Tokyo Institute of Technology

Degree Policy

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Educational goals

Academic research driven by intellectual curiosity has given birth to new technologies and industries that have made the impossible possible, and built the foundation of modern society. Today there is an even greater need to pursue truth, further develop our knowledge and pass it on to the next generation, and create innovative sciences and technologies that will lead the way to a sustainable society. Expectations for world-class research and education are growing.

To meet these expectations, Tokyo Institute of Technology (Tokyo Tech) is dedicated to cultivating talent by introducing its students to world-class research and providing them with the education that promotes their ability to learn and think for themselves.

Tokyo Tech students will acquire the following competencies, enabling them to become goal-driven leaders who take on challenges and have an understanding of ethical issues in order to make the world a better place.
- Specialist skills
- Liberal arts skills
- Communication skills
- Applied skills

Note: Mission of Tokyo Institute of Technology

As one of Japan's top universities, Tokyo Institute of Technology seeks to contribute to civilization, peace and prosperity in the world, and aims at developing global human capabilities par excellence through pioneering research and education in science and technology, including industrial and social management. To achieve this mission, we have an eye on educating highly moral students to acquire not only scientific expertise but also expertise in the liberal arts, and a balanced knowledge of the social sciences and humanities, all while researching deeply from basics to practice with academic mastery. Through these activities, we wish to contribute to global sustainability of the natural world and the support of human life.

Professionals cultivated at Tokyo Tech

Tokyo Tech cultivates goal-driven leaders equipped with specialist, liberal arts, communication, and applied skills.

Bachelor's Degree Program	Master's Degree Program	Doctoral Degree Program	Professional Master's Degree Program
Individuals with the ability to learn and think for themselves on the basis of knowledge and skills in science and technology	**Specialists in science and technology with the ability to contribute to society on an international level**	**Leaders in science and technology with the ability to build a better society**	**Practitioners of science and technology with the ability to construct their own theories to contribute to the development of industry and society as leaders in innovation**
The bachelor's degree program equips students with: • Fundamental specialist skills • Cultural skills • Skills necessary to provide logical explanations • Ability to learn and think for oneself • Willingness to challenge the unknown • Understanding of ethical issues	The master's degree program equips students with: • Broad specialist skills • General intercultural skills • Ability to integrate diverse ideas • Enthusiasm to explore the mysteries of science and technology • Ability to engage in practical matters	The doctoral degree program equips students with: • Superior specialist skills • Developed intercultural skills • Ability to provide logical explanations to society and exhibit leadership • Ability to take on new challenges without setting limits and perceive the true essence and universality of matters • Ability to generate new knowledge, create value, and inspire others	The professional master's degree program equips students with: • Practical specialist skills • General intercultural skills and language skills • Ability to integrate diverse ideas • Ability to pursue the true essence and universality of matters • Ability to establish a vision and to innovate • Ability to engage in practical matters

Degree policy

To achieve its educational goals, Tokyo Tech confers degrees on students who have been enrolled for the required period, acquired the competencies described below, and attained the required course credits.

Competencies that will be developed

・Specialist skills ・Liberal arts skills ・Communication skills ・Applied skills (inquisitive thinking and/or problem-finding skills) ・Applied skills (practical and/or problem-solving skills)

	Bachelor's Degree Program	Master's Degree Program	Doctoral Degree Program	Professional Master's Degree Program
Specialist skills	**Fundamental specialist skills** • Fundamental expertise to conduct research and development	**Broad specialist skills** • Wide-ranging expertise to conduct in-depth research and development	**Superior specialist skills** • Superior expertise to promote research and development and generate and systematize new knowledge	**Practical specialist skills** • Practical expertise in science, technology and socioeconomic systems
Liberal arts skills	**Cultural skills and independent study** • Broad knowledge and language skills necessary to comprehensively grasp matters • Ability to learn and think for oneself • Willingness to challenge the unknown • Understanding of ethical issues	**General intercultural skills and developed independent study** • Broad knowledge and language skills necessary to grasp matters from a comprehensive and international perspective • Ability to continue learning and thinking for oneself with a purpose in mind • Willingness to try anything • Understanding of ethical issues	**Developed intercultural skills and independent study, and self-motivated action** • Systematic and broad knowledge and language skills necessary to understand matters from a comprehensive and international perspective • Ability to learn, consider, and take concrete actions to generate new knowledge and create value • Willingness to take on new challenges without setting limits • Understanding of ethical issues	**General intercultural skills and developed independent study** • Broad knowledge and language skills necessary to grasp matters from a comprehensive and international perspective • Ability to continue learning and thinking for oneself with a purpose in mind • Willingness to try anything for practical innovation • Understanding of ethical issues

	Bachelor's Degree Program	Master's Degree Program	Doctoral Degree Program	Professional Master's Degree Program
Communication skills	**Logical explanations and mutual respect**	**Various communicative methods using logic**	**Social leadership**	**Various communicative methods using logic**
	• Skills necessary to provide logical explanations • Ability to achieve mutual respect and understanding among team members	• Skills necessary to provide logical explanations, responding to various circumstances • Ability to integrate diverse ideas	• Skills necessary to provide logical explanations to society, responding to various circumstances • Ability to exhibit leadership	• Skills necessary to provide logical explanations, responding to various circumstances • Ability to integrate diverse ideas
Applied skills (inquisitive thinking and/or problem-finding skills)	**Organization and analysis**	**Passion for exploration**	**Investigative work and new challenges**	**Vision and innovation**
	• Ability to organize phenomena from a multifaceted perspective and analyze them logically	• Ability to organize phenomena from a multifaceted perspective and analyze them logically • Enthusiasm to explore the mysteries of science and technology	• Ability to organize phenomena from a multifaceted perspective and analyze them logically • Skills necessary to explore the mysteries of science and technology • Ability to perceive the true essence and universality of matters in order to identify and investigate problems and set new challenges	• Ability to organize phenomena from a multifaceted perspective and analyze them logically • Ability to pursue the true essence and universality of matters • Ability to establish a vision and to innovate in science, technology and industry

	Bachelor's Degree Program	Master's Degree Program	Doctoral Degree Program	Professional Master's Degree Program
Applied skills (practical and/or problem-solving skills)	**Basic problem solving**	**Application of problem-solving skills**	**Advanced problem solving and making a positive impact**	**Application of problem-solving skills**
	• Ability to solve fundamental problems using knowledge, skills, and creativity	• Ability to solve practical problems, making full use of broad knowledge, skills, and creativity	• Ability to solve advanced and practical problems, making full use of broad and deep knowledge and skills, initiative, and creativity • Ability to inspire others	• Ability to solve practical problems, making full use of broad knowledge, skills, and creativity

Note: The competencies acquired by Tokyo Tech students are as follows:

○***Specialist skills***
　Knowledge and skills necessary to conduct research and development in the student's individual field of study (including business development skills for professional master's degree programs)

○***Liberal arts skills (broad knowledge, as well as social and individual attitude and conduct)***
　Intelligence and maturity required of an independent adult to participate in social activities (complementary to specialist skills)
　E.g.
　　・Knowledge beyond one's field of study and understanding about areas other than science and technology (including intercultural knowledge and language proficiency)
　　・Deep understanding of ethical issues in science and technology to help guide decision-making and behavior
　　・Willingness to try new things and continue learning and thinking for oneself

○***Communication skills (necessary to interact with others and express oneself properly)***
　Skills necessary to communicate clear ideas and elicit a consensus among a group of people based on mutual respect

○ ***Applied skills (necessary to contend with a task, i.e., research activities, etc.)***
　Skills necessary to perceive matters accurately and respond to circumstances flexibly to achieve breakthroughs, create value, and inspire others through logical thinking and decision-making, while making full use of diverse knowledge, original ideas, and creativity
(1) Inquisitive thinking skills and/or problem-finding skills (necessary to perceive matters accurately)
　Knowledge and academic skills necessary to raise profound questions
　Ability to perceive the true essence and universality of matters and set new challenges when facing questions such as "why is that so?"
(2) Practical and/or problem-solving skills (necessary to flexibly respond to circumstances and take appropriate action)
　Knowledge and academic skills necessary to take practical action and make improvements
　Ability to solve practical problems, while making full use of diverse knowledge, original ideas, and creativity

　The above are closely related to the five competencies embodied by the Institute's educational reform.

Curriculum policy

In line with the degree policy, Tokyo Tech implements the overarching curriculum described below.

Education implementation

Tokyo Tech introduces its students to world-class research and provides them with an education that promotes their ability to learn and think for themselves.

Educational content

In order to equip students with specialist, liberal arts, communication, and applied skills, Tokyo Tech provides the following educational content.

	Bachelor's Degree Program	Master's Degree Program	Doctoral Degree Program	Professional Master's Degree Program
Specialized Education	Specialized education through academic courses including lectures, seminars, experiments, and practice			
	Students will acquire: • Broad, basic knowledge and skills in science and technology • Fundamental knowledge and skills necessary to conduct research in one's field of study • Basic knowledge and skills in research fields that are related to or beyond one's field of study • Ability to use the overall knowledge and skills	Students will acquire: • Broad and deep knowledge and skills in one's field of study • Systematic knowledge and skills in research fields that are related to or beyond one's field of study • Ability to use the overall knowledge and skills	Students will acquire: • Cutting-edge knowledge and skills in one's field of study by tackling advanced practical tasks • Ability to use the overall knowledge and skills	Students will acquire: • Broad and deep knowledge and skills in one's field of study • Systematic knowledge and skills in research fields that are related to or beyond one's field of study • Ability to use the overall knowledge and skills

	Bachelor's Degree Program	Master's Degree Program	Doctoral Degree Program	Professional Master's Degree Program
Research education	Practical education in a research environment where students can receive guidance from leading professors and researchers, and can develop themselves through friendly competition with other students when tackling academic tasks such as Independent Research Projects, master's thesis research, doctoral thesis research, project reports, etc.			
	Through Tokyo Tech's curriculum and experience in world-class research, students will acquire the academic foundation to create a process from problem setting to problem solving, which will be applied to their own research and other activities	Through master's thesis research and a related curriculum, students will acquire the ability to create a process necessary to conduct world-class research, which will be applied to their own research and other activities	Through doctoral thesis research and a related curriculum, students will acquire the ability to create a process necessary to lead and accomplish world-class research and promote further development, which will be applied to their own research and other activities	Through broad research activities and a related curriculum, students will acquire the ability to create a process of pursuing phenomena and theories necessary for innovation
Liberal arts and career development	Liberal arts education and career development through academic courses including lectures, seminars, experiments, and practice			
	Students will acquire: • Independence and strong motivation for learning • Broad knowledge and skills beyond their field of study such as an understanding of ethical issues in science and technology, language proficiency, and intercultural knowledge • Ability to use the overall knowledge and skills	Students will acquire: • Great breadth of knowledge of science and technology • Awareness about social significance of their careers and fields of study from a comprehensive and ethical perspective	Students will acquire: • Expanded knowledge networks with other students from different disciplines in the course of considering how they can build careers, create value, and contribute to society	Students will acquire: • Great breadth of knowledge of science and technology • Awareness of social significance of their careers and fields of study from a comprehensive and ethical perspective

Note: Tokyo Tech provides students in their first year of the bachelor's program with education that places emphasis on developing strong motivation to learn, which will help them define their academic objectives, set up their own study plan, and engage in independent learning.

Educational methods

Tokyo Tech provides students with educational content that complies with the following methods and framework:

1) Educational methods that enable students to learn and think for themselves

Tokyo Tech's educational methods enable students to apply their own knowledge and skills as well as think and learn for themselves while pursuing an objective, and to engage in friendly competition with others. Methods include practice, workshops, presentations, debate, problem-based learning, and learning that nurtures creativity and entrepreneurship.

Note: The professional master's degree program makes use of practical educational methods that incorporate case studies, fieldwork, one-on-one and multidirectional debates, and question-and-answer sessions.

2) Educational framework in which major courses and the liberal arts and basic science courses are organically interrelated and students can advance their learning in a phased manner

Tokyo Tech's "wedge-style education" organically connects liberal arts courses to expertise courses, deepening students' understanding of the social significance of their studies in relation to science and technology. This helps them to continue building on their knowledge and skills while focusing on their end goals. Students may also advance their learning in stages from the bachelor's program to graduate programs according to their level of achievement.

3) Diverse education programs corresponding to individual learning goals for students

Tokyo Tech provides a diverse array of education programs that promote extramural activities like studying abroad and internships, which enable students to learn with other students from countries around the world, and engage in expansive learning based on their interests.

Evaluating learning achievements

○Tokyo Tech adopts a rigorous process for evaluating students' learning achievements

Tokyo Tech specifies its standards and methods for grading courses and evaluates the results of student learning based on these specifications. In the master's degree and doctoral programs, Tokyo Tech specifies its evaluation standards and methods for degree theses and research projects, upon which it bases its reviews and final examinations. In the professional master's degree program, Tokyo Tech specifies its evaluation standards and methods for project reports, upon which it bases its project report reviews and final examinations.

Admissions policy

Tokyo Tech welcomes students who exhibit the following qualities and capabilities.

		Bachelor's Degree Program	Master's Degree Program	Doctoral Degree Program	Professional Master's Degree Program
Qualities and capabilities expected for prospective students		• Intellectual curiosity about science and technology • Desire to contribute to society • Basic concepts and knowledge of science and technology, and understanding of its effective uses	• Fundamental specialist skills • Cultural skills • Skills necessary to provide logical explanations • Ability to learn and think for oneself • Willingness to challenge the unknown • Understanding of ethical issues	• Broad specialist skills • General intercultural skills • Ability to integrate diverse ides • Enthusiasm to explore the mysteries of science and technology • Ability to engage in practical matters	• Fundamental specialist skills in science, technology, and socioeconomic systems • Cultural skills • Skills necessary to provide logical explanations • Ability to learn and think for oneself • Willingness to challenge the unknown • Understanding of ethical issues
Required skills	Specialist skills	Basic concepts and knowledge of mathematics and science	Fundamental specialist skills	Broad specialist skills	Fundamental specialist skills in science, technology, and socioeconomic systems
	Liberal arts skills	Basic knowledge of society and language skills	Broad knowledge and language skills necessary to comprehensively grasp matters	Broad knowledge and language skills necessary to grasp matters from a comprehensive and international perspective	Broad knowledge and internationally competent language skills necessary to comprehensively grasp maters

		Bachelor's Degree Program	Master's Degree Program	Doctoral Degree Program	Professional Master's Degree Program
Required skills	Communication skills	Skills necessary to clearly express one's ideas	• Skills necessary to provide logical explanations • Ability to achieve mutual understanding	• Skills necessary to provide logical explanations, responding to various circumstances • Ability to integrate diverse ideas	• Skills necessary to provide logical explanations • Ability to achieve mutual understanding
	Applied skills	Ability to think logically and apply one's knowledge	• Ability to organize and analyze • Ability to solve fundamental problems using knowledge, skills, and creativity	• Enthusiasm to explore the mysteries of science and technology • Ability to solve practical problems making full use of broad knowledge, skills, and creativity	• Ability to organize and analyze • Ability to solve fundamental problems using knowledge, skills, and creativity

Selection Methods

Tokyo Tech:

○ implements multiple examinations and schedules to secure a broad and diverse array of talented individuals.

○ examines potential students using any one of or a combination of scholastic ability examinations, interviews, and examinations of school records to determine whether a candidate possesses the required scholastic abilities and aptitudes.