

## Liberal Arts and General Education (G) (大学院教養・共通科目群)

### • Interdepartmental Courses (G) (大学院広域科目)

#### ◆ Interdepartmental Courses by Graduate School

##### 1. General outline and scopes

Interdepartmental Subjects are offered by a graduate school. The courses cover interdisciplinary or common subjects, from which the students acquire common skills and knowledge and broaden their views in the field of Science and Technology.

##### 2. Table of courses offered

Courses offered by Graduate School of Engineering

Registration Number	Subject	Credit	Semester S: Spring A: Autumn	Opening year a: Annually b: Even o: Odd	Notes
99302	Sustainable Engineering Technology	1-1-0	A	a	
99312 *	Science Communication for Global Scientists- Overseas Internship	1-1-0	S	a	
99319	Technical Management for Sustainable Engineering	2-0-0	A	a	
99349	Communication Skill in Japanese Industry I	1-0-0	A	a	
99350	Communication Skill in Japanese Industry II	1-0-0	S	a	

\*: course detail is available at < <http://sec-titech.jp/lect/index.html#cate04> >

Courses offered by Interdisciplinary Graduate School of Science and Engineering

Registration Number	Subject	Credit	Semester S: Spring A: Autumn	Opening year a: Annually b: Even o: Odd	Notes
99405	Technical Writing 1	0-2-0	S	a	*
99406	Technical Writing 2	0-2-0	A	a	*
99412	Technical Writing 3	0-2-0	A	a	*
99413	Technical Writing 4	0-2-0	S	a	*
99403	Technical Discussion 1	0-2-0	S	a	*
99404	Technical Discussion 2	0-2-0	A	a	*
99410	Technical Discussion 3	0-2-0	A	a	*
99411	Technical Discussion 4	0-2-0	S	a	*
99416	Critical Thinking	2-0-0	A	a	
99415	Scientific Communication	2-0-0	S	a	
99417	Global Trends in Science and Technology	2-0-0	A	a	
99408	Ethics for Scientists and Engineers	2-0-0	A	a	

\* 'Technical Writing' and 'Technical Discussion' can be registered only by the students who belong to IPISE, IGP(A) and Innovative Platform for Education and Research course (IPER).

### 3. Syllabus of Course Subjects

#### 99302

##### **Sustainable Engineering Technology**

Autumn Semester (1-1-0) (Every Year)

Coordinators of SEP and invited lectures

[Aims and scopes]

Sustainable Development has been secured by a various technologies. In this course, leading engineers and researchers will give lectures on a specific area which is crucial for sustainable development, such as, energy and environment, security, material production, and information technology. In addition to the lectures, the students will investigate the relation of their specialty to the specific area by various ways, including site visits, and give presentations on the investigation to share the knowledge with the students of different specialty in a seminar. Through lectures and seminars with the discussions by the students of different disciplines, this course aims to train the students as “highly educated, internationalized engineers” having a wide spectrum of technical knowledge from basics to their applications. Details of lectures and seminar in the previous years are available in  
< <http://www.eng.titech.ac.jp/ingp/sep/setss/> >

#### 99312 \*

##### **Science Communication for Global Tarents – Overseas Program –**

Spring Semester (1-1-0)

Nohara Kayoko, Michael Norton

This is a programme for providing opportunities to students to think the relations between science and society, the significance of their own professional fields in the society by exposing themselves to overseas science communication organisations. Students will learn how researchers and lay people share science information in organisations such as Science Museum and the Parliamentary Office for Science and Technology in London.

#### 99319

##### **Technical Management for Sustainable Engineering**

Autumn Semester (2-0-0) (Every Year)

Coordinators of SEP and invited lectures

[Aims and Scopes]

To educate high skill experts in technology with proper understanding of management in the industries where their specialties and technology are utilized, this course provides basic concept and theories as well as practical examples in the field of account, management of technology (MOT), decision-making theory, corporate finance, intellectual property and project management. Acquisition of integrated perspective of technical management for sustainable engineering with international competitive edge is expected.

[Outline (partly tentative)]

1. Fundamentals of Accounting
2. Accounting for Business Enterprise
3. Decision-Making Theory
4. Introduction to Microeconomics
5. Management of Technology (1)
6. Management of Technology (2)
7. Intellectual Property
8. Legal Operation of Patents (1)
9. Legal Operation of Patents (2)
10. Strategic use of Accounting
11. Introduction to Project Management

12. Risk Management of International Project
13. Enterprise Strategy for Globalization and Localization
14. International Technical Standard and International License for Engineer

### **99349, 99350**

**Communication Skill in Japanese Industry I** Autumn Semester (0-1-0) (Every Year)

**Communication Skill in Japanese Industry II** Spring Semester (0-1-0) (Every Year)

Coordinators of SEP and invited lectures

[Aims and Scope]

Required language and communication skills for the working environment in Japan vary depending on the types of industries and types of work. This class is designed for the students who are aiming or considering a job/internship opportunity in Japan. In this class, lecturers are invited from companies of various industries and the students have lectures about general introduction, working environment, especially language environment, and required communication/language skills of the companies. After having the lectures, the students visit a company to see actual working conditions. Through the studies in the class and the company visit, the students are expected to set their own targets of language ability at the time of internship and graduation based on their desired working place conditions. The student will also make her/his own study plan for promoting the language and communication skills with the guidance of instructors.

[Prerequisite]

This class is aiming to motivate the students in their own language study. To maximize the efficiency of the study in this class, the students should also take classes of Language Program, e.g., Japanese class in particular.

### **99405, 99406, 99412, 99413**

**Technical Writing 1** Spring Semester (0-2-0)

**Technical Writing 2** Autumn Semester (0-2-0)

**Technical Writing 3** Autumn Semester (0-2-0)

※ 2014 No Lecture

**Technical Writing 4** Spring Semester (0-2-0)

※ 2014 No Lecture

D. Ricinschi, D. Berrar, H. Gonzales

To be one of the outstanding scientists in the international field, it is necessary to be able to write scholarly scientific and technical papers in English. Writing academic reports while learning the fundamental and advanced writing techniques is the principal aim of this course.

### **99403, 99404, 99410, 99411**

**Technical Discussion 1** Spring Semester (0-2-0)

**Technical Discussion 2** Autumn Semester (0-2-0)

**Technical Discussion 3** Autumn Semester (0-2-0)

※ 2014 No Lecture

**Technical Discussion 4** Spring Semester (0-2-0)

※ 2014 No Lecture

D. Ricinschi, D. Berrar, H. Gonzales

Practical exercises through English discussions and oral presentations will help students develop their English proficiency and eventually play an active role in the international field of research.

### **99416**

**Critical Thinking** Autumn Semester (2-0-0)

D. Ricinschi, H. Gonzales, D. Berrar

The course aims to demonstrate the importance of thinking critically about the various issues in science and technology that students are likely to encounter during their future careers. Students will learn to ask the right

questions when confronted with their peers' ideas and opinions, as well as to quickly find ambiguities, lack of evidence, weaknesses in argumentation, contradictions, and omissions in both written and oral communications. The course includes a discussion of the various approaches to the scientific inquiry, such as induction, deduction, and abduction, and logical fallacies. In addition to regular lectures, the course will have an important interactive component where students will practice constructive criticism on written/oral communications chosen by the instructor. The ultimate goal of this course will be to help students to improve the logical soundness of their own argumentations.

### **99415**

**Scientific Communication** Spring Semester (2-0-0)

D. Berrar, D. Ricinski, H. Gonzales

This course covers topics of scientific oral and written communication in English. The course objective is to develop and refine the students' skills that are required for scientific publications and oral presentations. The main topics include (i) how to write and publish a scientific paper and (ii) how to give academic presentations at international conferences. The course objectives will be met through lectures and practice in writing exercises, oral presentations, and classroom discussions.

### **99417**

**Global Trends in Science and Technology** Autumn Semester (2-0-0)

H. Gonzales, D. Berrar, D. Ricinski

This course aims to enhance the students' knowledge of the current global concerns in relation to progress in science and technology as well as the scientific principles and techniques needed to address the reigning global issues. This will give students a basic understanding of the ongoing worldwide research and development in science and technology. Aside from the regular lectures, there will be a series of discussions on selected topics from science and technology that will allow students to freely express themselves as they share their respective insights. After completion of the course, the students are expected to have acquired an increased level of interest in and awareness of advances in scientific and technological research.

### **99418**

**Ethics for Scientists and Engineers** Autumn Semester (1-0-0)

M. Yamamura

This omnibus lecture series covers topics related to research ethics, such as research misconduct and its prevention. Experts will explain research ethics by citing concrete examples from various fields, such as environmental policy and residential participation, bioethics, and the history of safety standards for gene recombination, the Helsinki Declaration (international ethical principles for biomedical research involving human subjects), examples of research misconduct (e.g., fabrication and falsification of data by Jan Hendrik Schön, Bell Labs), and ethics in information society. In small interactive groups of 3-5, students will present selected topics on ethics for scientists and engineers, which will then be discussed during the class.