

For entrants in AY 2024

Appended Form 1

Specifications for Major Program

Name of School (Program) School of Engineering Cluster 1(Mechanical Systems, Transportation, Material and Energy)

Program name (Japanese)	
(English)	Program of Material Processing
1.Academic degree to be Acquired Bachelor's degree in Engineering	
2.Overview	
(1) Overview of "English-based Bachelor's Degree Program"	
<p>This program aims to foster and produce future members of a global society who have the knowledge to be innovative, creative, take leadership, and possess language abilities that will help them play an important role in the international world.</p> <p>This program focuses specifically on producing individuals who are capable of addressing various global issues from an engineering perspective and contribute to the creation of new and valuable solutions that are significant to both the industrial and academic societies.</p> <p>Students enrolled in the program will begin the curriculum from the first semester of their first year. In the second year, students will set off on their major programs and take the designated courses which are offered at each cluster. Major program overview is as (2).</p>	
(2)Program overview of "Program of Material Processing".	
<p>The Program of Material Processing in Cluster 1 aims at nurturing engineers and researchers who, having a broader perspective on human-machine relations such as general machinery, automobiles, electrical machinery, information communication, heavy industry, chemical industry, etc., energy, and environmental issues, are able to assume cutting-edge design and development roles in production engineering. In order for students to develop their perspectives in other related fields, while also gaining in-depth expertise, the program will be run not only by specialists from the closely-related Materials and Processing Program, but also by specialists from the other three programs in Cluster 1, as well as by highly-skilled technical personnel from the Phoenix Workshop.</p> <p>In particular, this program helps students acquire basic knowledge as mechanical engineers through the learning of basic mechanical subjects, drafting and design, and machine shop training at the Phoenix Workshop. Also, this program offers such materials-related specialized subjects as machine materials and materials science; specialized subjects related to the deformation and destruction of materials, such as material strength and elastic-plastic engineering; and specialized subjects that deal with the technology of forming processes, such as forming processes and machine processes. The program provides students with highly specialized education in the design, development, and use of functional materials, and in the principles of production and processing. Students are assigned to this program in the second semester of the second year. Then, in the first semester of the fourth year, students are assigned to their respective research laboratories, choose their research topics, and write up their graduation theses. Around sixty percent of graduates from this program will advance to graduate school. Graduates are employed in the general machinery and automotive fields, as well as in electronics, information & communications, heavy industry, the chemical industry, and a broad range of other industries. Centering on manufacturers in the fields of heavy industry, transportation equipment, machinery, and materials, they work actively in the fields of R&D, design, production engineering, and engineering marketing.</p>	
3. Academic Awards Policy (Goals of the Program and Policy for Awarding Degrees)	
<p>The Program of Material Processing develops professionals capable of taking action and displaying great humanity and rationality, who can contribute to the peace, development, and survival of humankind, and to the realization of</p>	

happiness while striving for co-existence with nature.

This program awards a bachelor's degree in engineering to students who have acquired the following abilities in a balanced manner, as well as the number of credits necessary to meet the standard of the course.

The completion of courses in material mechanics, mechanical dynamics, thermodynamics, and fluid dynamics (the so-called 'four dynamics') and other basic mechanical subjects. In addition, the completion of courses in highly-specialized subjects on related to design and development, and to the principles of production and processing of functional materials, which form the foundation of the development and manufacturing technology of products for the next generation.

The ability to assume roles in the design and development of cutting-edge production technology, while having a broader perspective about human-machine relations, energy for the next generation, and environmental issues.

4. Curriculum Policy (Policy for Preparing & Implementing Curriculum)

The Program of Material Processing offers not only machine-related basic education, but also specialized education concerning the design and development of new functional materials and utilization technology, as well as the principles of production and processing, and their the application.

To ensure that students are able to achieve the goals of the program, the program develops and puts into practice a curriculum based on the following policy:

In the first year, the students take Liberal Arts Education subjects such as Peace Science Courses, Basic Courses in University Education, common subjects, and Foundation Courses, as well as specialized basic subjects and specialized practical education, such as machine shop training.

In the first semester of the second year, specialized basic subjects such as “Mechanics of Materials ” and “Fluid Dynamics ” become major subjects. In the second semester of the second year, the students are assigned to this program. As a result, specialized subjects in accordance with the program become major subjects to be taken.

In the third year, specialized subjects tailored to the program continue to become major subjects to be taken.

In the fourth year, the students are assigned to their respective research laboratories, choose their research topics, and write their graduation theses.

In the curriculum described above, teaching and learning will be implemented by utilizing active learning and online classes, depending on the delivery methods of the program, such as lectures and seminars.

In addition to strict grading using the standards clearly outlined in the syllabus, learning outcomes are evaluated based on the degree to which the goals set by the educational program are achieved.

5. Program Timing/Acceptance Conditions

○ When to start the Program

The English-based Bachelor's Degree programs begin in the first semester of the first year. Enrollment in Program of Material Processing occurs in the second semester of the second year.

○ Additional Requirements

To determine acceptance into the English-based Bachelor's Degree program, all applicants are required to have an individual consultation with the faculty committee members.

○ Credit Requirements

By the first semester of the second year, students must have acquired the Liberal Arts Education subjects and specialized basic subjects that are commonly specified in Cluster 1.

6. Qualifications to be Acquired

Type-1 High School Teaching License (Industry)

(Students must acquire the required number of credits for the Type-1 High School Teaching License (Industry), in addition to the required number of credits for this program.)

7. Class subjects and course content

* For class subjects, see the Course List table on the attached sheet.

* For course content, see the syllabus for each academic year.

* All course subjects are taught in Japanese. Course materials will be written in both Japanese and English or only English.

8 Academic Achievements

At the end of each semester, the evaluation criteria are applied to each academic achievement evaluation item so that the level of attainment is clearly demonstrated. Students' grade calculation for each subject, from admission to the current semester, is given in one of three levels: "Excellent," "Very Good," and "Good," based on evaluation criteria calculated by adding the weighted values to the numerically-converted values of their academic achievement in each subject being evaluated (S = 4, A = 3, B = 2, and C = 1).

Evaluation of academic achievement	Converted values
S(Excellent: 90 points or higher)	4
A(Superior:80-89 points)	3
B(Good: 70-79 points)	2
C(Fair: 60-69 points)	1

Academic achievement	Evaluation criteria
Excellent	3.00 4.00
Very Good	2.00 2.99
Good	1.00 1.99

- * For the relationship between evaluation items and evaluation criteria, see the attached Sheet 2 .
- * For the relationship between evaluation items and class subjects, see the attached Sheet 3.
- * For the curriculum map, see the attached Sheet 4.

9. Graduation Thesis (Graduation Research) (Positioning, When and how it is assigned, etc.)

o Positioning

The graduation thesis is positioned as one of the major subjects to achieve the following learning/educational goals:

- (D) Developing the ability to solve engineering issues on one's own initiative with flexible thinking and creativity
- (E) Developing communication skills and the ability to globally collect and dispatch information.

o When and how it is assigned

When it is assigned: At the start of the fourth year (only to those who meet the conditions for embarking on a graduation thesis)

Conditions for embarking on a graduation thesis

- (1) Students must gain 43 credits or more out of 46 credits, the required number for graduation in Liberal Arts Education subjects.
- (2) Students must gain 10 credits or more in the first group of specialized basic subjects
- (3) Students must gain all of the required credits in Machine Design and Drawing, CAD, Mechanical Engineering Design and Production, Machine Shop Training, Experiments in Mechanical Engineering.
- (4) Students must gain 11 credits or more out of 15 credits, the required number in the second group of specialized basic subjects.
- (5) Students must gain a total of 68 credits or more in specialized basic subjects and specialized subjects.

o How it is assigned

The research details of each laboratory to which the students can be assigned are explained by giving out handouts at a briefing held in February, in the second semester of the third year. After the number of students acceptable to each laboratory is given at the start of the fourth year, students who can begin their graduation theses are assigned as requested. In the case that the number of students exceeds the acceptable limit for a laboratory, adjustments may be made.

The graduation thesis must be written in English in "English-based Bachelor's Degree Program".

10. Responsibility-taking System

(1) PDCA Responsibility-taking System ("Plan," "Do," "Check," and "Act")

The cluster leader and program leader are responsible for executing this program. Faculty committee members responsible for this program make plans, while self-check/evaluation committee members responsible for this program make evaluations. The cluster and program teachers committee scrutinize the plans and evaluations from time to time for further improvement. When major issues arise, a working group may be established at the discretion of cluster leader and program leader.

(2) Program assessment

o Criteria for program assessment

Whether or not each class subject is properly allocated in light of the goals of the program, and whether course content is appropriate

Whether or not, on average, students taking the course have achieved or exceeded the goals

Whether or not the system runs in proper cycles that enable the continuous improvement of the program

- How the program is assessed

Conducting self-assessment for each subject based on class improvement questionnaires from students who have taken course, and based on performance rating results

Conducting questionnaires (obtained at graduation) in suitable cycles, to evaluate the validity of the goals

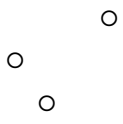
- Position on feedback to students and how it should be conducted○

Search records of each student's learning status, prepared by tutors, are kept.

Based on these records, study guidance is given to each student. At the same time, requests from students are discussed at teachers' meetings as needed. Furthermore, based on the results of the course improvement questionnaires obtained from students, subject teachers draw up class improvement plans that reflect the questionnaire results.

Experimental Methods and Laboratory Work in Chemistry I (Note 4)

Experimental Methods and Laboratory Work in Chemistry II (Note 4)



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