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) | 材料加工プログラム |
| (English) | Program of Material Processing |
| 1.Academic degree to be Acquired ：Bachelor’s degree in Engineering | |

2.Overview

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.

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 f

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 Ⅰ" and "Fluid Dynamics Ⅰ" 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

* 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.

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

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

○ 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.

○ 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.

○ 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.

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

○ 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.

# Cluster 1　Basic Specialized Subjects

◎ Required subject
○Compulsory elective subject
△Free elective subject

| | Class Subjects | Credits | Type of course registration | | | | Class Hours/Week | | | | | | | | | | | | | | Note |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Mechanical Systems Engineering | Transportation Systems | Materials Processing | Energy Transform Engineering | 1st grade | | | | 2nd grade | | | | 3rd grade | | | | 4th grade | | | | |
| | | | | | | | Spring | | Fall | | Spring | | Fall | | Spring | | Fall | | Spring | | Fall | | |
| | | | | | | | 1T | 2T | 3T | 4T | 1T | 2T | 3T | 4T | 1T | 2T | 3T | 4T | 1T | 2T | 3T | 4T | |
| 1st group | Applied Mathematics I | 2 | ◎ | ◎ | ◎ | ◎ | | | 4 | | | | | | | | | | | | | | |
| | Applied Mathematics II | 2 | ◎ | ◎ | ◎ | ◎ | | | | | 4 | | | | | | | | | | | | |
| | Applied Mathematics III | 2 | ◎ | ◎ | ◎ | ◎ | | | | | | | 4 | | | | | | | | | | |
| | Engineering Mathematics A | 2 | ○ | | ○ | ○ | | | | | | | | | 4 | | | | | | | | |
| | Engineering Mathematics C | 2 | ○ | | ○ | ○ | | | | | | | | 4 | | | | | | | | | |
| | Probability and Statistics | 2 | ◎ | ◎ | ◎ | ◎ | | | | | 4 | | | | | | | | | | | | |
| | Synthesis of Applied Mathematics | 2 | ○ | | ○ | ○ | | | | | | | | | | | 4 | | | | | | |
| | Practice of Mechanics | 1 | ○ | △ | ○ | ○ | | | 4 | | | | | | | | | | | | | | |
| | Introduction of Mechanical and Transportation Engineering | 2 | ◎ | ◎ | ◎ | ◎ | | | 4 | | | | | | | | | | | | | | |
| | Technical English | 1 | ◎ | ◎ | ◎ | ◎ | | | | | 2 | 2 | | | | | | | | | | | |
| | Basic Engineering Computer Programming | 2 | ◎ | ◎ | ◎ | ◎ | | | | | | 4 | | | | | | | | | | | |
| 2nd group | Mechanics of Material I | 2 | ◎ | ◎ | ◎ | ◎ | | | | | 4 | | | | | | | | | | | | |
| | Thermodynamics I | 2 | ◎ | ◎ | ◎ | ◎ | | | | | 4 | | | | | | | | | | | | |
| | Fluid Dynamics I | 2 | ◎ | ◎ | ◎ | ◎ | | | | | | 4 | | | | | | | | | | | |
| | Control Engineering I | 2 | ◎ | ◎ | ◎ | ◎ | | | | | | 4 | | | | | | | | | | | |
| | An Introduction to Engineering Materials | 2 | ◎ | ◎ | ◎ | ◎ | | | | | 4 | | | | | | | | | | | | |
| | Fundamentals of Materials Processing | 2 | ◎ | ◎ | ◎ | ◎ | | | | | | 4 | | | | | | | | | | | |
| | Machine Design and Drawing | 1 | ◎ | ◎ | ◎ | ◎ | | | 3 | 3 | | | | | | | | | | | | | |
| | Computer Aided Design | 1 | ◎ | ◎ | ◎ | ◎ | | | | | 3 | 3 | | | | | | | | | | | |
| | Machine Shop Training (a) | 1 | ◎ | ◎ | ◎ | ◎ | | | 3 | 3 | | | | | | | | | | | | | |
| | Machine Shop Training (b) | 1 | ◎ | ◎ | ◎ | ◎ | | | | | 3 | 3 | | | | | | | | | | | |

※Students can select either Machine Shop Training (a) or Machine Shop Training (b)

# Cluster 1 Specialized Subjects

(Program of Material Processing)

◎ Required subject
○Compulsory elective subject
△Free elective subject

| Class Subjects | Credits | Type of | Class Hours/Week | | | | | | | | | | | | | | | | Note |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1st grade | | | | 2nd grade | | | | 3rd grade | | | | 4th grade | | | | |
| | | | Spring | | Fall | | Spring | | Fall | | Spring | | Fall | | Spring | | Fall | | |
| | | | 1T | 2T | 3T | 4T | 1T | 2T | 3T | 4T | 1T | 2T | 3T | 4T | 1T | 2T | 3T | 4T | |
| Dynamics of Vibrations I | 2 | ◎ | | | | | | | 4 | | | | | | | | | | |
| Experiments in Mechanical Engineering | 1 | ◎ | | | | | | | | | 3 | 3 | | | | | | | |
| Mechanical Engineering Design and Production | 1 | ◎ | | | | | | | | | | | 3 | 3 | | | | | |
| Mechanical Materials I | 2 | ◎ | | | | | | | | | | 4 | | | | | | | |
| Mechanical Materials II | 2 | ○ | | | | | | | | | | | | 4 | | | | | |
| Fracture Mechanics | 2 | ◎ | | | | | | | | | | | | 4 | | | | | |
| Fusion and Solidification Processings I | 2 | ◎ | | | | | | | | | | 4 | | | | | | | |
| Plastic Working and Powder Metallurgy II | 2 | ○ | | | | | | | | | | | 4 | | | | | | |
| Materials Science | 2 | ◎ | | | | | | | | 4 | | | | | | | | | |
| Machining | 2 | ◎ | | | | | | | | | | 4 | | | | | | | |
| Introduction to Quantum Physics | 2 | △ | | | | | | | | 4 | | | | | | | | | |
| Fluid Dynamics II | 2 | ○ | | | | | | | | 4 | | | | | | | | | |
| Thermodynamics II | 2 | ○ | | | | | | | | 4 | | | | | | | | | |
| Heat Transfer I | 2 | ○ | | | | | | | 4 | | | | | | | | | | |
| Combustion Engineering Fundamentals | 2 | △ | | | | | | | | | 4 | | | | | | | | |
| Internal Combustion Engines | 2 | △ | | | | | | | | | | | 4 | | | | | | |
| Data Processing and Numerical Analysis | 2 | ◎ | | | | | | | | 4 | | | | | | | | | |
| Computer Programming | 2 | ○ | | | | | | | | | | 4 | | | | | | | |
| Theory of Elasticity and Plasticity | 2 | ○ | | | | | | | | | 4 | | | | | | | | |
| Computational Solid Mechanics | 2 | ○ | | | | | | | | | | 4 | | | | | | | |
| Mechanics of Materials II | 2 | | | | | | | | 4 | | | | | | | | | | |
| Mechanism and Kinematics | 2 | ○ | | | | | | | | 4 | | | | | | | | | |
| Dynamics of Vibrations II | 2 | ○ | | | | | | | | | 4 | | | | | | | | |
| Control Engineering II | 2 | ○ | | | | | | | 4 | | | | | | | | | | |
| Electrical and Electronic Engineering | 2 | ○ | | | | | | | | | 4 | | | | | | | | |
| Mechatronics | 2 | △ | | | | | | | | | | | 4 | | | | | | |
| Measurement and Signal Processing | 2 | ○ | | | | | | | | | | | | 4 | | | | | |
| Mechanical System Control | 2 | △ | | | | | | | | | 4 | | | | | | | | |
| Data Structure and Algorithm | 2 | △ | | | | | | | | | | | | 4 | | | | | |
| Manufacturing System | 2 | △ | | | | | | | | | | 4 | | | | | | | |
| Machine Elements Design | 2 | ○ | | | | | | | 4 | | | | | | | | | | |
| Machine Design | 2 | ○ | | | | | | | | | | | 4 | | | | | | |
| Systems Engineering | 2 | ○ | | | | | | | | 4 | | | | | | | | | |
| Transportation | 2 | ○ | | | | | | | 4 | | | | | | | | | | |
| Internship | 1 | ○ | | | | | | | | | | | 3 | 3 | | | | | |
| Graduation Thesis | 5 | ◎ | | | | | | | | | | | | | | | | | |

# Academic Achievements in Educational Program for Materials and Processing

## The Relationship between Evaluation Items and Evaluation Criteria

| Academic Achievements | | | Evaluation Criteria | | |
|---|---|---|---|---|---|
| Evaluation Items | | | Excellent | Very Good | Good |
| Knowledge and Understanding | (1) | To develop the ability to work positively and independently on the development of local societies, international society, and business and industries. | To be able to be sufficiently engaged in the development of local societies, international society, and business and industry. | To be able to be engaged in the development of local societies, international society, and business and industry at the standard level. | To be able to be engaged in the development of local societies, international society, and business and industry at the minimum level. |
| | (2) | Acquiring necessary basic knowledge for an engineer and developing the ability to consider logically. | Acquiring necessary basic knowledge for an engineer and being able to sufficiently and logically consider it. | Acquiring necessary basic knowledge for an engineer and being able to logically consider it at the standard level. | Acquiring necessary basic knowledge for an engineer and being able to logically consider it at the minimum level. |
| Abilities and Skills | (1) | Acquiring basis of mechanical system, material creation and processing engineering steadily, and being able to apply | Acquiring basis of mechanical system, material creation and processing engineering steadily, and being able to apply it | Acquiring basis of mechanical system, material creation and processing engineering steadily, and being able to apply it at the standard level. | Acquiring basis of mechanical system, material creation and processing engineering steadily, and being able to apply it at the minimum level. |
| | (2) | Developing the ability of solving the technological issues with flexible ideas and creativity. | Based on flexible ideas and creativity, to be able to sufficiently solve problems related to engineering. | Based on flexible ideas and creativity, to be able to independently solve problems related to engineering to the standard level. | Based on flexible ideas and creativity, to be able to independently solve problems related to engineering at the minimum level. |
| Overall Abilities | (1) | Cultivating abilities of communication and of internationally collecting information and releasing it | To be able to communicate sufficiently with others, collect and release information internationally. | To be able to communicate with others, collect and release information internationally at the standard level | To be able to communicate with others, collect and release information internationally at the minimum level. |

## Placement of the Liberal Arts Education in the Major Program

We aim to cultivate a well-rounded character, backed up by a broad range of basic knowledge and an understanding of global environmental issues and problems in the social environment. Furthermore, we aim to cultivate the ability to consider ways to solve problems in the context of the multifaceted relations between people and society, and between nature and engineering. To that end, the following are offered: (1) The acquisition of the necessary abilities and attitudes to see various social issues multilaterally and to understand the complete picture (2) The acquisition of a broader perspective after being exposed to fields outside of one's area of expertise (3) Through sports, the acquisition of knowledge of health and physical strength that form basis of human living (4) The cultivation of the ability to understand the position of machine system engineers and material creating/processing engineers in society, and to solve ethical problems

## Relationships between the evaluation items and class subjects

| | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Weighted values of evaluation items in the subject | Weightsed values of evaluation items | Weighted values of evaluation items in the subject | Weightsed values of evaluation items | Weighted values of evaluation items in the subject | Weightsed values of evaluation items | Weighted values of evaluation items in the subject | Weightsed values of evaluation items | Weighted values of evaluation items in the subject | Weightsed values of evaluation items | | | | | | |
| Liberal Arts Education | Introduction to University Education | 2 | Required | 1semsester-1T | 100 | 1 | | | | | | | | | | | | | | |
| Liberal Arts Education | Introductory Seminar for First-Year Students | 2 | Required | 1semsester | | | | | | | 50 | 1 | 50 | 1 | 100 | | | | | |
| Liberal Arts Education | Peace Science Courses | 2 | Elective | 1semsester-2T | 100 | 1 | | | | | | | | | 100 | | | | | |
| Liberal Arts Education | Area Courses Courses in Arts and Humanities/Social Sc | 4 | Elective | 1,2,3,4semsester | 100 | 1 | | | | | | | | | 100 | | | | | |
| Liberal Arts Education | Area Courses Courses in Natural Sciences | 4 | Elective | 1,2,3,4semsester | 100 | 1 | | | | | | | | | 100 | | | | | |
| Liberal Arts Education | Basic English UsageI | 1 | Required | 1semsester | | | | | | | | | 100 | 1 | 100 | | | | | |
| Liberal Arts Education | Basic English UsageII | 1 | Required | 2semsester | | | | | | | | | 100 | 1 | 100 | | | | | |
| Liberal Arts Education | CommunicationI | 1 | Required | 1semsester | | | | | | | | | 100 | 1 | 100 | | | | | |
| Liberal Arts Education | Communication I | 1 | Required | 1semsester | | | | | | | | | 100 | 1 | 100 | | | | | |
| Liberal Arts Education | Communication II | 1 | Required | 2semsester | | | | | | | | | 100 | 1 | 100 | | | | | |
| Liberal Arts Education | Communication II | 1 | Required | 2semsester | | | | | | | | | 100 | 1 | 100 | | | | | |
| Liberal Arts Education | Basic language I | 1 | Elective | 1semsester-1T | | | | | | | | | 100 | 1 | 100 | | | | | |
| Liberal Arts Education | Basic languageII | 1 | Elective | 1semsester-2T | | | | | | | | | 100 | 1 | 100 | | | | | |
| Liberal Arts Education | Introduction to Information and Data Sciencies | 2 | Required | 1semsester | | | 100 | 1 | | | | | | | 100 | | | | | |
| Liberal Arts Education | Health and Sports Courses | 2 | Elective | 1,2semsester | 100 | 1 | | | | | | | | | 100 | | | | | |
| Liberal Arts Education | CalculusI | 2 | Required | 1semsester | | | 100 | 1 | | | | | | | 100 | | | | | |
| Liberal Arts Education | CalculusII | 2 | Required | 2semsester | | | 100 | 1 | | | | | | | 100 | | | | | |
| Liberal Arts Education | Linear AlgebraI | 2 | Required | 1semsester | | | 100 | 1 | | | | | | | 100 | | | | | |
| Liberal Arts Education | Linear AlgebraII | 2 | Required | 2semsester | | | 100 | 1 | | | | | | | 100 | | | | | |
| Liberal Arts Education | Seminar in Basic Mathematics I | 1 | Required | 1semsester | | | 100 | 1 | | | | | | | 100 | | | | | |
| Liberal Arts Education | Seminar in Basic Mathematics II | 1 | Required | 2semsester | | | 100 | 1 | | | | | | | 100 | | | | | |
| Liberal Arts Education | General Mechanics I | 2 | Required | 1semsester | | | 100 | 1 | | | | | | | 100 | | | | | |
| Liberal Arts Education | General Mechanics II | 2 | Required | 2semsester | | | 100 | 1 | | | | | | | 100 | | | | | |
| Liberal Arts Education | Basic Electromagnetism | 2 | Required | 3semsester | | | 100 | 1 | | | | | | | 100 | | | | | |
| Liberal Arts Education | Experimental Methods and Laboratory Work in Physics I | 2 | Required | 2semsester | | | 100 | 1 | | | | | | | 100 | | | | | |
| Liberal Arts Education | General Chemistry | 2 | Elective | 3semsester | | | 100 | 1 | | | | | | | 100 | | | | | |
| Liberal Arts Education | Experimental Methods and Laboratory Work in Chemistry I | 2 | Elective | 2semsester | | | 100 | 1 | | | | | | | 100 | | | | | |
| Specialized Education | Applied Mathematics I | 2 | Required | 2semsester | | | | | 100 | 1 | | | | | 100 | | | | | |
| Specialized Education | Applied Mathematics II | 2 | Required | 3semsester | | | | | 100 | 1 | | | | | 100 | | | | | |
| Specialized Education | Applied Mathematics III | 2 | Required | 4semsester | | | | | 100 | 1 | | | | | 100 | | | | | |
| Specialized Education | Engineering Mathematics A | 2 | Elective | 5semsester | | | | | 100 | 1 | | | | | 100 | | | | | |
| Specialized Education | Engineering Mathematics C | 2 | Elective | 4semsester | | | | | 100 | 1 | | | | | 100 | F | | | | |
| Specialized Education | Probability and Statistics | 2 | Required | 3semsester | | | | | 100 | 1 | | 1 | | | 100 | | 1 | | | |
| Specialized Education | Synthesis of Applied Mathematics | 2 | Elective | 6semsester | | | | | 100 | 1 | | | | | 100 | | | | | |
| Specialized Education | Practice of Mechanics | 1 | Elective | 2semsester | | | | | 100 | 1 | | | | | 100 | | | | | |
| Specialized Education | Introduction of Mechanical and Transportation Engineering | 2 | Required | 2semsester | | | | | 100 | 1 | | | | | 100 | | | | | |
| Specialized Education | Technical English | 1 | Required | 3semsesterT2 | | | | | | | | | | | | | | | | |

| Subject type | Class subjects | credits | Type of course registration | Period | Evaluation items | | | | | | | | | | Total weighted values of evaluation items in the subject |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Knowledge and Understanding | | | | Abilities and Skills | | | | Comprehensive Abilities | | |
| | | | | | (1) | | (2) | | (1) | | (2) | | (1) | | |
| | | | | | Weighted values of evaluation items in the subject | Weightsed values of evaluation items | Weighted values of evaluation items in the subject | Weightsed values of evaluation items | Weighted values of evaluation items in the subject | Weightsed values of evaluation items | Weighted values of evaluation items in the subject | Weightsed values of evaluation items | Weighted values of evaluation items in the subject | Weightsed values of evaluation items | |
| Specialized Education | Mechanical Materials II | 2 | Elective | 6semsester | | | | | 100 | 1 | | | | | 100 |
| Specialized Education | Fracture Mechanics | 2 | Required | 6semsester | | | | | 100 | 1 | | | | | 100 |
| Specialized Education | Fusion and Solidification Processings I | 2 | Required | 5semsester | | | | | 100 | 1 | | | | | 100 |
| Specialized Education | Plastic Working and Powder Metallurgy II | 2 | Elective | 6semsester | | | | | 100 | 1 | | | | | 100 |
| Specialized Education | Materials Science | 2 | Required | 4semsester | | | | | 100 | 1 | | | | | 100 |
| Specialized Education | Machining | 2 | Required | 5semsester | | | | | 100 | 1 | | | | | 100 |
| Specialized Education | Introduction to Quantum Physics | 2 | Elective | 4semsester | | | | | 100 | 1 | | | | | 100 |
| Specialized Education | Fluid Dynamics II | 2 | Elective | 4semsester-4T | | | | | 100 | 1 | | | | | 100 |
| Specialized Education | Thermodynamics II | 2 | Elective | 4semsester-4T | | | | | 100 | 1 | | | | | 100 |
| Specialized Education | Heat Transfer I | 2 | Elective | 4semsester-3T | | | | | 100 | 1 | | | | | 100 |
| Specialized Education | Combustion Engineering Fundamentals | 2 | Elective | 5semsester | | | | | 100 | 1 | | | | | 100 |
| Specialized Education | Internal Combustion Engines | 2 | Elective | 6semsester | | | | | 100 | 1 | | | | | 100 |
| Specialized Education | Data Processing and Numerical Analysis | 2 | Required | 4semsester | | | | | 100 | 1 | | | | | 100 |
| Specialized Education | Theory of Elasticity and Plasticity | 2 | Elective | 5semsester | | | | | 100 | 1 | | | | | 100 |
| Specialized Education | Computational Solid Mechanics | 2 | Elective | 5semsester | | | | | 100 | 1 | | | | | 100 |
| Specialized Education | Mechanics of Materials II | 2 | Elective | 4semsester | | | | | 100 | 1 | | | | | 100 |
| Specialized Education | Mechanism and Kinematics | 2 | Elective | 4semsester | | | | | 100 | 1 | | | | | 100 |
| Specialized Education | Dynamics of Vibrations II | 2 | Elective | 5semsester | | | | | 100 | 1 | | | | | 100 |
| Specialized Education | Control Engineering II | 2 | Elective | 4semsester | | | | | 100 | 1 | | | | | 100 |
| Specialized Education | Electrical and Electronic Engineering | 2 | Elective | 5semsester | | | | | 100 | 1 | | | | | 100 |
| Specialized Education | Mechatronics | 2 | Elective | 6semsester | | | | | 100 | 1 | | | | | 100 |
| Specialized Education | Measurement and Signal Processing | 2 | Elective | 6semsester | | | | | 100 | 1 | | | | | 100 |
| Specialized Education | Mechanical System Control | 2 | Elective | 5semsester | | | | | 100 | 1 | | | | | 100 |
| Specialized Education | Data Structure and Algorithm | 2 | Elective | 6semsester | | | | | 100 | 1 | | | | | 100 |
| Specialized Education | Manufacturing System | 2 | Elective | 5semsester | | | | | 100 | 1 | | | | | 100 |
| Specialized Education | Machine Elements Design | 2 | Elective | 4semsester | | | | | 100 | 1 | | | | | 100 |
| Specialized Education | Machine Design | 2 | Elective | 6semsester | | | | | 100 | 1 | | | | | 100 |
| Specialized Education | Systems Engineering | 2 | Elective | 4semsester | | | | | 50 | 1 | 50 | 1 | | | 100 |
| Specialized Education | Transportation | 2 | Elective | 4semsester | | | | | 100 | 1 | | | | | 100 |
| Specialized Education | Internship | 1 | Elective | 6semsester | 40 | 1 | | | | | 30 | 1 | 30 | 1 | 100 |
| Specialized Education | Graduation Thesis | 5 | Required | 7,8semsester | | | | | | | 55 | 1 | 45 | 1 | 100 |

# Curriculum Map of Materials Processing

Sheet 4

4th grade

| Spring | Fall | Spring | Fall | Spring | Fall | Spring | Fall |
|---|---|---|---|---|---|---|---|
| Introduction to University Education | Area Courses | Area Courses | Area Courses | | Internship | | |
| Peace Science Courses | Health and Sports Courses | | | | | | |
| Area Courses | | | | | | | |
| Health and Sports Courses | | | | | | | |
| Introduction to Information and Data Sciencies | CalculusII | Basic Electromagnetism | | Computer Programming | | | |
| CalculusI（ ） | Linear AlgebraII | General Chemistry | | | | | |
| Linear AlgebraI（◎） | Seminar in Basic Mathematics II | Basic Engineering Computer Programming | | | | | |
| Seminar in Basic Mathematics I（◎） | General Mechanics II | | | | | | |
| General Mechanics I（◎） | Experimental Methods and Laboratory Work in Physics I （ ） | | | | | | |
| | Applied Mathematics I | Applied Mathematics II | Applied Mathematics III | Engineering Mathematics A | Synthesis of Applied Mathematics | | |
| | Practice of Mechanics | Probability and Statistics | Engineering Mathematics C | Mechanical Materials I | Mechanical Materials II | | |
| | Introduction of Mechanical and Transportation Engineering | Mechanics of Material I | Dynamics of Vibrations I | Fusion and Solidification Processings I | Fracture Mechanics | | |
| | Machine Design and Drawing | Thermodynamics I | Materials Science | Machining | Plastic Working and Powder Metallurgy II | | |
| | | Fluid Dynamics I | Introduction to Quantum Physics | Combustion Engineering Fundamentals | Internal Combustion Engines | | |
| | | Control Engineering I | Fluid Dynamics II | Theory of Elasticity and Plasticity | Mechatronics | | |
| | | An Introduction to Engineering Materials | Thermodynamics II | Dynamics of Vibrations II | Data Structure and Algorithm | | |
| | | Fundamentals of Materials Processing | Heat Transfer I | Electrical and Electronic Engineering | Machine Design | | |
| | | | Data Processing and Numerical Analysis | Mechanical System Control | Measurement and Signal Processing | | |
| | | | Mechanics of Materials II | Manufacturing System | | | |
| | | | Mechanism and Kinematics | Computational Solid Mechanics | | | |
| | | | Control Engineering II | | | | |
| | | | Machine Elements Design | | | | |
| | | | Systems Engineering | | | | |
| | | | Transportation | | | | |
| Introductory Seminar for First-Year Students | Machine Shop Training (a) | Machine Shop Training (b) | Systems Engineering | Experiments in Mechanical Engineering-1 | Mechanical Engineering Design and Production | Graduation Thesis | Graduation Thesis |
| | | Computer Aided Design | | | Internship | | |
| Introductory Seminar for First-Year Students | Basic English UsageII | | | Experiments in Mechanical Engineering-1 | Internship | Graduation Thesis | Graduation Thesis |
| Basic English UsageI | Communication II | Technical English | | | | | |
| CommunicationI | Communication II | | | | | | |
| Communication I | | | | | | | |
| Basic language I（○） | | | | | | | |
| Basic language II | | | | | | | |

Cultivating abilities of communication and of internationally collecting information and releasing it

Color-code Symbol

Common subjects Required subject

Foundation Courses Compulsory elective subject

Basic Specialized Subjects The first group Free elective subject

Basic Specialized Subjects The second group

Specialized Subjects