

## **Curriculum Policy in Graduate School of Life Science and Systems Engineering**

To achieve the goals outlined in the Diploma Policy, we will organize and implement a systematic curriculum based on the following principles.

### **<Master's Program>**

#### **(1) Curriculum Organization Policy**

To efficiently acquire the knowledge, understanding, versatile skills, attitudes, and aspirations required of advanced engineers in biotechnology, the curriculum comprises four subject groups. The first group consists of specialized subjects for learning advanced knowledge and skills in each course's field. The second group consists of common subjects for learning highly shared knowledge and skills, such as data science. The third group consists of practical subjects for developing hands-on abilities through domestic and international internships. The fourth group consists of seminar subjects primarily focused on research activities related to the master's thesis. Specifically, each course designates core subjects strongly recommended for completion within its specialized subjects. To foster an understanding of different specializations and cultivate a broad, interdisciplinary perspective, students may also take specialized subjects from other courses at their discretion.

#### **(2) Educational Content**

Specialized subjects provide advanced knowledge and skills within each field of bioengineering. Students can deeply study their own specialty, understand related fields, and cultivate advanced abilities for conducting interdisciplinary research and development activities. Students also develop an understanding of the roles that their specialty and related fields play in society.

Common subjects provide education in the following areas. First, foundational courses in data science are required to ensure all students acquire the ability to conduct research and development activities based on data and scientific reasoning. Second, to gain an understanding of different specialized fields and acquire a broad, interdisciplinary perspective, introductory courses are offered that provide an overview of the fundamental knowledge within each course's field. To foster an understanding of the role of each specialized field and its related fields play in society, and to cultivate an attitude of collaborating with society to meet social needs based on the value of pursuing diverse forms of happiness for both individuals and society, liberal arts courses and entrepreneurship education courses are provided.

Practical subjects include language courses such as English, domestic and international

internships, and overseas training programs. These courses aim to cultivate a global perspective and develop the ability to communicate accurately based on logical thinking. They also enable students to apply these skills in international settings.

Seminar subjects involve research activities related to the master's thesis and help students acquire the ability to logically analyze and solve problems within their specialized field and related areas. Additionally, to cultivate presentation and communication skills based on logical thinking, necessary for proposing and publishing new technologies, education will be provided through research guidance. Students have opportunities to present their research findings at domestic and international academic conferences. Students are also guided to understand the role their research plays in society, learn to plan and manage work autonomously toward solving social issues, and to collaborate effectively with diverse individuals.

### **(3) Educational Methods**

Appropriate learning guidance is provided through diverse instructional formats tailored to the educational content, including lectures, seminars, combined lecture-seminar formats, and active learning methodologies.

Through common subjects such as liberal arts, entrepreneurship, as well as practical subjects such as language studies and overseas training, we cultivate the advanced communication skills, cultural adaptability, and problem-solving abilities, which are essential for professionals to thrive in a global society. We guide students to elevate these competencies to higher levels through the Global Engineer Training Course.

For research guidance, we systematically organize a multi-instructor supervision system to effectively develop research execution and thesis writing abilities.

### **(4) Evaluation of Learning Outcomes**

Each subject is evaluated strictly according to the university's established grading standards, based on the assessment methods specified in the syllabus and the degree of achievement against the learning and educational objectives.

Regarding the evaluation of the master's thesis, it is appropriately conducted through an interim presentation, thesis review, and final examination, based on the examination criteria and methods established by the graduate school.

## **<Doctoral Program>**

### **(1) Curriculum Organization**

To efficiently acquire the knowledge, understanding, versatile skills, attitudes, and aspirations necessary for becoming an outstanding advanced engineer in biotechnology, the curriculum comprises three types of courses. The first group consists of specialized courses that teach advanced knowledge and skills in each field. The second group consists of practical courses that develop practical abilities through domestic and international research outside the university. The third group consists of seminar courses that include research activities and presentations related to the doctoral thesis. The curriculum is specifically designed to allow students to freely take specialized courses in different fields, enabling them to acquire advanced and broad knowledge across multiple disciplines.

### **(2) Educational Content**

Specialized subjects provide cutting-edge knowledge and skills within each field of bioengineering. Students can cultivate advanced and broad capabilities to not only master their own specialty but also related fields, and promote original interdisciplinary research and fostering innovation.

Practical subjects include domestic and international fieldwork placements for research. Guided by the principle of pursuing diverse forms of happiness for individuals and society, these courses cultivate an attitude that responds to societal needs from a global perspective and developing communication skills applicable in international settings.

Seminar subjects primarily involve research activities related to doctoral dissertations and help students acquire the specialized knowledge and skills to conduct cutting-edge, interdisciplinary research and development in bioengineering. Students gain an understanding of the societal impact that their research and development can achieve. Furthermore, to cultivate presentation and communication skills enabling them to conduct research and present findings in international settings, education is provided through research guidance. Students are provided with opportunities to present research outcomes at domestic and international academic conferences. Students are also guided to cultivate an attitude of constantly monitoring trends in research and technology fields, proactively identifying challenges, and striving autonomously for innovative technological creation. Students can develop the ability to demonstrate leadership by providing direction to others, soliciting cooperation, and driving technological development to fruition.

### **(3) Educational Methods**

Appropriate learning guidance is provided through diverse instructional formats tailored to the educational content, including lectures, seminars, and active learning methodologies.

Through practical subjects such as off-campus research, students develop the advanced communication skills, cultural adaptability, and problem-solving abilities essential for professionals thriving in a global society.

For research guidance, we have systematically established a structured system involving multiple faculty members to effectively cultivate research execution and thesis writing abilities.

#### **(4) Evaluation of Learning Outcomes**

Each subject is evaluated strictly according to the university's established grading standards, based on the assessment methods specified in the syllabus and the degree of achievement against the learning and educational objectives.

Regarding the evaluation of doctoral dissertations, it is appropriately conducted through a preliminary review, thesis examination, and final examination, based on the review criteria and methods established by the graduate school.