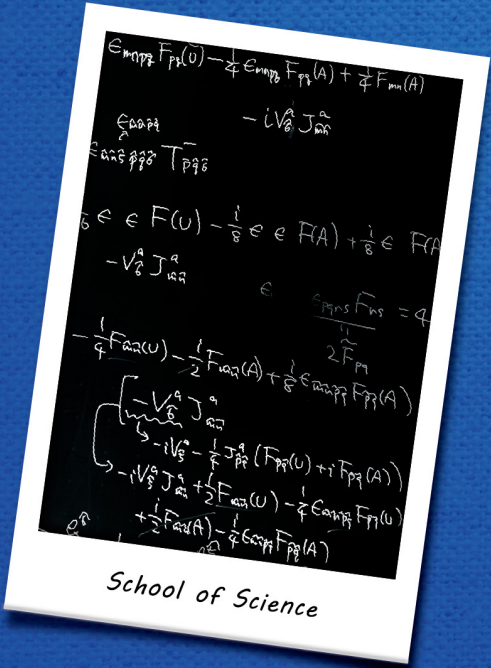


# Studying at Tokyo Tech An Introduction



School of Science



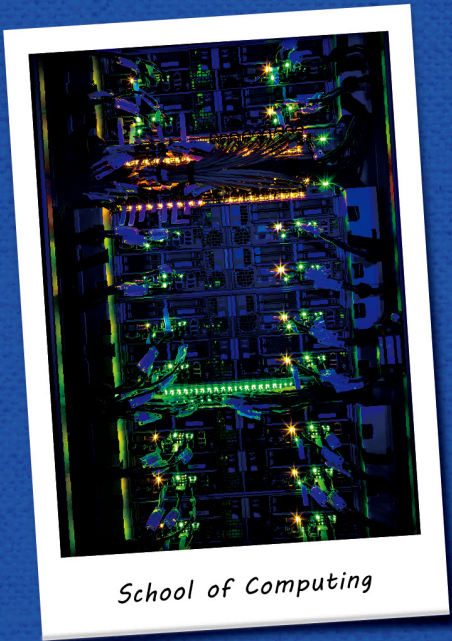
School of Engineering



School of Materials and  
Chemical Technology



School of Environment  
and Society



School of Computing



School of Life Science and Technology

## My Goals

Today: Learn actively

Tomorrow: Contribute to the world through the power of science and technology





*Dear Students,*

*We have created this pamphlet to help you understand Tokyo Tech's approach to education.*

*Our unique approach to education has been crafted in the hope that you develop as individuals through the satisfaction of learning and the enjoyment of student life you experience while at Tokyo Tech, and grow up to become professionals with character who flourish on the world stage.*

*We will do everything in our power to support your growth and foster your strong will to achieve.*

*We hope you will think and keep thinking about how you wish to grow during your time at Tokyo Tech.*



## Contents

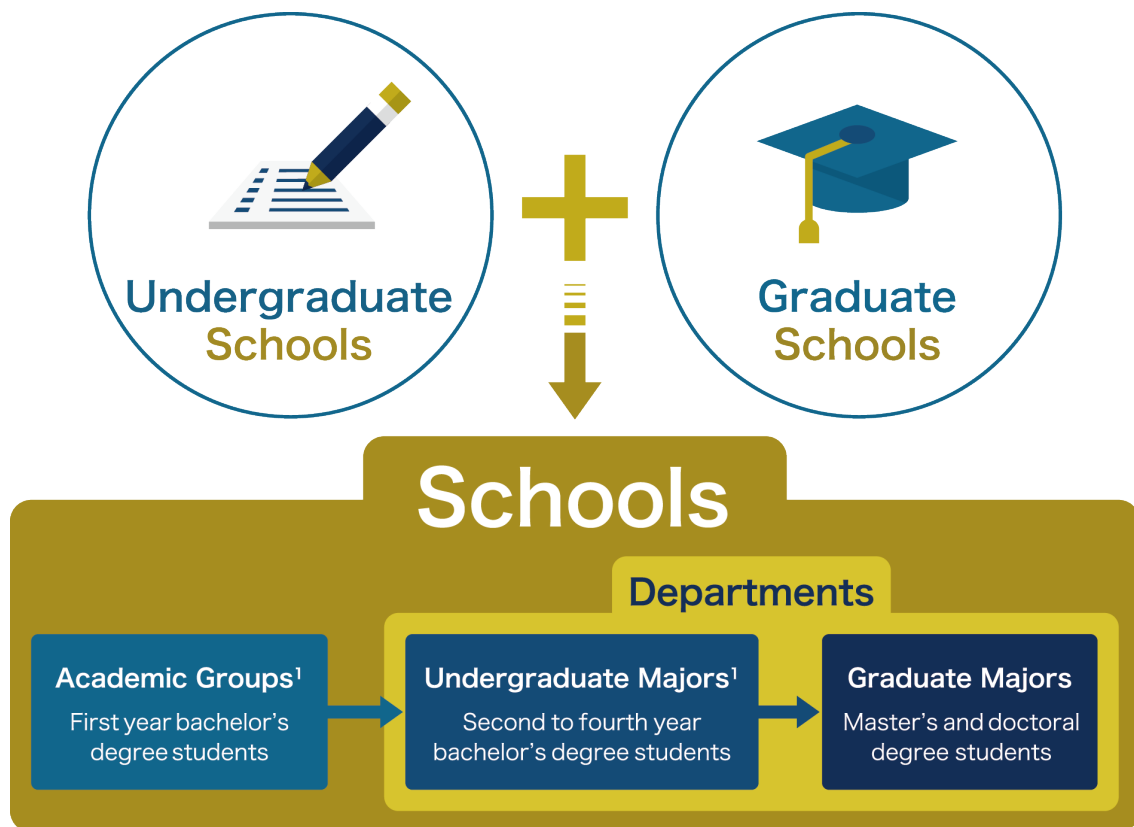
Educational objectives of Tokyo Institute of Technology	4
Schools, undergraduate majors, and graduate majors	4
Cultivating the spirit of learning and creating	5
Countless possibilities for the future	6
Flexible durations of study	7
Durations of study	7
Standard learning	8
Learning aimed at early completion of degree programs	9
Quarter system	10
Flexible approach to studying	11
Flexibility in the choice of fields to study	11
Learning that covers a single discipline in depth and learning that spans multiple disciplines	11
Graduate minors and progressive graduate minors ~ interdisciplinary learning for graduate students~	12
Interdisciplinary graduate majors	13
Seamless transition and wedge-shaped education	14
Education with distinctive character	15
Liberal arts and career development education	15
Developing research skills	16
Study abroad and other international experiences	17
Classes in English	17
Highly developed education system	18
Achievement-based assessment	18
The five competencies	19
Course numbering system	20
Limit on the number of credits that can be registered (maximum credit load)	20
Course syllabi	21
Active learning	22
Support for learning	23
Student support system	23
Tokyo Tech Learning Portfolio	24
Schools, departments, and majors	25

## Educational objectives of Tokyo Institute of Technology

Tokyo Tech aims to cultivate individuals who have a solid academic foundation, have the capacity to practice and integrate what they have learned, have the will to take on challenges, and will strive to develop the future of science and technology through their creativity.

## Schools, undergraduate majors, and graduate majors

The previously separate undergraduate and graduate schools have been joined together to form new Schools. The education system at these new Schools encourages students to pursue their interests and develop a broad perspective through comprehensive and systematic learning.



**Note:** The Technology of Innovation Management Professional Master's Degree Program is offered by the School of Environment and Society.

**1:** Bachelor's degree students spend their first year studying in an academic group and begin their undergraduate major studies from the following year.



## Cultivating the spirit of learning and creating

At Tokyo Tech, we consider the first year of the bachelor's program to be an extremely important time to help students grow and become successful in society and the world. Therefore, our goal for first year education is to cultivate a spirit of learning and creating.

To this end, a wide range of basic science and technology courses in mathematics, physics, chemistry, life science, and other areas are taught to give you the solid foundation necessary to become competent scientists and engineers. In addition, liberal arts courses, including courses in English and a second foreign language, are part of compulsory learning to ensure that you receive a well-rounded education as well as to build global awareness that is necessary to excel worldwide. Furthermore, we offer the Frontiers of Science and Technology course, a unique, experience-based course that aims to make you aware of the fun and challenges of science and technology and to ignite strong motivation to gain knowledge.

The “spirit of learning and creating” that you develop during your undergraduate years is a crucial asset that will enable you to fully realize your potential to pursue research at the graduate level.



### Learning

By taking required basic science and liberal arts courses at Tokyo Tech, students are able to learn the common language of science and engineering fields.



### Creating

Creative experiences foster students' ability to innovate. Together with their knowledge and enterprising spirit, students become individuals who can make significant contributions to society.



### Spirit

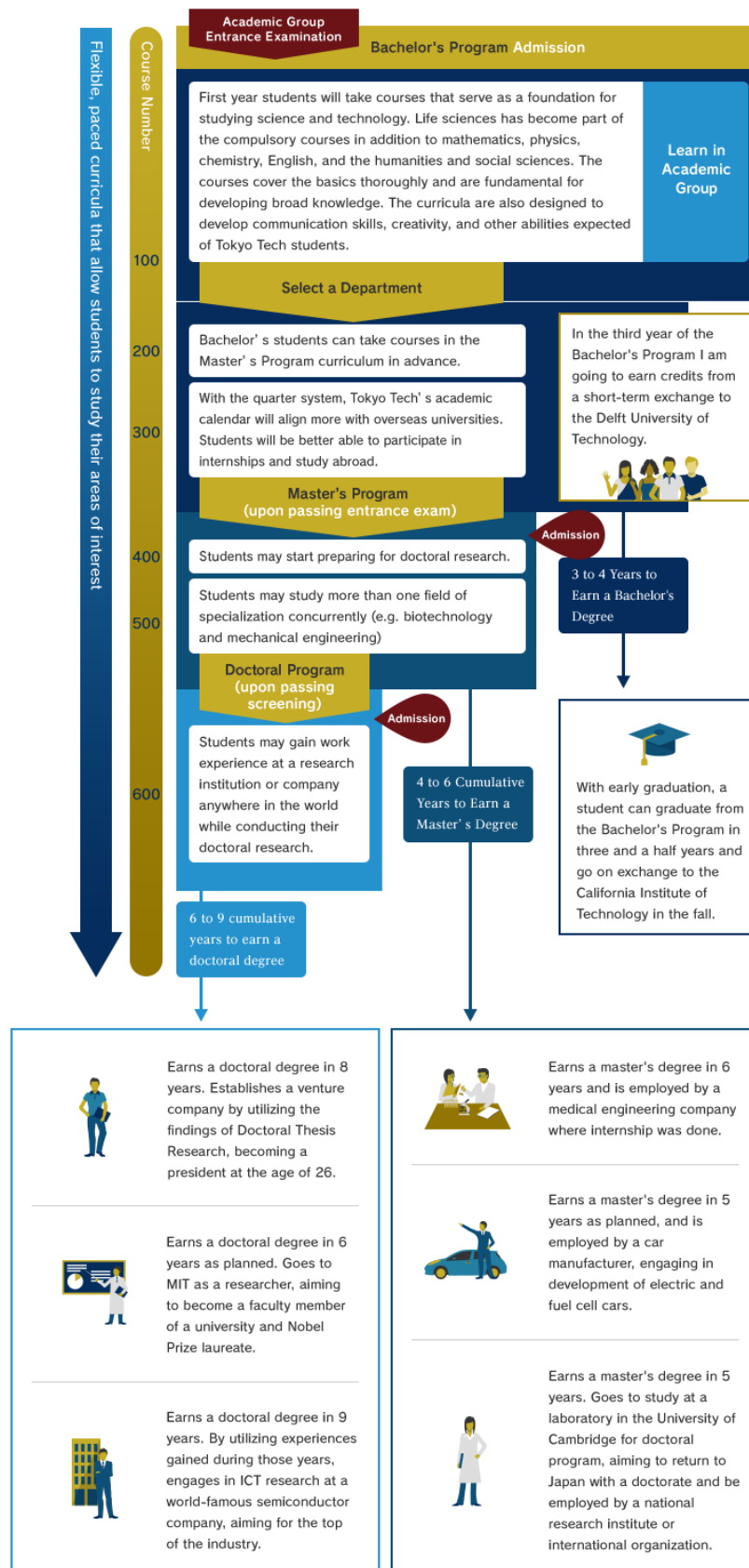
We value the spirit to tackle global problems and strive for one's dreams. University is a place to cultivate such spirit.





# Countless possibilities for the future

You choose your own goals and work towards them at your own pace. This is our approach to education. As you can see from the example below, at Tokyo Tech, you have plenty of options when it comes to designing a learning plan that fits your needs and leads you to the future you desire.





## Flexible durations of study

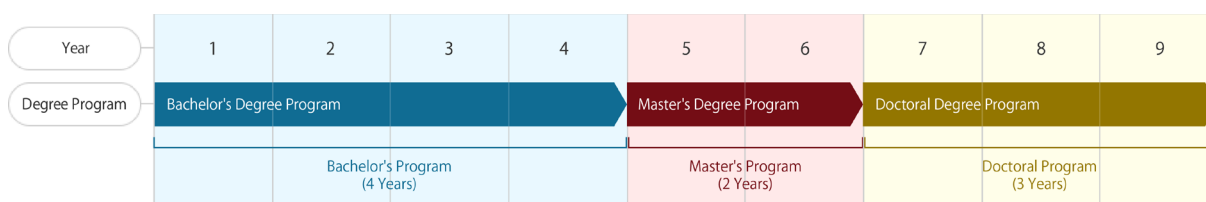
### ■ Durations of study

At Tokyo Tech, you set up your own learning plan. Based on your plans for your future, you decide how much time you ought to spend studying on campus and what experiences you ought to gain. Furthermore, the amount of time you spend at university is flexible. If you are successful in completing the degree programs in the minimum study durations, you can earn a doctoral degree in six years from the time you enroll in our undergraduate program. Similarly, bachelor's and master's degrees can be earned in shorter durations of study. Those of you wishing to embark on a career early, for example, can therefore plan to complete your degree programs early. Of course, you can also choose to thoroughly pursue your studies in the standard durations and incorporate study abroad, internships, and a variety of other activities in your learning plan.

	Standard duration of study	Minimum duration of study
Bachelor's degree program	4 years	3 years
Master's degree program and professional master's degree programs	2 years	1 year*
Doctoral degree program	3 years	1 year*

\*In total, a minimum of three years of enrollment is required to get both master's and doctoral degrees.

### Timeline for standard durations of study



### Timeline for early completion of studies

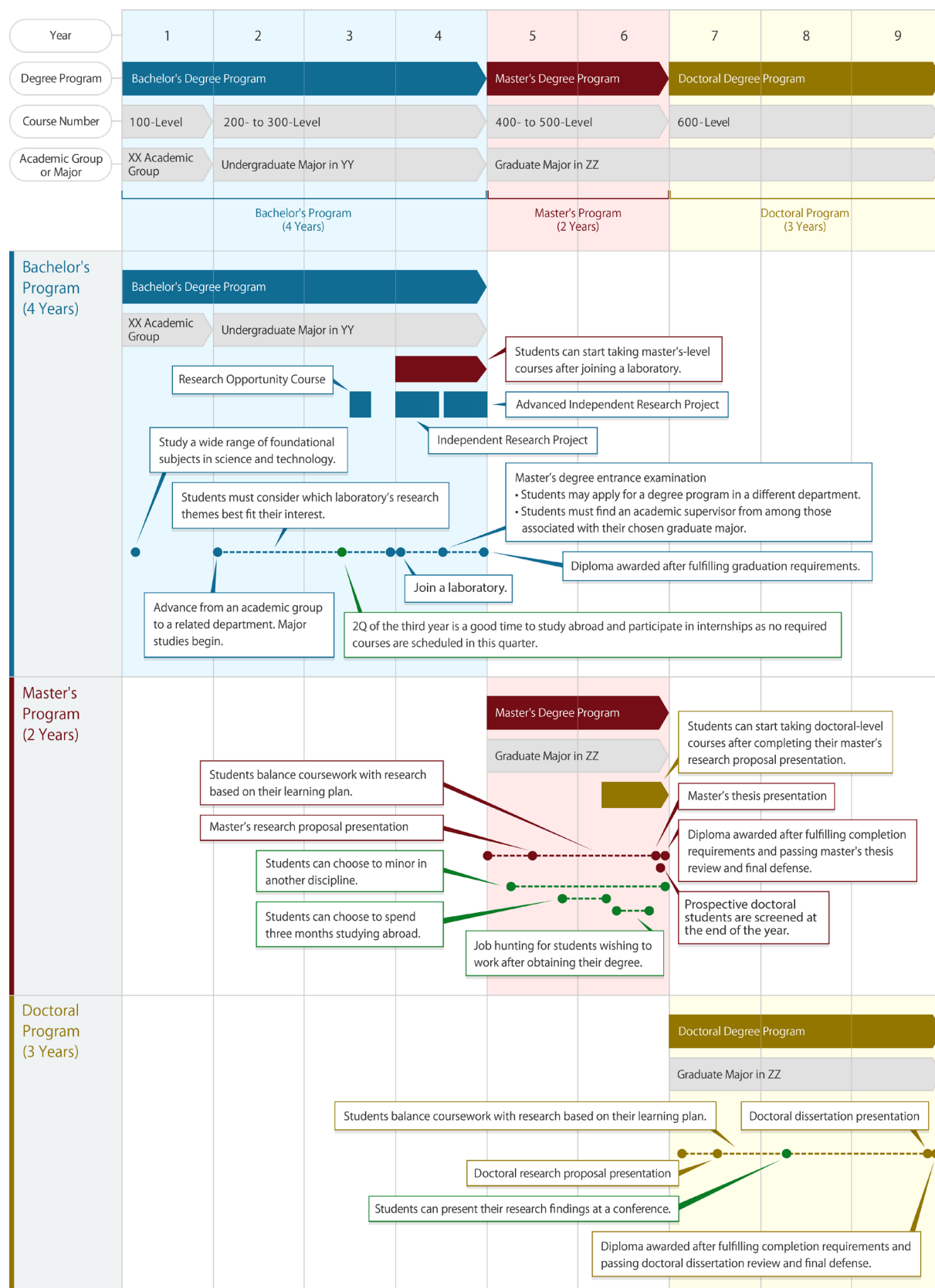
The timeline below shows a case where a student completes the bachelor's, master's, and doctoral programs in the course of seven years.





## ■ Standard learning

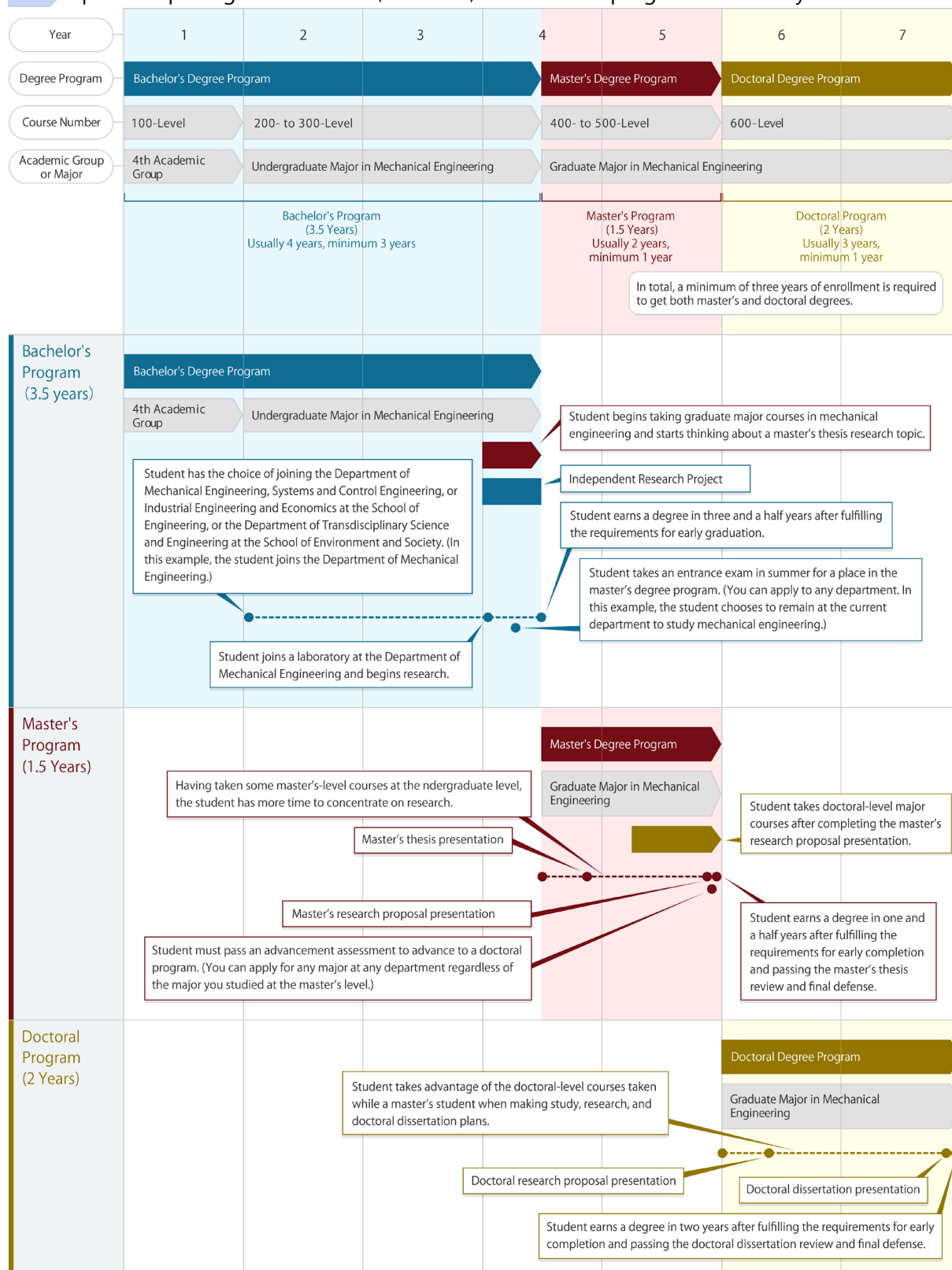
The standard durations of study are four years for the bachelor's, two years for the master's, and three years for the doctoral program.



## ■ Learning aimed at early completion of degree programs

Tokyo Tech's curriculum is designed in a way that enables those of you who are highly motivated and successful in meeting requirements to quickly advance to the next level of study. This allows you to complete your studies earlier than you would by pursuing it in the standard durations of study. You can, at the shortest, earn a bachelor's, master's, and a doctoral degree in six years.

Example: Completing the bachelor's, master's, and doctoral programs in seven years.





## ■ Quarter system

Tokyo Tech divides its academic year into four quarters. This quarter system makes the learning periods more flexible and enhances the effectiveness of learning. One quarter is slightly over two months long.

### Participate in a variety of different activities

Tokyo Tech wants you to take part in a variety of different activities. The quarter system makes it easier to accommodate this as it enables you to set up your learning plans more flexibly. For example, if you decide to study abroad, go on an internship, or engage in some other activity away from the university in a quarter and therefore take fewer or no courses, you can take more courses in the next quarter to restore the balance. Furthermore, there are no required courses scheduled in the second quarter of the third year of the bachelor's degree program. This leads to internship and study abroad experiences that are more constructive as you can use this quarter in conjunction with your summer vacation to participate in these activities.

### Effective learning

The quarter system enables intensive learning of course topics. For example, courses that carry two credits have classes twice a week. The shortened interval between classes means the next class is held before you forget what you learned in the previous lesson, making it effective for the solid acquisition of content. Courses whose topics require time to thoroughly study the content have classes spread out over longer periods. In this case, if the content of a course is worth two credits, for example, classes are held once a week for two quarters and content worth one credit is presented in each quarter. This gives you time to establish a solid understanding of the material.

Furthermore, a basic course in a subject you take in the first quarter may help you understand a course you take in the second quarter, or may allow you to take a course in an applied subject. Thus, the quarter system is suited to learning in stages and eases early advancement to higher-level courses.

1Q	2Q	Summer Vacation	3Q	4Q	Spring Vacation
Early April–early June	Mid June–early August	Mid August–mid September	Late September–late November	Early December–early February (including winter vacation)	Mid February–late March

There are no required courses in 2Q of the third year of the Bachelor's Program, so students can easily study abroad using 2Q and the summer vacation.

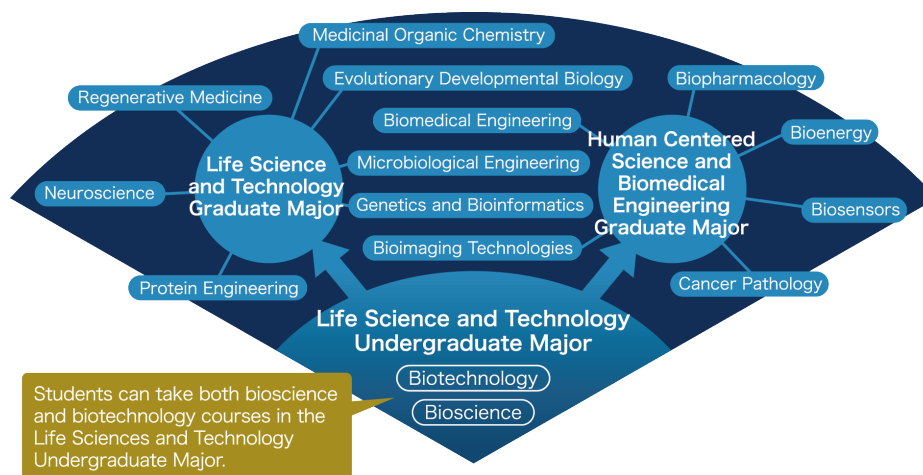
## Flexible approach to studying

### ■ Flexibility in the choice of fields to study

Since each undergraduate and graduate major at Tokyo Tech covers a wide range of fields, there is no need to choose the area to specialize in at the time of admission. Within each discipline, you can flexibly choose courses that meet your learning needs, which allows you to define the scope of fields to study.

Even if your interests shift to different fields, the education system we have in place will allow you to pursue learning that is in line with your interests and fascinations. Your motivation to learn will always be sustained.

Example: School of Life Science and Technology



### ■ Learning that covers a single discipline in depth and learning that spans multiple disciplines

There are two main paths to learning at Tokyo Tech, both of which provide an education that is characteristic of Tokyo Tech.

#### Focused path

If you are only interested in one specific discipline of science or engineering, this path is for you. It allows you to immerse yourself in in-depth study of your chosen discipline.

#### Interdisciplinary path

If you are interested in more than one discipline of science or engineering, then this path is for you. It allows you to complement your major with a systematic study of another discipline. Take courses provided by other majors or minor in a discipline that interests you. Although the graduate minor is part of the master's degree program, you can make a head start by taking courses for a graduate minor while an undergraduate.



## ■ Graduate minors and progressive graduate minors ~interdisciplinary learning for graduate students~

If you wish to complement your graduate major studies with a systematic study of another discipline, you can choose to take a graduate minor or progressive graduate minor. In addition to having a solid grasp of your own discipline, by studying another discipline, you can learn to become a flexible individual who can diversify, which are characteristics that are essential in society.

If you complete a minor, you will receive a certificate of completion as proof of study. The certificate will be presented to you together with your diploma at the end of your degree program.

### Graduate minors

Graduate minors allow you to systematically learn, starting from the basics, the essence of a specific discipline, different from the one in which you are studying for your degree, that you are interested in or curious about.

All master's degree graduate major disciplines have a graduate minor. Some of these allow students enrolled in the bachelor's degree program at Tokyo Tech to start taking graduate minor courses while an undergraduate.

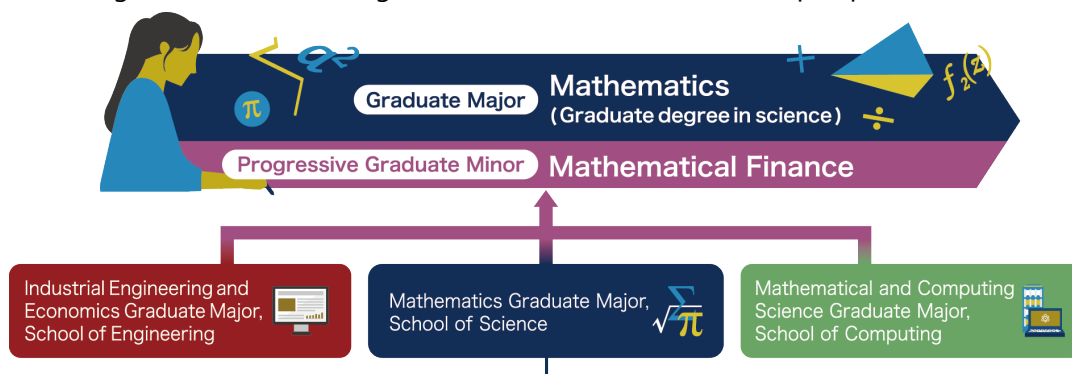
Example: If you are enrolled in the Mechanical Engineering Graduate Major but want to acquire a certain level of knowledge in materials and their properties, you can choose to take a graduate minor in Materials Science and Engineering.



### Progressive graduate minors

Progressive graduate minors offer education that encompass multiple disciplines.

Example: If you are enrolled in the Mathematics Graduate Major and are interested in a career in finance, by taking a progressive graduate minor in Mathematical Finance, you will gain an understanding of mathematics from a financial perspective.



For the Mathematical Finance Graduate Major, the Department of Mathematics provides courses specifically designed for Mathematical Finance in addition to courses in Mathematics (i.e., courses for the Mathematics Graduate Major).

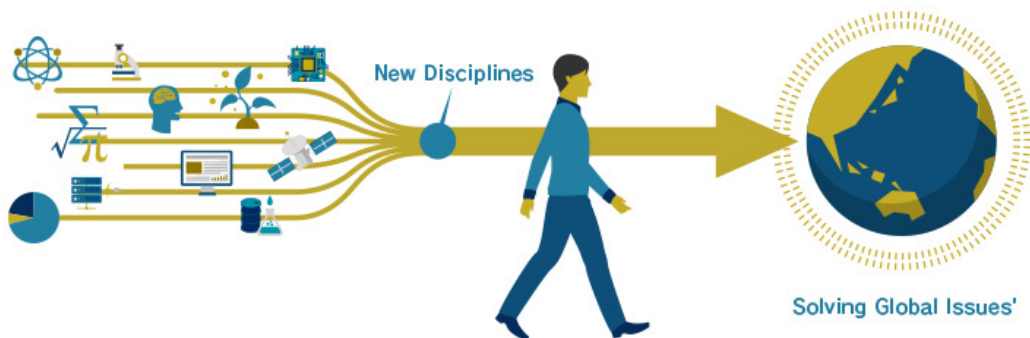
## ■ Interdisciplinary graduate majors

In the twenty-first century, many issues are dealt with on a global scale, and most of these become topics for research at science and technology universities. Tokyo Tech aims to lead the world by placing guideposts that point to solutions to these issues.

A novel selection of interdisciplinary graduate majors, each based on newly established fields of study that span multiple disciplines, have been made available in the graduate degree programs. These majors are administered across multiple departments, allowing undergraduate students to go on to take an interdisciplinary major that is related to their undergraduate studies. Students from a variety of different disciplines are brought together and they work with each other toward a goal. This is what makes interdisciplinary graduate majors attractive.

### **Interdisciplinary graduate majors**

- Interdisciplinary graduate majors available in multiple schools  
Energy Science and Engineering, Engineering Sciences and Design, Human Centered Science and Biomedical Engineering, and Nuclear Engineering
- Interdisciplinary graduate major available in the School of Computing  
Artificial Intelligence
- Interdisciplinary graduate major available in the School of Environment and Society  
Urban Design and Built Environment





## Seamless transition and wedge-shaped education

### Seamless transition between degree programs

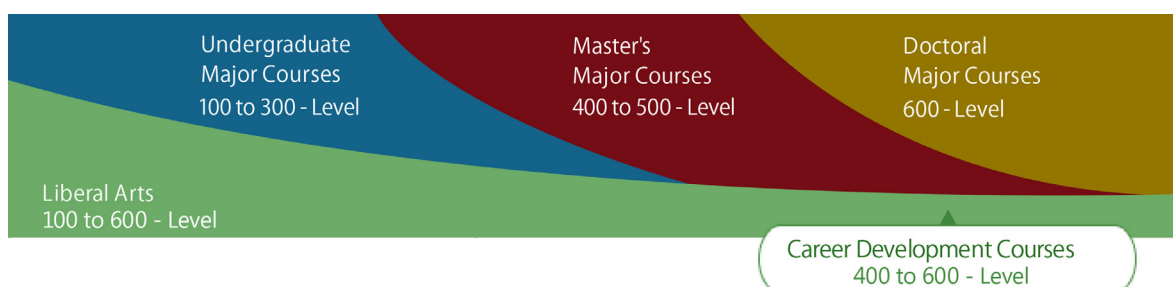
At Tokyo Tech, you can smoothly transition from the bachelor's to the master's program and from the master's to the doctoral program.\* As many of you choose to pursue a graduate degree, our curriculum clearly shows how the undergraduate program and its content are linked with the higher-level programs.

Our education system not only gives you an understanding of what you can learn as an undergraduate when you first join the bachelor's program, but it also helps you visualize your studies at the graduate level and your lives after graduation. It allows you to make academic choices based on your interests and enables you to better plan what you wish to accomplish during your time at Tokyo Tech.

\*A diploma is awarded upon completion of each degree program. Students must pass an entrance exam to advance from a bachelor's to a master's program, and pass a screening to advance from a master's to a doctoral program. Students majoring in one discipline may go on to major in a different discipline at the next degree level.

### Wedge-shaped style education

Tokyo Tech implements a wedge-shaped style education to produce students with broad perspectives that is not limited to science and engineering. Our unique wedge-shaped style education is designed to generate an upward spiral of knowledge and ability by providing liberal arts education and specialized education in an interrelated manner from the bachelor's to the doctoral program. It allows you to acquire cutting-edge science and engineering expertise, deepen your understanding of the social significance of your studies, fosters personal development, and broadens your sense of values.

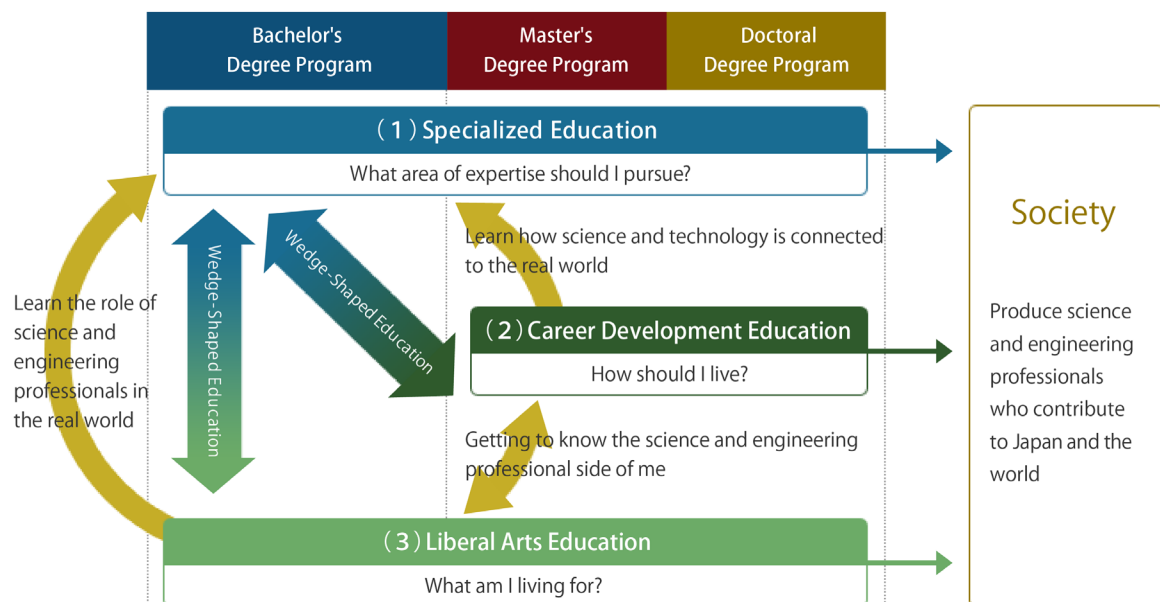


## Education with distinctive character

### ■ Liberal arts and career development education

In order for you to firmly acquire specialized skills in science and engineering and to make use of these skills in life after university, you must (1) determine what area of expertise you wish to pursue through specialized education, (2) think about what you want to live for through broad liberal arts education, and (3) consider how you should live through career development education.

The combined effects of specialized education, liberal arts education, and career development education will cultivate the skills you need to make contributions to society.





## ■ Developing research skills

Tokyo Tech's research reputation is not confined to Japan. It is rated highly worldwide. As Tokyo Tech students, you are taught by faculty members who carry out such world-class research.

Our laboratories are the ideal environment for you to learn to put all of the skills you acquired in your studies to use, and to strengthen this ability.

### Bachelor's degree program

We offer courses that allow you to get a taste of research as early in the bachelor's degree program as possible.

- Research Opportunity Course

This course allows you to experience research in multiple laboratories. You can select laboratories from different campuses or from different fields.

- Independent Research Project

In this course, you conduct research on a particular topic over two quarters and write a graduation thesis.

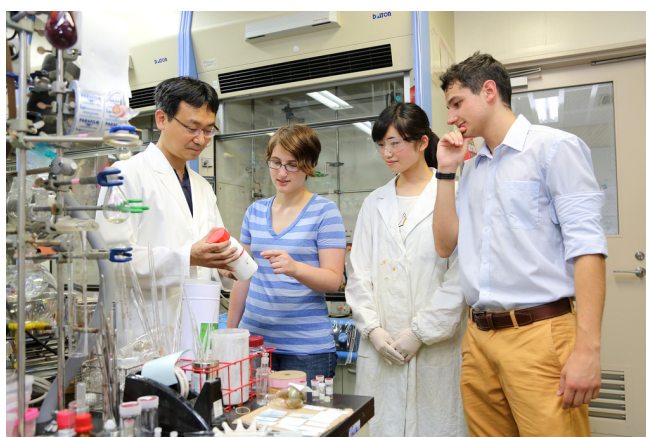
- Advanced Independent Research Project

In this course, you can further explore the topic you researched for the Independent Research Project, conduct research on a different topic, or prepare a research topic for the master's degree program.

### Graduate majors

Full-fledged research begins when you join a graduate program. To help you expand your knowledge related to your research, you take Research Seminars as part of the program. Different fields and laboratories have their own ways of conducting seminars, but in general, you read research papers and engage in discussions under the guidance of faculty members.

In the laboratories, you can get helpful suggestions for your research not only from faculty members, but also from research staff and your peers. Furthermore, the discussions you have will lead to new perspectives and you will see your research gain depth over time.



## ■ Study abroad and other international experiences

International awareness is an essential element in becoming leaders in Japan and leaders around the world. Therefore, we provide many opportunities for our students to acquire international awareness, and expect all of you to have studied abroad or to have gained other international experience by the time you complete the master's degree program.

Moreover, receiving intellectual stimulation from outside the university is a great way to learn international values, enhance yourself, and broaden and deepen interests and concerns.



## ■ Classes in English

The English language is a tool to broaden your world. It enables you to communicate with people all around the globe, and share things such as your studies at Tokyo Tech, your thoughts, your theories, and your research results. However, bachelor's level education is about learning the fundamentals, and during this time, we want you to build a strong foundation of the discipline and develop your ability to think in Japanese. For these reasons, you study mainly in Japanese. Nonetheless, Tokyo Tech recognizes the importance of having proficiency in English, as this is vital for you to play an active role at a global level. It puts you on the path to becoming individuals who make worldwide contributions through science and technology. Therefore, major courses at the graduate level, which are concerned with the practical aspects of the discipline, are taught in English. To prepare you for graduate-level studies, English is gradually introduced in undergraduate major courses.

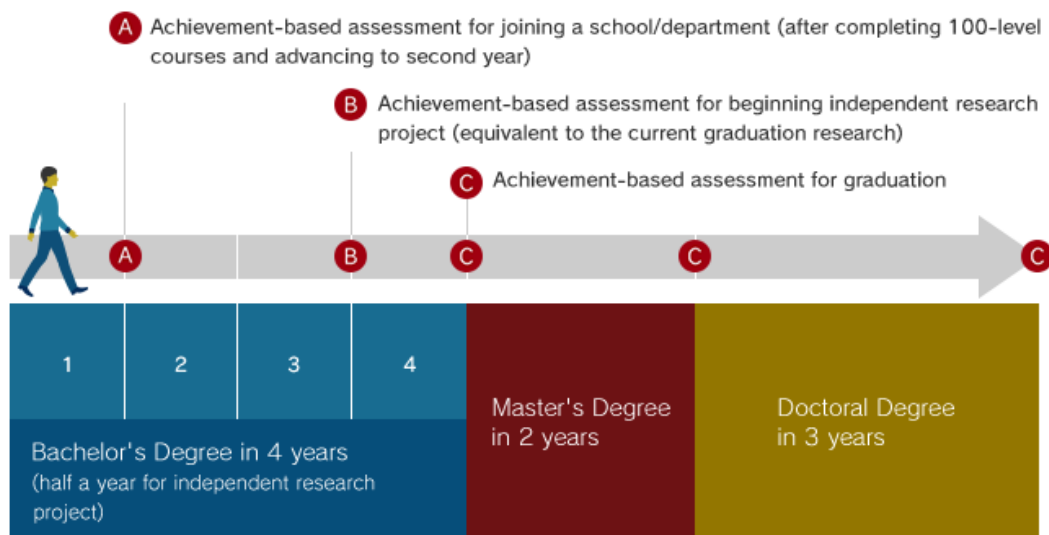
## Highly developed education system

### ■ Achievement-based assessment

At Tokyo Tech, what you have learned is determined not by the year in which you are in, but by your academic progress. Your advancement is based on your level of achievement.

Through this achievement-based learning system, you get to monitor your own progress. This in turn allows you to reflect on what you have done and achieved in your studies. Use this knowledge to determine what further learning you require and to set new goals. Since advancement is based on achievement, you can learn at your own pace.

### A standard model





## ■ The five competencies

In society, you need to interact with a variety of people. After you graduate, you will need more than your expertise in a major discipline to function in this rapidly evolving world: you will need to be able to act on your own initiative and to deal with matters in any environment.

Tokyo Tech has therefore taken various steps, including the incorporation of many active learning techniques in lectures, exercises, experiments, and training sessions, so that you acquire intercultural, communication, specialist, critical thinking, and practical and/or problem-solving skills — the five competencies — through the courses you take. Each course states which of these competencies it develops on its syllabus. By the time you graduate, you will have acquired all five competencies.

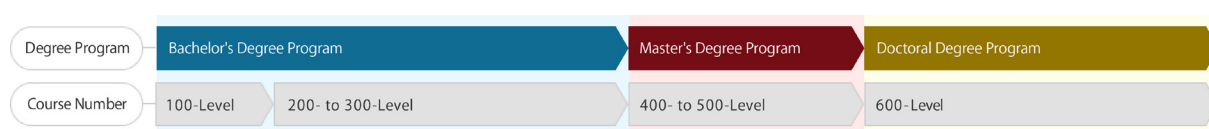
The faculty keep in mind what you will become capable of doing and which competencies you will develop while they teach courses. Therefore, we urge you to be aware of the five competencies when you take your courses.

Five competencies acquired by Tokyo Tech students		
<b>Intercultural skills</b>	Knowledge and language proficiency necessary to communicate successfully within an international community, and the intelligence and maturity required of an independent adult	Competencies required in society
<b>Communication skills</b>	Skills that are required to communicate and reach a consensus among a group of people by drawing on your knowledge and experience	
<b>Specialist skills</b>	Knowledge and academic skills necessary to conduct research and development in your area of expertise	Competencies relating to major
<b>Critical thinking skills</b>	Skills necessary for resolving issues or discrepancies found between an ideal and actual state	Competencies required to contend with various issues
<b>Practical and/or problem-solving skills</b>	The following skills based on your theories and ideas (drawn from experience, learning, and ways of thinking): the ability to act and achieve a certain goal or to resolve issues; the ability to tackle social issues and problems where no real solutions exist; and the ability to come up with new findings and disseminate them.	

## ■ Course numbering system

All courses are assigned a course number that indicates the learning level. This arrangement is called the course numbering system. The course numbers serve as a guide for choosing courses. It directs you to the courses you need to take now, to those you should take next, and furthermore, to the courses you will take after advancing to the next stage of your education.

Since the learning sequence and your level of achievement are linked, you can see what lies ahead. This enables you to set up specific learning plans. There is no need to coordinate your plans to match the number of years you have spent in university or with the learning plans of other students. Instead, examine each course, create learning plans geared to your own achievements, and take courses that will thoroughly develop your capabilities.



## ■ Limit on the number of credits that can be registered (maximum credit load)

One credit is equivalent to forty-five hours of learning, including time spent learning on your own (Standards for Establishment of Universities). In other words, to earn a credit, you are not only expected to attend class but also to spend time studying outside class. By preparing for class, time can be allocated for you to hold discussions during class. You can then spend time after class tackling assignments. Courses are held on the assumption that you continue to learn beyond your hours in class.

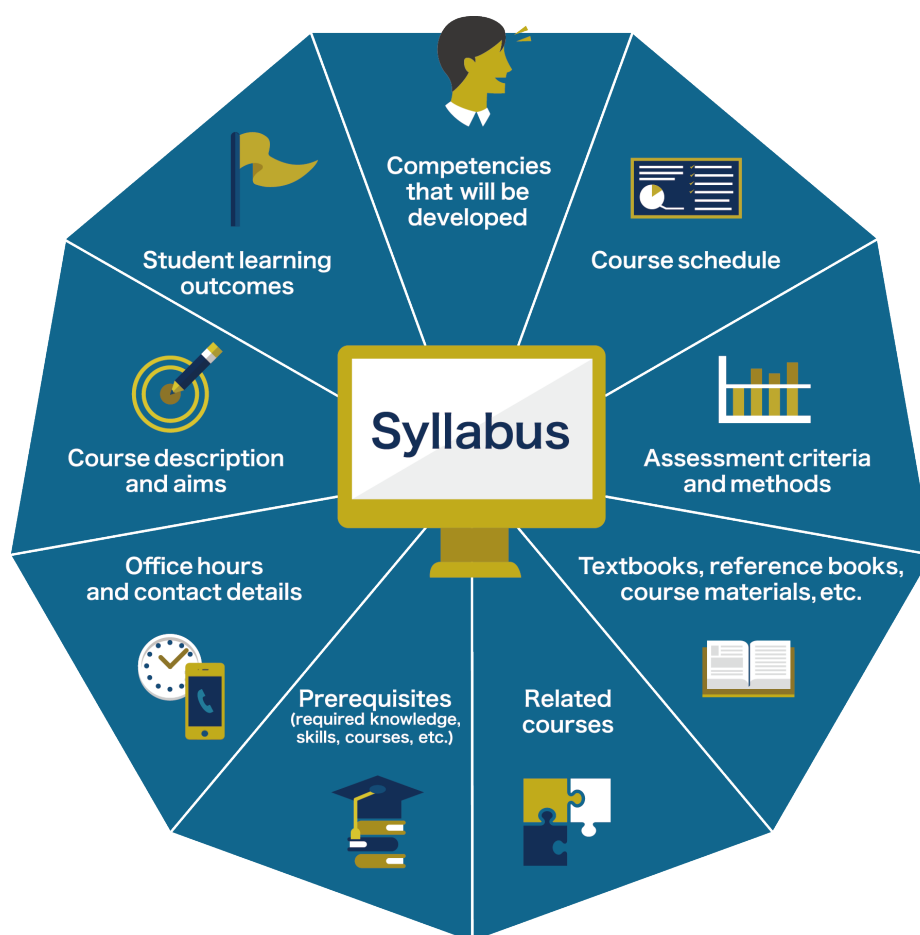
To ensure that you have the time necessary to study outside class and gain a solid grasp of the course content, a limit is placed on the number of credits you can register. In the bachelor's degree program, you can register up to forty-eight credits per year. If you showed outstanding academic performance in the previous year, you will be permitted to register up to eight extra credits for a maximum of fifty-six credits per year. In the graduate degree programs (excluding the professional master's degree program), no upper limit on the number of credits you can register has been set, as the number of courses taken in one year is small.

Although we understand that you will be engaged in a variety of activities during your time at Tokyo Tech, we urge you to make every effort to keep a good balance of the number of credits you register every quarter and to study at a pace that allows you to gain a solid grasp of the content of each course.

## ■ Course syllabi

The course syllabus tells you what is covered in the course, what competencies you can develop in the course, and what the learning outcomes of the course are. Refer to the syllabi to help you decide which courses to take.

Course syllabi are provided in both Japanese and English. (The English syllabi are not only there for the benefit of international students, but for Japanese students who wish to study abroad.)





## Active learning

Along with traditional lectures that concentrate on the dissemination of knowledge, courses with greater emphasis on active learning are also promoted at Tokyo Tech. We have incorporated group work, discussions, and presentations in the courses with the aim of encouraging you to learn for yourselves.



Online learning is used to help active learning. Through it, you can tackle tasks that are assigned in advance and do preparatory study before attending class. This allows you to ask questions about things you don't understand and engage in discussions to deepen your understanding during class. Furthermore, Tokyo Tech participates in edX, a worldwide online educational consortium that provides opportunities for independent study and autonomous learning through massive open online courses (MOOC) and small private online courses (SPOC).

In conjunction with these initiatives, we are also increasing the number of classrooms that facilitate active learning. The epitome of this is the Tokyo Tech Lecture Theatre. The Theatre is designed to provoke the five senses as you participate in creative debates and open experiments, and is an ideal space for holding lectures given by leading Tokyo Tech researchers, Nobel Prize-level scientists, and industry experts with a creative edge.



Scene of a Christmas lecture held in the Tokyo Tech Lecture Theatre

## Support for learning

### ■ Student support system

Tokyo Tech has a well-developed student support system to help you maintain the quality of life and learning necessary to successfully navigate through your studies. Make use of the services available whenever you have questions or issues that you need help with or wish to discuss.



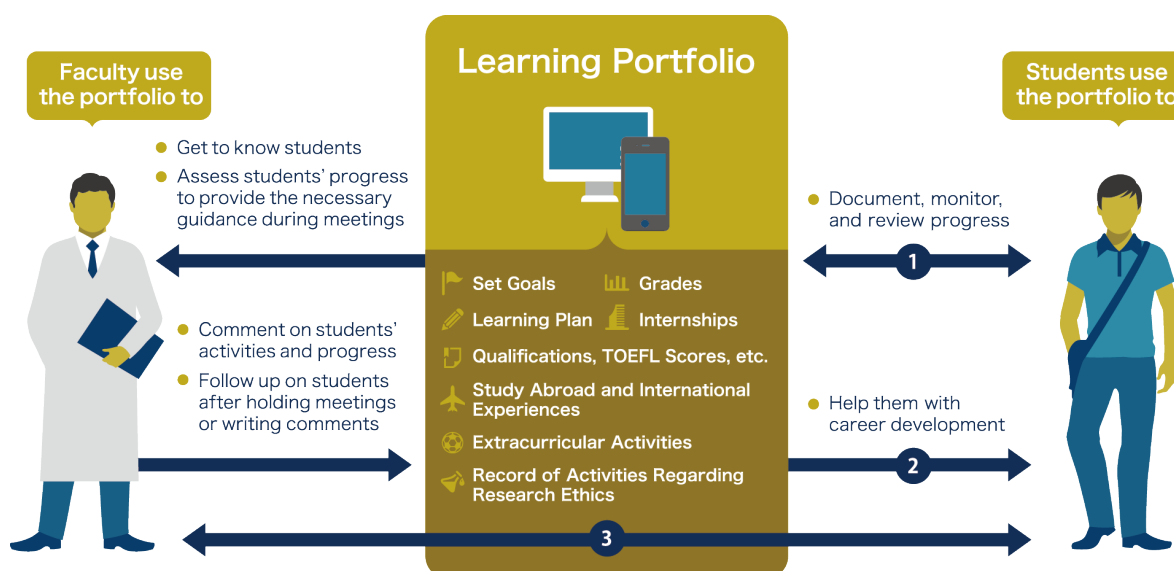
## ■Tokyo Tech Learning Portfolio

The Tokyo Tech Learning Portfolio is a custom designed tool to document your learning. It allows you to maintain an extensive record of your learning progress and achievements.

There are many benefits to using the portfolio.

- (1) You can use your learning record for critical reflection as well as to help you determine goals and what steps you need to take next.
- (2) You can use it to improve your student life and to help you with career development as it enables you to visualize your experiences at Tokyo Tech.
- (3) Your academic advisors can view your portfolio to give you constructive guidance. It can also be used to receive advice from your academic advisors.

We encourage you to use the portfolio to gain an objective understanding of yourself and to help you with your independent learning.





# Schools, Departments, and Majors



Tokyo Tech

School	Department	Undergraduate Major	Graduate Major
Science	● Mathematics	Mathematics	Mathematics
	● Physics	Physics	Physics
	● Chemistry	Chemistry	Chemistry
	● Earth and Planetary Sciences	Earth and Planetary Sciences	Earth and Planetary Sciences
Engineering	● Mechanical Engineering	Mechanical Engineering	Mechanical Engineering
	● Systems and Control Engineering	Systems and Control Engineering	Systems and Control Engineering
	● Electrical and Electronic Engineering	Electrical and Electronic Engineering	Electrical and Electronic Engineering
	● Information and Communications Engineering	Information and Communications Engineering	Information and Communications Engineering
	● Industrial Engineering and Economics	Industrial Engineering and Economics	Industrial Engineering and Economics
Materials and Chemical Technology	● Materials Science and Engineering	Materials Science and Engineering	Materials Science and Engineering
	● Chemical Science and Engineering	Chemical Science and Engineering	Chemical Science and Engineering
Computing	● Mathematical and Computing Science	Mathematical and Computing Science	Mathematical and Computing Science
	● Computer Science	Computer Science	Computer Science
Life Science and Technology	● Life Science and Technology	Life Science and Technology	Life Science and Technology
	● Architecture and Building Engineering	Architecture and Building Engineering	Architecture and Building Engineering
Environment and Society	● Civil and Environmental Engineering	Civil and Environmental Engineering	Civil Engineering
	● Transdisciplinary Science and Engineering	Transdisciplinary Science and Engineering	Global Engineering for Development Environment and Society
	● Social and Human Sciences		Social and Human Sciences
	● Innovation Science		Innovation Science
	● Technology and Innovation Management (professional master's degree program)		Technology and Innovation Management
Institute for Liberal Arts		Liberal arts courses taken throughout each program	

1st years join one of seven academic groups



# Campuses

②Tokyo Tech Campus Innovation Center  
(Tokyo Tech Professional Academy)

## Tamachi Campus



## Ookayama Campus



①Main Building

A symbol of Tokyo Tech since 1934, the Main Building is located in the center of Ookayama Campus.



②Promenade of cherry trees

Impressive cherry blossom trees line the deck in front of the Main Building. They usually reach their peak bloom just in time to welcome students at the start of spring.



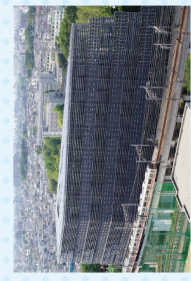
③Ginkgo trees in the North Area

Ginkgo trees form a welcoming green canopy in the summer and a vibrant golden one in the fall.



④Multipurpose field

Students enthusiastically take advantage of the artificial turf field for a variety of club and athletic activities.



⑤Environmental Energy Innovation (EEI) building

The building has a centralized smart-grid management system called Ene-Swallow, and is nearly energy self-sufficient.

- ⑥Statue of Seiichi Tejima
- ⑦Museum and Archives
- ⑧Library

⑨Collaboration Center for Design and Manufacturing Environmental (CODAMA)



## Suzukakedai Campus

①Suzukake Hall

Boasting a lounge and cafeterias, the Suzukake Hall is an oasis on Suzukakedai Campus. It also hosts international conferences.



②Suzukakedai Library

③Museum's Suzukakedai Exhibition Space

①Tokyo Tech High School of Science and Technology

Tokyo Tech High School of Science and Technology, endorsed by the Japanese government as a Super Science High School (SSH) and a Super Global High School (SGH), offers an advanced curriculum in science and technology while promoting global science and technical leadership.





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