



Tokyo Tech



Department of **Transdisciplinary Science and Engineering** 4th Year Orientation

April 5, 2021

GSEP Faculty

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>



融合理工学系

Undergraduate Major of
Transdisciplinary Science and Engineering

Requirement for graduation in the Department of TSE

In addition to the common requirements of Tokyo Tech, the following conditions should be satisfied.

1. All 30 credits of required subjects (◎) in the list of the subjects in the Department of TSE should be obtained.
2. "Research Opportunity in Laboratories" and "Independent Research Project" should be obtained.
3. 50 credits in the major course in the list of the subjects in the Department of TSE should be obtained.
4. 124 credits should be obtained in total.



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Independent Research Project (IRP)

- The purpose of the IRP is to have students put together the theory, the experimental work, the investigation, the planning, and other such aspects of their work on their specific topics, to bring the academic achievement they have cultivated up to that point into focus on deeper understanding of the courses in their field of study, and to acquire the methods of putting research into organized order as well as how to write reports, give presentations, and other such skills.
- Format of the report of IRP will be distributed.
- Research topic should be discussed with the academic supervisor of your lab.
- Register IRP through Tokyo Tech Portal. Deadline is April 23.



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Advanced Independent Research Project (AIRP)

- AIRP is a course taken after completing the IRP in order to conduct further research at a deeper level, to begin preparing to conduct research for a Master's Degree, or to conduct a new independent research project for the Bachelor's Degree at a different laboratory from the one where the independent research project for the Bachelor's Degree was conducted, or by some other such method to conduct research at a deeper level and to increase the breadth of learning.
- AIRP should be conducted at the lab where IRP was conducted.
- There is no requirement to submit the reports and presentations.



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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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Online Bulletin

Slack and Mailing List

TSE/GSEP English Website <http://www.tse.ens.titech.ac.jp/en/>

COVID-19

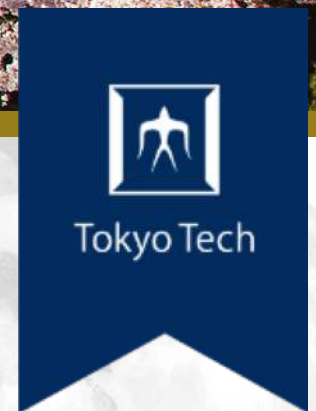
COVID-19 updates for all students

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



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Research ethics education

– Approach in Tokyo Tech –

Office of Education and International Cooperation (Japanese only)
http://www.eduplan.titech.ac.jp/w/creative_subject/ethic_student/

Tokyo Tech Code of Conduct for Researchers

(Basic Responsibilities of Researchers)

1. Researchers shall recognize that they are responsible for assuring the quality of the specialized knowledge and skills that they themselves create, and for using their expert knowledge, skills, and experience to contribute to the health and welfare of humankind, the safety and security of society, and the sustainability of the global environment.

The Science Council of Japan's "Code of Conduct for Scientists" Article 1. Basic Responsibilities of Scientists has similar text.

Features of Tokyo Tech's Education on Responsible Conduct for Research

- Three levels of educational targets
 - Level 1 (1st- to 3rd-year undergraduate students): Basic
 - Level 2 (4th-year undergraduate students and master's students): Advanced
 - Level 3 (Doctoral students): More advanced
- Fourteen learning and educational targets divided into four categories
 1. Academic integrity
 2. Roles and social responsibilities of researchers
 3. Responsible Conduct of Research (RCR)
 4. Compliance with laws and ordinances
- With respect to the teaching method, there are no common courses across the whole Institute. Each School and Department is given discretion to determine necessary methods.

1. Academic integrity

- a) Establishment of awareness as a Tokyo Tech Student
- b) Develop ethical sensibility that allows one to identify ethical issues involved in the implementation of research and technology
- c) Acquire skills required to resolve ethical issues

2. Roles and social responsibilities of researchers

- a) Understand general roles and social responsibilities of researchers
- b) Understand ethical principles relevant to one's field

3. Responsible Conduct of Research (RCR)

- a) Acquire knowledge and understanding of responsible conduct of research (RCR) and research misconduct (5 minor targets)
- b) Acquire knowledge and understanding of correct data handling for RCR
- c) Understanding on meaning and importance of authorship
- d) Acquire knowledge and positive attitude for building a sound environment that promotes RCR (3 minor targets)

4. Compliance with Laws and Ordinances

- a) Acquire knowledge and understanding of laws and policies related to RCR (6 minor targets)
- b) Acquire knowledge and understanding of regulations and policies concerning research misconduct
- c) Acquire knowledge and understanding of regulations and policies concerning collaborative research
- d) Acquire knowledge and understanding of conflicts of interest
- e) Become able to use research funds in an appropriate manner

Education Method (available research ethics courses and resources)

	Courses	Online education	Laboratory education	Other
Level 1	<ul style="list-style-type: none"> Courses: Tokyo Tech Visionary Project (100-level required courses) Frontiers of Science and Technology (100-level virtually required) Ethical Engineering A, B, and C (100- to 300-levels elective) Liberal Arts Final Report (300-level required courses) First-Year Courses, Major Courses offered by Departments Courses involving laboratory experiments 	<ul style="list-style-type: none"> SPOC Japan Society for the Promotion of Science Research Fellowship (JSPS), e-Learning Course on Research Ethics (el-CoRE) 	N.A.	<ul style="list-style-type: none"> Guidances and orientations by each School and Department Tokyo Tech portal site on fair promotion of research activities summarizing related information including policies and code of conduct The Open University of Japan: Atarasiijidai no gijyutussyarinri (Engineering Ethics in a New Era)
Level 2	<ul style="list-style-type: none"> Career Development Courses: Career Design, Ethics of Engineers (400- to 500-levels electives required) Ethics of Scientists (400-level required) Ethics in Engineering, Essence of Humanities and Social Sciences 2 (400-level elective required) 	<p>In addition to the above:</p> <p>Association for the Promotion of Research Integrity (APRIN) e-Learning program (formerly CITI Japan)</p>	<ul style="list-style-type: none"> Research ethics education in laboratory settings Education using "The Lab," visual education material on research ethics education distributed by JST Utilize check list 	Same as above
Level 3	<p>Career Development Courses: Career Design, Ethics of Engineers (600-levels electives required)</p> <p>Liberal Arts Courses: Path-Breaking Liberal Arts Courses, Independent Studies (600-levels required)</p>	Same as above	<p>In addition to the above:</p> <p>Research ethics education in laboratory settings</p>	Same as above

About the Checklist

1. Students are expected to fill in the checkboxes and have them confirmed by their academic supervisor. Laboratories are responsible for implementing this procedure at least once a year. Completion of required courses will be checked via the Web System for Students and Faculty.

2. Students' attainment of educational objectives is confirmed around 'acts' including signatures, course completion, and laboratory activity participation.

Although possible methods of confirmation are listed in the checklist, they are by no means exhaustive. Educational objectives may still be ticked off if they can be regarded as having been met through other acts. For example, if a student establishes an understanding of the roles and social responsibilities of a researcher through his/her participation in discussions based on The Lab, he/she may tick off educational objective 2a.

Note that '●' used in front of a confirmation method indicates that the method includes quizzes, reports, or tests that may be used to verify the solid acquisition of knowledge. '◆' on the other hand indicates that confirmation is necessary through additional means such as participating in discussions and being asked questions on research ethics. Resources for research ethics education in laboratory settings are also available from the Institute (e.g., "The Lab" and Tokyo Tech SPOC, quizzes prepared for ethics learning).

3. Level 1 is a subset of level 2, and level 2 is a subset of level 3. Students who reach level 2 objectives are also considered to have fulfilled level 1 objectives.

Evaluation by the Checklist



Tokyo Tech

Level 2 Checklist

Level 1 is a subset of level 2. Students who reach level 2 objectives are also considered to have fulfilled level 1 objectives.

Educational objectives			Points to ascertain	Possible methods of confirmation	Check box
1	Academic Integrity	(a) Establish awareness of the roles and responsibilities as a Tokyo Tech student	Does the student have sufficient self-awareness of standards upheld as a member of Tokyo Tech? Examples • Has he/she read the Institute's education policy or the "Seven Tokyo Tech Principles for Good Practice in Learning"? • Is he/she an autonomous learner who is keen to advance his/her own studies? • Does he/she appreciate cultured activities, have communication skills, and have interests that extend to wide areas of science and technology?	●3 credits from Humanities and Social Science Courses (preferably completion of Leadership Workshop) ◆Familiarity with the research ethics resources listed in the Attachment	
		(b) Develop ethical sensibility that allows individuals to identify ethical issues involved in the implementation of research and technology (advanced level)	Can the student identify ethical issues in case studies?	●Completion of "Tokyo Tech Science, Engineering, AI and Data Ethics"(SPOC)	
		(c) Acquire skills required to resolve ethical issues (advanced level)	Does the student understand ethical decision making methods such as the Seven Step Guide?	●Completion of "Tokyo Tech Science, Engineering, AI and Data Ethics"(SPOC)	
2	Social responsibilities of researchers	(a) Understand the roles and social responsibilities of researchers	Does the student understand the "Code of Conduct for Researchers at Tokyo Institute of Technology"?	◆Familiarity with the research ethics resources listed in the Attachment (a signature is a must for the Code of Conduct for Researchers at Tokyo Institute of Technology)	
			• Does the student understand the basic responsibilities of researchers? • Does the student understand the impact science and technology have on society? • Can the student clearly explain his/her research to people outside the research community (i.e., dissemination of information)?	●Completion of "Tokyo Tech Science, Engineering, AI and Data Ethics"(SPOC) ●Completion of eL-CoRE	
		(b) Understand ethical principles that are relevant to one's field (e.g., engineering ethics, information ethics, ethics where human participants are involved in research) (advance level)	Does the student understand ethical principles that are relevant to his/her field?	●Method specified by the relevant department, etc. (e.g., completion of a course) ●Completion of "Tokyo Tech Science, Engineering, AI and Data Ethics"(SPOC)	



Evaluation by the Checklist



Level 2 Checklist

Level 1 is a subset of level 2. Students who reach level 2 objectives are also considered to have fulfilled level 1 objectives.

Educational objectives		Points to ascertain	Possible methods of confirmation	Checkbox
3	Responsible conduct of research (RCR)	(a) Acquire knowledge and understanding of responsible conduct of research (RCR) and research misconduct (advanced level)	Does the student understand the basic concepts concerning RCR and why the practice is necessary? Does he/she understand: • what constitute research misconduct (fabrication, falsification, and plagiarism) and questionable research practice (QRP); • what factors lead to research misconduct and QRP; • how complaints are filed and investigative procedures are carried out for research misconduct; • the role of ethics review; and • limitations of regulations and policies related to RCR, differences in standards and codes of conduct between fields, organizations, and laboratories?	● Method specified by the relevant department, etc. (e.g., completion of a course) ● Completion of eL-CoRE ● eAPRIN
	(b) Acquire knowledge and understanding regarding the correct handling of data for responsible conduct of research (advanced level)	Does the student understand how data should be collected, managed, and processed? Does he/she understand: • the purpose of keeping laboratory notebooks and how to maintain them, as well as what to record and methods of recording; • practical and correct ways of handling data in his/her research field (i.e., ways of collecting, recording, managing, sharing, and owning data)?	● Method specified by the relevant department, etc. (e.g., completion of a course) ● Completion of eL-CoRE ● eAPRIN	
	(c) Understand the meaning and importance of authorship (advanced level)	Does the student understand the meaning and importance of authorship? Does he/she understand: • the rights, implications, and responsibilities associated with authorship; • the international standards for authorship; • the roles and responsibilities that come with being an author or a co-author of academic journals; and • the issues surrounding inappropriate authorship (e.g., gift and ghost authorship)?	● Method specified by the relevant department, etc. (e.g., completion of a course) ● Completion of eL-CoRE ● eAPRIN	
	(d) Acquire knowledge and a positive attitude on building sound environment for promoting RCR	Does the student understand the need to build a sound environment for promoting RCR and is he/she taking steps in support of it? • Does he/she contribute towards building a sound research environment (e.g., clarify the roles and responsibilities of mentors and trainees, and participate in establishing an open research environment)? • Does he/she understand the importance and methods of research ethics education? • Does he/she actively consider ways of avoiding ethical issues from arising in research?	● Completion of eL-CoRE ● eAPRIN	

Guidance, Orientation, and Lectures

- Guidance and orientation by each School, Department, and Graduate Major
- Lectures and seminars related to research ethics offered by each School, Department, and Graduate Major

Online Education

- Japan Society for the Promotion of Science Research Fellowship e-Learning Course on Research Ethics (eL-CoRE)
- Association for the Promotion of Research Integrity (APRIN) e-Learning program (formerly CITI Japan)
- Tokyo Tech SPOC course: “Science, Engineering, AI & Data Ethics” (edX)

e-Learning Course on Research Ethics [eL CoRE] by JSPS



JAPAN SOCIETY FOR THE PROMOTION OF SCIENCE
日本学術振興会

受講者ログイン/
Enrollee Login

User ID

Password

ログイン(Log in)

ユーザID・パスワードを忘れた場合はこちら
Forgot your User ID or password?
管理者ログインはこちら

HOME

新規登録(個人)/
New Registration
(individuals)

新規登録(団体)

推奨環境/Requirements

操作マニュアル/
Course Manual

よくあるご質問

研究倫理eラーニングコース(e-Learning Course on Research Ethics)[eL CoRE]


Japanese English

The e-Learning Course on Research Ethics is based on the book *"For the Sound Development of Science-The Attitude of a Conscientious Scientist."* It provides researchers with an opportunity to learn about research ethics at any time or anywhere they may be.
The course for researchers and the course for graduate students are on offer.
Please select the course you would like to take at the time of application.

This e-Learning Course provides scientists engaged in all fields of research, including the humanities, social sciences and natural sciences, guidance on essential points of conduct in carrying out their research and in communicating their results within the science community and to the larger society. This course compiles essential points on how people engaging in research in all fields from the humanities and social sciences to natural sciences should conduct their research and communicate their results within the science community and to the larger society.
This course contains what researchers should know and bear in mind when conducting research, including a code of ethics, a code of conduct, methods of presenting research results, and appropriate use of research funds.

[Features of this e-Learning Cours]


■ Feature 1
Anyone can take the course free of charge. There are no age requirements,



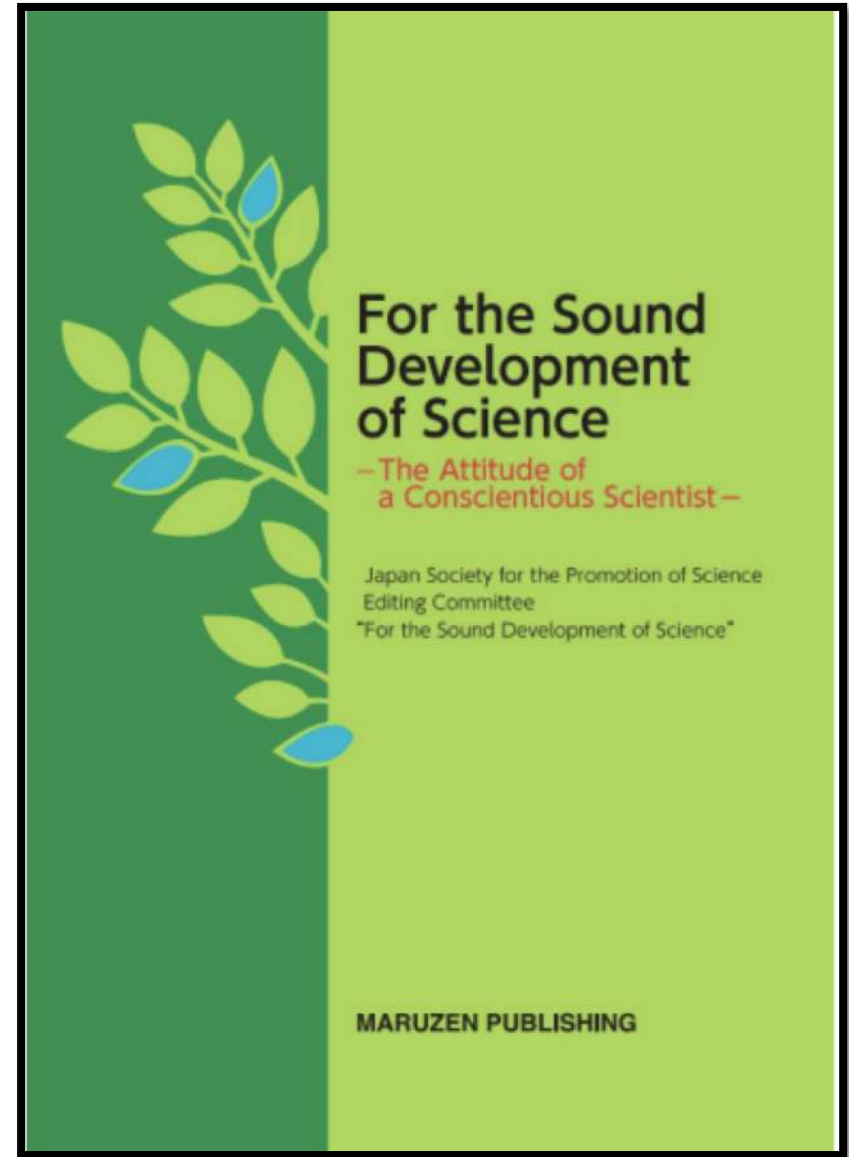
■ Feature 2
Group registration and management available.



■ Feature 3
Many examples are provided to enhance the learner's understanding.



“Green Book”



国立大学法人東京工業大学

[メインメニュー](#) ▶ [国立大学法人東京工業大学](#) ▶ [責任ある研究行為：基盤編（RCR）](#) ▶
[責任ある研究行為について／Responsible Conduct of Research_RCR](#)

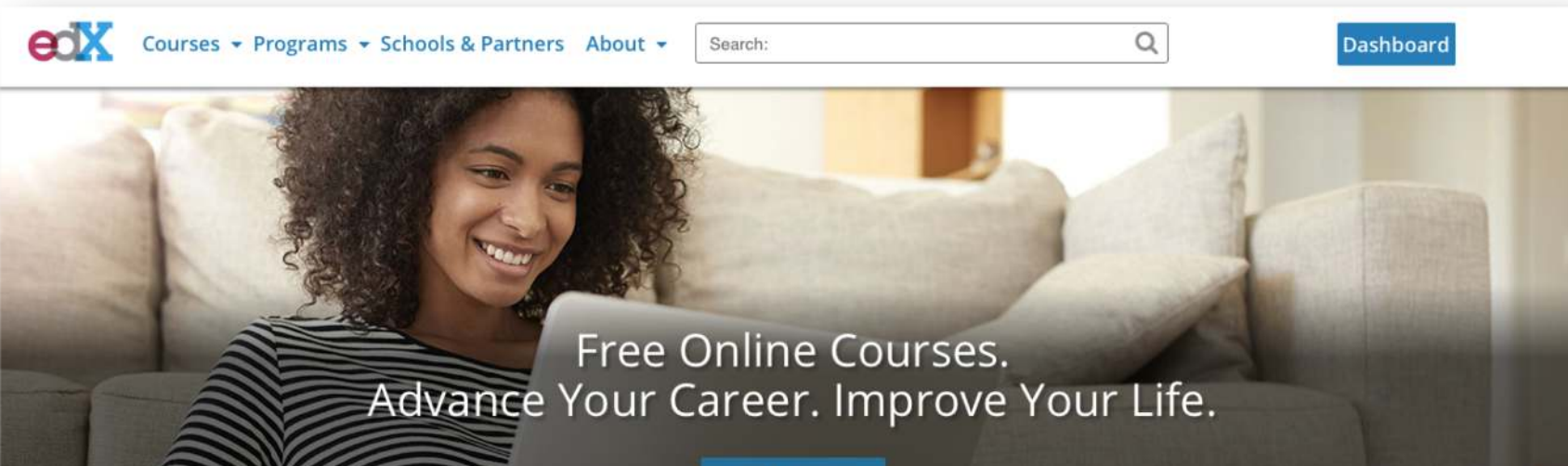
責任ある研究行為について／Responsible Conduct of Research_RCR

はじめに、テキストを受講してください。
テキストの受講を完了すると、クイズを受けることができます。

[テキストを読む/Read the text](#)

[もう一度クイズを受ける/Re-take the quiz](#)

Tokyo Tech SPOC -Tokyo Tech Science, Engineering, AI and Data Ethics 2020|edX-



Tokyo Tech: 2020TT-ethics
東工大の科学技術倫理 / Tokyo Tech Science, Engineering, AI & Data Ethics 2020

Register

Sign in

東工大の科学技術倫理 / Tokyo Tech Science,
Engineering, AI & Data Ethics 2020
Tokyo Tech

Enroll Now

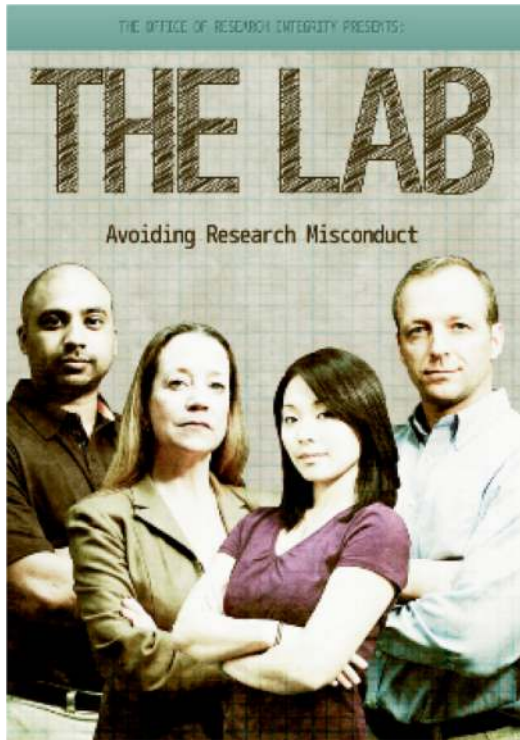


Case study material “The Lab”

Japan Science and Technology Agency (JST): Research ethics education DVD developed by the U.S. Department of Health and Human Services (HHS), Office of Research Integrity. All episodes have been translated. Japanese version was released in April 2015.



Features of “The Lab”



1. Interactive. (Enables active learning and simulation)
2. Consider specific problem from each stakeholder's position (Research Integrity Officer (RIO), principal investigator, postdoctoral researcher, graduate student).
3. Different decision making and action will result in different ending.
4. Result of superior decision making is depicted.
5. Learn the required values and qualities of a researcher.
6. Learn the methods of ethical decision making.
7. Already translated into Chinese and Spanish, allowing for international comparison and discussions.

Mission of Tokyo Institute of Technology

Tokyo Institute of Technology seeks to **contribute to civilization and the welfare of humankind** by educating students to acquire necessary expertise in liberal arts and scientific expertise, and aims to develop competent citizens par excellence as future industrial engineers, industrial managers, and science and engineering researchers and educators, researching the theory and application of science and engineering deeply with academic mastery to promote development of science and technology.

National University Corporation Tokyo Institute of Technology Organization Management Regulations, Article 2, Paragraph 2.



(Basic Responsibilities of Researchers)

1. Researchers shall recognize that they are responsible for assuring the quality of the specialized knowledge and skills that they themselves create, and for using their expert knowledge, skills, and experience to **contribute to the health and welfare of humankind, the safety and security of society, and the sustainability of the global environment.**

Science Council of Japan's "Code of Conduct for Scientists" Article 1. Basic Responsibilities of Scientists has similar text.

**Code of Conduct for
Researchers at
the Tokyo Institute of Technology**

Extension: 7643 / 内線 : 7643 Email: kenki@

研究者は、責任ある研究の実施と不正行為の防止に不可欠な公正な環境の確立・維持も自らの重要な責務であることを自覚し、研究コミュニティ及び自らの所属組織の研究環境の質的向上、ならびに不正行為抑止の教育啓発に継続的に取り組む。また、これを達成するために社会の理解と協力が得られるよう努める。

shall also make efforts to prevent misconduct and to manage research appropriately.

事務職員等、研究者の研究活動を支援する者は、本成金の趣旨に沿った研究活動の展開と研究支援環境整備の高度化との共益的な推進に邁進する。特に研究費の管理においては不正行為を為さず、また加担しないことともより、不正行為の禁止と適正な管理に努める。