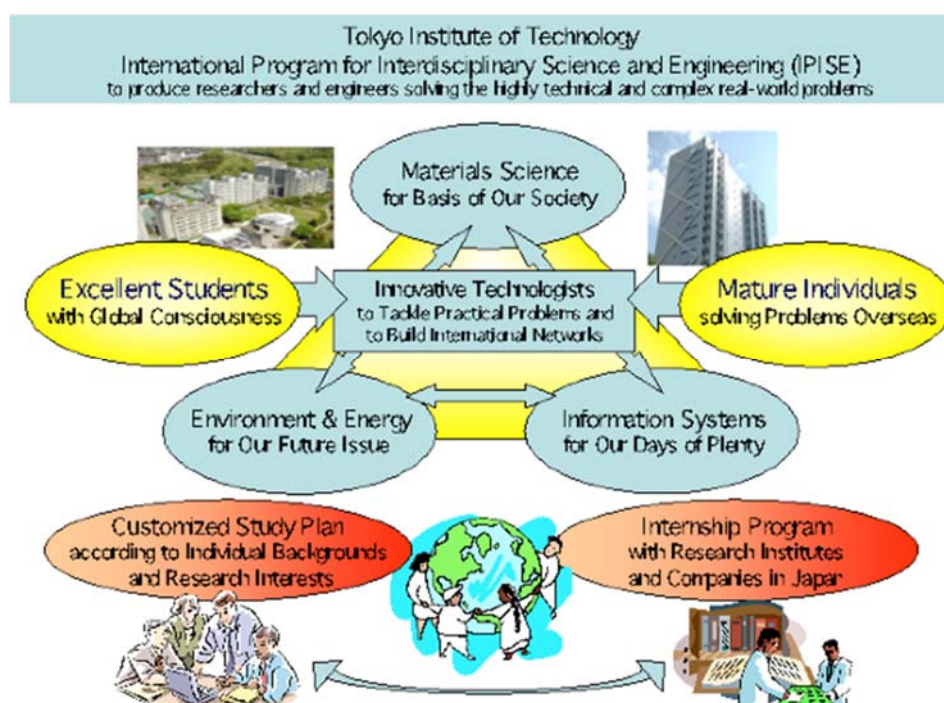


## International Program for Interdisciplinary Science and Engineering

### 1. IGP(A) Outline

This graduate program is designed to produce researchers and engineers capable of solving the highly technical and complex real-world problems relating to materials, the environment, and information, through science and engineering. The independent graduate school that offers this program emphasizes interdisciplinary and creative education and research. In pace with the progress of globalization, the program accepts students from all over the world especially mature individuals with experience in solving problems overseas. The program offers these students a flexible and carefully designed course of education that can be finely customized according to their individual academic backgrounds and research interests, as well as the opportunity for exchange with Japanese students through tuition, and for internships with international research institutes and companies in Japan. The program is geared to producing innovative technologists equipped to tackle practical problems and to build multilateral international networks among them.



In the IPISE, there are three advanced courses: Materials Science, Environment & Energy, and Information Systems. The enrolled student officially belongs to one of the three advanced courses, according to his/her supervisor, and learns under the curriculum offered by the department.

#### 1. Advanced Course of Materials Science and Engineering

The advanced course of Materials Science and Engineering covers a wide range of fields, from basic research in the chemistry of organic, inorganic, metallic, and composite materials, to the development of high-performance materials. They aim to exploit the science and engineering of the near future, in particular future-oriented electronics, to contribute to the construction of a safe, secure, and sustainable society. It is necessary to pass the results of this materials research

rapidly and efficiently to the international community. Also, due to the expected standardization and mobility of global-scale universities and graduate schools in the near future, pioneering work is vital in this field.

## 2. Advanced Course of Environmental and Energy Science and Engineering

The advanced course of Environmental and Energy Science and Engineering is expected to make a contribution to the common global issues that must be addressed in order to construct a sustainable society - namely environmental problems, natural disaster threats, and energy problems. Because the nature of these problems, their conditions of occurrence, and the means for solving them vary from place to place, there is a vital need for innovative technologists who can conduct probing research into specific cases to seek solutions. Positioning these highly individual phenomena into the generalized knowledge system of science is both extremely labor-intensive and time consuming. For this reason, compared with other more highly abstract fields of science, often the results of research efforts cannot be always ~~be~~ successfully applied. In this course, the technologists placed in this position are taken up as a major subject of study.

## 3. Advanced Course of Information Technology and System Sciences

The advanced course of Advanced Course of Information Technology and System Sciences is targeted at high achievers from leading universities in developing countries, or universities with which Tokyo Tech has cooperative agreements, and covers leading-edge, innovative, practical, and original fields of research in intelligent computing and data communications. The course aims to cultivate world-leading individuals who will promote exchange between Japan and international researchers and technologists when they return home after completing their studies.

The IPISE offers Integrated Doctoral Education Program, which is designed as a combined program continuing from Master's Program to Doctoral Program. To finish the IGP-A program of IPISE, the students must fulfill the Graduate Major completion requirements of their departments, in addition to the IPISE classes.

## 2. Competencies Developed

The IPISE program is designed to produce researchers and engineers capable of solving the highly technical and complex real-world problems relating to materials, the environment, and information, through science and engineering. The independent graduate school that offers this program emphasizes interdisciplinary and creative education and research. Through this interdisciplinary education and research, we aim to develop students who can think globally and who will have strong problem-solving capabilities.

The IPISE targets Japanese students as well as foreign students. The collaborative learning environment provides a good opportunity for Japanese students to acquire a global perspective and deepen their insights, which are necessary for studying today's science and technology developments in depth. This is another objective of this program.

## 3. Learning Goals

We aim to develop students who can think globally and who will have strong problem-solving capabilities. To realize this, the following compulsory classes are offered:

1. Seminar for Cultivating International Understandings (SCIU) I and II

The purpose of this seminar is to provide a platform for international collaboration, mutual understanding and cooperation, while fostering the development of global human resources. The seminar consists of (a) informal research meetings as well as a “science cafe”, (b) Mini-internship and (c) Corporative work between the foreign and Japanese students.

2. Modern Japan

Japan is regarded as an industrialized country, however it has many unique characteristics which differ from those of Western-industrialized countries. Selected foreign and Japanese authorities will lecture on how they view contemporary Japan, with special regard to research activities and career paths in the various fields of science and technology.

3. International Communication I-IV

This class is provided as a seminar for students from different countries of IPISE to exchange information on background and objective their research. In addition to the above three compulsory classes, a few classes are recommended for the aim of IPISE program:

Historical Review of Intellectual Property

Strategic Management of Technology

Critical Thinking F

Scientific Communication S

#### **4. IGP (A) Completion Requirements**

Under this program, in addition to the following requirements, students must also fulfill the Graduate Major completion requirements of their departments (degree completion requirements). Please refer to the relevant IGP (C) pages for completion requirements of your Graduate Major.

##### **【Master's degree program】**

The following compulsory classes must be taken to finalize the master degree of the IPISE program:

1. Seminar for Cultivating International Understandings (SCIU) I and II

2. Modern Japan

3. International Communication I-IV (Two of four classes I-IV)

##### **【Doctoral degree program】**

In Doctoral degree program, no compulsory classes are offered.