

Educational purpose

To develop global human resources with the extensive knowledge needed to realize a sustainable society, and having specialties from the basics to applications of science and technology, flexibility in thinking, competencies for intellectual creativity with problem finding and solving skills, broad perspectives, enriched sense of humanity, and collaboration skills to work in teams, all with a view to contributing to the international society.

College of Mathematics

College of Physics

College of Chemistry

College of Engineering Sciences

College of Engineering Systems

College of Policy and Planning Sciences

Bachelor's Program in Interdisciplinary Engineering

College of Physics

■ Bachelor of Science

■ Educational purpose ■

We foster personnel who possess the solid foundations and advanced specialized knowledge of Modern Physics, which is diversely developing. Students also gain flexible thinking ability through the processes of pursuing the truth as well as the capability for getting insights about the true nature of things and thereby solving the actual causes of problems, so that they will draw on their respective abilities in the society to be active in various areas.

■ Desired students ■

We seek candidates who possess the basic academic abilities in various high school subjects and the ability to further study physics based on them. Students are expected to have a wide perspective of view, learn in their own right, and deal with unknown matters flexibly.

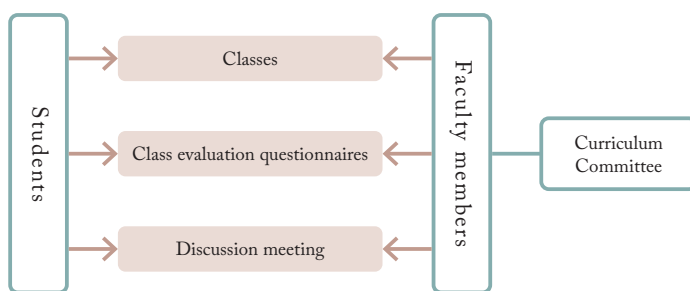
Measures to ensure and improve the quality of education

■ **Rigorous grading:** Grading is done rigorously based on exams and reports submitted.

■ **Standing Curriculum Committee:** The Curriculum Committee, consisting of approximately 10 faculty members, meets several times each semester to review and improve the classes.

■ **Questionnaires for class improvement and discussion meetings between faculty members and students:** Students take the initiative in conducting questionnaire surveys for all Foundation Subjects for Major and Major Subjects, and the results of the surveys are made public. Based on the class questionnaires, discussion meetings for students and faculty are held every year for class improvement.

Measures to ensure and improve the quality of education (conceptual diagram)



Bachelor of Science

Diploma Policy

We grant diplomas for Bachelor of Science to persons who have acquired the knowledge and abilities (that is, Generic Competences) to become learned based on the educational purpose for undergraduate students of the University of Tsukuba. In their learning outcomes, they have achieved the following goals based on the educational purpose of our school and college.

■ Abilities for understanding concepts and ways of thinking that are bases for natural science and for solving problems (Calculus, Linear Algebra, Introduction to Physics, and courses in Chemistry and Biology, etc.)

■ Abilities for understanding concepts and ways of thinking that are bases for classical physics and for solving problems (Mechanics, specialized electromagnetics, analytical mechanics, introductory physics, thermodynamics, etc.)

■ Abilities for understanding concepts and ways of thinking that are bases for Modern Physics and for solving problems (Quantum mechanics, statistical mechanics, relativity, etc.)

■ Abilities to understand the concepts and ideas of specialized physics in each field and to solve problems (Graduation research, introduction to physics and physics in each specialized field)

■ Abilities for understanding and implementing calculation programs and accurately observing the results therefrom in a physics-related manner (Graduation research, Computational Physics)

■ Abilities for understanding principles and operation of experiments and accurately observing the results therefrom in a physics-related manner (Graduation research, physics experiments, experimental physics, etc.)

■ Ability to express and discuss physics content in English and other languages (Graduation research, scientific English, etc.)

■ Ability to explore and solve problems in physics on students' own (Graduation Research, Problem Exploration Practice Seminar, etc.)

Curriculum Policy

We organize and implement curricula based on the following policies for programs that allow students to acquire learning outcomes related to Bachelor of Science.

General policy

We organize a systematic curriculum for students to gain basic knowledge related to overall natural science and to effectively acquire specific competence. In order for students to proactively study, we select the most appropriate subject format (lecture, seminar, experiment).

Course sequence policy

Physics has been developed as a process based on what predecessors have built. In this way, new discoveries are accumulated in a repeated manner. The Modern Physics involves highly developed study, and specialties in different fields of physics are advanced. At the same time, basic concepts are universally used in a wide-range field. During the four years in the school, it is necessary to learn in the correct order, starting from classical physics and moving into basic subjects forming a core of the Modern Physics and highly specialized development subjects. A year of standard learning is set for each subject.

■ The first year: Students understand classical physics from the viewpoint of point mass and fields and widely learn natural science subjects, such as mathematics, chemistry, biology, and earth science.

■ The second year: Students study classical physics in further depth and acquire basic knowledge in Quantum Mechanics, etc., forming the core of the Modern Physics.

■ The third year: Students study more advanced topics in modern physics as well as specialized physics.

■ The fourth year: Students join a laboratory to study specialized physics and conduct graduation research.

Implementation policy

We offer courses that utilize e-learning to

promote active learning, and courses that explore issues to foster creativity. Furthermore, in order to produce human resources who can conduct research on the international stage, we have established courses taught by foreign faculty members.

Policy for evaluation of learning outcomes

We evaluate learning outcomes from the college in question based on the status of acquisition of abilities set forth in the Diploma Policy.

