

Graduate School of Advanced Engineering

Department of Medical and Robotic Engineering Design

Diploma Policy

1. The master's program aims to foster graduates “who can demonstrate to society the significance of creating ‘engineering that aids the functioning of the human body’ through a fusion of advanced knowledge of nanomedicine and robotics, based on a deep understanding of Design Thinking”. In addition, “through creative thinking and encouraging a broad perspective and flexible thinking skills, we aim to foster graduates who can demonstrate the results and significance of their innovations by solving various problems associated with population decline”. Students who have acquired the requisite knowledge and skills, earned the prescribed credits as specified by the Department of Medical and Robotic Engineering Design, and passed a master's degree thesis examination, and written exam, will be awarded a Master’s degree (Master of Engineering).

A graduating student will acquire the following abilities:

- (1) Advanced specialist knowledge required for careers that demand a diverse range of expertise.
- (2) The ability to play an active role in the international community as a researcher or engineer with high ethical standards.
- (3) The ability to think in a design-oriented way, gathering and analyzing information independently, identifying and setting issues, and finding solutions.
- (4) The ability to conduct research activities in an original and instructive manner and contribute to society.
- (5) The ability evaluate the science and technology that is developed from a broad perspective, with a view to harmonizing it with people, society and the global environment.

2. The doctoral program aims to foster graduates who “can lead the creation of ‘engineering that aids the functioning of the human body’ through a high-level fusion of advanced knowledge of nanomedicine and robotics based on an extremely deep understanding of Design Thinking”. In addition, we aim to “foster graduates who can analyze issues independently, conduct research from research theme-setting, and continuously create innovation through originality, have a broad perspective, and flexible thinking; thereby not only contributing to the development of the field of engineering from a global perspective, but also by solving various problems associated with population decline”. A doctoral degree (Doctor of Engineering) is accredited and awarded to those who have earned the prescribed credits as stipulated by the Department of Medical and Robotic Engineering Design, and have passed a doctoral dissertation review, written exam, and oral examination to confirm academic ability.

A graduating student will acquire the following abilities:

- (1) Extremely advanced specialized knowledge and ethical standards required for work that

requires diverse expertise.

- (2) The ability to develop cutting-edge research fields from an international perspective.
- (3) The ability to collect and analyze information, identify and set issues, and solve problems based on flexible thinking and deep insight.
- (4) The ability to independently conduct research activities in an original and leadership manner and contribute to society.

Curriculum Policy

The curriculum is based on the philosophy of the Department of Medical and Robotic Engineering Design, which is “to create ‘engineering that aids the functioning of the human body’ through the fusion of advanced knowledge of nanomedicine and robotics, based on a deep understanding of Design Thinking”. The aim of the Master's course is “to foster graduates who can demonstrate to society the significance and results of their work, which will lead to solutions for various problems associated with population decline”. Similarly, by creating innovation through originality, a broad perspective, and flexible thinking Doctoral-level courses are designed to “foster graduates who can analyze issues independently, conduct research from research theme-setting, and continuously create innovation through originality, have a broad perspective, and flexible thinking, thereby contributing to the development of the engineering field from a global perspective, and by solving various problems associated with population decline.”

1. In the master's program, the curriculum is based; on the knowledge of design thinking and a wide range of liberal arts acquired in the bachelor's program, and further specialized knowledge centred on nanomedicine and robotics. The master's program develops graduates with a deeper and more refined knowledge. The curriculum of liberal arts courses, specialized courses and research guidance is not only designed to cultivate research and development skills that require a high level of expertise, but also to develop graduates with a new interdisciplinary perspective that is not constrained by the framework of the academic subjects they have studied to date.
 - (1) In order to be active globally as researchers and engineers, liberal arts courses aim to enhance ethical standards, cultural and values, and communications skills.
 - (2) Specialist courses will help students to acquire a broad range of specialist knowledge in the fields of nanomedicine, robotics and related areas, and to cultivate creativity and problem-solving skills rooted in Design Thinking, which is key to solving issues in the development of advanced technologies. Courses are organized so that students can take an active role in their own learning, and cultivate the thinking, judgement and expression skills necessary for researchers and engineers. In addition, it is possible to take courses from other graduate schools, departments and universities, providing opportunities for interdisciplinary study and exchange between different fields.
 - (3) In Research Guidance, students will: develop the ability to research and analyze global academic information and research and development trends in the fields of nanomedicine,

robotics and their fusion technologies; and gain the ability to solve research and development issues using specialist knowledge and skills. Moreover, students will both improve their general communication skills and the ability to promote research and development through practical research presentations at international conferences and meetings.

2. The doctoral program is based on the advanced academic ability, ethics and wide range of liberal arts acquired in the master's degree program. Students will not only be able to develop a deep understanding of Design Thinking through research guidance and liberal arts courses, but also to contribute to solving social issues by conducting creative and original research at a higher level with respect to nanomedicine, robotics or interdisciplinary research fields.
 - (1) In Research Guidance, students will improve their ability to accurately express the results of their research in their own field of expertise, as well as their research and development implementation skills and general communication skills, through activities such as: research presentations at academic conferences in Japan and overseas, publishing academic papers, researching foreign language literature, discussions with their academic advisor, and opportunities for exchange with other fields. Students will also cultivate the qualities needed to carry out creative and pioneering research and development activities not only in their own field of expertise, but also in collaboration with international researchers.
 - (2) Liberal arts courses are designed to help students develop their ethical awareness, cultural and value systems and communication skills. In order for students to become active researchers and engineers on the global stage they will acquire the knowledge and insight necessary to contribute to society through science and technology in the international community.

Admissions Policy

The admissions policy is based on the philosophy of the Department of Medical and Robotic Engineering Design, which is “to create ‘engineering that aids the functioning of the human body’ through a fusion of advanced knowledge of nanomedicine and robotics, based on a deep understanding of Design Thinking”.

1. The master's program is based on the basic academic skills and broad range of liberal arts acquired in the Bachelor's program. Furthermore, the master's course is for those who aim to acquire the design thinking skills, judgement and expression skills necessary to solve problems independently in the fields of nanomedicine, robotics and related fields, or those who aim to acquire the skills necessary for professions that require advanced expertise.
2. The doctoral program is based on the expertise in research acquired up to master's program level. The doctoral program seeks those who are willing to independently conduct creative research that goes beyond the boundaries of existing engineering.
3. The university seeks those with a global perspective and a wide range of interests in

science and technology and social trends, as well as the motivation to work with a diverse range of people as a specialist scientist or engineer.

Evaluation methods for the types of abilities required for the admissions policy in differing entrance examinations:

(General entrance examination)

The university seeks those who have specialist knowledge, English ability, analytical skills and communication skills that match the admission and curriculum policies of the department, and who have the desire to conduct their own research. In the master's program, students will be selected through an examination of documents submitted, written examinations and qualifications / results of officially recognized qualifications and an interview. In the doctoral program, students will be selected through an examination of documents submitted, oral examinations on the Master's thesis and research plan.

(Recommendation entrance examination)

In the master's program the university seeks those who have the specialist knowledge, English skills, analytical skills and communication skills that match the characteristics of the department, and who have the desire to conduct their own research beyond the boundaries of their specialist field. Candidates will be selected by an examination of documents submitted, short essay and interview.

(Special selection for working people, foreign student entrance examination)

The university seeks those who have acquired experience in research institutes or companies, have a positive attitude toward learning, and/or have skills acquired abroad. In the master's program, candidates will be selected through an examination of documents submitted, written examinations and qualifications / results of officially recognized qualifications and interview. In the doctoral program, candidates will be selected through an examination of documents submitted, and an oral examination of their master's thesis / research plans.