermodynamics, mathematical physics, computer science) in online lectures

- **Video Lectures on Space Science and Engineering (video coursework)**

Video lectures on Space Fundamentals (Elementary Particles, Astrophysics, Solar-Terrestrial System, Space Technology);
Space Utilization (Astronomical Observations, Space Plasma Observations, Earth Observations, Space Communications);

Space Development (Transportation, Satellites, Space Weather, Space Exploration),
and Advanced Technologies (Materials, Measurements, Numerical Simulations)

· **Overview of Space Exploration and Research (2 credits)**

Lectures covering the basic science and engineering knowledge that is needed in space research and development, including space engineering, space science, organizational management, and scientific literacy.

· **Lecture Courses on Satellite Systems**

Lectures on space science and engineering

· **Satellite systems** (2 credits): Satellite systems, subsystems, parts and materials control, assembly and tests, launches, ground stations and operations.

· **Monozukuri lecture**: Introduction to the experimental and observational techniques for particle and astro physics research (2 credits): Classes on radiation detectors, signal processing electronic circuits, low-temperature vacuum technology, optical and radio wave observation technology, and missile technology

· **Advanced engineering creative experiments** (certified as 2 credits): Engineering research classes

· **Short Courses on Satellite Development and Applications** (0.5-1 credits each)

Short-class courses and practical learning courses in specialties related to space science and engineering

· **Satellite Development and Applications training courses**: Classroom and laboratory training in thermal design and analysis and structural design and analysis

· **Monozukuri Laboratory Courses**: Laboratory training in installation and fabrication of electronic circuits, FPGA and ASIC training courses, machining laboratory, and other topics

【Curriculum to cultivate global communication, execution and leadership skills】

· **English Training**

Students with IELTS test score of 5.0 or lower, or equivalent scores in other English tests are highly encouraged to take this course.

· **International Internships**

Students experience global research environments at foreign companies and research institutions

· **Corporate Internships**

Students experience practical environment at companies

· **Leadership Development Seminars**

Self-recognition as a leader is encouraged through accounts of personal experiences

given by leaders in various fields and roundtable discussions based on them, a wide range of academic fields including the humanities, social sciences and space utilization and monozukuri (manufacturing and engineering), seminars and experiences related to self-development, and seminars planned and carried out by students themselves, to cultivate broad perspectives and execution, project planning, and management skills.

· **Global Leadership Training**

Students acquire international knowledge and perspectives through interactive lectures and exercises. Practical training covers international relations, business, international law, space law, international joint projects, international competition, project simulation, project management, and global communication (cross-cultural exchange, negotiation and presentation skills)

【Curriculum to cultivate problem-solving, management and execution skills】

· **ChubuSat Instrument Development Project - Mission Proposal Phase**

Teams of five to eight students from differing academic fields prepare mission proposals that utilize ChubuSat microsatellites. Projects are organized and carried out by students to develop their project planning, management, and problem-solving skills. Projects judged to be the most meaningful and viable may be supported until launch.

· **ChubuSat Instrument Development Project - Instrument Development Phase**

Instrument development and operation related to ChubuSat are carried out.

Prototyping and tests of onboard instruments are carried out to examine the feasibility of the proposals in Mission Proposal Phase. When a team so desires or the feasibility of a proposed project is low, teams may also select from among the following pre-defined projects.

- Mechanical response test and model analysis simulating rocket launch vibration environment
- Temperature test and model environment simulating space thermal vacuum environment
- Various ChubuSat pre-launch environmental tests or post-launch tracking and operation
- Construction of an automatic reception system for microsatellite downlink signals

· **ChubuSat Instrument Development Project Flight-Model Fabrication Phase.**

Development of projects with high feasibility among those proposed in Mission

Proposal Phase can be continued with voluntary participation of student teams with the support of faculty advisors. In order to install on a ChubuSat and launch. Students can choose any project regardless of the projects they are involved with in the Mission Proposal Phase.

5. Course Completion Requirements

5.1. Assessing Results and Level of Achievement

In the Program, results and level of achievement in coursework and other activities are assessed according to the Grade Points (GP) shown in Table 5-1. Students can check their results and level of achievement in the e-Portfolio (see “5.6 e-Portfolio”).

Table 5-1 Relationship between results/achievement level and grade point

Achievement level (percentage)	Real number grade point	Integer grade point	Letter grade
≥90	4.0	4	S
85–89	3.7		A
80–84	3.3	3	B
75–79	3.0		
70–74	2.7		
65–69	2.3	2	C
60–64	2.0		
55–59	1.7		
<55	0	0	F

When a student is absent from lecture courses due to unavoidable circumstances, up to 20% of the total number of classes may be excluded from the student’s performance assessment. However, this applies only if approval from the faculty member in charge is obtained. Here, “unavoidable circumstances” refers to the following.

- (1) The student has participated in events needed to complete the doctoral course and an official notice of absence has been submitted in advance by the doctoral advisor or other supervisor.
- (2) The student is unable to attend because of sudden illness and submits a medical certificate from a hospital or documents attesting to the fact that the student visited the hospital.
- (3) The student is absent for some other unavoidable reason and submits documents or other evidence that are accepted as attesting to that reason.

5.2. Leadership Contribution, Active Contribution, Optional activities

The student’s abilities and level of contribution as a leader in activities organized and carried out mainly by students are evaluated as Leadership Contribution Point (LCP).

In addition, when students are recognized as actively contributing in the Program curriculum and related events, that level of contribution is assessed as Active Contribution Point (ACP). We also encourage students to participate in related activities outside of this program. Participation in those optional activities authorized by the Program is required to fulfill requirements for Standard Scholarship as well as certain amount of LCP and ACP. (see “5.3 List of Course Completion Requirements”). Please note that only single type of credit can be earned for a single activity.

(1) Leadership contribution

Leadership ability (execution, problem-solving, activeness, project planning, etc.) and level of contribution as a leader are evaluated as LCP in order to encourage students to organize and carry out projects independently. Students' activity is monitored and assessed by the faculty member in charge in the following activities.

- a. Leadership in the ChubuSat Instrument Development Project (maximum GP = 4.0)
- b. Organizing Leadership Development Seminars (maximum GP = 2.0)
- c. Organizing Student Workshop (maximum GP = 4.0)
- d. Student Committees (maximum GP = 4.0)
- e. Other activities authorized by the Education Committee

(as soon as the activity is authorized, students will be informed together with maximum GP)

(2) Active contribution

Dedicated contributions in various activities are evaluated as ACP in order to encourage motivated activity and contributions in ways other than organizing and carrying out the Program activities. Program faculty members authorize the activities covered by this and set the maximum GP according to the activity, informing students in each case. As a rule, maximum GP will not exceed 1.6. Typical activities covered by this are oral or poster presentations at relevant events and acting as an instructor or TA in lecture courses.

(3) Optional activities

“Participation in optional activities” refers to participation in relevant events that are held outside the Program. Authorization for events covered by this is conferred by the Education Committee, and the announcement of these events will state that they are “Participation in optional activities” (Organization/execution or oral / poster presentations are not necessarily required for “participation in optional activities.”)

Past “optional activities” have included the following.

- Leading forums
- Panel discussion on “What will the image of a leader be in 30 years”
- “Breakthrough camp for becoming a leader”
- Transferable skills training
- Seminar for new space related business

5.3. List of Course Completion Requirements

In each course, the completion deadline or review period and criteria for level of achievement to be fulfilled are set. These criteria form the course completion and scholarship requirements. The completion deadline and review period are shown in Figure 5-1. Table 5-2 summarizes the course completion requirements and scholarship requirements categorized by the course completion requirements and scholarship requirements for each completion deadline and review period in (1) through (5). Figure 5-1 (1) – (5) correspond to the numbers of the parts of Table 5-2. When calculating grade point average (GPA), which is the average of the student’s GP in each requirement, GP in course and seminars that are not needed in the requirements can be excluded from the calculation.

The requirement for completing the Program is to have fulfilled all A Requirements by the time of Program completion. Fulfilling the pertinent A Requirement for each completion deadline/review period is a requirement for receiving a Basic Scholarship (6.1 Financial Aid). Fulfilling the pertinent B Requirement is a requirement for receiving Standard Scholarship. Students are eligible to receive a Standard Scholarship after a review based on the student self-reporting. In the special category for international students, B Requirements must be fulfilled.

The progress of Program students is monitored by academic-year advisors and/or doctoral advisor based on the “Leading Graduate School Education and Research Activity Status Report” submitted each month. In the event that a student no longer meets the eligibility requirements for a basic scholarship or a standard scholarship, those payments may be suspended or the student may be removed from the Program in some cases. For details please refer to “6.1 Financial Aid.”

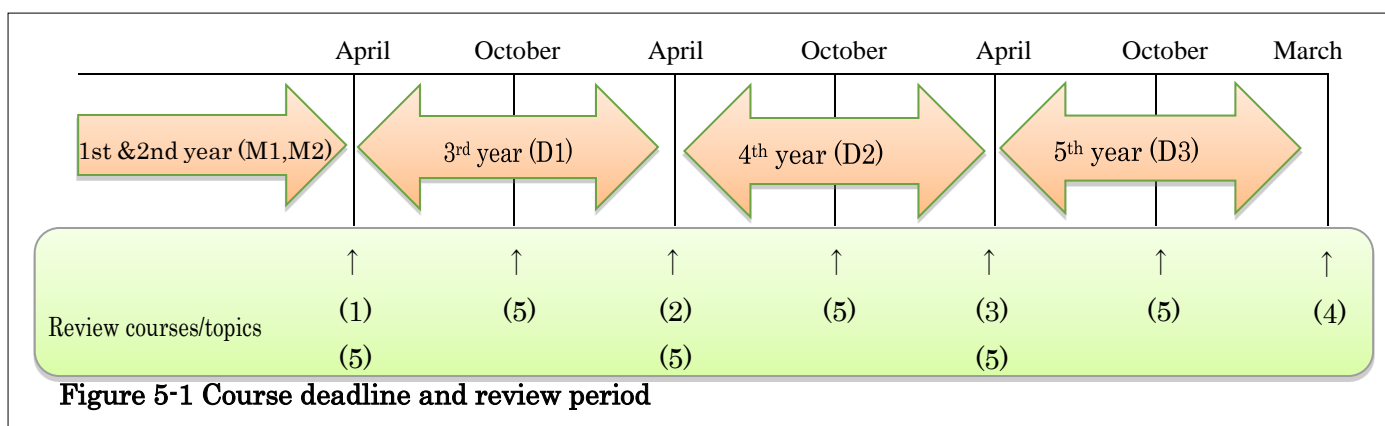


Table 5-2 Summary of Requirements by Course Completion Deadline

(1) Requirements before advancing to the third year (D1)*

*Requirements before advancing to the fourth year (D2) for [D1-F, D1-S] students from outside the university

Courses and Topics	A Requirements (Basic Scholarship Requirements)	B Requirements (Standard Scholarship Requirements)
Basics for Space Science and Engineering (Minima-A)	Passing grades ¹⁾	Same as on the left
Video Lectures on Space Science and Engineering	All 4 lectures of course of affiliation + 2 lectures	Same as on the left
Overview of Space Exploration and Research	Overview of Space Exploration and Research, 2 credits	Same as on the left
Short Courses and Lecture Courses on Space Science and Engineering	A total of 2 or more credits from satellite system lecture courses (0.2 credits each) or satellite development and Applications short courses (1 credit each)	Total of 4 credits or more from the Short Courses/Lecture Courses on Space Science and Engineering (of which 2 credits or more are from satellite system short courses or satellite development and Applications short courses)
Global Leadership Training ²⁾	Not applicable	Global Leadership Training I and II
	GPA of ≥ 3.3 for above	GPA of ≥ 3.5 for above

Participation in optional activities	Not applicable	One time or more
ChubuSat Instrument Development Project Mission Proposal Phase ^{3,4)}	GP ≥ 3.0	GP ≥ 3.3

- 1) [M1-W] Must be taken by students prior to acceptance
- 2) Minimum IELTS of 5.5 or equivalent required as prerequisite
- 3) To be retaken if achievement is insufficient (financial aid is suspended until completion).
- 4) [D1-S][D1-F][D1-P] students take Mission Proposal Phase in April-September of third year (D1) and Instrument Development Phase in April-September of fourth year (D2). If retaken, only pertinent sections retaken (Instrument Development Phase can be taken even if student failed Mission Proposal Phase).

(2) Requirements before advancing to fourth year (D2)

Courses and Topics	A Requirements (Basic Scholarship Requirements)	B Requirements (Scholarship Requirements)
ChubuSat Instrument Development Project	GPA (average for Mission Proposal Phase and Instrument Development Phase, or score of Mission Proposal Phase) ≥ 3.3	GPA (average for Mission Proposal Phase and Instrument Development Phase, or score of Mission Proposal Phase) ≥ 3.5
Qualifying Examination (QE)	Passing grades	Passing grades

*

- 1) To be retaken if achievement is insufficient (financial aid is suspended until completion).
- 2) [D1-S][D1-F][D1-P] students take Mission Proposal Phase in April-September of third year (D1) and Instrument Development Phase in April-June of fourth year (D2). If retaken, only pertinent sections are retaken (Instrument Development Phase can be taken even if student failed Mission Proposal Phase).

(3) Requirements before advancing to fifth year (D3)*

*Requirements before completion of fifth year (D5) for [D1-F, D1-S] students

Courses and Topics	A Requirements (Basic Scholarship Requirements)	B Requirements (Scholarship Requirements)
English proficiency ¹⁾	TOEIC ≥ 785 and TOEIC S/W ≥ 310 , or IELTS ≥ 6.0 or TOEFL iBT ≥ 87 Aptis (Final score) ≥ 150	Same as on the left
ChubuSat Instrument Development Project Mission Proposal Phase, Internship ²⁾	Complete at least one of ChubuSat Instrument Development Project, corporate or international ⁴⁾ internship.) ⁵⁾ and also complete a total of 3 units from above courses. See Figure 7-4, for details in the combination examples. It is not mandatory for students accepted in and after June of FY2016 (or for D1 students transferred in and after June of FY 2018) to take the course. GPA ≥ 3.3	It is mandatory to take Corporate internship. Complete at least one of ChubuSat Instrument Development Project Instrument Development Phase or international ³⁾ internship, and also complete a total of 4 units including corporate internship. See Figure 7-4, for details in the combination examples. It is not mandatory for students accepted in and after June of FY2016 (or for D1 students transferred in and after June of FY 2018) to take the course. GPA ≥ 3.5

- 1) If a student is far from satisfying the completion requirements in the English proficiency test immediately after registering as a Program student, it is recommended that he or she take English training classes.
- 2) Internships are not required for foreign students. However, they can participate in international internships at foreign institutions outside their home country, and/or corporate internships in the case that there is a company to accept them.
- 3) International internships require a certain level of English proficiency. (see section 7.8.3)
- 4) International internships may be certified and fulfill the B Requirement for students who participate in corporate internships for at least 6 weeks, who have participated in a special overseas training of 1-2 weeks with a program approved to be appropriate,

and whose English communication skills are determined to be sufficient based on an interview (see sections 7.8.2 and 7.8.4).

(4) Requirements at the end of fifth year (D3)

Courses and Topics	A Requirements (Basic Scholarship Requirements)	B Requirements (Scholarship Requirements)
Leadership Development Seminars	Attendance at least 25 times in total, including at least 3 times in each of categories (1)–(5). $GPA \geq 3.3$	Attendance at least 25 times in total, including at least 3 times in each of categories (1)–(5). $GPA \geq 3.5$
Doctorate degree	Successful defense of dissertation	Same as on the left

(5) Conditions for the start and continuation of scholarship payments: Confirmed every six months from the completion of second year (M2)

Courses and Topics	A Requirements (Basic Scholarship Requirements)	B Requirements (scholarship requirements)
Leadership Development Seminars	Credit of $25 \times \alpha^{1) 2)}$ seminars $GPA \geq 3.3$	Credit of $25 \times \alpha^{1) 2)}$ seminars $GPA \geq 3.5$
Student Retreats, Annual Meeting	Attendance each year during program affiliation ³⁾	Same as on the left
Leadership and Active contributions	Not applicable	Total of cumulative Leadership Contribution Point (LCP) and cumulative Active Contribution Point (ACP) meets following requirements. $LCP + ACP \geq 3.3$ and $LCP \geq 1.7$

1) $\alpha = [\text{Elapsed time in since admission}] / [\text{Total time since admission until completion}]$

2) The required number of attendance is 25α , rounded down to nearest decimal.

For example, for Program students registered in M1-P (starting in April), this will be $\alpha = 12 \text{ months} / 60 \text{ months} = 0.2$, and $25\alpha=5$. The required number of attendance is 5 when advancing to M2. Another example, for [M1-S] students (starting in June), this will be $\alpha = 10 \text{ months} / 58 \text{ months} = 0.172$, and $25\alpha=4.31$. The required number of attendance

is 4 when advancing to M2.

3) In the event of absence for unavoidable reasons, students must contact the Student Affairs Office (for Student Retreats) or the Promotion Office (for Annual Meeting) to obtain the permission. In case of absence from Student Retreats and Annual Meeting without appropriate permission, the student may be subject to scholarship suspension, decrease in the amount of scholarship, or expulsion from the Program.

Table 5-3 Summary of Completion Requirements

【For students accepted in and after June of FY 2016 or for D1 students transferred in and after June of FY 2018】

Course Name	A Requirements (Requirements for Basic Scholarship)	B Requirements (Requirements for Standard Scholarship)
Basics for Space Science and Engineering	Passing grades	Same as on the left
Video Lectures on Space Science and Engineering	All 4 lectures of course of affiliation + 2 lectures	Same as on the left
Overview of Space Exploration and Research	Overview of Space Exploration and Research, 2 credits	Overview of Space Exploration and Research, 2 credits
Short Courses and Lecture Courses on Space Science and Engineering	A total of 2 or more credits from satellite system lecture courses (0.2 credits each) or satellite development and Applications short courses (1 credit each)、	Total of 4 credits or more from the Short Courses/Lecture Courses on Space Science and Engineering (of which 2 credits or more are from satellite system short courses or satellite development and Applications short courses)、
Global Leadership Training (GLT)	Not applicable	Global Leadership Training I and II
	GPA of ≥ 3.3 for above	GPA of ≥ 3.5 for above

English proficiency	TOEIC \geq 785 and TOEIC S/W \geq 310, or IELTS \geq 6.0 or TOEFL iBT \geq 87 Aptis (Final score) \geq 150	Same as on the left
Leadership Development Seminars(including attendance time of cross-disciplinary seminars)	Attendance at least 3 times each in Category 【1】 to 【5】 ,and at least 25 times in total GPA \geq 3.3	Attendance at least 3 times each in Category 【1】 to 【5】 ,and at least 25 times in total GPA \geq 3.5
ChubuSat Instrument Development	<Mandatory> Mission Proposal Phase <Optional> ・ Instrument Development Phase ・ Corporate internships (at least 6 weeks) ・ International internships (at least 6 weeks) GPA \geq 3.3	Same as on the left GPA \geq 3.5
Internships		
Leadership Contribution or Active Contribution	Not applicable	Total of cumulative Leadership Contribution Point (LCP) and cumulative Active Contribution Point (ACP) meets following requirements. LCP + ACP \geq 3.3 and LCP \geq 1.7 Same as on the left
Participation in optional activities	Not applicable	At least once
Qualifying Examination (QE)	Passing grades	Passing grades
Student Retreats, Annual Meeting	Attendance each year during program affiliation ¹⁾	Same as on the left
Doctorate degree	Successful defense of dissertation	Same as on the left

- 1) In the event of absence for unavoidable reasons, students must contact the Student Affairs Office (for Student Retreats) or the Promotion Office (for Annual Meeting) to obtain the permission. In case of absence from Student Retreats and Annual Meeting without appropriate permission, the student may be subject to scholarship suspension, decrease in the amount of scholarship, or expulsion from the Program.

【For Program students as of April of FY 2016 or for D1 students transferred in FY 2016 and 2017】

Course Name	A Requirements (Requirements for Basic Scholarship)	B Requirements (Requirements for Standard Scholarship)
Basics for Space Science and Engineering	Passing grades	Same as on the left
Video Lectures on Space Science and Engineering	All 4 lectures of course of affiliation + 2 lectures	Same as on the left
Overview of Space Exploration and Research	Overview of Space Exploration and Research, 2 credits	Same as on the left
Short Courses and Lecture Courses on Space Science and Engineering	A total of 2 or more credits from satellite system lecture courses (0.2 credits each) or satellite development and Applications short courses (1 credit each)、	Total of 4 credits or more from the Short Courses/Lecture Courses on Space Science and Engineering (of which 2 credits or more are from satellite system short courses or satellite development and Applications short courses)
Global Leadership Training (GLT)	Not applicable	Global Leadership Training I and II
	GPA of ≥ 3.3 for above	GPA of ≥ 3.5 for above

English proficiency	TOEIC \geq 785 and TOEIC S/W \geq 310, or IELTS \geq 6.0 or TOEFL iBT \geq 87 Aptis (Final score) \geq 150	Same as on the left
Leadership Development Seminars(including attendance time of cross-disciplinary seminars)	Attendance at least 3 times each in Category 【1】 to 【5】 ,and at least 25 times in total GPA \geq 3.3	Attendance at least 3 times each in Category 【1】 to 【5】 , and at least 25 times in total GPA \geq 3.5
ChubuSat Instrument Development Project	<Mandatory> • Mission Proposal Phase <Mandatory to select>at least one of the following • Instrument Development Phase • Corporate internships (at least 6 weeks) • International internships (at least 6 weeks) GPA \geq 3.3	<Mandatory> • Mission Proposal Phase • Corporate internships (at least 2 weeks) <Mandatory to select>at least one of the following • Instrument Development Phase • International internships (at least 6 weeks) GPA \geq 3.5
Internship	For international students <Mandatory> • Mission Proposal Phase <Mandatory to select>at least one of the following • Instrument Development Phase • Corporate internships (at least 6 weeks) • International internships (at least 6 weeks) GPA \geq 3.3	For international students Same as on the left GPA \geq 3.5

Leadership Contribution or Active Contribution	Not applicable	Total of cumulative Leadership Contribution Point (LCP) and cumulative Active Contribution Point (ACP) meet following requirements. $LCP + ACP \geq 3.3$ and $LCP \geq 1.7$
Participation in optional activities	Not applicable	At least once
Qualifying Examination (QE)	Passing grades	Passing grades
Student Retreats, Annual Meeting	Attendance each year during program affiliation ¹⁾	Same as on the left
Doctorate degree	Successful defense of dissertation	Same as on the left

1) In the event of absence for unavoidable reasons, students must contact the Student Affairs Office (for Student Retreats) or the Promotion Office (for Annual Meeting) to obtain the permission. In case of absence from Student Retreats and Annual Meeting without appropriate permission, the student may be subject to scholarship suspension, decrease in the amount of scholarship, or expulsion from the Program.

5.4. Certification of Record Prior to Program Participation

Program courses taken by students before they enter the Program (including Leadership Development Seminars) will be included in calculations for certification of program completion requirements (including grades in those courses). In cases when past employment performance at a company or achievements such as international experiences are recognized as being equivalent to an internship, they may be approved as corporate or international internships, respectively. For internships to be certified, applications must be made in the designated format.

5.5. Qualifying Examination

Program students are graduate students working on doctoral dissertation research with the aim of earning a degree, and completion of the Program is a requirement for them to obtain a doctoral degree. A qualifying examination (QE) is given to confirm the progress of student research and their academic performance in Program courses at about the midpoint, and to confirm their prospect of completing the courses.

The QE is given before completion of the third year (D1) by a committee consisting of at least three people, one or more of whom should be Program faculty members including the student's main doctoral advisor (one of the doctoral advisors acts as the chief reviewer). The QE is conducted based on an application made by the student. The QE determines whether or not the student can start his or her dissertation research.

During the QE, the examiners review whether the following 4 items have been fulfilled.

- (1) A Requirements shown in Table 5-2 (1)
- (2) The student does not have an exceptionally low GP in any courses (judged by minimum GP within the prescribed number of credits)
- (3) Master's degree certification: The student has written a master's thesis or else has submitted a paper to a European language academic journal (peer-reviewed) for which he or she is the main author
- (4) Thesis proposal: For students who fulfill (1)-(3) above, a thesis proposal written by the student him- or herself has been examined based on an interview and a judgment has been made as to whether the student can start dissertation research as a Program student.

The QE chief reviewer reports the results of the review in a designated format to the student affairs office, which then notifies the student of the review results.

【QE Procedure】

QE is administered in the following procedure.

1. Program student is to submit Doctor Thesis Proposal in the designated format* to his/her main doctoral advisor.
2. Based on the submitted Doctor Thesis proposal, the QE is to be conducted by a committee consisting of at least three people, one or more of whom should be Program faculty members including the student's main doctoral advisor acting as the chief reviewer. Through the interview to be conducted based on the proposal in the QE, the committee is to examine whether it is possible to start his/her doctor thesis study in terms of basic academic skills, the significance of his/her doctorate thesis study, feasibility, and originality.
3. The chief reviewer (his/her main doctoral advisor) is to submit the examination result in the designated format* to the Student Affairs Office.
4. The Student Affairs Office is to make QE judgment based on the following 4 points.
 - i. Overall judgment of the judgment result submitted by the chief reviewer is to be A or B
 - ii. A Requirements shown in Table 5-2 of the Guide Book
 - iii. The student does not have an exceptionally low GP in any courses (judged by minimum GP within the prescribed number of credits)
 - iv. Master's degree certification: The student has written a master's thesis or else has submitted a paper to a European language academic journal (peer-reviewed) for which he or she is the main author

Based on confirmation of the above, the Student Affairs Office is to notify the student of the examination results (via e-Portfolio).

*The designated format can be obtained via the website of the Leading Graduate Schools. For inquiry, contact the Student Affairs Office.

5.6. Program Completion Requirements and Deadline

The A requirements in “5.3 List of Course Completion Requirement” except for successful defense of dissertation needs to be fulfilled to complete the program. Those requirements must be fulfilled before the submission of a final report (one week before the preliminary examination) (see Figure 5-2 E).

5.7. Completion Examination

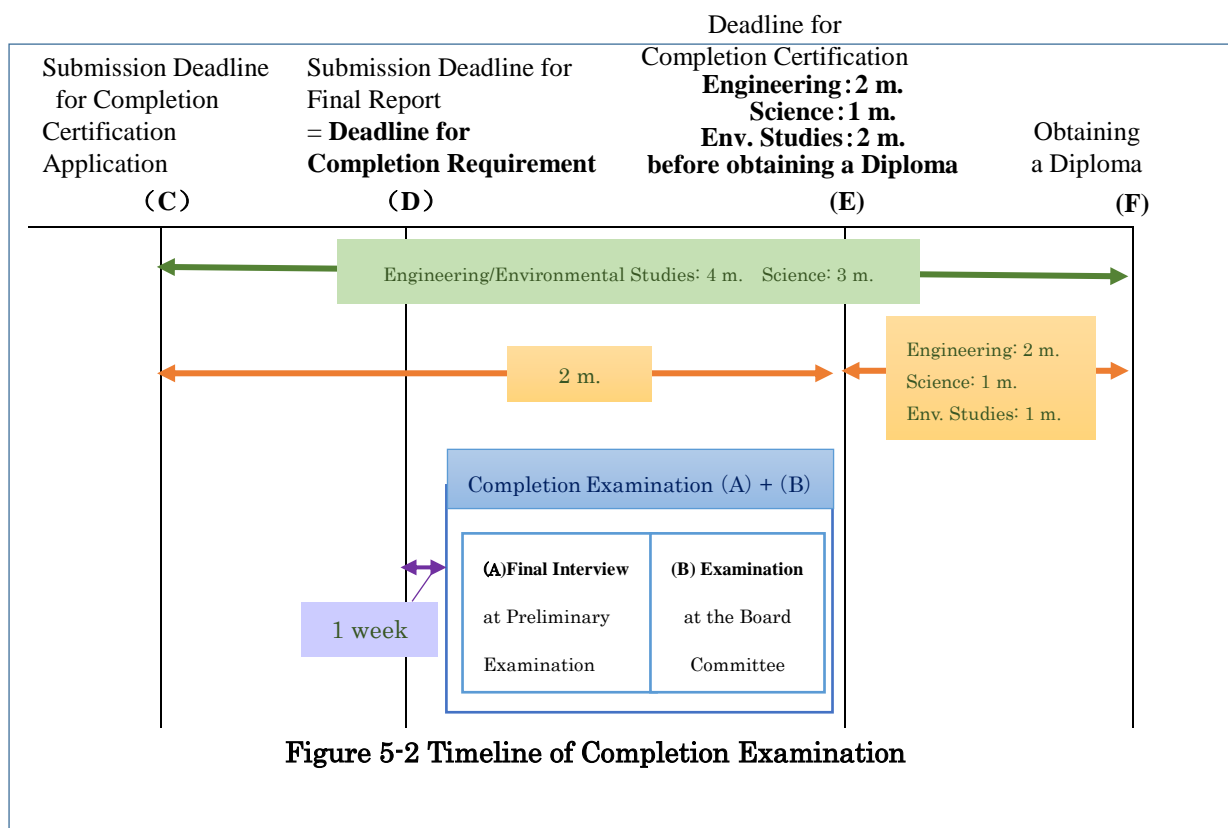
The program completion examination consists of a final interview (see Figure 5-2 A) at the preliminary examination followed by an approval (see Figure 5-2 B) by the program council. Students passing the program completion examination are certified a program

completion. (use “completion certification” hereafter) Please refer to Figure 5-2 for timeline of the completion examination. In order to be certified a completion certification it is required that a completion certification application (designated format) be submitted to the office in charge of Completion Examination by email (use the email address below for submission). The submission must be completed at least until the end of the month before three months (Science) or four months (Engineering, Environmental studies) from the month that the student plans to receive his or her diploma. (see Figure 5-2 C,F). The preliminary examination committee consists of at least 5 members of the Executive Board, including the program coordinator or deputy program coordinators. The preliminary examination date will be scheduled after the application has been filed. After the student is notified the date of the preliminary examination, a final report (designated format) has to be submitted to the office in charge of Completion Examination by email (use the email address below for submission). The submission must be completed at least until one week before the preliminary examination is conducted. The final report must include the statements of your own leadership development and future aspirations such as what you learned about leadership through the LGS program, what is your career path.

Application of completion certification and Final report must be submitted to the following address: lgs-fq[at]frontier.phys.nagoya-u.ac.jp

Based on the final report (designated format) written by the student, the Preliminary Examination Committee confirms that the student has completed all requirements (Table 5-2 (1)-(4)) and examines his or her level of achievement based on student records and an interview. Students who passed the preliminary examination will be certified the completion upon approval of the program council. If the doctoral advisor of the student is not a program faculty member, the doctoral advisor is allowed to participate in the program council as an observer when approving the completion examination. Program completion examination is required to be certified by the end of the month before one month (Science) or two month (Engineering, Environmental studies) of the month expected to receive Diploma. (Completion certification deadline: figure 5-2 E) After the completion examination is completed, the student and his or her doctoral advisor are notified of the results. Students who pass a completion examination are issued a certificate of completion that acknowledges and attests to the courses and activities the student has completed in the Program and the student’s achievement in those activities. An indication that the Program has been successfully completed is also

appended to the student's diploma. For procedures, please consult with an appropriate administrative office of each graduate school in which the student is enrolled (Student Affairs, Academic affairs, etc.).



e.g. In case when obtaining a doctorate degree in March
 [Graduate School of Engineering/ Environmental Studies]
 Submission deadline for Completion Examination Application (4 months before attaining a doctorate degree) : End of November
 Deadline for Completion Examination (2 months before attaining a doctorate degree): End of January
 [Graduate School of Science]
 Submission deadline for Completion Examination Application (3 months before attaining a doctorate degree) : End of December
 Deadline for Completion Examination (1 months before attaining a doctorate degree): End of February

In case all the requirements were not fulfilled before the last month of D3, students are able to continue as a program student for a maximum of 1 year as long as the students remain enrolled in a doctoral course and the A requirement (Basic scholarship requirement) for the internship has been satisfied before the last month of D3. However, no financial aid such as scholarships is provided for those. In addition, there are limitations for supports on completing required courses and activities. For details please contact the LGS Frontier Administration Office in the division the student is enrolled.

5.8. e-Portfolio

The e-Portfolio is a web system to view Program students' progress status to date, such as their grades (GP) in courses taken so far, results of English proficiency tests, leadership and active contribution points and participation results in optional activities. For access to the e-Portfolio and instructions for use, see the e-Portfolio manual in the "Document archive" of the member's only pages of the Program website (<http://www.frontier.phys.nagoya-u.ac.jp/>).

Program students can log into the e-Portfolio using their own Nagoya University ID. (Note: Login to the e-Portfolio cannot be done from outside the university.) Initial passwords are issued by the administration office. These passwords are sent to each student in a password notification letter. Students who lose their password or cannot log in should contact the e-Portfolio manager.

Students can only view their own records. Accounts for viewing records are not issued to doctoral advisors. Therefore, if a doctoral advisor wants to check a student's records to consult with the individual student in order to view the student's records.

The grades for courses that Program students have taken will be registered in e-Portfolio as soon as they are confirmed. A certain amount of time is needed for grading and approval, but we aim to post grades within about one month after the completion of a course (or a seminar). However, in some cases it will take a little longer before grades can be posted, depending on the course. The update status for grade information is given in the "Notifications" column within the e-Portfolio system. Students are asked to check the update status for each course. The course information displayed is restricted to that for which results have been finalized. Courses or activities that were not taken and those that are still being graded are not displayed.

If course information is not displayed for a course that a student has taken, or if a student has inquiries regarding the content of the results given, they should contact the e-Portfolio coordinator.

Contact address for e-Portfolio coordinator: portfolio [at] frontier.phys.nagoya-u.ac.jp

6. Student Support

6.1. Financial Aid

In order to support outstanding program students, the Program provides basic and standard scholarships (hereinafter "scholarships") to encourage dedication to studies and research, or research assistant (RA) and teaching assistant (TA) employment

available for work supporting the Program's research and educational activities (such financial assistance is generally referred to as "financial aids").

Provision of financial aids requires the student to fulfill the conditions stipulated in "5. Course Completion Requirements."

Financial aid is provided in accordance with the "Conditions for Provision of Financial Aid for Nagoya University's Program for Leading Graduate Schools" and "Conditions for Provision of Financial Aid for Nagoya University's Leadership Development Program for Space Exploration and Research." Please refer to these rules (not included in this overview) for more details on suspension and resumption of financial aid. Financial aid for students leaving the program is terminated the month following notification of the reason for leaving the program.

If a student's academic performance indicates the student cannot expect to fulfill the required course requirements within the given time frame, then following a provisional warning the scholarship may be terminated and the student may be expelled. If the student is unable to complete the requirement in the specified period, financial aid may be suspended. However, if the program student submits a request to the student affairs office for an interview after the requirements are met, and it is confirmed in the interview that the requirements have been met, financial aid may then be resumed. If the student's academic performance is exceptionally unsatisfactory (e.g., student is not registered for many required courses, has numerous absences, etc.), or if the remedial conditions remain unfulfilled for one year or longer, the student may then be expelled from the program. In such cases, the student may be required to return the financial aid he or she has received, dating back to the time the problem arose.

(1) Basic Scholarship

As a general rule, all students of the program receive 85,000 yen per month as a basic scholarship to allow them to dedicate themselves to the course curriculum (excluding students receiving Society for the Promotion of Science Research Fellowship and other scholarships; see below for details).

(2) Standard Scholarship

A standard scholarship of 150,000 yen per month will be provided to high-achieving (meeting "B" requirements described in "5. Course Completion Requirements") doctoral course students (third year (D1) or above) to encourage them to complete a larger volume of coursework than that required to complete the program, obtain greater levels of achievement, complete various internships, and contribute as leaders in student

activities. The student starts to receive funds after applying for the scholarship and undergoing screening.

Once payment begins, screening for the scholarship is then conducted every six months (decision in March, with payment starting in April; decision in September, with payment starting in October). If the student is unable to fulfill the requirements for the standard scholarship within the required time limit, funding is reduced to the amount of the basic scholarship, but can be restored through an interview after the conditions are met. If the student is unable to fulfill the “A” requirements for the basic scholarship within the required time limit, then all funding is suspended. Even in such cases, this level of funding can be restored through an interview after the requirements are met.

In addition, [M1] or [M2] students enrolled in Master's first or second year in and after FY 2016, who intends to fulfill high achievement level as mentioned above after advancing to his/her Doctoral course, monthly payment of 150,000 yen as Standard Scholarship in place of Basic Scholarship is to be provided after interview. (Conditions for scholarship provision were revised in April, 2016.)

(3) Standard Scholarship (Special Category for International Students)

In most cases, international students accepted in this category will receive a scholarship of 200,000 per month, starting from their first year (M1). Once payment begins, screening for the scholarship is then conducted every six months (decision in March, with payment starting in April; decision in September, with payment starting in October). If the student is unable to fulfill the “B” requirements for the standard scholarship within the required time limit, payment is reduced to the amount of the basic scholarship, but can be restored through an interview after the “B” requirements are met. If the student is unable to fulfill the “A” requirements for the basic scholarship within the required time limit, then all payment is suspended. Even in such cases, this level of funding can be restored through an interview after the required conditions are met.

(4) Receiving Other Forms of Financial Aid

Students fall under the following conditions may not simultaneously receive scholarships from the Program.

- Students receiving financial aid from the national government
- Students employed as JSPS research fellows (DC)
- Students receiving JASSO scholarships (student loans)
- International students receiving Japanese government (MEXT) scholarships
- International students receiving JASSO Honors Scholarships

- Students receiving financial assistance from their home countries
- Students receiving scholarships from the university itself

For students who have received or plan to receive other forms of financial assistance, contact the admission office for details. In addition, JSPS research fellows may be employed as teaching assistants. Specifics are in accordance with Program bylaws. Please inquire at the admission office for details.

(5) Remarks

(5-1) Recipients of scholarships must submit a “Leadership Development Program for Space Exploration and Research” LGS Educational and Research Activity Status Report. If submission of the report is overdue by one month or more, the doctoral advisor is notified and scholarship funding may be suspended.

- Deadline for submission: 3rd of the following month (if the 3rd falls on a weekend or holiday, then the preceding business day)
- Submit to: Frontier Administration Office

(5-2) As a rule, scholarship recipients may not be allowed to take part-time work. Please contact the administration office for details.

(5-3) The names of students receiving scholarships (including basic scholarships) are published on the LGS Leadership Development Program for Space Exploration and Research website.

(5-4) Program students who are expelled for extremely poor academic performance or who leave the program before completion without a legitimate reason may be required to repay the scholarship money they have received dating back to the time the problem arose.

6.2. Support for Studies and Activities

The following grant is provided to encourage and support Program students’ activities and independent studies.

(1) Financial assistance for travel within Japan

Program students can receive up to 50,000 yen as support for travel expenses in Japan, granted for one trip per person during an academic year. There is no special screening

for the receipt of this support, but before applying students should closely read the section on general applications in the “On-campus applications” page in the Member’s Only area of the Program website (<http://www.frontier.phys.nagoya-u.ac.jp/>).

(2) Expenses for Independent International Communication Training

Students may receive up to 330,000 yen per application for travel expenses associated with international communications in other countries or participation in international conferences to present research results. Applications can be submitted a couple of times each year, with about 20 applications accepted annually through a competitive selection process.

(3) Expenses for Original Study and Research

Financial assistance is available for research and development of outstanding course proposals. The aim is to refine the skills that Program students will utilize in the future as research and development project leaders for the promotion of original, creative research when they are in positions of leadership. This financial assistance for research and development also aims to provide students with opportunities to acquire skills in obtaining competitive funding for research and development.

Students may submit proposals in two categories, “general” and “instrument development.” These proposals are screened by a review panel comprising program faculty members and specially appointed faculty members. The applications for all of the submitted proposals are returned with comments from multiple panel members, and those rated highly are selected for funding. Members working on selected research topics are required to submit a completion report on the results of the research at the end of the academic year. The content of the completion report is taken into consideration in judging the following year’s applications for Expenses for Original Study and Research.

6.3. Support for Internships

To support corporate and international internships, students may receive travel and living expenses of up to 900,000 yen per person for international internships only (including English language training) and up to 1,200,000 yen in total when combined with a corporate internship. Only in case of implementation of long-term internship for 2 months or longer, the student can apply for additional support for transportation and accommodation expenses up to 600,000 yen (If the application is approved, the total amount for internships is to be a maximum of 1.8 million yen, which includes an international internships maximum of 1.5 million yen.)

- Travel expenses for corporate internships: as described in “7.8.2 Corporate Internships (2) Details”
- Travel expenses for international internships: as described in “7.8.3 International Internships (2) Details”

6.4. Career Path Support

Career path support for LGS Program students is provided primarily by faculty members in the industry-academia-government cooperation office. This includes support for corporate internships. Specially appointed full-time faculty members provide guidance and support for students' career paths in collaboration with the Nagoya University Human Resources Development Division and Business Capacity Development Center.

6.5. Academic-Year Advisor System (Principal/ Subsidiary)

Every year, two faculty members are assigned to each grade as the faculty advisors. These academic-year advisors monitor students' overall progress during the year as well as their performance in each course, holding interviews with students about every six months to provide suitable advice to each individual. They are also available for consultations and to respond to students' questions about coursework or other issues. Academic-year advisors report the progress of students under their supervision at regular education committee meetings, where problems are discussed by the entire faculty if any.

6.6. Mentorship

Students are assigned mentors to provide academic support. In the ChubuSat Instrument Development Project, mentors assigned to each project provide the students with academic support including suitable advice and confirmation of progress and course load.

7. Course Information

7.1. Basic Coursework

(1) Aims

To make the fullest possible use of findings in science, engineering, and environmental science, and develop basic and specialized knowledge in areas from space itself to its utilization, related research and development, and the advanced technologies that support it.

(2) Details

The basic coursework comprises the following three areas

- (1) Basics for Space Science and Engineering
- (2) Overview of Space Exploration and Research
- (3) Video Lectures on Space Science and Engineering

Of the above, (1) and (3) are online resources available via the Internet.

To take these courses, students must register as pre-registered students or register their Program student information (see “3.2 (6) Trial Period Students”) in advance. Number (2) above corresponds to a lecture course offered in the Spring semester as Graduate School of Science: A Classes and Graduate School of Engineering: Applied engineering courses.

Details are given in the following.

7.1.1. Basics for Space Science and Engineering

In Basics for Space Science and Engineering, students study in the five course areas below using online text to acquire and reconfirm broad, undergraduate-level basic knowledge. Certification examinations are given for this coursework. Students who pass examinations in all five courses are certified in Basics for Space Science and Engineering. Course materials and tests are available in both Japanese and English, with courses offered in the following five courses.

- Classical mechanics
- Electromagnetism
- Statistical Thermodynamics
- Mathematical Physics
- Computer Science

Basics for Space Science and Engineering classes can be taken from outside the university at any time the student chooses via the Internet. Course materials can be

accessed at any time. For class certification, students must take and pass tests during two-week test periods three times a year, in July, November, and March.

After the above information is registered, students eligible to take Basics for Space Science and Engineering will be notified by e-mail. The student then logs in to the Nagoya University Collaboration and Course Tools (NUCT, <https://ct.nagoya-u.ac.jp/portal>) as explained in the notification e-mail to take the courses. A manual can be downloaded from the Basics for Space Science and Engineering web page. Students are asked to refer to the manual for details on how to take the courses.

7.1.2. Overview of Space Exploration and Research

Overview of Space Exploration and Research lectures help students to acquire a wide-ranging, panoramic knowledge of space research and development given by variety of lecturers from different academic fields. Students are asked to take classes offered among Graduate School of Science: A Classes and Graduate School of Engineering: Applied engineering courses in the first semester and to receive credit certification. Since the lectures are offered in Japanese, video lectures in English are an accepted alternative for international students whose mother tongue is not Japanese. Students who want to use this alternative are asked to apply to the student affairs office ([lgs-edu\[at\]frontier.phys.nagoya-u.ac.jp](mailto:lgs-edu[at]frontier.phys.nagoya-u.ac.jp)) well in advance so that they can take the courses before advancing to the third year (D1).

7.1.3. Video Lectures on Space Science and Engineering (video coursework)

In this video coursework, students can acquire specialized knowledge using online resources in four course areas—Space Fundamentals, Space Utilization, Space Development, and Advanced Technologies. Each course has 4 video lectures, for a total of 16 lectures (see Table7-1). This video coursework can be taken outside the university via the Internet at any time that is convenient for the student. Permission to take the course is obtained by registering the Program student information mentioned above. After joining the Program, students must take all four lectures in the course they have selected plus two or more other lectures of their choice from other courses. Students who have taken two or more courses from among Fundamentals of Advanced Physics I, II, III since the 2013 academic year, by student self-report, do not have to take four lectures in Space Fundamentals. In addition, students who have finished taking Introduction to Experimentation and Measurement Techniques for Studies in Particle Physics and Astrophysics (Monozukuri lecture) or Creative Experiments in Advanced Engineering, by student self-report, do not have to take four lectures in Advanced

Technologies. Once applying this exemption for video lectures, these finished courses self-reported can't be included as courses taken to fulfill the requirement of Lecture courses on Space Science and Engineering. (See “7.6.1 Lecture Courses on Space Science and Engineering”)

Table 7-1 Video Coursework Lectures

Course	(Lecture Title)	Key Words	Lecturer
Space Fundamentals	Space Fundamentals 1 (Elementary Particles)	Elementary particles and their interactions	J. Hisano
		Strong interaction and hadron physics	
		Weak interaction and origin of elementary particle masses	
	Space Fundamentals 2 (Universe)	Big bang	T. Takeuchi
		Expansion of the universe	
		Structure formation	
	Space Fundamentals 3 (Solar-Terrestrial System)	Formation and evolution of galaxies	K. Shiokawa
		Overview of the solar-terrestrial environment system	
		Sun and heliosphere	
		Acceleration and propagation of cosmic ray	
	Space Fundamentals 4 (Space Technology)	Structure and dynamics of magnetosphere, ionosphere, and atmosphere	H. Nagano
		Spacecraft classification	
		Spacecraft environment	
Space Utilization	Space Utilization 1 Astronomical Observatories in Space)	Spacecraft thermal control	H. Tajima
		Astronomical observations	
		Instrument development	
	Space Utilization 2 Space Plasma Observations	Satellites	M. Hirahara
		In-situ plasma observations	
		Electric and magnetic field observations	
		Planetary exploration missions	

Space Utilization	Earth Observations	Observations of atmosphere and surface from space	T. Shibata
		Methods of observations by satellite	
		Typical examples of observations by satellite	
	Space Utilization 4 Wireless Systems	Satellite communication and broadcasting systems)	M. Katayama
		Satellite positioning systems	
		Applications of satellite wireless	
Space Development	Space Development 1 Space Transportation Systems	Rocket motion	A. Sasoh
		Rocket engine	
		Reentry	
	Space Development 2 Earth-Orbiting Spacecraft	Spacecraft orbital motion	K. Yamada
		Spacecraft attitude motion	
		Spacecraft sensors and actuators	
	Space Development 3 Space Environment and Space weather	The impacts of space weather on society and the economy	D. N. Baker (Edited:Seki)
	Space Development 4 Space Exploration Systems	Hayabusa, its seven years voyage and another age of new discovery	J. Kawaguchi (Edited:Sasoh)
Advanced Technologies	Advanced Technologies 1 Materials and Processing	Materials selection	T. Umehara
		Processing of smart surfaces	
	Advanced Technologies 2 Optical Diagnostic Techniques	Rarefied gas flow	T. Niimi
		Optical diagnostic techniques	
	Advanced Technologies 3 Radiation Measurement	Radiation and detectors	J. Haba
		System integration of radiation detectors	
	Advanced Technologies 4 Numerical Simulations	Basics of numerical analysis	S. Inutsuka
		Computational fluid dynamics: Finite volume method	
		Computational fluid dynamics: Particle method	

7.2. English proficiency tests and training

7.2.1. English proficiency tests

(1) Aims

To raise Program students' English proficiency based on objective evaluations of their English communication skills. Students lacking proficiency work to raise their level from an early stage. English communication skills are the basis for international communication ability, and these skills are objectively evaluated in Program students so that they receive English training matched to their English proficiencies.

(2) Details

Four English proficiency tests are used in the Program.

- (1) TOEIC + TOEIC SW (in the following, "TOEIC + SW"): A set including TOEIC SW, which adds speaking and writing to the TOEIC widely used by Japanese companies.
- (2) TOEFL iBT: Widely used in American institutions and companies.
- (3) IELTS: Widely used in British institutions and companies.
- (4) Aptis: Computer-based, simplified version of IELTS test.

Students take the above Aptis test immediately after they are admitted to the Program and every half-year thereafter to assess their English proficiency. Based on the results, a decision is made as to the English communication training the student should take after admission and after advancing to each subsequent year.

At the end of the first year after Program enrollment and the fourth year (D2), students select and take one of tests (1)–(4) above. In the Program completion requirements, a required minimum score must be attained in one of these English proficiency tests. Please refer to Table 7-3 for the score on each test that is required for Program completion.

The test fees for the above English proficiency tests (Aptis test on admission and at the end of each academic year and the English proficiency test at the end of the first year after Program enrollment and fourth year (D2)) are paid for by the Program. Students not in the first or fourth year can also take one of these English proficiency tests on these occasions if desired (however, the test fee is paid from each Program student's allowance for international internship expenses). Students can also take English proficiency tests at their own expense outside of the university on separate occasions. In such cases, the test results can be used as a completion requirement test if the student submits an official certificate of results.

Table 7-2 Score conversions for English proficiency tests

	A Requirements (Basic scholarship requirement)	IELTS 5.5 equivalent	IELTS 5.0 equivalent
TOEIC+TOEIC SW	$\geq 785 + \geq 310$	TOEIC 784~735	TOEIC 734~685
TOEFL iBT	≥ 87	86~77	76~67
IELTS (Overall Score)	≥ 6.0	5.5	5.0
Aptis (Final Score)	≥ 150	149~140	139~130

(3) Inquiries

International Office: lgs-intl[at]frontier.phys.nagoya-u.ac.jp

Contact faculty members: Yoshitaka ITOW · Hiroaki MENJO

Ext.: 4319 · 4329

Room: Room521 – Room 523,

Research Institutes Building I

e-mail: itow[at]isee.nagoya-u.ac.jp menjo[at]isee.nagoya-u.ac.jp

7.2.2. English communication training

(1) Aims

To raise the English proficiency of Program students, especially those judged to be lacking in basic English ability.

(2) Details

The following two training programs are offered to students judged to be lacking in basic English ability.

(2-1) Basic English training

Basic conversational English is offered for two hours week in the Spring (April–July) and Fall (October–January) semesters. Students with IELTS test score of 5.0 or lower, or equivalent scores in other English tests are highly encouraged to take this course.

(2-2) Overseas intensive English training

This month-long intensive program at an English school in Malaysia helps students to strengthen their English conversation skills through immersion in an English language environment. Students with IELTS test score of 5.0 or lower, or equivalent scores in other English tests are highly encouraged to take this course..

The Program will bear half of the expenses out of 60,000 yen for the above Basic English training activity, with the remaining half (30,000) deducted from the international internship allowance of the student taking the training. The expenses for the above Overseas intensive English training are paid in full by the Program.

In addition to the above English communication training, Global Leadership Training I (Global Communication) is offered with the aim of raising Program students' English communication skill levels. For details, please refer to "7.4 Global Leadership Training" and the syllabus.

In addition to the conversational English classes offered by the Program, classes that aim to improve students' English proficiency are also available among the common courses of Nagoya University Graduate School. Program students may also make use of these classes.

(2-3) Completion requirements

English communication training [(2-1) and (2-2)] are not Program requirements. They are taken at the student's discretion. Students are also encouraged to make efforts to improve their English proficiency through self-learning (although there is no financial support for this). However, in the case that a student does not take English training classes and no improvement is seen in his or her English proficiency, this may be taken to indicate that he or she is not committed to completing the Program.

(2-4) Evaluation

English communication training is not included in evaluations of GP.

(2-5) Inquiries

International Office: lgs-intl[at]frontier.phys.nagoya-u.ac.jp

Contact faculty members: Yoshitaka ITOW · Hiroaki MENJO

Ext.:4319·4329

Room: Room521·Room 523, Research Institutes Building I

e-mail: itow[at]isee.nagoya-u.ac.jp menjo[at]isee.nagoya-u.ac.jp

7.3. Leadership Development Seminars

(1) Aims

To encourage students' self-awareness as leaders, through talks by current leaders from various fields, roundtable discussions based on those talks, and seminars and

experiences related to a wide range of fields including the humanities, social sciences and monozukuri; and to cultivate students' comprehensive understanding (especially categories 2-4), execution, and project planning and management (especially category 5). The Education Committee plans and carries out these activities with consideration of a balance in content and fields. At the same time, proposals for each category are also accepted from Program students.

(2) People in charge

- Education Committee (General supervisor: Ichiro NISHIMOTO)

Note: For student proposals, the student making the proposal shall serve as the organizer in charge of planning and execution, with advice, guidance and oversight by the General Supervisor.

(3) Format

- (1) Format A (seminar format): The basic format is a 60-minute seminar followed by a 30-minute discussion.
- (2) Format B (factory, business tour)
- (3) Format C (other: debates, practical experience, etc.)

As a rule, English is used in all formats

(4) Categories:

(1) Leadership seminar

Students listen to and discuss presentations by leaders in various fields, learning their approaches to leadership as a means to help students form their own images as leaders.

(2) Seminars in the humanities and social sciences

Students listen to and discuss talks on various fields, including politics and public policy, international relations and business, finance, work-life balance, history, culture, and literature. In this way students gain wide knowledge and broaden their outlooks while cultivating the ability to view things comprehensively.

(3) Space utilization and cross-disciplinary seminars

Students listen to and discuss talks on space utilization, including observations, manned flight, medicine, and industry, as well as talks on various sciences across disciplines. In this way students gain wide knowledge and

broaden their outlooks while cultivating the ability to view things comprehensively.

(4) Monozukuri seminar

Students increase their knowledge of technology, broaden their outlook and cultivate their ability to view things comprehensively by participating in seminars on various technologies. Factory tours at companies are sometimes adopted as an alternative.

(5) Self-development

These activities are carried out in a free format to sharpen students' qualities as leaders who can perform globally. Format C activities in particular are recommended, including global exchanges and exchanges between fields, roundtable discussions, and practical experience. Various types of training with the aim of self-development are also possible. These activities can also be carried out as one part of student retreats. Plans proposed by students, however, are reviewed for appropriateness as self-development plans by the contact faculty member. Advice or guidance may also be given in some cases on how to proceed with a plan, such as how to negotiate with instructors.

Note: If a student takes one of the following common courses in the Nagoya University Graduate School, the credit may be transferred to participation in a Leadership Development Seminar in the corresponding category. This requires an application by the student.

Table 7-3 Summary of Common Courses in Nagoya University Graduate School

<Up to 2014 Academic Year>

Seminar Course	Category	No. of makeup classes
Experience-based Lecture in Leadership	1	4
Experience-based Lecture in Team-building	5	4
Experience-based Lecture in Management	5	4
Experience-based Lecture in Employability	5	4
Relationships and Communication (Seminar) I	5	2
Relationships and Communication (Seminar) II	5	2
Career and Life Development I	2	2
Career and Life Development II	2	2
Future leaders of Japan I	1	4
Future leaders of Japan II	1	2

Arts Literacy (Painting Theory I)	2	4
Arts Literacy (Painting Theory II)	2	4
Arts Literacy (Music I)	2	4
Arts Literacy (Music II)	2	4
Arts Literacy (Lecture Concert I)	2	4
Arts Literacy (Lecture Concert II)	2	4

<2015 Academic Year>

Seminar Course	Category	No. of makeup classes
Experience-based Class in Leadership	5	4
Experience-based Class in Team-building	5	4
Experience-based class in Management	5	4
Experience-based class in Employability	5	4
Relationships and Communication (Seminar) I	5	2
Relationships and Communication (Seminar) II	5	2
Personal Transformation	5	4
Academic Writing and Research Integrity	5	4
Arts Literacy (Painting Theory I)	2	4
Arts Literacy (Painting Theory II)	2	4
Arts Literacy (Music I)	2	4
Arts Literacy (Music II)	2	4
Arts Literacy (Lecture Concert I)	2	4
Arts Literacy (Lecture Concert II)	2	4
Techniques for Active Learning	5	1

<2016 ,2017 Academic Year>

Seminar Course	Category	No. of makeup classes
Experience-based Class in Leadership	5	1
Experience-based Class in Team-building	5	1
Experience-based Class in Management	5	1
Experience-based Class in Employability	5	1
Research Skills A-1 (Logical Thinking Skills in Research Writing I)	5	1

Research Skills A-2 (Logical Thinking Skills in Research Writing II)	5	
Research Skills B-1 (Fundamentals of Academic Writing)	5	1
Research Skills B-2 (Developing Academic Writing)	5	
Research Skills B-3 (Elements of Academic Writing I)	5	1
Research Skills B-4 (Elements of Academic Writing II)	5	
Research Skills C-1 (Academic Presentation Skills I)	5	1
Research Skills C-2 (Academic Presentation Skills II)	5	
Research Skills C-3 (Presentation as Writing)	5	1
Research Skills C-4 (Presentation as Writing II)	5	
Research Skills D-1 (Academic Writing and research integrity)	5	1

(5) General information for Leadership Training Seminars

- As a rule, the language used is English. Japanese may also be used when necessary, depending on the content and instructor. Slides and other materials should be in English only where possible, or in both English and Japanese.
- As a rule, these classes are held at 16:30-18:00 on the first and third Fridays of the month. If one of those days falls on a holiday or is inconvenient for many Program students, the day and time may be changed. Classes are held 24 times a year in all cases. As a rule, they are offered in rotation in the above categories.
- For other events with content appropriate to the intent of this program, attendance results may be added to attending students' records if the event is announced in advance. To obtain such attendance credit, students must submit a report as described below.
- Proposals from program students are accepted twice a year, and the Education Committee decides which of them to adopt. In line with the above, priority is given to proposals that will be conducted in English. Although proposals may be in any category, those in category (5) are especially encouraged.
- Event notifications should always include starting and ending times. If these times differ from the general rules above, approval must be obtained from the contact faculty member. The contact faculty member shall request the cooperation of the instructor in advance, especially with regard to strict adherence to the official finishing time. Continuation of a seminar beyond the scheduled finishing time is not prohibited, but attendance is voluntary.

Seminars that students or faculty members plan themselves independent of the above rotation may also be held. In such cases, attendance records may be added in accordance with seminar content. However, an application must be made to the general supervisor in all cases with regard to date/time and content, and his or her approval must be obtained.

- Attendance is certified only in cases when a student is registered in the attendance roll before the seminar starts (for tours, before the gathering time) and a report (about one A4 sheet of paper. Not accepted if the student did not attend) is submitted by 17:00 on the Friday of the week after the day the seminar was held (if that Friday is a holiday, the soonest school day after that) (place of submission: LGS Frontier Office, C315, Graduate School of Science Building C). Tardiness or reports submitted after the deadline are not acceptable. In the event of possible tardiness for unavoidable reasons, or inability to submit the report to the LGS Frontier office by the deadline, students must contact the professor in charge by email and state the reason (Prof. Nishimoto: inishimoto[at]nuae.nagoya-u.ac.jp) by the day before the seminar.

(6) Roles of those in charge

(6-1) In the case of Education Committee plans

- Contact faculty member: Administrative oversight, advance contact with instructor, advance seminar announcements, management of attendance register, site preparation, report submission guidelines, report grading

(6-2) In the case of student-proposed plans

- Contact faculty member: Administrative oversight, management of attendance register, report submission guidelines, report grading, evaluation of proposing student's leadership contribution
- Student in charge: Planning and administration, advance arrangements with instructor, site preparation, chairmanship, maintaining forward movement of discussion, seminar report

(7) Evaluating level of achievement

- Attending students

Achievement level is evaluated by contact faculty member. Reports are evaluated based on the average scores for the following:

- (1) Does the report appropriately summarize what was covered in the seminar?

- (2) Does the report appropriately describe the student's impressions of what was covered in the seminar and what the student gained from the seminar?
- The contact faculty member evaluates the achievement level of the student in charge (in cases of student-proposed plans only) based on the following:
 - (1) Did the student display leadership and work to enhance the plan?
 - (2) Did the student make sufficient arrangements with the instructor and contact faculty member?
 - (3) Did the student make proper preparations for the seminar, including site preparations?
 - (4) Was the student's seminar report done properly?

Note: In cases of student-proposed plans, a value of 0.5 times the achievement level GP for the seminar is conferred as Leadership Contribution Point (LCP) to the student in charge for his or her leadership contribution. By submitting a report, GP evaluated depending on the contents is also conferred to the student in charge as other students do. The maximum number of students in charge is one for formats A and B and three for format C.

(8) Completion requirements

Students must attend at least 25 seminars in total, 3 times or more in each category during the total amount of time scheduled for their affiliated course (from the time of registration until completion). This number cannot be reduced even if a student's affiliated course is scheduled to last less than five years.

In the review of scholarship eligibility, students need to attend $25 \times [\text{Elapsed time in affiliated course}] / [\text{Total planned time in affiliated course}]$ seminars.

See Table 5-2 (4) and 5-2 (5) for requirements related to achievement level.

(9) Instructor fee

Instructor fees may be paid to instructors and program coordinators from outside the university. The amount of the fee is set in the Nagoya University regulations. Procedures to pay these fees must be completed in advance at the LGS frontier office. Instructor fees cannot be paid to Nagoya University faculty members.

(10) Persons in charge and contact information

General faculty member: Ichiro NISHIMOTO
 Ext.: 6753 Room: 343, Engineering Building 2
 e-mail: inishimoto[at]nuae.nagoya-u.ac.jp

7.4. Global Leadership Training (GLT)

(1) Aims

To cultivate the English language proficiency, international outlook, and project management ability needed as a global leader.

(2) Details

Global Leadership Training I and Global Leadership Training II are allotted 1 credit each, for a total of 2 credits. In I, students strengthen their ability to communicate and discuss in English, essential in global communication, as well as their negotiation and presentation skills. In II, they acquire qualities that can be used globally, such as during joint international development and in international competition, through lectures and presentations on international and space law, international relations and business, global communication, and project management on the course of the space industry. In both I and II, lectures and presentations are in English.

(3) Prerequisites

Students need an English score of IELTS 5.5 or higher or the equivalent, or to pass an eligibility interview conducted before the start of the course.

Students who have already obtained an IELTS score of 7.0 or higher or the equivalent are not required to take Global Leadership Training I (Global Communication), and are awarded 1 credit.

(4) Class times

- Global Leadership Training I (Global Communication)

First semester (spring semester) and second semester (fall semester). As a rule, first and third Fridays of each month at 13:00-14:30 and 14:45-16:15. Total of 7 class meetings.

The class content is the same in the spring and fall semesters. One credit is awarded for taking the class in either the spring or fall. With advance registration, the class can be repeated even if it has already been taken.

- Global Leadership Training II (Project Management & Space Policy)

Second semester (fall semester) only. As a rule, second and fourth Fridays of each month at 13:00-14:30 and 14:45-16:15. Total of 7 class meetings.

(5) Inquiries

LGS Frontier Office

Administrative assistant: Yoko MIZUNO
Ext: 6041 e-mail: yokom[at]nuae.nagoya-u.ac.jp

7.5. Student Retreats

(1) Aims and details

Student retreats (camp-type training workshops) are held for about two or three days with students taking leading roles. A principal and vice-principle selected from among students and the student organizing committee taking the lead during these retreats, conducting roundtable discussions and debates on topics such as leadership and space utilization, and holding research exchanges. These activities are intended to deepen mutual understanding between people in different fields and cultivate both a panoramic perspective and planning and management skills.

(2) General information for student retreats

During the Program student guidance held in April of each year, a principal, vice-principal, and planning and administrative staff are selected and a student organizing committee (SOC) is formed for the student retreat. These retreats, from planning to administration, are carried out mainly by students with the SOC at the center.

With the principal and vice-principal taking leading roles, the SOC plans, arranges the schedule, launches the web page, and makes arrangements for the site and participation applications. On the days of the retreat it takes on all administrative duties as the host.

One mentor participates in each SOC meeting. The details of the meetings are reported to other mentors and the faculty members by email, so that the SOC can obtain advice as necessary. Leadership Contribution Point is conferred in accordance with the contribution level of each of the SOC members.

(3) Compulsory participation

- As a rule, all Program students are required to participate in a student retreat once a year.
- However, a student may submit a request for permission not to participate in a retreat. This request must be made in advance, using the designated form, to the Student Affairs Office. If the student's reason for not being able to participate is judged to be valid, this requirement for participation may be waived. In the case of unavoidable circumstances such as sudden illness, the form requesting permission not to participate may be accepted after the retreat.

- If a student is absent from a student retreat without a reason judged to be valid by the Student Affairs Office, the student's scholarship may be suspended or reduced as determined by the Executive Board or the student may be expelled from the Program.

7.6. Short Courses and Lecture Courses on Space Science and Engineering

(1) Aims

To have students acquire basic and advanced knowledge on satellite systems and the subsystem technology that make up those systems, how to conduct satellite development, and monozukuri technology in short courses, and cultivate a broad perspective on satellite technology in general through contact with satellite design and analysis technology, circuitry and machine tools in lecture courses. Another aim is for students to use what they learn in these courses in the ChubuSat Instrument Development Project.

(2) Details

The Short Courses and Lecture Courses on Space Science and Engineering shown below have been developed to help students learn widely about satellite technology. Although both short courses and lecture courses are in Japanese, some are also offered in English for international students who would have difficulty taking a course in Japanese. In the short courses, international students can take the courses in Japanese and Japanese students can take the courses in English. In the lecture courses, however, there is limited capacity and because of this, as a rule, Japanese students are generally given priority in the courses conducted in Japanese and international students are given priority in the courses conducted in English.

Details for Short Courses and Lecture Courses on Space Science and Engineering

Lecture Courses on Space Science and Engineering	Satellite Systems	0.2 credits each
	Monozukuri	2 credits
	Creative Experiments in Advanced Engineering	2 credits and certification
Short Courses on Space Science and Engineering	Satellite Development and Applications	1 credit each
	Monozukuri	0.5–1 credits each

(3) Time of year and format

Satellite Systems: Courses in English in the first semester, courses in Japanese in the

second semester; intensive course format

Monozukuri Lectures: First semester

Creative Experiments in Advanced Engineering: First semester

Satellite Development and Applications Short Courses: Second semester. As a rule, one course is continued for two consecutive days

Monozukuri Short Course: One course is held for one to several days throughout the year

7.6.1. Lecture Courses on Space Science and Engineering

(1) Satellite Systems

Courses are arranged to cover the following topics. Please note, however, that they are not necessarily offered in the order shown below.

1. Satellite system technology
2. Telemetry, command, and ranging technology
3. Solar array wing and electric power supply technology
4. Attitude control system technology
5. Propulsion system technology
6. Structural system technology
7. Thermal control technology
8. Mission technology
9. Space parts and materials technology
10. Range and launching
11. Satellite operation and earth-based systems
12. Satellite orbital theory
13. Satellite development methods and procedures

(2) Monozukuri

Introductory courses related to experimental and observational technology in the particle, space, and solar-terrestrial fields are offered on the following topics.

1. Gas detectors, scintillation, Cherenkov detectors
2. Fundamentals of sensors using semiconductors
3. Fundamentals of analog and digital circuits
4. Optics
5. Low-temperature vacuum technology and infrared observations
6. Missile technology
7. Radio wave observation technology

(3) Creative Experiments in Advanced Engineering

Engineering research classes.

7.6.2. Short Courses on Space Science and Engineering

(1) Satellite Development and Applications Courses

The following satellite development and Applications short courses are offered. Please refer to the syllabus for details. Also note that the opening-class frequency and content of each course may change from year to year.

1. Satellite communications
2. Microsatellite development and Applications
3. Thermal design and analysis
4. Structural design and analysis

(2) Monozukuri Laboratory Courses

The following courses related to monozukuri are offered. Please refer to the syllabus for details. Also note that the content of each course may change from year to year.

1. Mounting technology
2. Electronic circuit fabrication
3. FPGA training course
4. ASIC training course
5. Printed circuit board fabrication equipment
6. Machine work
7. Monozukuri practices: Vibration cutting
8. Monozukuri practices: Automated technology
9. Monozukuri practices: Thin-film fabrication technology using plasma ion processes and assessment of tribological characteristics

7.6.3. Notes on taking “Satellite Systems” lectures courses and “Satellite Development and Applications short Courses”

(1) Satellite Systems

Students are permitted to take both the Japanese and English language versions of any course, but cannot receive credit for both. In such cases students will receive the number of credits of whichever of the courses taken gives them the largest number of credits.

For example, these courses are worth 0.2 credits for each course, and if a student takes the English version of three courses, equal to 0.6 credits, and the Japanese version

of four courses, equal to 0.8 credits, the credits cannot be combined to receive 1.4 credits. In this case, the student will receive 0.8 credits for the courses taken in Japanese.

In addition, if taken within the required period, a student may take these courses in two different academic years. However, the credits cannot be combined. The course record for the year in which the number of credits for the course was the largest will be recognized.

(2) Satellite Development and Applications

Students are permitted to take both the Japanese and English language versions of a course, but credits cannot be combined if both versions are taken for the same course subject. For example, if a student takes both the Japanese and English language versions of the “Structural design and analysis” lecture course, he or she will receive credit (1 credit) for only one of them. If a student takes two different subjects, one in Japanese and one in English, the credits for both are totaled.

For example, if a student takes “Thermal design and analysis” in Japanese and “Structural design and analysis” in English, he or she will be awarded credits for both (2 credits total).

However, unlike the lecture courses, the short courses have restricted capacity. As a result, Japanese students are given priority in the courses conducted in Japanese and international students are given priority in the courses conducted in English.

7.7. ChubuSat Instrument Development Project

(1) Aims

Nagoya University leads the ChubuSat microsatellite project (see the supplemental note below). In the Program, students can learn through actual experience in satellite development and testing related to the ChubuSat project. Projects are carried out by teams of 5–9 students from different academic fields. The aims are to promote exchanges between disciplines while at the same time cultivating students’ planning, organizational management, and problem-solving skills.

(2) Details

(2-1) Mission Proposal Phase (first semester of second year (M2). For third year transfer students, first semester of third year (D1)): Students develop a proposal for a satellite project over six months. Satellite projects with important goals and significance, and a high level of feasibility then enter the planning stage. Satellite instrument specifications, satellite orbit, and operation plans are determined from the demands to

achieve the project's goals. Verification tests are planned to examine the feasibility of the proposed satellite projects. This will take about 8 hours per week (maximum) for six months, although it will depend partly on the team and how it progresses.

(2-2) Instrument Development Phase (first semester of third year (D1). For third year transfer students, first semester of fourth year (D2)): More practical work is carried out for the development of the satellite instrument. The following options are available for this work. Instrument Development Phase will take about 16 hours per week (maximum) for three months, although it will depend partly on the team and how it progresses.

- Prototyping and testing of onboard instruments are carried out to examine the feasibility of the satellite projects proposed in Mission Proposal Phase. (If parts procurement for the test is expected to take time, students can take measures such as starting preparations earlier or prolonging the start of actual work.)
- If the plan proposed by a team is thought to have low feasibility or a team does not wish to continue the work from Mission Proposal Phase, the team can select and carry out a standard program prepared by the ChubuSat Program Office. Topics include (1) Mechanical response test and model analysis simulating the rocket launch vibration environment, (2) Temperature characteristic test and model analysis simulating the space thermal vacuum environment, (3) Various ChubuSat pre-launch environmental tests or post-launch tracking and operation, (4) Construction of an automatic reception system for microsatellite downlink signals, and others.

(2-3) Flight-Model Fabrication Phase (first semester of third year (D1) or later, semester chosen by students): Development of highly feasible satellite onboard instruments selected from Mission Proposal Phase by student teams is continued with support from faculty members of the ChubuSat Instrument Development Project Promotion Office. Participation on these teams is voluntary (students are not limited to working only on their own team's project). The aim is actual installation and launching on ChubuSat.

(3) Implementation

Faculty members from the ChubuSat Program Office form teams based on students' major field of study, academic history, and instrument development experience. Faculty members and mentors also participate, with teams meeting once a week to discuss the project for about three hours or spend several hours for measurements and experiments. The faculty members and mentors offer advice to students as appropriate and the faculty members evaluate students' levels of contribution and roles.

In Mission Proposal Phase, report meetings are held twice during the six-month

period (generally three and five months after the start). Each team gives a presentation on its proposal. Faculty members with deep experience in satellite instrument development review the proposals and offer appropriate advice. The first version of the written proposal is reviewed after four months. Students revise the proposal based on feedback and submit a final version for review at six months. After proposals are submitted, faculty members will conduct brief oral questioning to check the students' level of understanding. Each student will submit a written report on their individual contribution, what they have learned, and other matters.

In Instrument Development Phase, a final report meeting will be held at the end of the three-month period. Each team will present its verification results and submit a report of their activities. Reports will be reviewed after the final report meeting. After this phase has ended, each student will submit a written report on their individual contribution, what they learned, and other matters.

Participation in Flight-model Fabrication Phase is voluntary, and the work done and methods are further developed with cooperation from ChubuSat Program Office faculty.

(4) Evaluating student achievement

In evaluating student achievement, group score (proposal content, level of activity) accounts for 40% and individual score (attendance rate, self-evaluation, evaluation by faculty, oral examination) accounts for 60%.

Proposal content in written reports and report meetings is graded by taking the average score for the following.

- Is the project objective compelling?
- Do the scientific demands, mission demands, and success criteria for the project agree with the objective?
- Do the instrument's conceptual design and specifications satisfy the project's mission demands?
- Is the content of the report and presentation easy to understand (theoretically and in terms of how well the report and slides were prepared)?

A group's activity level is assessed based on things such as the number of meetings and the content of their inquiries to faculty members and manufacturers. In self-evaluation reports, students use a written format to report the roles they have performed and what they have gained through the activities. Students who take leading roles in discussions and contribute to team management are rated highly by faculty members. Scores on things such as participation in related courses are also added. Each student undergoes an oral examinations to ascertain whether he or she properly understands the

content of the final report.

Student achievement in Instrument Development Phase is also evaluated with group evaluation accounting for 40% and individual evaluation accounting for 60%. The content of written reports and in report meetings is graded by taking the average of the scores for the following.

- Were the progress and share of roles in the project appropriate?
- Has the achievement level to this point been adequate?
- Is the content of the report easy to understand (theoretically and in terms of how well the report was prepared)?

Individual level of contribution is evaluated comprehensively, including such things as the student's role in the team and attitude toward the program in discussion meetings (in both Mission Proposal Phase and Instrument Development Phase), based on individual student evaluation reports by contact faculty members.

In Flight-Model Fabrication Phase, ChubuSat Program Office faculty members make assessments suited to the individual projects.

(5) Completion requirements

Mission Proposal Phase is mandatory. Please refer to Table 7-4 for combination of Instrument Development Phase and Internship, and to section 5.3 for requirements regarding student achievement.

Flight-model Fabrication Phase is optional.

(6) Attendance

ChubuSat Instrument Development Projects are carried out by teams, and so students are encouraged to keep absences to the minimum. As a rule, short study trips are not prohibited, but students are asked to share information on such trips in advance and limit their frequency to avoid interfering with the activities of the team. Long absences for study trips or other reasons are generally prohibited because of the adverse impact on team activities. If a long absence for research purposes is unavoidable, please consult with the team at an early time and make efforts to minimize the impact.

Illnesses are treated as “authorized absences,” but absences for research are treated as regular absences and students should understand that such absences will affect their GP (attendance through teleconferencing, etc., counts for 0.5 attendance points. Evaluation of level of contribution to the team will also decrease).

Students should understand that managing outside matters for minimum interference with team activities is a necessary element as a leader, and recognize that

the cooperation of individual students is essential to the ultimate success of the team. Absences should be minimized accordingly.

(7) Contact information

Mission Proposal Phase Contact faculty member: Hidehiro KANEDA

Ext: 2452 Room 2, C306, Graduate School of Science Building C

e-mail: kaneda[at]u.phys.nagoya-u.ac.jp

Instrument Development & Flight-model Fabrication Phase Contact faculty member:

Hiroyasu TAJIMA

Ext: 4314 Room 510, Research Institutes Building I

e-mail: tajima[at]nagoya-u.jp

(Supplemental note) ChubuSat Microsatellite Project

The ChubuSat Project is a microsatellite project planned by Nagoya University, Daido University, and the Meiyu Aerospace Support Technology Team (MASTT), which is made up of small and medium-sized aerospace enterprises in the Chubu Region. This project shows the high level of space development technology at universities and space-related businesses in the Chubu Region, and is undertaken with the goal of widening the window for entry into the satellite business by greatly reducing costs.

ChubuSat-1, called “Kinshachi-1,” was launched in November 2014. It has a weight of 50 kg and a cubic shape of 50 cm on each side. It is equipped with an optical camera developed by the Kimura Laboratory at Tokyo University of Science and a commercially-available infrared camera. These cameras are used for various purposes, including checking the operational status of facilities isolated by disaster or other reasons, the occurrence of fire, and the eruption status of volcanoes; conducting regular remote monitoring of affected areas when disasters occur; detecting forest fires in remote areas; and creating a database of space debris. The satellite is also equipped with an amateur radio band transceiver to provide a message relay service for general amateur radio users.

After the completion of actual satellite fabrication and various tests for putting it into orbit, ChubuSat-1 was successfully launched in November 2014. With adoption of a mission objective proposed in the ChubuSat Instrument Development Project, ChubuSat-2 was launched at Tanegashima Space Center of the Japan Aerospace Exploration Agency in February 17, 2016.

7.8. Internship

7.8.1. Internship duration and number of credits

Internships are outstanding learning experiences for students. During internships, students see how the skills we focus on nurturing in the Program are displayed in the actual corporate world, and develop their global communication skills through work in other countries. In total, students are required to spend a minimum of 6 weeks at companies or in other countries (A Requirements) or a minimum of 8 weeks at companies and in other countries (B Requirements). Normally, it is assumed that internships will be done from the third year (D1) to fourth year (D2), but in some cases students are busy with the ChubuSat Instrument Development Project or their dissertation research during that time. Thus, careful planning is needed. To assist in this planning, Program students in the second year (M2) and later who have not yet completed their internships are asked to refer to the Frontier Space LGS Intra-University Study Internship Orientation (scheduled around May each year), or individual interview, etc. for assured participation in internship in each academic year and obtain information related to the internships in the year.

To encourage Program students to carry out their work in a systematic manner throughout the entire duration of the Program, those who have not completed their internships should submit the “Primary Internship Application” by a separately designated deadline each year even in years when they are not planning to do an internship.

Completion requirements and scholarship requirements are determined depending upon combination of internships and ChubuSat Instrument Development Phase of ChubuSat Instrument Development Project. Table 7-4 shows some example combinations for durations of internships and ChubuSat Instrument Development Phase of ChubuSat Instrument Development Project. . Students who do a corporate internship only for 6 weeks or more can fulfill their B Requirements by participating in a “Special Overseas Training” (1-2 weeks) in place of the international internship. Besides, students can fulfill their B Requirements by participating in overseas corporate internship for at least 8 weeks. Internship requirements may be waived for Program students with working experience or experience living overseas if they apply for such waiver and their application is accepted.

**Table 7-4 Example Combinations of Internships
and Instrument Development Phase of ChubuSat Instrument Development Project**

		Corporate Internships	International Internships	Special Overseas Training	Instrument Development Phase of ChubuSat Instrument Development Project
	Individual Requirements	Calculate 2 weeks as 1 unit. 1 unit or more are required for completion.	Calculate 2 weeks as 1 unit. 3 units or more are required for completion.	Count 1 or 2 weeks as 1 unit. Applicable only for those who completed at least 3 units of Corporate Internships	Counted as 3 units
	Requirements				
A Requirements (Requirements for Basic Scholarship)	A total of 3 units or more	3 units	-	-	-
		-	3 units	-	-
		-	-	-	3 units
		3 units or more		-	-
B Requirements (Requirements for Standard Scholarship)	Corporate Internships is mandatory. Complete at least 2 courses including Corporate Internships with a total of 4 units or more.	1 unit or more			3 units
		1 unit or more	3 units	-	-
		4 units of Overseas Corporate Internships			
		3 units	-	1 unit	-
A Requirements and B Requirements for those accepted in and after June of FY 2016*		Not mandatory			

* Or D1 students transferred in and after June of FY 2018

The number of certified credits for corporate and international internships corresponding to the duration of each is shown in Table 7-5. Student achievement (GP) is evaluated based on the student's written report, evaluation from the internship site, presentation at report meeting, and other factors, with GPA calculated as follows.

$$\frac{[\text{GP (corporate)} \times \text{credits (corporate)} + \text{GP (international)} \times \text{credits (international)}]}{[\text{credits (corporate)} + \text{credits (international)}]}$$

Table 7-5 Number of certified credits for internships

Duration (weeks)	No. of credits
≥2	1
≥4	2
≥8	3
≥12	4
≥16	5
≥20	6
≥24	7

7.8.2. Corporate Internships

(1) Aims

To have students experience the practical environment of a company and learn how the skills emphasized in the Program—project planning, execution, management, and problem-solving skills—are displayed in the corporate world. Of course students are greatly encouraged to do their internships in companies outside Japan, but they should remember that the initial approach and negotiations with the company where the internship will take place need to be done by the student him- or herself.

(2) Details

Students stay with a company for a fixed period and obtain working experience. Before the start of an internship, sufficient arrangements need to be made with the company, including agreements on the work that will be done, the duration and other conditions. During the internship an on-site survey will also be done by the faculty member. If the internship is done outside the company grounds, permission from a corporate internship faculty member in the program is needed.

A single internship must last at least two weeks. Long-term internships of six months are also possible, depending on the company. Corporate internships can be done from the

first year (M1) as long as they do not interfere with other Program classes or activities. During the ChubuSat Instrument Development Project, only corporate internships that do not involve travel will generally be allowed.

Corporate internships at the Japan Space Exploration Agency (JAXA) are recognized only in cases when the same results as work experience at a company can be expected (for example, when it is seen as work experience at a site where JAXA is working together with a company or other organization for space utilization and development). Whether or not such experience will be recognized is determined for each case in a review based on an application from the Program student. Such experience will not be recognized as an internship if it is seen as one part of the student's dissertation research, or if the student is participating in research done in a system similar to that of a university. Specifically, internships are not recognized at the JAXA Institute of Space and Astronomical Science or Institute of Aeronautical Technology, or other organizations that are essentially research institutions, as they are not recognized as corporate internship environments.

Students with working experience prior to acceptance into the Program may apply to have the corporate internship requirement waived.

For internships that involve travel, travel expenses are paid in an amount determined with consideration of the lodging provided by the company where the student is serving as an intern. These travel expenses include lodging expenses (maximum of 150,000 yen per month, although individual consideration is given if a student submits a statement of reason), a daily allowance of 1,300 yen (for working days only, excluding times not associated with the internship trip), and round-trip transportation expenses. If lodging for the internship is provided by the company (either free of charge or for a cost), the Program pays only the necessary difference in amount.

The Nagoya University bylaws do not allow people to accept remuneration from companies. The amount to be paid will as a rule be calculated by the LGS Frontier Administration Office. Except in special circumstances, this doesn't require a declaration of expenses from the student. Expenses for travel to a place other than the internship site or for conference presentations, etc., are generally not paid.

Special note for international students: Because of the limited number of companies that accept interns and for other reasons, a corporate internship is not part of the Program completion requirements for international students. However, if an opportunity is presented international students are encouraged to undertake a corporate internship.

(3) Implementation

(3-1) Internship Workshops sponsored by the Nagoya University Career Development Office and Internship Guide

Students planning to do a corporate internship in Japan attend an “Internship Workshop” sponsored by the Nagoya University Career Development Office, held in May and July of the current academic year, and receive an “Internship Guide.” Students who cannot attend one of these workshops are asked to visit the Nagoya University Career Development Office (first floor, Building 7, School of Engineering) to receive their Internship Guide.

(3-2) Primary application for internship

After consulting with their doctoral advisor, students are asked to submit a Primary Internship Application by the designated deadline. However, in cases when an internship is decided on short notice, students are asked to submit an application to the LGS Frontier Administration Office at that time.

(3-3) Selecting candidate companies for internships

The following opportunities are provided to help students looking for a company to do an internship.

- Use of the Program’s special framework (posted on member’s site)
- Use of Nagoya University research internships
<http://www.rdint.engg.nagoya-u.ac.jp/>
(This is a Graduate School of Engineering site, but can be used by students of other graduate departments in the university with advance contact.)
- General recruitment (individual company sites)
- Other
- Students can also discuss internships with specially appointed faculty members to receive appropriate advice, as necessary.

Hiroshi AOKI, Specially Appointed Staff (full-time)

[haoki\[at\]nuae.nagoya-u.ac.jp](mailto:haoki[at]nuae.nagoya-u.ac.jp)

Involved in research and development of liquid rocket engines at JAXA (including former NASDA). Tetsuo YAMAGUCHI, Specially Appointed Staff (part-time)
[tyamaguchi\[at\]nuae.nagoya-u.ac.jp](mailto:tyamaguchi[at]nuae.nagoya-u.ac.jp)

Involved in satellite development at Mitsubishi Electric’s Corp., Kamakura Works and Japan Manned Space Systems Corporation

- Students can obtain company information and have opportunities to talk with faculty members in charge of internships by attending the Internship Orientation held by the Program or events sponsored by the Nagoya University Human Resources Development Division and Business Capacity Development Center .
<http://www.b-jin.jp/>
- Students may also want to consider participating in company or factory tours planned in the Leadership Development Seminars (Category 4: Monozukuri Seminars) as an opportunity to observe the work performed at companies.

(3-4) Matching

- Once a specific company is decided, attempts are made to match the work content, duration, and other internship conditions between the student and company.
- Before starting an internship, students can visit the company for matching of conditions (advance travel procedures are required).
- After the company, duration, and content of an internship are determined, students report to their doctoral advisor to obtain the advisor's agreement. Students are also asked to submit a "Corporate Internship Matching Completion Notice" to the LGS Frontier Administration Office. As a rule, the Matching Completion Notice is to be submitted at least two months before the start of the internship.

(3-5) Procedures to start internship

Students should be sure to complete the following reports and procedures designated in the Nagoya University Internship Guide before and after the start of an internship.

1. Conclusion of a letter of understanding between the company and graduate school, and submitting a letter of commitment.

Upon receiving a Corporate Internship Matching Completion Notice from the student, the LGS Corporate Internship Office will confirm the letter of understanding and letter of commitment with the company. The content of the letter of understanding and letter of commitment also needs to be checked by the university. The internship cannot move forward based on the judgment of the student only. If, during the matching stage, the person in charge at the company where the internship will take place requests a letter of commitment and other

documents, the student should inform that person that the content needs to be confirmed by the university. The student should not submit the documents at that time.

(The content of the letters of understanding and commitment are to be confirmed by both the LGS Corporate Internship Office and the company.)

2. Submission of a Corporate Internship Preparation Competition Notice and Internship Plan (Form 4) by two weeks before the start of the internship. (The student submits these documents to his or her doctoral advisor and the LGS Corporate Internship Office.)
3. Students enroll in Personal Accident Insurance for Students Pursuing Education and Research (PAS) (Liability Insurance for Students Pursuing Education and Research (LSR) coupled with PAS). (The student completes the procedures at the student affairs section of the graduate school in which he or she is enrolled.) These procedures are not necessary for students who enrolled in insurance as part of their university admission. To be sure, students should check their insurance status with the student affairs section of the graduate school to which they belong.
4. Completion of travel procedures at the Program office of the graduate school in which the student is enrolled (Science or Engineering).
5. Giving a blank internship rating form (form 6) (or its electric file) to the person in charge of the internship at the company (this can be done on the first day of the internship, with the form filled in at the time the internship is completed.)

(3-6) Procedures after completing internship

1. Submission of internship report (forms 1-3, 5), internship rating by the person in charge at the company (form 6, sealed in an envelope designated by the university). The student submits these forms to the LGS corporate internship office, which then passes them on to the person in charge of student affairs in the student's graduate school.
2. Giving a presentation at an internship report meeting

3. For students who want to receive credit certification from their graduate school (only in graduate schools that recognize internship credits), completion of procedures designated by the graduate school after the internship has ended. However, the amount of time for which credit certification is available is the time obtained by subtracting RA working hours from internship hours. Also note that separate regulations are followed for research internships.

Note: The forms are included in the Internship Guide issued by Nagoya University (they can also be obtained as electronic files).

(3-7) Evaluating student achievement

Student achievement will be evaluated with the internship report counting for 40%, the internship rating submitted by the company counting for 20%, and the student's presentation at a report meeting counting for 40%.

Internship reports will be graded by taking the average of the scores for the following.

1. Training content and its significance
2. Is the guidance structure at the company clearly specified?
3. Targets and level of attainment
4. New discoveries and things gained from the internship experience
5. How will the student use the internship experience, and is a message to younger students included?

Presentations (presentation time and question-and-answer time are about 10 min each) at report meetings are graded by taking the average of the scores for the following:

1. Training content, significance, targets and level of attainment, lessons learned from the training, etc.
2. Are the above matters described appropriately and in a way that is easy to understand?

(4) Application procedures for credit for past work and internship experiences

Work and internship achievements before becoming a Program student may be recognized for internship credits after a review conducted on the basis of an application by the Program student.

(4-1) Students who would like to be exempted from internship requirements based on past experience are asked to apply by email to lgs-internship[at]frontier.phys.nagoya-u.ac.jp (with CC to doctoral advisor).

(4-2) The following documents are to be submitted.

- For past work achievements, a “Certificate of company employment” or an “Employment record application and report”
- An “Internship report” on internship experiences before joining the Program

(4-3) A review is conducted based on submitted documents and the equivalent time period and GP are certified. If necessary, an interview may also be requested.

Persons in charge and contact information

• LGS Corporate Internship Office: LGS Frontier Administration Office (Engineering)

Person in charge: Yoshiko KUBO Ext: 6041 e-mail: [ykubo\[at\]nuae.nagoya-u.ac.jp](mailto:ykubo[at]nuae.nagoya-u.ac.jp) •

Student affairs section of the graduate school in which the student is enrolled

Science and mathematics: Student Affairs Section

Engineering: Student Affairs Section

Environmental Science: Postgraduate Section, Junko OHASHI (part-time, ext. 4272)

- LGS corporate internship contact faculty members: Hiroshi AOKI, Tetsuo YAMAGUCHI, Hidehiro KANEDA (Graduate School of Science); Akihiro SASOH (Graduate School of Engineering); Hiroaki KATSURAGI (Graduate School of Environmental Studies)

e-mail: [lgs-internship\[at\]frontier.phys.nagoya-u.ac.jp](mailto:lgs-internship[at]frontier.phys.nagoya-u.ac.jp)

<http://www.frontier.phys.nagoya-u.ac.jp/websystem/admission/form/?id=16>

7.8.3. International internships

(1) Aims

To cultivate students' international communication skills and help students obtain the experiences necessary for international leadership. Students go outside the university for a long-stay at an overseas company or research institution to experience the most advanced development and research in an intercultural environment.

(2) Details

Internships are as a rule done from during the third (D1) to fourth (D2) years. However, international internships need to be avoided during the time a student is involved in ChubuSat Instrument Development Project. Planning and negotiations for international internships are carried out by students themselves. Negotiating with the research institution where the internship will take place and visa applications for long-

term stays in other countries take time, and so students should plan their international internships far in advance.

The total duration of international internships needs to be at least 6 weeks, with each internship lasting for at least two weeks. (See Table 7-4.) In the Program, a long stay of at least four weeks for one internship is recommended. International internships are reviewed individually (for each overseas trip).

Expenses incurred in internships may be paid with up to a total of 1.2 million yen per Program student, including expenses for corporate internships. This financial support is for lodging expenses (actual expenses, up to a maximum of 8,000 yen/day), daily allowance (up to a maximum of 2,500 yen/day for stays of 30 days or more, and a maximum of 4,000 yen/day for stays shorter than that), travel expenses, visa application fees, and insurance fees. Students are strongly encouraged to obtain traveler's insurance. The things that need to be covered by insurance depend on the visa application and host research institution, and students should make sure that the coverage is appropriate. Students are also asked to get vaccinated for infectious diseases as necessary (see the website of the Ministry of Foreign Affairs).

Special note for international students: International students already have sufficient international experience from living in Japan, and so are exempted from the international internship. If they want to do an international internship, however, they can receive the same support as Japanese Program students. However, an international internship cannot be done at a research institution in the student's home country.

(3) Implementation

(3-1) Participation in Internship Orientations (for both corporate and international internships)

Internship orientations are planned once every six months, conducted jointly with corporate internship orientations.

(3-2) Submission of survey of hopes for internship and primary application (for both corporate and international internships)

Students are asked to consult their doctoral advisor about the content of the internship. They should then submit a survey of hopes for the internship, which is conducted once every six months. Students with a detailed internship plan then submit a primary application. At this time a written opinion from the doctoral advisor should also be submitted. In addition to the period for batch submission every six months,

students who develop a sudden internship plan are asked to submit an application to the contact below (See 7.8.3 (7)) at that time the plan is made.

(3-3) Confirmation of English proficiency

If English proficiency does not meet the required level at the time of the primary application, approval of the primary application will be temporarily withheld. The required English proficiency level is the equivalent of an IELTS score of 5.5 or higher, or a judgment based on a student interview that the student has English proficiency sufficient for an international internship.

(3-4) International internship host researcher and development of internship plan

Students are asked to prepare an international internship plan after conferring with the host researcher at the internship site and their doctoral advisor. Research and expense plans should be described in detail in the secondary application. At that time, necessary details for overseas travel (whether or not a visa is needed, lodging) should be confirmed with the host researcher. Negotiations with the host researcher are conducted by the student him- or herself.

(3-5) Submission of secondary international internship application

The secondary application includes a description of the international internship plan together with a checklist of matters necessary for overseas travel. Students should submit the application as an email attachment to the International Office at least three months before the start of the international internship. The secondary application is reviewed for formal approval of the international internship plan.

(3-6) Overseas travel applications

Students should apply to the Program office in their respective school (Science or Engineering) at least one month before traveling.

(3-7) Submission of interim reports during international internships

Students are asked to submit an interim report about half-way through international internships.

(3-8) Procedures after the end of international internships

1. The student must submit a final report to the International Office within one month after the end of the international internship.

2. The student asks the host researcher to send the international internship questionnaire to the International Office within one month after the end of the internship.
3. The student gives a presentation at an internship report meeting (presentation: 10 min, question-and-answer session: 10 min, language: English).

(4) Evaluating student achievement

Student achievement is evaluated with the internship report counting for 40%, the internship rating submitted by the company counting for 20%, and the student's presentation at a report meeting counting for 40%.

Internship reports will be graded by taking the average of the scores for the following.

1. Status of communication with the internship host and local researchers.
2. Targets and level of attainment. New discoveries and the things gained from the experience
3. How the student will use the internship experiences
4. Is there a message to younger students?

The presentation at the report meeting will be graded by taking the average of the scores for the following.

5. Research content, significance, targets and level of attainment
6. Are the things learned from a long stay overseas and lessons regarding global communication described?
7. Are the above matters explained appropriately and understandably in English?
Was the question-and-answer session appropriate?

(5) Completion requirements

See Table 7-4.

Please refer to Table 5-2 for requirements regarding level of attainment.

(6) Special notes

(6-1) Special exception for people who have completed a long corporate internship

For people who have completed a long corporate internship of 6 weeks or more, scholarship requirements can be fulfilled with special overseas training from the perspective of reducing the time burden. Refer to “7.8.4 Special overseas training” for information on special overseas training.

(6-2) Special exception for long-term overseas travel experience prior to admission to the Program

Students who have studied abroad or lived long-term overseas prior to admission to the Program can apply to have that time accepted as an international internship. However, this is limited to the following conditions.

- Study abroad for eight weeks or more at an overseas university, undertaken based on the student's own choice (excluding language study abroad)
- Living in another country for at least one year during the high school and university years in Japan

In the above cases, students write about their experiences on the designated long-term overseas stay certificate and receive the certification of the International Office. GPA evaluation will be based on a written report and presentation at an internship report meeting, just as for regular international internships.

(7) Contact information

General internship information: e-mail lgs-internship[at]frontier.phys.nagoyau.ac.jp

International Office: e-mail lgs-intl[at]frontier.phys.nagoya-u.ac.jp

Contact faculty member: Yoshitaka ITOW

Ext:4319, Room 521, Research Institutes Building I

e-mail:itow[at]isee.nagoya-u.ac.jp

7.8.4. Special overseas training

(1) Aims

To encourage corporate internships, the following special overseas training can be applied to shorten the certified period for international internships for people who have completed corporate internships of 6weeks or more. This assumes that the student already has adequate international communication skills. By carrying out this special overseas training, students can intensively refine their international communication skills while obtaining overseas living experience. This training can be used to fulfill scholarship conditions.

(2) Details

(2-1) Special overseas training (independently planned)

Students stay for one to two weeks at an overseas university or research institution

and participate in local training activities based on their own plan. However, English proficiency of IELTS 5.5 or its equivalent is a required condition. Plans are implemented according to the following.

One or two candidate institutions are selected and students conduct preparations and negotiations for their stay while carrying out discussions with a local researcher. Simple attendance at an international conference by itself will not be recognized.

1. Local training is planned to include at least three days of training activities (research, experiments, surveys, debates, etc. conducted locally, and at least one presentation).
2. Before traveling, students write their training goals, training schedule (for each day) and other matters on a special overseas training application and have it approved at the International Office.
3. Students make a travel application at the Program office in their respective school (Science or Engineering) at least one month before traveling.
4. Students submit a special overseas training report within one month after returning to Japan. A research report is also conducted with an oral presentation (presentation 10 min, question-and-answer session 10 min).

(2-2) Special overseas training (using Nagoya University overseas locations)

This training is currently being planned. It will be announced as soon as preparations are complete.

(2-3) Evaluating student achievement

Student achievement is evaluated with the special overseas training report as 50% and an oral presentation as 50%. The points evaluated are the same as for international internships.