

FEATURES OF THE GRADUATE SCHOOL OF BIOMEDICAL SCIENCE AND ENGINEERING

In the Graduate School of Biomedical Science and Engineering, we have established two courses to meet student interests and the needs of their future careers: The Quantum Biomedical Science and Engineering Course to acquire the in-depth comprehensive knowledge required to apply the basic radiation physics developed through quantum mechanics to medical science, and the Molecular Biomedical Science and Engineering Course to acquire the in-depth knowledge required to apply science and engineering to *in vivo* molecules in medical science. These courses are offered with unique curricula exclusive to our school.

Interdisciplinary Subjects / Course Work

- Lectures in interdisciplinary subjects for medicine, science, and engineering where students will acquire the basic knowledge and skills of these fields, in addition to a basic knowledge of medical science and medical ethics
- Productive course work for students with diverse backgrounds to complete the learning tasks systematically, ranging across multiple subject areas



Support System for International Students

- At the Graduate School of Biomedical Science and Engineering, courses are provided in English in principle if international students attend the courses. Students can complete their programs only in English.
- Special selection for international students is conducted using Skype for those who have difficulty in visiting Japan for an entrance exam. (See p.9)

Global Perspectives

- World leading intensive lectures for education in medical physics and radiation biology in cooperation with internationally renowned universities and other relevant organizations



Methods of Education and Research for Career Development

- Customized opportunities for all students to be provided with individualized research support through the collaboration of the staff of the science, engineering, and medical faculties
- Hokkaido University Hospital in-house training in subjects for medical professionals and medical engineers who will play active roles in medical settings as medical physicists
- Subject curricula designed to train technical experts able to conduct research and development of medical equipment, including the quality control aspects, through actual innovative development of medical equipment in collaboration with industry



Developing Skilled Specialists with a Broad Comprehensive Understanding

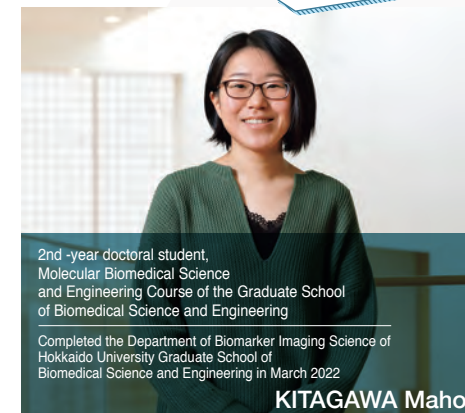
- Subjects where students can acquire comprehensive medical-related industry-academia-government relevant knowledge, where it differs from standard science, engineering, and biology. This includes the historical background to biomedical science and engineering, the importance of statistics grounded in the diversity of life, medical economics, and medical administration including the development of medical equipment



Developing Specialized Personnel with High Ethical Standards

- The subjects we offer will develop high ethical standards and provide the ethical knowledge required, including the basics of medical ethics, guidelines for clinical research and conflicts of interest, knowledge which is required for "research related to human beings" when conducting research and development of medical technology and medical equipment

Message from a Student



Attracted by the research content

My entry into the Graduate School of Biomedical Science and Engineering was triggered when I visited my current supervisor's laboratory during my senior year of college. She introduced me to her research on the calculation of quantitative indicators from diagnostic images to reflect the state and prognosis of diseases. It had never before occurred to me to use numbers when assessing images, which are normally assessed visually, i.e., qualitatively, so I was fascinated and wanted to learn more about it. Since entering the school, I have been conducting research on the quantitative analysis of MRI images and evaluation of such a system. In the master's degree program, I performed the quantitative evaluation of the MRI images of glioma and demonstrated the possibility of predicting the presence of prognosis-reflecting genes from MRI images showing amide groups in tissues. In my current doctoral work, I am evaluating the effects of nocturnal awakening on the brain of healthy subjects using MRI. I wish to contribute to the development and advancement of medical imaging technology based on the knowledge of quantitative analysis of images that I am learning at the school.

History of the Graduate School of Biomedical Science and Engineering



Sapporo Agricultural College (1876)

