For entrants in AY 2018

Appended Form 1

Specifications for Major Program

Name of School (Program) School of Engineering,Cluster 4 (Social and Environmental Engineering)

Program name (Japanese)	
(English)	Program of Civil and Environmental Engineering

1. Academic degree to be Acquired

2. Overview

In this program, students learn the engineering theory needed to plan, design, construct, and maintain social infrastructure facilities that create rich communities and social environments, while attempting to harmonize and coexists with natural environments. Students also learn about a wide range of technology for environmental preservation on a global basis, considering that there is a strong demand for technologies that can create advanced, circulatory society that makes effective use of limited resources. Therefore, this program produces professionals and future engineers or researchers who take the initiative in addressing various

environment. This program produces professionals and future engineers or researchers who set goals on their own initiative, explore solution to problems in a scientific and rational way, and possess the leadership and vitality to achieve their goal in an ethical and harmonious way.

3.Academic Awards Policy (Policy for awarding degrees and goal of the program)

The Program of Civil and Environmental Engineering aims at developing engineers and researchers who are able, at their own discretion, to deal with the various problems faced when engaged in social infrastructure improvement in a comprehensive manner.

engineering to students who have acquired the number of credits necessary to meet the standard of the course and who, through learning the engineering theory needed to plan, design, construct, and maintain social infrastructure facilities, have acquired the liberal arts education and special education designed to achieve the following goals.

(A) A wide range of general knowledge and a broad perspective: The ability to view the expanding and increasingly complex societies and natural environments from multiple scientific perspectives of nature, humanities, and society

(B) The ability to identify issues: the ability to understand the relationship between nature, humankind, and technology, in both international and regional communities, and ability to identify issues

(C) The ability to configure problems: The ability to organize problems logically and construct technical issues

(D) The ability to analyze problems: The ability to gather the necessary data, and to abstract, model, and analyze technical issues

(E) The ability to evaluate: The ability to propose multiple solutions, predict outcomes, and evaluate relative merits

(F) Communication abilities: The ability to communicate to others the details of the proposed solutions, their rationale, their effects, and their feasibility

(G) Implementation and problem-solving abilities: The ability to implement problem-solving processes in cooperation with other people, by making full use of a wide range of general knowledge and a broad perspective, as well as the ability to identify problems, the ability to configure problems, the ability to analyze problems, comprehensive communication abilities, and the ability to enhance problem-solving abilities voluntarily and continuously by learning the above processes,

4. Curriculum Policy

The abilities required to achieve the seven goals (a wide range of general knowledge and a broad

perspective, the ability to identify issues, the ability to configure problems, the ability to analyze problems, the ability to evaluate, communication abilities, and implementation and problem-solving abilities) are described below. The curriculum is organized in such a way that these abilities may be cultivated as required by engineers in civil and environmental engineering. Learning outcomes are evaluated based on the grade calculation for each subject and the level of attainment against the goals.

(A) Wide range of general knowledge and broad perspective

Required abilities: the ability to view the expanding and increasingly complex societies and natural environments from multiple scientific perspectives, such as nature, humanities, and society

The ability to explain the current status of the natural environment and expected environmental problems

The ability to give examples where different scientific findings on the same subject conflict

The ability to list multiple scientific facts relevant to the resolution of research tasks

Applicable subjects: liberal arts education subjects, Graduation Thesis

(B) Ability to identify issues

Required abilities: the ability to understand the relationship between nature, humankind, and technology in the international and regional communities, and the ability to identify issues

The ability to understand the characteristics of civil engineering structures and the surrounding environment, and to list possible natural phenomena and disasters

The ability to explain the roles that civil engineering has played in coexistence with the environment

The ability to position the existing technology related to research tasks, and to set goals

Applicable subjects: liberal arts education subjects, specialized basic

subjects

(C) Ability to configure problems

Required abilities: the ability to organize problems logically and construct technical issues

The ability to use knowledge about mathematics and physics, and select equation systems that control major elements of phenomena

The ability to mathematically express and understand diverse phenomena, including disasters

The ability to accurately explain the major elements constituting phenomena which are the subject of study

Applicable subjects: specialized basic

specialized

(D) Ability to analyze problems:

Required abilities: the ability to gather the necessary data and abstract, model, and analyze technical issues

The ability to acquire information necessary to model phenomenon

The ability to seek solutions for the model using mathematical methods

The ability to explain the validity and reliability of analytical approach in research

Applicable subjects: Liberal arts education

specialized basic

specialized subj

(E Ability to evaluate:

Required abilities: the ability to propose multiple solutions, predict outcomes, and evaluate relative merits

The ability to consider the applicability to actual phenomena of theoretically-gained solutions, and their limitations

The ability to design multiple alternative solutions, predict outcomes, and compare

The ability to explain knowledge gained from research an its applicability, and the limitations and social significance of civil engineering technology

Applicable subjects: specialized

(F) Communicating abilities

Required abilities: The ability to communicate to others details of proposed solutions, their rationale, their effects, and their feasibility

The ability to use information processing equipment, and prepare accurate charts, tables, and sentences with a certain level of quality

entation

The basic ability to communicate in Japanese and English

Applicable subjects: Liberal arts education

specialized basic ntal

specialized

(G) Implementation and problem-solving abilities:

Required abilities: the ability to implement problem-solving processes in cooperation with other people by making full use of (A) to (F) above. The ability to enhance problem-solving abilities voluntarily and continuously by learning the above processes.

The ability

The ability to evaluate problem-solving processes, and make suggestions for improvement

omplex questions

Applicable subjects: specialized basic

and , mainly specialized

5. Program Timing and Acceptance Conditions

When the first year students who are enrolled in Cluster 4 of the School of Engineering (construction and environment) advance to the second year, those who are to be assigned to this program are chosen based on their requests and GPA.

6. Qualifications to be Acquired

This program is certified by the Japan Accreditation Board for Engineering Education (JABEE).Those who finish this program are certified as associate professional engineers, and exempt from the first examination for national certification as professional engineers. By completing the program, students are certified as assistant surveyors. Other relevant licenses are those for professional engineers, civil engineering works implementation management engineers, concrete engineers, senior concrete engineers, concrete diagnosis engineers, qualified engineers of the Society of Civil Engineers, operations chiefs of every kind, construction machine operation engineers, and real estate surveyors. By meeting all of the requirements, students can obtain these licentiates.

subjects

(Japanese Constitution, etc.), students can obtain the Type-1 High School Teaching License (Industry).

7. Class Subjects and Course Content

* For class cubjects, see the subject list in the attached sheet 1.

(subject list to be attached.)

* For course content, see the syllabus published every academic year.

8 Academic Achievements

At the end of each semester, evaluation criteria are applied to each evaluation item of academic

lculations for each subject, from

-converted

values of their academic achievements (S = 4, A = 3, B = 2, and C= 1) in each subject being evaluated.

Evaluation of academic achievement	Converted values
S (Excellent: 90 points or higher)	

A (Superior:80-89 points)	
B (Good: 70-79 points)	
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

* See the relationship between evaluation items and evaluation criteria in the attached sheet 2.

* See the relationship between evaluation items and class subjects in the attached sheet 3.

* See the curriculum map in the attached sheet 4.

9. Graduation Thesis (Graduation Research) (Purpose, when and how it is assigned, etc.)

This program approves graduation and awards a bachelor

have met graduation requirements, and who have acquired a total of 46 credits in liberal arts education, a total of 79 credits in specialized education, and an overall total of 125 credits or more.

7. In mid-February of the fourth year, the final presentation meeting is held.

(1) Using research daybooks, seminar materials, research notebooks, related literature, and experiment reports, and others documents prepared by the students as a reference, the chief (supervisor) checks whether time has been devoted to study on a regular basis in a way that enhances problem-solving abilities voluntarily and continuously, and whether research has been conducted, and the supervisor evaluates the learning and research attitudes during the year (goals of the course 1-6).

(2) The deputy-head evaluates the attainment levels of the goals 1-6 of the course, based on the submitted theses.

(3) Furthermore, in the mid-term and final presentation meetings, multiple teachers in attendance evaluate mainly the attainment level of goal 5 of the course.

Students who have earned a rating of 60% or more in the above points (1), (2), and (3) are regarded as having passed and are awarded credit.

Other

The graduation research is a comprehensive course aimed at cultivating implementation and problem-solving abilities while developing each ability by using cultivation, the ability to identify challenges, the ability to configure problems, the ability to analyze problems, the ability to evaluate, and the communication abilities acquired through taking the courses in the Program of Civil and Environmental Engineering of Cluster 4 (construction and environment), School of Engineering, Hiroshima University.

Based on the submitted theses and presentation content, the acquisition status of the abilities (1-6) which graduates of this program must acquire, are evaluated in a comprehensive manner.

10. Responsibility System

To check and improve this program, the following two PDCA systems have been created.

PDCA system for checking and improving each class subject and related subject

PDCA system to check and improve the whole educational program, including educational goals and the image of students that is sent out

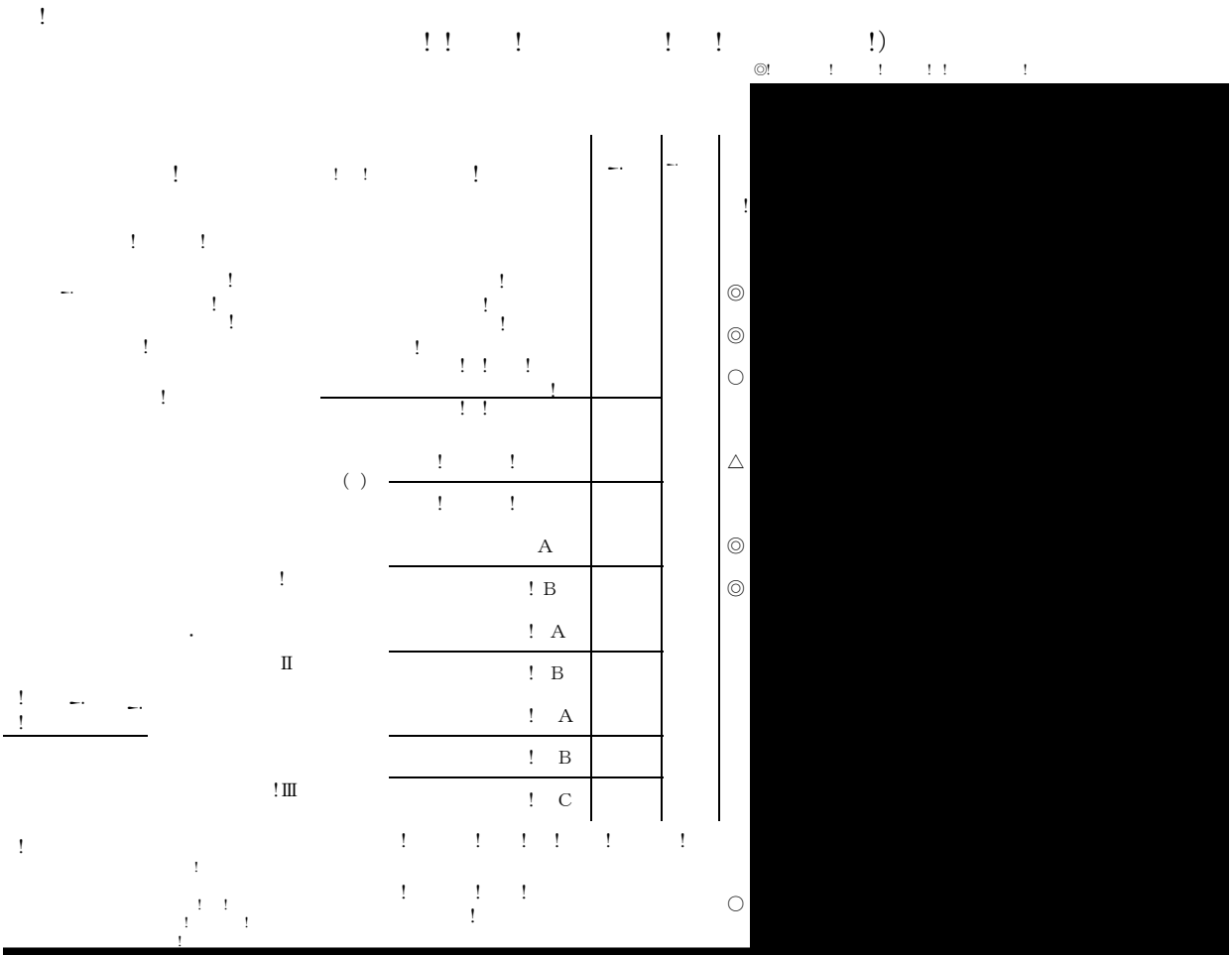
(2) Program evaluation

In cooperation with the academic affairs committee overseeing the educational assessment and improvement of the whole School of Engineering, the educational program assessment and improvement committee was created, under which the examination working group for each subject and the external advisory committee are established, and each implements educational assessment and evaluation according to the above two PDCA systems,

The educational program assessment and improvement committee checks the establishment of learning and educational goals and the disclosure of these. By getting a picture of the operational status of the assessment and improvement system, mainly undertaken by the examination working group for each subject, the committee checks the amount of learning and education, the educational tools, educational environment, and attainment of learning and educational goals. This committee improves the educational system by undertaking staff development, by holding the external advisory committee, and by conducting questionnaires targeted at graduates. The committee also checks and improves the validity of the assessment and improvement system itself.

The examination working groups for each subject check and confirm the class plans and class implementation status, and ask the persons in charge of each subject to prepare class improvement plans. The groups report to the educational program assessment and improvement committee on the achievements of working groups.

The external advisory committee examines whether the details of learning and the educational goals and standards can respond to the requirements of society and industry, and gives advice as needed to the educational program assessment and improvement committee. It checks the functioning of the educational assessment and improvement system in this group, and gives advice as needed about its improvement.



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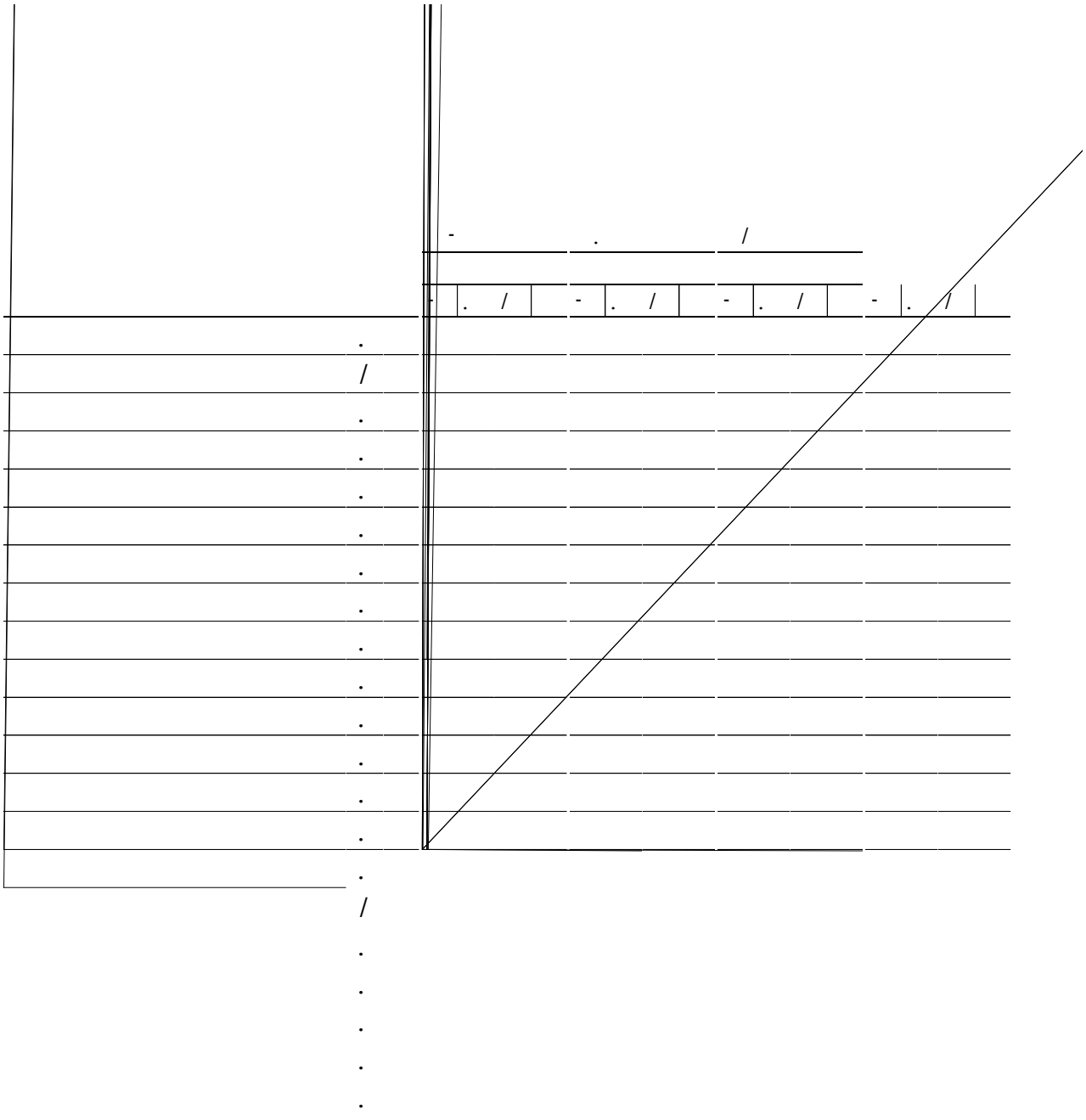

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	2	gjg af gc c l b gjg j c f c jck	R c jc f l bjc f c jck j gl e ac g f f c c c d gj jc i l jcbec l bc l bgl e gjg l b i gjj l bc f c a jj g l g f f c , R c jc gk c gjg j c jck l b gjg af gc c i l gj l b	R c jc f l bjc f c jck j gl e ac g f f c c c d gj jc i l jcbec l bc l bgl e gjg l b i gjj l bc f c a jj g l g f f c ,	g f f c c c d gj jc i l jcbec l bc l bgl e gjg gc l b i gjj c jc f l bjc f c jck j gl e ac ,

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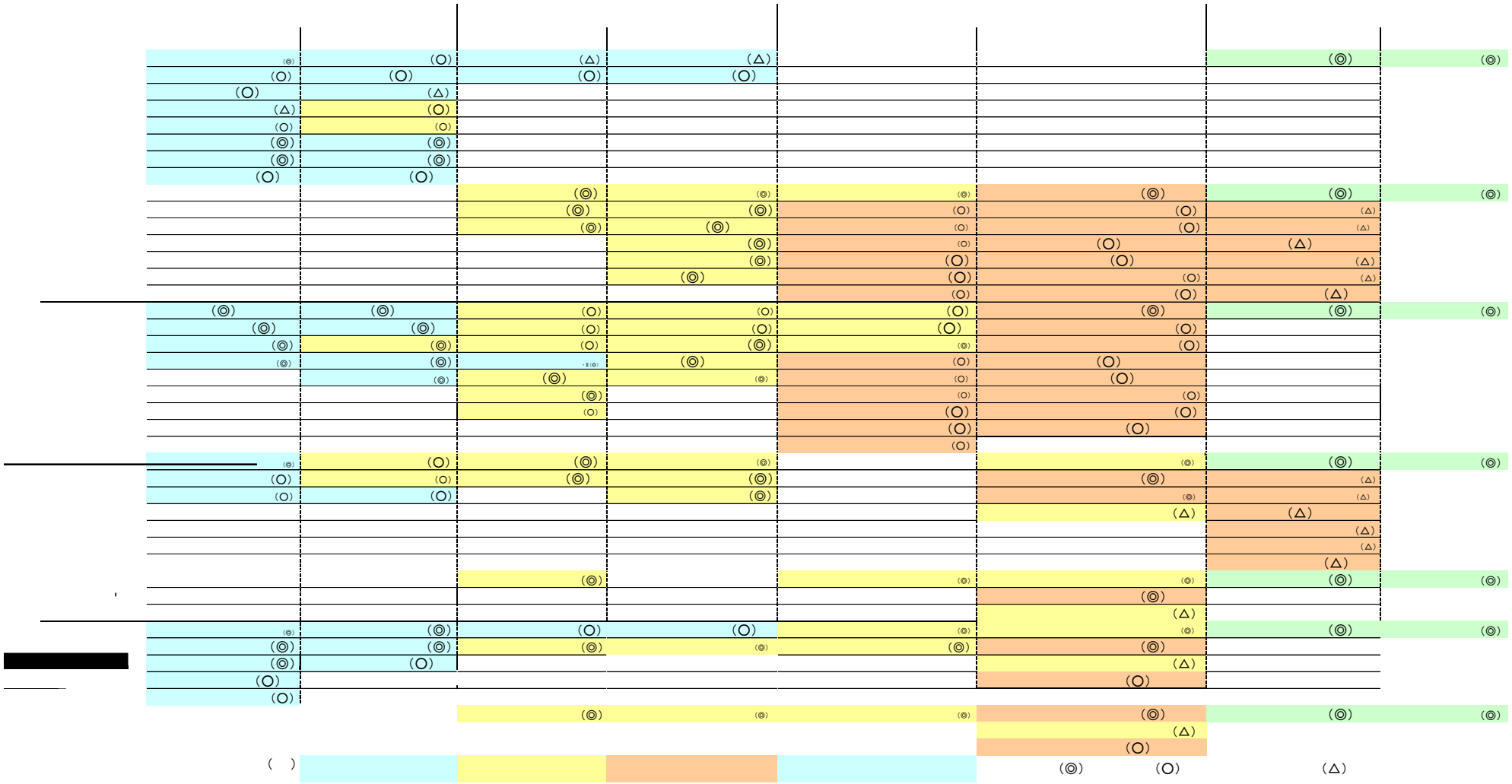
Relationships between the evaluation items and class subjects

					Weighted values of evaluation items in the subject	Weighted values of evaluation items	Weighted values of evaluation items in the subject	Weighted values of evaluation items	Weighted values of evaluation items in the subject	Weighted values of evaluation items	Weighted values of evaluation items in the subject	Weighted values of evaluation items	Weighted values of evaluation items in the subject	Weighted values of evaluation items	Weighted values of evaluation items in the subject	Weighted values of evaluation items	
Liberal Arts Education	Introductory Seminar for First-Year Students	2	Required	1semester	33	1					33	1			34	1			100
Liberal Arts Education	Peace Science Courses	2	Required	1 semester	50	1					50	1							100
Liberal Arts Education	CommunicationI A	1	Required	1semester	50	1									50	1			100
Liberal Arts Education	Communication I B	1	Required	1semester	50	1									50	1			100
Liberal Arts Education	Communication II A	1	Required	semester	50	1									50	1			100
Liberal Arts Education	Communication II B	1	Required	semester	50	1									50	1			100
Liberal Arts Education	Communication III A	1	Required	semester	50	1									50	1			100
Liberal Arts Education	Communication III B	1	Required	semester	50	1									50	1			100
Liberal Arts Education	Communication III C	1	Required	semester	50	1									50	1			100
Liberal Arts Education	Basic language I	2	Required	1semester	50	1									50	1			100
Liberal Arts Education	Basic language II	2	Required	semester	50	1									50	1			100
Liberal Arts Education	Information Courses	2	Required	1semester											100	1			100
Liberal Arts Education	Area Courses	2	Elective	1 semester	100	1													100
Liberal Arts Education	Free elective subjects	6	Elective	1 semester	100	1													100
Liberal Arts Education	Health and Sports Courses	2	Required	1semester	100	1													100
Liberal Arts Education	CalculusI	2	Required	1semester					100	1									100
Liberal Arts Education	CalculusII	2	Required	semester					100	1									100
Liberal Arts Education	Linear AlgebraI	2	Required	1semester					100	1									100
Liberal Arts Education	Linear AlgebraII	2	Required	semester					100	1									100
Liberal Arts Education	Seminar in Basic Mathematics I	1	Required	1semester					100	1									100
Liberal Arts Education	Seminar in Basic Mathematics II	1	Required	semester					100	1									100
Liberal Arts Education	General Mechanics I	2	Required	1semester					100	1									100
Liberal Arts Education	General Mechanics II	2	Required	semester					100	1									100
Liberal Arts Education	Experimental Methods and Laboratory Work in Physics I・II	1	Required	semester					100	1									100
Specialized Education	Creation of Architectural Space	2	Elective	semester	50	1					50	1							100
Specialized Education	Lifestyle and the city	2	Elective	semester	50	1					50	1							100
Specialized Education	Applied Mathematics I	2	Required	semester					100	1									100
Specialized Education	Applied Mathematics II	2	Elective	semester					100	1									100
Specialized Education	Applied Mathematics III	2	Elective	semester					100	1									100
Specialized Education	Engineering Mathematics A	2	Elective	semester					100	1									100
Specialized Education	Probability and Statistics	2	Elective	semester					100	1									100
Specialized Education	Synthesis of Applied Mathematics	2	Elective	4semester					100	1									100
Specialized Education	Exercise of Mathematics	2	Elective	semester					100	1									100
Specialized Education	Basic Engineering Computer Programming	2	Required	4semester					33	1					33	1	34	1	100
Specialized Education	Exercise of Technical English	1	Required	semester											100	1			100
Specialized Education	Civil and Environmental Engineering and Engineer's Ethics	2	Elective	semester							33	1	33	1	34	1			100
Specialized Education	Strength of Materials	2	Required	semester			100	1											100
Specialized Education	Exercise of Strength of Materials	1	Elective	semester					100	1									100
Specialized Education	Structural Mechanics	2	Required	4semester			100	1											100
Specialized Education	Exercise of Structural Mechanics	1	Elective	4semester					100	1									100
Specialized Education	Hydraulics	2	Required	4semester			100	1											100
Specialized Education	Exercise of Hydraulics	1	Elective	4semester					100	1									100
Specialized Education	Soil Mechanics	2	Required	4semester			100	1											100
Specialized Education	Exercise of Soil Mechanics	1	Elective	4semester					100	1									100
Specialized Education	Materials Science	2	Required	semester			50	1			50	1							100
Specialized Education	Fluid Mechanics	2	Required	semester			50	1			50	1							100
Specialized Education	Concrete Engineering	2	Required	4semester			50	1			50	1							100
Specialized Education	Fundamentals of Environmental Science	2	Required	semester			50	1			50	1							100
Specialized Education	Infrastructure Planning	2	Required	4semester			50	1			50	1							100
Specialized Education	Land Survey	2	Required	semester					100	1									100
Specialized Education	Exercise of Surveying	2	Required	semester					25	1			25501 Tm[00374		25r(20) Tj 1 32501		25m 00374		1 Tc(te)-128(r)I
Specialized Education	Experiments in Civil and Environmental Engineering	4	Required	semester			20	1	20	1			20	1	20	1	20	1	100
Specialized Education	Field Work at Construction Sites