



Tokyo Tech

GSEP 2021

Orientation for 2nd year students

Pioneering new fields and solving global problems with
knowledge from science and technology

2021/04/07

GSEP Faculty

Welcome to TSE Department!

- Faculty
- Educational philosophy of TSE
- Curriculum and required for graduation
- Timetable for Q1 and Q2
- Ethics education
- Bulletin board/Internal website
- Measures to COVID-19
- TSE Lounge/Locker
- B2D scheme



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Students

- **New 2nd years 49**
 - Japanese 23
 - International Student 13
 - **GSEP 13**
- **Total (except 1st years) 153**
 - Japanese 80
 - International Student 31
 - **GSEP 42**

Faculty

Primary Faculty (2021.4.1)

Professor 17

Associate Professor 19

Lecturer 3

Assistant Professor 16

Staff Ms. Yuko YAKO

(Ishikawadai 4 Bldg. 104)

Faculty List

(Including secondary faculty)

<https://educ.titech.ac.jp/tse/>



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Vision of TSE

Pioneering new fields and solving global problems with knowledge from science and technology

Transdisciplinary science and engineering is a way of study where researchers go **beyond the boundaries of academic fields to solve the complex problems** shared by global society as a whole. **The Department of Transdisciplinary Science and Engineering is a fusion of a wide range of fields** — chemical engineering, mechanical engineering, electrical and communications engineering, civil engineering, biological engineering, encompassing even environmental policy and planning, applied economics, sociology, translation studies, and applied linguistics. Students acquire **practical skills — not simply academic knowledge**. Specifically, our goal is to train **individuals as global scientists and engineers** with the following abilities: ability **to contribute to the innovation of novel technology, values, and concepts needed by society** (ability to define and solve problems, creative thinking and the ability to carry out projects); **to communicate with engineers in other fields with a global perspective and co-create**; and **to manage complex and large-scale projects and organizations**.



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Vision of TSE

Specific action:

To establish **“Transdisciplinary Research”** as a new educational and research framework with the primary purpose of solving complex social problems through **interdisciplinary approaches** that transcend those of current individual research fields.

- Issues/problems that cannot be solved through single discipline
⇒ **Transdisciplinary**
- Issues that cannot be solved by one region/nation and has significant global impacts
⇒ **Global engineering**



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Competencies

Basic abilities with a wide range of applications

- Logical and mathematical thinking and analytical skills
- Comprehension of physical and natural phenomena
- General-purpose measuring and computation techniques

Applied abilities unhindered by existing academic fields

- Ability to solve given problems using suitable methods
- Ability to comprehend systems and operate them

Personal and social skills required as a global engineer

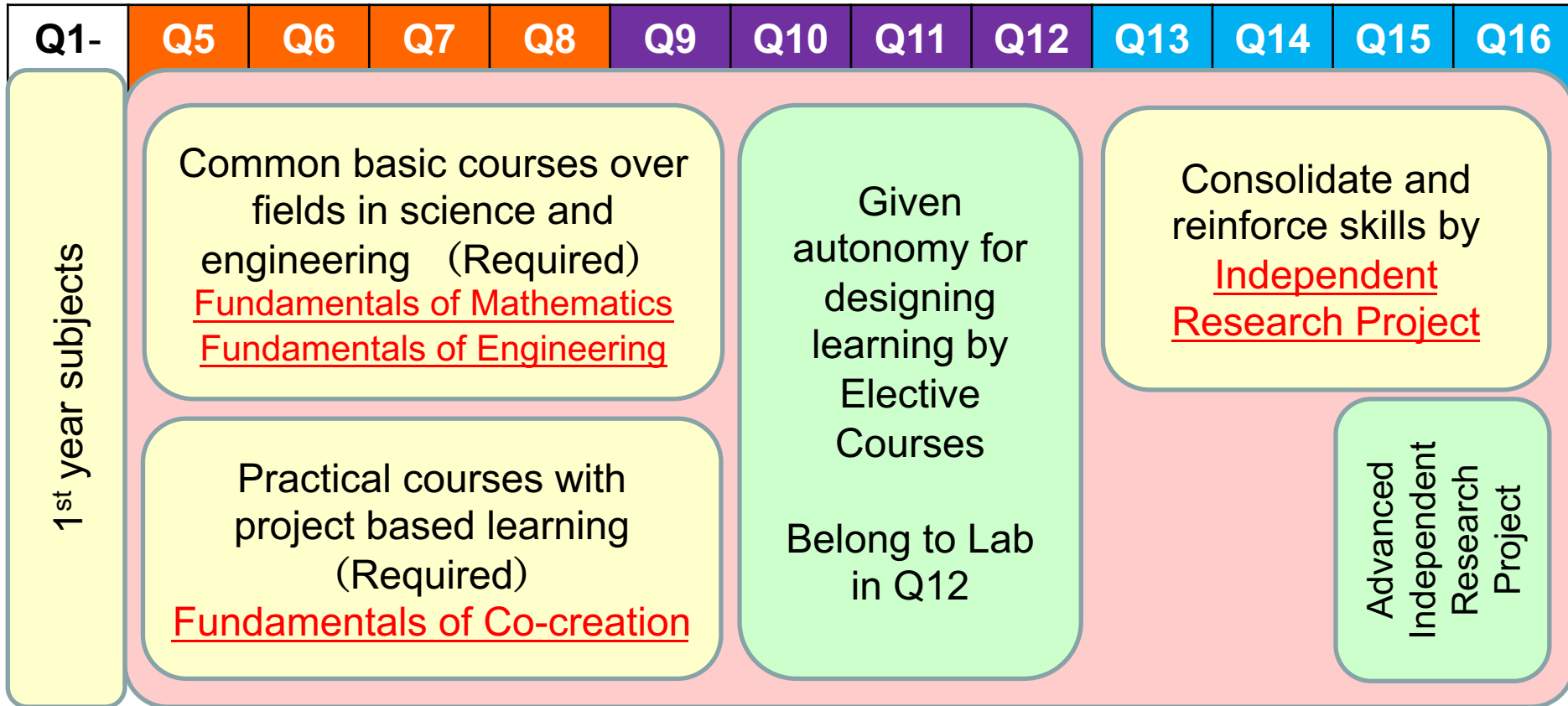
- Communication skills
- Sense of social responsibility and ethics
- Autonomy, ability to execute projects



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TSE Curriculum



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TSE Curriculum

100番台 | 100-Level

200番台 | 200-Level

300番台 | 300-Level

線形代数学第一 Linear Algebra I
線形代数学演習第一 Linear Algebra Recitation
微積分学第一 Calculus I
微積分学演習第一 Calculus Recitation I
力学基礎1・2 Fundamentals of Mechanics 1 / 2
電磁気学基礎1・2 Fundamentals of Electromagnetism 1 / 2
量子化学基礎 Basic Quantum Chemistry
無機化学基礎 Basic Inorganic Chemistry
有機化学基礎 Basic Organic Chemistry
化学熱力学基礎 Basic Chemical Thermodynamics
生命化学基礎第一1・2 Fundamentals of Life Science 1 / 2
類専門科目1~4 School type subjects
数理基盤群 FUNDAMENTALS OF MATHEMATICS
常微分方程式と物理現象 Ordinary Differential Equations and Physical Phenomena
偏微分方程式と物理現象 Partial Differential Equations for Science and Engineering
線形システム論 Theory of Linear Systems
統計とデータ解析 Statistics and Data Analysis

工学基盤群 FUNDAMENTALS OF ENGINEERING
材料・物性工学基礎 Material and Molecular Engineering
固体・構造力学基礎 Solid Mechanics and Structural Engineering
電気・磁気工学基礎 Electrical Engineering
反応工学基礎 Chemical Reaction Engineering
流体工学基礎 Fluid Engineering
生物工学基礎 Biological Engineering
工学計測基礎 Engineering Measurement
融合理工学実験A Transdisciplinary Engineering Experiments A
融合理工学実験B Transdisciplinary Engineering Experiments B
共創基盤群 FUNDAMENTALS OF CO-CREATION
融合理工学基礎 Introduction to Transdisciplinary Science and Engineering
システムデザインプロジェクト System Design Project
社会デザインプロジェクト Social Design Project
システムデザイン&アセスメント System Design & Impact Assessment
プロジェクトマネジメント Project Management

専門科目群 ELECTIVE COURSES
プログラミングと数値解析基礎 Programming and Numerical Analysis
プログラミングと数値解析応用 Applied Programming and Numerical Analysis
通信とネットワーク Communications and Networks
電磁気学(融合理工) Electromagnetics (TSE)
環境流体力学基礎 Basis of Environmental Hydrodynamics
防災工学基礎 Introduction to Natural Disaster Science and Engineering
剛体の運動力学 Rigid Body Dynamics
強度の力学 Mechanics of Strength
操作論 Unit Operations
工業化学 Industrial Chemistry
実用材料の冶金学基礎 Introduction to Metallurgy of Engineering Materials
原子核工学概論 Introduction to Nuclear Engineering
原子核工学基礎 第1~第4 Basic Nuclear Engineering 1-4
社会環境政策概論 Introduction to Environmental Policy and Social Systems
水・物質循環システム概論 Introduction to Water and Mass Transport in the Environment
気象学基礎 Introduction to Meteorology
地球・地域生態学概論 Introduction to Global and Local Ecology

地域・地球環境概論 第1&第2 Basic Theory of Regional and Global Environment 1 and 2
国際開発共創概論 Introduction to International Development
開発経済学入門 Introduction to Development Economics
融合技術論 Methodology of Transdisciplinary Research; Theory and Practice
エンジニアリングデザイン概論 Introduction to Design Engineering
国際エンジニアリングデザインプロジェクト基礎F&S International Engineering Design Experience (Fall Semester and Spring Semester)
エンジニアリングデザインと技術経営基礎 Introduction to Engineering Design and Management of Technology
資源・エネルギー工学概論 Theory of Resource and Energy Engineering
エネルギーと環境(融合理工) Energy and Environment (TSE)
特定課題研究・特定課題研究プロジェクト など RESEARCH OPPORTUNITIES AT LABORATORIES, INDEPENDENT RESEARCH PROJECTS, INTERNSHIPS, ETC.
研究プロジェクト(融合理工学系) Research Opportunities at Laboratories (TSE)
学士特定課題研究(融合理工学系) Independent Research Project (TSE)
学士特定課題プロジェクト(融合理工学系) Advanced Independent Research Project (TSE)
国際プロジェクト演習 Exercises in International Development Engineering
融合理工学海外研修 International Training in Transdisciplinary Science and Engineering
融合理工学インターンシップ Transdisciplinary Science and Engineering Internship



Elective courses

- International Development Courses
- Resource and Energy Engineering Courses
- Environmental Policy and Social Systems Courses
- Global and Regional Environment Courses
- Engineering Science and Design Courses
- Nuclear Engineering Courses.

Graduate courses in TSE

Deepening study fields of department

- Global Engineering for Development, Environment and Society Graduate Major

Complex study fields over plural departments

- Nuclear Engineering Graduate Major
- Engineering Sciences and Design Graduate Major
- Energy Science and Engineering Graduate Major



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Additional references pertaining to undergraduate education

https://www.titech.ac.jp/english/education/features/flexible_study.html



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Required Credits for Undergraduate Program

Courses	Eligibility for Application for Independent Research Project	Eligibility for graduation
Humanities and social science Courses	9 credits	13 credits
English language courses		4 credits
Basic science and technology courses	14 credits	14 credits (all in 1st year)
Japanese language courses		9 credits
Second foreign language courses	2 credits	4 credits
Research-related courses	2 credits	8 credits
Other major courses	Determined by the department for TSE, refer to the Study Guide	Determined by the department for TSE, refer to the Study Guide
TOTAL	110 or more to join a research lab	124 units or more to graduate

For more detailed information, refer to Table 2 and Table 3 of the **Study Guide**.



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Common requirement for graduation in Tokyo Institute of Technology

- See Table 2 of “Study Guide”.
- Liberal arts course group are amended for only GSEP students. Review the requirements through the following link:

<https://www.titech.ac.jp/english/enrolled/life/resources/pdf/agreement.pdf>



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Notifications for timetables and completing courses

Timetables (On-campus website) : <http://www.tse.ens.titech.ac.jp/en/>

- Please complete courses as recommended timetables
- It is possible to take 200s in other departments. However, this is recommended for 3rd years so that priority should be given to TSE 200s subjects.
- Laboratory assignments for “Independent Research Project” will be given by GPT ranking. Details will be explained at 3rd year orientation.

Classes during AY 2021 spring semester (1Q and 2Q)

https://www.titech.ac.jp/covid-19/pdf/gakumu_20210324-1.pdf

“Quarter-end exams that require students’ physical attendance will be conducted face-to-face to the extent possible.”



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Notifications for timetables and completing courses

1st Quarter 2021 (For GSEP 2nd Year Students)							(Last updated March 26, 2021)
Time	Mon	Tue	Wed	Thu	Fri	Intensive	
8:50 9:40 10:30	1 Ordinary Differential Equations and Physical Phenomena TSE.M201-01 2 credits A. Varquez (ZOOM)			Ordinary Differential Equations and Physical Phenomena TSE.M201-01 2 credits A. Varquez (ZOOM)			
10:40 11:35 12:20	3 Engineering Thermodynamics TSE.A204-01 2 credits E.Andrews, S.Cheng (ZOOM)		Introduction to Transdisciplinary Science and Engineering TSE.C201-01 1 credit N. Abe (Hybrid)	Engineering Thermodynamics TSE.A204-01 2 credits E.Andrews, S.Cheng (ZOOM)			
12:35 13:25 14:15	星時間帯		Oral Expression in English 5 [2] LAE.E231-02 1 credit M. Stoneburgh (ZOOM)	Japanese 5 [GSEP] LAJ.J201-04 1 credit Y. Yukari (ZOOM)	Japanese 5 [GSEP] LAJ.J201-04 1 credit Y. Yukari (ZOOM)	Japanese 5 [GSEP] LAJ.J201-04 1 credit Y. Yukari (ZOOM)	
14:20 15:10 16:00	5 English Presentation Seminar 5 LAE.E241 1 credit Page Anthony (ZOOM)		English Speech Seminar 9 LAE.E371 1 credit L. Kiyama (ZOOM)	Oral Expression in English 5 [1] LAE.E231-01 1 credit H. Makiko (ZOOM)	System Design Project TSE.C202 1 credit S.Saito, K. Inaba, et al. Face-to-face		
16:15 17:05 17:55	7 Statistics and Data Analysis TSE.M204-02 2 credits S. Hanaoka, S.Choi (Hybrid)	Statistics and Data Analysis TSE.M204-02 2 credits S. Hanaoka, S.Choi (Hybrid)	Japanese 5 [GSEP] LAJ.J201-04 1 credit Y. Yukari (ZOOM)	System Design Project TSE.C202 1 credit S.Saito, K. Inaba, et al. Face-to-face	Statistics and Data Analysis TSE.M204-02 2 credits S. Hanaoka, S.Choi (Hybrid)	Statistics and Data Analysis TSE.M204-02 2 credits S. Hanaoka, S.Choi (Hybrid)	
	6 Page Anthony (ZOOM)						

Japanese 5 [GSEP] is re-scheduled to Wed 5-6



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2nd Quarter 2021 (For GSEP 2nd Year Students)							(Last updated March 26, 2021)
Time	Mon	Tue	Wed	Thu	Fri	Intensive	
8:50 9:40 10:30		Introduction to International Development TSE.C301 2 credits N. Abe (ZOOM)	Solid Mechanics and Structure Engineering TSE.A202-01 2 credits B.T. Quoc, et al (ZOOM)		Introduction to International Development TSE.C301 2 credits N. Abe (ZOOM)		
10:40 11:35 12:20	3 Theory of Linear System TSE.M203-01 2 credits O. Takumi (ZOOM)			4 Theory of Linear System TSE.M203-01 2 credits O. Takumi (ZOOM)			
12:35 13:25 14:15			Oral Expression in English 6 [2] LAE.E232-02 1 credit M. Stoneburgh (ZOOM)				
14:20 15:10 16:00	5 English Presentation Seminar 6 LAE.E242 1 credit A. Page (ZOOM)		English Speech Seminar 10 LAE.E372 1 credit L. Kiyama (ZOOM)	Oral Expression in English 6 [1] LAE.E232-01 1 credit H. Makiko (ZOOM)			
16:15 17:05 17:55	7 Engineering Measurement I TSE.A232 1 credit Y. Tohru (ZOOM)	8 Partial Differential Equations for Science and Engineering TSE.M202-01 2 credits A. Varquez (ZOOM)	Japanese 6 [GSEP] LAJ.J202-04 1 credit Y. Yukari (ZOOM)		Partial Differential Equations for Science and Engineering TSE.M202-01 2 credits A. Varquez (ZOOM)		



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GSEP Japanese Language and Culture Courses 2021

Japanese language course orientation and first Japanese class for
1st year students

Japanese language courses for undergraduate students

100-level (1st year)

Japanese 1(1Q): Tuesday 14:20~ and Thursday 16:15~

Japanese 2(2Q), 3(3Q) and 4(4Q): Tuesday 14:20~ and Thursday 10:40~

200-level (2nd year)

Japanese 5(1Q), 6(2Q), 7(3Q) and 8(4Q) : Wednesday 14:20~

300-level (3rd year)

Japanese 9(1-4Q): see note 2

GSEP students who will take Japanese language classes may do the following procedures by **April 12th**:

- 1) Make an account on Japanese Class Online System at JCOS (will open on April 27th) (<https://cuckoo.js.ila.titech.ac.jp/~yamagen/regist-h/>)
- 2) Take an online placement test at the following site (<https://cuckoo.js.ila.titech.ac.jp/~yamagen/placement/>)
- 3) Send an email message to **Prof. M. Komatsu** (komatsu.m.ae@m.titech.ac.jp) with "GSEP 2021" as a subject, and mail body must contain your name, student ID, and Japanese language level (B3, I1 etc.) obtained after your JCOS placement test.



Ethics Education

- Level 1: 1st year to 3rd year in bachelor's program
(before starting “Independent Research Project”)
- Level 2: 4th year in bachelor's program (From the start of “Independent Research Project”) to master's program
- Level 3: Doctoral program

Liberal Arts Courses

- ◎Tokyo Tech Visionary Project(LAH.C101)
- Ethics in Engineering A/B/C(LAH.T105, T206, T305)
- Frontiers of Science and Technology (LAS.F101)

Major Courses

- Processes for Creation in Science and Technology
【School of Environment and Society】(XES.P101)
- School of Environment and Society Academic Group Literacy (XES.A101)
- ◎Research Opportunities at Laboratories(TSE.Z381)
- ◎Independent Research Project (TSE.Z389)



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TSE Bulletin Board

South Entrance, O-okayama South 6 Bldg

On-campus Website

<http://www.tse.ens.titech.ac.jp/en/>

- Contact for TSE students
- Latest information on timetables can be confirmed
- Announcements for presentations etc.
- Annual plans



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Measures against COVID19

**Keep in close communication with
your "Academic Advisors"**

Check the link below for the latest information from the university:

<https://www.titech.ac.jp/english/enrolled/health/coronavirus.html>



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Academic Advisor

ID	Name	G	Adademic Advisor (Main)	Adademic Advisor (Sub)
20B60012	ALTAN-OCHIR ANUUL	M	因幡 和晃 (INABA KAZUAKI)	Varquez Alvin Christopher Galang
20B60029	BATTSEREN ERDENEBAT	M	松本 義久 (MATSUMOTO YOSHIHISA)	Sadeghzadeh Nazari Mehrdad
20B60041	BURARAKSAKIET NATTHA	F	高橋 邦夫 (TAKAHASHI KUNIO)	Andrews Eden Mariquit
20B60058	CHAN YU NIN	F	因幡 和晃 (INABA KAZUAKI)	Choi Sunkyung
20B60064	DO TIEN DUNG	M	松本 義久 (MATSUMOTO YOSHIHISA)	Sadeghzadeh Nazari Mehrdad
20B60070	INCHID CHAWALA	F	阿部 直也 (ABE NAOYA)	Andrews Eden Mariquit
20B60087	KIETKAJORNRIET AUKSARAPAK	F	高橋 邦夫 (TAKAHASHI KUNIO)	Choi Sunkyung
20B60093	KIM GWAN WOO (Absent)	M	因幡 和晃 (INABA KAZUAKI)	Varquez Alvin Christopher Galang
20B60101	LU YILUN	M	松本 義久 (MATSUMOTO YOSHIHISA)	Andrews Eden Mariquit
20B60118	MANGAKAJA NIPUN	M	阿部 直也 (ABE NAOYA)	Sadeghzadeh Nazari Mehrdad
20B60124	PATTAYAWIJ NATPRAWEE	M	高橋 邦夫 (TAKAHASHI KUNIO)	Choi Sunkyung
20B60130	TRAN HUU NHAT HUY	M	因幡 和晃 (INABA KAZUAKI)	Varquez Alvin Christopher Galang
20B60147	YOONGSOMPORN THANAKRIT	M	松本 義久 (MATSUMOTO YOSHIHISA)	Andrews Eden Mariquit

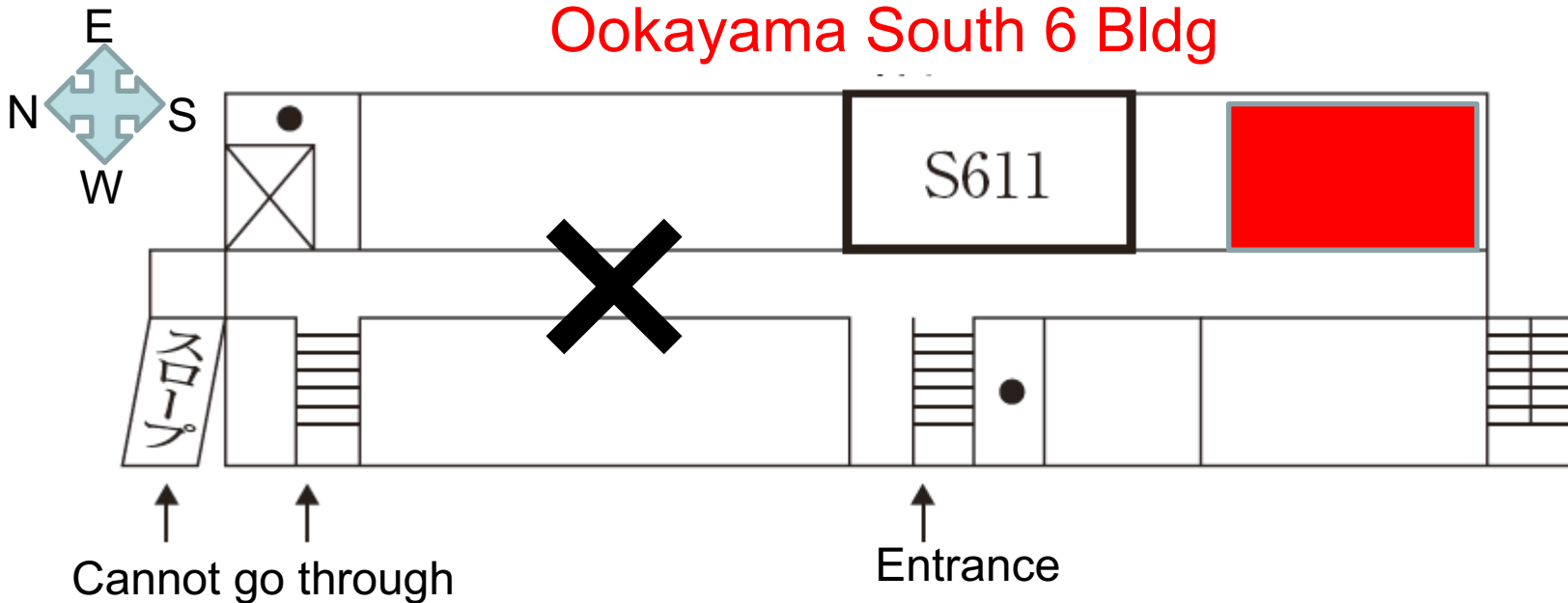


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TSE Lounge and Locker

Ookayama South 6 Bldg



- Use for group meeting, self studying, etc.
- There is no trash bin. Please bring back your trashes.
- Keep it clean and neat
- Keep your voice low since it is close to houses around
- Please sign distributed 'oath' if you agree with the rules.
- Passcode to enter the lounge will be notified.



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Details to be shared via e-mails

B2D Scheme

- **“B2D Special Selection (B2D Scheme)”** : a learning program that maximizes the use of education through the world’s top-tier research which is one of the university’s strengths.
- You can apply for “B2D Special Selection” from the second year of the bachelor's program in 2021.
- **“B2D Special Selection” set a tailored type curriculum to consider each individual student’s career** (bachelor’s program – B2D Special Selection, graduate program – in principle, Standard Learning Program(標準学修課程)).
- Our aim is to produce outstanding one-of-a-kind doctoral course students who can drive society beyond the existing framework through a learning plan that anticipates toward the future.

Contact: Prof. Kanda Manabu (tse-b2d-faculty@tse.ens.titech.ac.jp)



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