## Global Engineering Program for Inclusive Society and Sustainable Environment

## 1. IGP (A) Outline

Global Engineering Program for Inclusive Society and Sustainable Environment aims to train individuals as broadly-educated, global engineers with the ability to communicate with engineers in other fields with a global perspective and co-create; and to manage complex and large-scale projects and organizations to achieve an inclusive society and sustainable environment for emerging and developing countries. This program consists of three graduate majors: Global Engineering for Development, Environment and Society, Civil Engineering, and Urban Design and Built Environment. Students enrolled in each course learn specialized subjects and the others, in addition to liberal arts including Japanese language and culture. Furthermore, students take internship program primarily in domestic companies. The students will be enrolled in one of the Graduate Major and educated under the Integrated Doctoral Education Program, in which they are expected to study from Master to Doctoral programs continuously to obtain both degrees. Outlines of each Graduate Major are given below.

1. Graduate Major in Global Engineering for Development, Environment and Society: The aim of this major is to build the ability to (1) create a new technology, value, and concept required in the society and (2) solve the numerous problems faced by the international society with an accurate understanding, without being biased towards the framework of the existing academic system, to cope with the above social change. Moreover, the education aims to equip global engineers with the "ability to co-create" including communication skills to work effectively in cooperation with an engineer from a different field and management skills to operate multiple projects or an organization.

2. Graduate Major in Civil Engineering: Civil engineering is the practice of developing a civilized built environment in harmony with our natural surroundings, in which we may live safely and comfortably. The Department of Civil and Environmental Engineering at Tokyo Tech trains its students to develop technical engineering skills in a diverse and international environment, with the goal of producing tomorrow's global leaders in the civil engineering industry and in academia.

3. Graduate Major in Urban Design and Built Environment: Graduate Major in Urban Design and Built Environment offers a comprehensive academic program for studying the current status of urban design and built environment, and for solving relevant emerging issues and social concerns. In this program, students study "safety," "functionality," "comfort," "history," and "environmental-friendliness" in urban environment which are necessary for proposing urban design and built environment in the future.

### 1-1. Graduate Major(s) available to IGP (A) Students

Graduate Major in Civil Engineering

Graduate Major in Global Engineering for Development, Environment and Society

Graduate Major in Urban Design and Built Environment

## 2. Competencies Developed

In this program, students will acquire the following skills:

-Ability to resolve problems using broad engineering knowledge and skills

-Ability to develop a diverse view of things with well-rounded education and engineering ethics

-Ability to see the social trends, and find and solve current problems

-Ability to perform a project with understating of future trends from a global view by collaborating with others

-Ability to have communication and presentation abilities with logical explanation

## 3. Learning Goals

The goals of student learning as follows:

A) Fundamental knowledge in the field of global engineering, civil engineering, and urban design and built environment

B) Specialized and advanced subjects in the field of global engineering, civil engineering, and urban design and built environment

C) Interdisciplinary view of science and engineering in international perspective for an inclusive society and sustainable environment

D) Creative and practical research ability

E) Logical communication skills

## 4. IGP (A) Completion Requirements and Courses

### 【For Master's degree】

### 【1.】 IGP (A) Completion Requirements

(1) Sustainable Engineering Technology (LAW.X417) must be acquired.

(2) The seminar must be acquired in each semester.

(3) The student must complete a special research, submit a thesis for the degree and take the final examination given after the submission of her/his thesis for the qualification. The students qualified by the examination committee can go onto the Doctoral program with some formalities.

Under this program, in addition to the above-mentioned requirements, students must also fulfill the Graduate Major completion requirements of their departments (degree completion requirements). For core courses of your Graduate Major, please refer to the relevant Graduate Major pages in "Guide to Graduate Majors (for IGP)".

## 【2.】 IGP (A) Courses

**Table M1. Courses of IGP (A)**

| Course category | | Course number | | | Course title | Credits | Competencies | Learning goals | Comments |
|---|---|---|---|---|---|---|---|---|---|
| Breadth courses | 400 level | LAW.X414 | | | Technical Management for Sustainable Engineering | 2-0-0 | 1,3,5 | A,C,D | C0M |
| | | LAW.X416 | | | Modern Japan | 1-1-0 | 1,2,4,5 | A,B,C,D,E | |
| | | LAW.X417 | ◎ | | Sustainable Engineering Technology | 1-1-0 | 1,2,4,5 | A,B,C,D,E | |
| | | LAW.X418 | | | Communication Skills in Japanese Industries I | 0-1-0 | 1,2 | A,C,D,E | C0M C1M |
| | | LAW.X419 | | | Communication Skills in Japanese Industries II | 0-1-0 | 1,2 | A,C,D,E | C0M C1M |

Note：

• ◎：Required course

• Competencies: 1 = Intercultural skills; 2 = Communication skills; 3 = Specialist skills; 4 = Critical thinking skills;

   5 = Practical and/or problem-solving skills

• The character preceding the three digits in the course number denotes the course's subdiscipline (i.e., "D" represents the subdiscipline code in the course number LAW.D400.R): X (Global awareness and other breadth courses)

• C0M,C1M: courses that enable students to acquire GA (Graduate Attributes) and that are recognized as equivalent to Career Development Courses (For GA (Graduate Attributes) and Career Development Courses, please refer to the relevant Graduate Major pages in "Guide to Graduate Majors (for IGP).)

Under this program, in addition to the above-mentioned requirements, students must also fulfill the Graduate Major completion requirements of their departments (degree completion requirements). For core courses of your Graduate Major, please refer to the relevant Graduate Major pages in "Guide to Graduate Majors (for IGP)".

# 【For Doctoral degree】

## 【1.】 IGP (A) Completion Requirements

(1) 4 credits (0-0-4) of Off-Campus Project of the Graduate Major must be acquired.

(2) The seminar must be acquired in each semester.

(3) The candidate must complete and upload a thesis for the degree, and take and pass the final examination and evaluation of his/her thesis.

Under this program, in addition to the above-mentioned requirements, students must also fulfill the Graduate Major completion requirements of their departments (degree completion requirements). For completion requirements of your Graduate Major, please refer to the relevant Graduate Major pages in "Guide to Graduate Majors (for IGP)".

## 【2.】 IGP (A) Courses

**Table D1. Courses of IGP (A)**

| Course category | | Course number | | | Course title | Credits | Competencies | Learning goals | Comments |
|---|---|---|---|---|---|---|---|---|---|
| Major courses | 600 level | GEG.P671 | ○ | | Sustainable Engineering Program Off-Campus Project (GEDES) S | 0-0-4 | 1,2,3,4,5 | C,D,E | For the student whose Graduate Major is Global Engineering for Development, Environment and Society only |
| | | GEG.P672 | ○ | | Sustainable Engineering Program Off-Campus Project (GEDES) F | 0-0-4 | 1,2,3,4,5 | C,D,E | For the student whose Graduate Major is Global Engineering for Development, Environment and Society only |
| | | CVE.P621 | ○ | | Off Campus Project in Civil Engineering I | 0-0-4 | 2,3,4,5 | C,D,E | For the student whose Graduate Major is Civil Engineering only |
| | | CVE.P622 | ○ | | Off Campus Project in Civil Engineering II | 0-0-4 | 2,3,4,5 | C,D,E | For the student whose Graduate Major is Civil Engineering only |
| | | UDE.A601 | ○ | | Off Campus Project in Urban Design and Built Environment I | 0-0-4 | 2,3,5 | C,D,E | For the student whose Graduate Major is Urban Design and Built |

| | | | | | | | Environment only |
|---|---|---|---|---|---|---|---|
| | | UDE.A602 | ○ | Off Campus Project in Urban Design and Built Environment II | 0-0-4 | 2,3,5 | C,D,E | For the student whose Graduate Major is Urban Design and Built Environment only |

Note :

• ○ : Restricted elective

• Competencies: 1 = Intercultural skills; 2 = Communication skills; 3 = Specialist skills; 4 = Critical thinking skills;

  5 = Practical and/or problem-solving skills

• The character preceding the three digits in the course number denotes the course's subdiscipline (i.e., "D" represents the subdiscipline code in the course number GEG.D600.R): P (Project)

• The character preceding the three digits in the course number denotes the course's subdiscipline (i.e., "D" represents the subdiscipline code in the course number CVE.D600.R): P (Project-based learning)

• The character preceding the three digits in the course number denotes the course's subdiscipline (i.e., "D" represents the subdiscipline code in the course number UDE.D600.R): A (Common)

Under this program, in addition to the above-mentioned requirements, students must also fulfill the Graduate Major completion requirements of their departments (degree completion requirements). For core courses of your Graduate Major, please refer to the relevant Graduate Major pages in "Guide to Graduate Majors (for IGP)".