English-Taught Courses List **As of April 2025**

（Graduate School of Engineering） **This is for your reference only.**

Code	Course Title	Semester	Quarter	Main Instructor	Course Description
106a0608	Wireless communication II	Fall Semester	3rd Quarter	UMEBAYASHI Kenta	In wireless communications, estimation is one of the fundamental issues. Specifically, to receive and demodulate the received signal properly, the receiver has to estimate not only the transmitted signal but also channel response. However, typically they involve randomness, we have to consider it in the estimation problems. In this class, we will study the estimation problem and techniques.
106a0611	Advanced Topics in Semiconductor Device Engineering I	Fall Semester	3rd Quarter	ZHANG Ya	MEMS (micro-electro-mechanical systems) devices play an important role in the modern information society. This course aims to provide students with an understanding of the principles, structures, manufacturing processes, and research frontiers of MEMS devices. This class will be conducted in English.
106a0618	Advanced topics in information security	Fall Semester	3rd Quarter	WATANABE Shun	In the past few decades, quantum information science has been developed as a future technologies. In this course, students are expected to acquire basic knowledge on quantum information science.
106a0619	Academic communication	Spring Semester	1st Quarter	MIYASHIRO Ryuhei	Students learn the flow of research, including literature review, experimental design, program implementation and evaluation, with the supervisor. In addition, students are required writing papers and making presentation in English at an international conference.
106a0624	Academic communication	Fall Semester	3rd Quarter	MIYASHIRO Ryuhei	Students learn the flow of research, including literature review, experimental design, program implementation and evaluation, with the supervisor. In addition, students are required writing papers and making presentation in English at an international conference.
106c3022	Applied Chemistry: Advanced Seminar Ⅰ	Spring Semester	ONE-YEAR	LOUIS Marine	The aim of the course is to learn items necessary to promote the graduation study such as literature survey, presentation, discussion, experimental safety, and operation of scientific instruments in a seminar style. Students need to take this course along with Graduation Thesis, and learn mainly the following items: 1) Safety education, 2) understanding of the purpose and background of the study, 3) acquisition of knowledge and techniques necessary for the study. The format and schedule is dependent on each adviser, and active involvement in the course is very important.
106c3122	Applied Chemistry: Advanced Seminar Ⅱ	Spring Semester	ONE-YEAR	LOUIS Marine	[Purpose] Communicating with others through research presentations is an extremely important element as a researcher. Therefore, the progress of research in the master's program is announced in front of teachers other than the supervisor, and opinions are exchanged. In addition, by exchanging opinions, the aim is to find out information that cannot be obtained through literature surveys, etc., and to find new perspectives that were not noticed by oneself, and to make use of them for their own research. [Outline] An interim presentation will be held in early May every year, and the progress of research in the master's program will be announced through short presentations and poster presentations. Answer questions from other students and teachers, and present questions after listening to other students' announcements.
106c3209	Applied Chemistry: Practical Study Ⅰ	Spring Semester	ONE-YEAR	MURAOKA Takahiro	Purpose: In addition to conducting research for a master's thesis under a faculty advisor, it is important for a researcher to communicate with others through research presentations. The purpose of this course is to provide students with the opportunity to present the progress of their research in the Master's Course in front of faculty members other than their supervisors, to exchange opinions, and to discover information and new perspectives that cannot be obtained through literature survey and other means. Students are expected to take this course in their first year of the Master's program, and to present the progress of their research in the Master's program at the midterm presentation scheduled in December. Students will answer questions from other students and faculty members, as well as present questions after listening to other students' presentations.
106c3222	Applied Chemistry: Practical Study Ⅰ	Spring Semester	ONE-YEAR	LOUIS Marine	Purpose: In addition to conducting research for a master's thesis under a faculty advisor, it is important for a researcher to communicate with others through research presentations. The purpose of this course is to provide students with the opportunity to present the progress of their research in the Master's Course in front of faculty members other than their supervisors, to exchange opinions, and to discover information and new perspectives that cannot be obtained through literature survey and other means. Students are expected to take this course in their first year of the Master's program, and to present the progress of their research in the Master's program at the midterm presentation scheduled in December. Students will answer questions from other students and faculty members, as well as present questions after listening to other students' presentations.

English-Taught Courses List **As of April 2025**

（Graduate School of Engineering） **This is for your reference only.**

Code	Course Title	Semester	Quarter	Main Instructor	Course Description
106c3322	Applied Chemistry: Practical Study Ⅱ	Spring Semester	ONE-YEAR	LOUIS Marine	Purpose: In addition to conducting research for a master's thesis under a faculty advisor, it is important for a researcher to communicate with others through research presentations. The purpose of this course is to provide students with the opportunity to present the progress of their research in the Master's Course in front of faculty members other than their supervisors, to exchange opinions, and to discover information and new perspectives that cannot be obtained through literature survey and other means. Students are expected to take this course in their first year of the Master's program, and to present the progress of their research in the Master's program at the midterm presentation scheduled in December. Students will answer questions from other students and faculty members, as well as present questions after listening to other students' presentations.
106c3409	Applied Chemistry: Practical Presentation Ⅰ	Spring Semester	ONE-YEAR	MURAOKA Takahiro	Purpose: It is the responsibility of researchers to publish the results of their research at conferences, etc. and to return the results to society. In the future, there will be many opportunities to present the results and progress of research at companies, etc., and this is highly important. The purpose of this course is to practice and master a series of tasks up to the presentation, such as preparation of a presentation draft, preparation of presentation materials, practice of presentation, and presentation at an academic conference. With the consent of the academic advisor, students will present their research at academic societies. The student will be evaluated on her/his ability to give a professional presentation at an academic conference and answer questions after preparing a presentation draft and presentation materials and practicing the presentation
106c3422	Applied Chemistry: Practical Presentation Ⅰ	Spring Semester	ONE-YEAR	LOUIS Marine	Purpose: It is the responsibility of researchers to publish the results of their research at conferences, etc. and to return the results to society. In the future, there will be many opportunities to present the results and progress of research at companies, etc., and this is highly important. The purpose of this course is to practice and master a series of tasks up to the presentation, such as preparation of a presentation draft, preparation of presentation materials, practice of presentation, and presentation at an academic conference. With the consent of the academic advisor, students will present their research at academic societies. The student will be evaluated on her/his ability to give a professional presentation at an academic conference and answer questions after preparing a presentation draft and presentation materials and practicing the presentation
106i0834	Research & Business Analysis	Spring Semester	2nd Quarter	TAKAHASHI Koichi	To learn about various tools, methodologies, and content levels that concretely advance research activities for the preparation of research papers in graduate school, as well as to acquire them as research skills through exercises.
106i0837	Technical Marketing Management	Spring Semester	2nd Quarter	HIROSUE Masayuki	The objective of this lecture is to understand the marketing activities of companies across national borders for them to build sustainable competitive advantage in the face of intensifying global competition and changes in the technological environment. Through case studies of global companies in various countries, students will learn about the characteristics of today's global markets and marketing perspectives from the perspective of technology in global marketing. Through the study, students will not only understand global marketing knowledge but also acquire the ability to think about corporate management and marketing activities from a global perspective. Course Schedule in 2025: 8/24, 9/6, 9/7 (08:45- 18:00 from 1period to 5 period)
106l0110	Biological Organic Chemistry	Spring Semester	1st Quarter	SAKURAI Kaori	The aim of this class is to introduce students with advanced organic chemistry and chemical biology for elucidating and understanding the biological phenomena key concepts for understanding structures of compounds at atomic level, which will be an important foundation to study higher level courses at the Department of Bioengineering and Life Science. While reviewing high school-level chemistry, classes will introduce the key principles in chemistry, which involves atomic orbitals, valence bond theory, molecular orbital theory, molecular representations, acids and bases, stereochemistry. A particular emphasis is placed on learning the structures of organic compounds, so that it will serve as an introductory course for Bioorganic Chemistry courses.
106l0118	Brainstorming in English	Fall Semester	3rd Quarter	JAMES BALDWIN	The aim of this course is to introduce and practice strategies in scientific communication in English. Class activities will focus on discussion and presentation of students' research. Skills to be covered include preparing a "science pitch", developing coping strategies for discussion, making persuasive arguments, asking critical and constructive questions, delivering an effective oral presentation, and handling Q&A sessions.
106l0122	Frontieres of Biofunction Engeneering	Fall Semester	3rd Quarter	MORI Tetsushi	Each faculty member of the Department of Biotechnology will introduce cutting-edge research related to biotechnology, focusing on their own research. They will explain how technology based on " biotechnology " is important for the development of science and explain about biotechnology. While learning the needs and seeds of the advanced area, learn the way of thinking for advancing cutting-edge research in the area. The lecture will be given in English. This subject is associated with perspectives A, B, and C of the Diploma Policy.

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Code	Course Title	Semester	Quarter	Main Instructor	Course Description
106l1003	Biofunction Engineering: Presentation Ⅰ	Spring Semester	ONE-YEAR	KURODA Yutaka	Students are to develop advanced level presentation skills relevant in the field of biofunctionengineering through poster or oral presentations at a scientific meeting or a conference.
106l1021	Biofunction Engineering: Presentation Ⅰ	Spring Semester	ONE-YEAR	NAKAMURA Chikashi	Students are to develop presentation skills relevant in the field of biotechnology through poster or oral presentations at a scientific meeting or a conference.
106l1053	Biofunction Engineering: Presentation Ⅱ	Spring Semester	ONE-YEAR	KURODA Yutaka	Students are to develop presentation skills relevant in the field of biofunction engineering through poster or oral presentations at a scientific meeting or a conference.
106l1103	Biofunction Engineering: Presentation Ⅲ	Spring Semester	ONE-YEAR	KURODA Yutaka	Students are to develop presentation skills relevant in the field of biofunction engineering through poster or oral presentations at a scientific meeting or a conference.
106l1153	Biofunction Engineering: Presentation Ⅳ	Spring Semester	ONE-YEAR	KURODA Yutaka	Students are to develop presentation skills relevant in the field of biofunction engineering through poster or oral presentations at a scientific meeting or a conference.
106l1353	Biotechnology and Life Science: Seminar Ⅰ	Spring Semester	1st Quarter	KURODA Yutaka	In order to bring up researchers with broad scientific vision, a detailed bibliographic survey, material preparation followed by a oral presentation would be performed by each student in the masteral program. The students should have to chose a topic different from their research theme.
106l1371	Biotechnology and Life Science: Seminar Ⅰ	Spring Semester	1st Quarter	NAKAMURA Chikashi	In order to bring up researchers with broad scientific vision, a detailed bibliographic survey, material preparation followed by a oral presentation would be performed by each student in the masteral program. The students should have to chose a topic different from their research theme.
106l1403	Biotechnology and Life Science: Seminar Ⅱ	Fall Semester	3rd Quarter	KURODA Yutaka	In order to bring up researchers with broad scientific vision, a detailed bibliographic survey, material preparation followed by a oral presentation would be performed by each student in the masteral program. The students should have to chose a topic different from their research theme.
106l1453	Biotechnology and Life Science: Seminar Ⅲ	Spring Semester	1st Quarter	KURODA Yutaka	In order to bring up researchers with broad scientific vision, a detailed bibliographic survey, material preparation followed by a oral presentation would be performed by each student in the masteral program. The students should have to chose a topic different from their research theme.
106l1503	Biotechnology and Life Science: Seminar Ⅳ	Fall Semester	3rd Quarter	KURODA Yutaka	In order to bring up researchers with broad scientific vision, a detailed bibliographic survey, material preparation followed by a oral presentation would be performed by each student in the masteral program. The students should have to chose a topic different from their research theme.
106l1553	Biotechnology and Life Science: Special Study	Spring Semester	1st Quarter	KURODA Yutaka	Student will examine to make a report based on papers from the related research field of life-science and biotechnology. Student will acquire to find problems and discuss future perspectives in the examination.
106m0502	Advanced Mathematics in Mechanical Engineering	Spring Semester	1st Quarter	HIRANO Yuki	From mathematical fields fundamental to technology which are indispensable to students in master course, we will take up some advanced topics and exercise the calculations on them.
106m0509	Advanced Analysis of Mechanical Components	Fall Semester	3rd Quarter	IKEDA Koji	The official enrollement wil be needed through SIRIUS system. Day of week and period of day may be rearranged by the number of the participants. (in 2021, the schedule was rearranged)
106m0516	Mechanical Systems Engineering: Practice Ⅲ	Fall Semester	3rd Quarter	NISHIDA Hiroyuki	It actually observes how the knowledge and technology about the mechanical engineering lectured in department of mechanical systems engineering are harnessed at the field of research or manufacture, and realizes applied technologies. Moreover, understanding is simultaneously deepened about working at a company/research institute, and it is considered as an aid of career path formation.

English-Taught Courses List **As of April 2025**

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Code	Course Title	Semester	Quarter	Main Instructor	Course Description
106m0518	Advances in Mechanical Systems Engineering	Fall Semester	3rd Quarter	RAKSINCHAROENSAK Pongsathorn	This course is intended to provide both TUAT grduate students and short-term exchange program (STEP, AIMS, semester program, etc.) students with an innovative and inclusive scope on the Advances in Mechanical Systems Engineering. The course consists of fourteen 90 minutes classes and all lectures are given in English by selected speakers in various field of Mechanical Systems Engineering.
106m5110	Mechanical Systems Engineering Thesis: Seminar Ⅰ	Spring Semester	ONE-YEAR	RAKSINCHAROENSAK Pongsathorn	Participants carry out his / her own research as Master course theses. In this course, job-on training style is used for planning, experiments, analysis, and discussions. Students in Master course Year-1 must complete this course as compulsive.
106m5111	Mechanical Systems Engineering Thesis: Seminar Ⅰ	Spring Semester	ONE-YEAR	YAMANAKA Akinori	Participants carry out his / her own research as Master course theses. In this course, job-on training style is used for planning, experiments, analysis, and discussions. Students in Master course Year-1 must complete this course as compulsive. *Language is depend on the decision by the supervisor.
106m5137	Mechanical Systems Engineering Thesis: Seminar Ⅰ	Spring Semester	ONE-YEAR	AYUSAWA Ko	博士前期課程学生としての資質をより豊かにするために，研究テーマを決めて、理論、実験が行う。(*The course description is available only in Japanese)
106m5205	Mechanical Systems Engineering Thesis: Seminar Ⅱ	Spring Semester	ONE-YEAR	MURATA Akira	Participants carry out his / her own research as Master course theses. In this course, job-on training style is used for planning, experiments, numerical analysis, and discussions. Students in Master course Year-2 must complete this course as compulsive, especially for the final theses and presentation. *Language is depend on the decision by the supervisor.
106m5210	Mechanical Systems Engineering Thesis: Seminar Ⅱ	Spring Semester	ONE-YEAR	RAKSINCHAROENSAK Pongsathorn	Participants carry out his / her own research as Master course theses. In this course, job-on training style is used for planning, experiments, analysis, and discussions. Students in Master course Year-1 must complete this course as compulsive.
106m5219	Mechanical Systems Engineering Thesis: Seminar Ⅱ	Spring Semester	ONE-YEAR	TAKADA Satoshi	Participants carry out his / her own research as Master course theses. In this course, job-on training style is used for planning, experiments, numerical analysis, and discussions. Students in Master course Year-2 must complete this course as compulsive, especially for the final theses and presentation. *Language is depend on the decision by the supervisor.
106t0011	Bio-Informatics	Fall Semester	3rd Quarter	KURODA Yutaka	Fundamental knowledge of bioinformatics in relation to the sequence, structure, and function of protein will be explained.
106t0023	Scope of Applied Chemistry Ⅰ	Fall Semester	3rd Quarter	LOUIS Marine	This specialized course, conducted in English, is designed for international students but open to all graduate students. It provides up-to-date knowledge across a broad spectrum of applied chemistry and related fields, from fundamental principles to cutting-edge advancements. Additionally, the course offers a multifaceted perspective on various research areas and challenges in applied chemistry, helping students recognize differences from their own specialization and explore chemistry’s diverse roles in industry.
106t0026	Advanced Environmental Engineering I	Fall Semester	3rd Quarter	TERADA Akihiko	Towards the resolution of various environmental problems, environmental engineering is scientific learning based on concepts of material balance and energy balance with the transport phenomenon approach. The course consists of wastewater engineering and solid waste (especially, sewage sludge) engineering issues. The former topics will be given by Prof. Terada and the latter by Prof Riya.
106t0031	Advanced Control System Engineering	Fall Semester	3rd Quarter	RAKSINCHAROENSAK Pongsathorn	This course introduces the basic design theory of feedback control systems for linear dynamical systems. Several applications on automotive control as well as aircraft dynamics control are described based on control theories. Classical control and Modern control theories are introduced in the class. The theory of state observer and Kalman filtering are also introduced.

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106t0051	Human, Language and Society I	Spring Semester	2nd Quarter	OKANO Ichiro	This course aims to introduce students in science and technology to various studies in humanities and social sciences and to provide them with an opportunity to develop comprehensive, interdisciplinary knowledge on language and social life. First, students will learn key concepts and theories in anthropology and be familiar with a variety of topics in sociolinguistics. Second, they will learn about essential components of human culture and communication by looking into phenomenological understanding of "self" and changing notion of "beauty", as well as how human communication has been analyzed sociologically. Third, Students will learn key concepts and theories in the language system and be familiar with a variety of topics in linguistics.
106u0407	Special Lecture for Functional Devices	Spring Semester	1st Quarter	SATRIA ZULKARNAEN BISRI	Students learn various aspects of solid-state materials, physical chemistry, quantum mechanics, thermodynamics, and statistical mechanics within frameworks of developing, characterizing, and engineering functional devices. Among the functional devices that will be within the scope of this course are: electronic and optoelectronic devices of nanomaterials and quantum materials; sensors; photonic crystals; energy harvesting and storage devices based on functional interfaces; iontronics and ion-controlled electronics. After surveying the basic concepts of nanoscience and nanotechnology, the first part of this course will focus on various experimental techniques to characterize the properties of nanomaterials and nanostructures. The "five senses of nanoworld" will be explained, comprising the analogies of the senses of vision, touch, taste, sound, and smell to observe and measure nano- and molecular objects.
106u0411	Special Lecture on Advanced Chemical Physics Ⅱ "Physical and Energy Engineering"	Fall Semester	3rd Quarter	SATRIA ZULKARNAEN BISRI	The title of this lecture is: "Physical and Energy Engineering" We will deal with some important physics topics in energy engineering, especially to realize Zero Carbon Society. The topics include electromagnetic waves (or light) and energy, charged particles in electromagnetic fields, radiation physics, nuclear engineering, thermal engines, and heat pumps.
106u4020	Applied Physics and Chemical Engineering Seminar I	Spring Semester	ONE-YEAR	SATRIA ZULKARNAEN BISRI	Under the guidance of each faculty member, students will understand the significance of their own research in preparation for their master's thesis.
106u4070	Applied Physics and Chemical Engineering Seminar Ⅰ	Fall Semester	ACROSS ACADEMIC YEAR	SATRIA ZULKARNAEN BISRI	Under the guidance of each faculty member, students will understand the significance of their own research in preparation for their master's thesis.
106u4120	Applied Physics and Chemical Engineering Seminar Ⅱ	Spring Semester	ONE-YEAR	SATRIA ZULKARNAEN BISRI	Under the guidance of each faculty member, students will understand the significance of their own research in preparation for their master's thesis.
106u4170	Applied Physics and Chemical Engineering Seminar II	Fall Semester	ACROSS ACADEMIC YEAR	SATRIA ZULKARNAEN BISRI	Under the guidance of each faculty member, students will understand the significance of their own research in preparation for their master's thesis.
106u4220	Advanced Experiment in Applied Physics and Chemical Engineering	Spring Semester	ONE-YEAR	SATRIA ZULKARNAEN BISRI	Under the guidance of each faculty member, the student will formulate an experimental plan and conduct preliminary and exploratory experiments in preparation for the master's thesis. The results obtained will be summarized and reported as appropriate, discussed with the supervisor, and the direction of the research for the master's thesis will be clarified based on the results of the discussions.
106u4270	Advanced Experiment in Applied Physics and Chemical Engineering	Fall Semester	ACROSS ACADEMIC YEAR	SATRIA ZULKARNAEN BISRI	Under the guidance of each faculty member, the student will formulate an experimental plan and conduct preliminary and exploratory experiments in preparation for the master's thesis. The results obtained will be summarized and reported as appropriate, discussed with the supervisor, and the direction of the research for the master's thesis will be clarified based on the results of the discussions.

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Code	Course Title	Semester	Quarter	Main Instructor	Course Description
106u4320	Advanced Research in Applied Physics and Chemical Engineering	Spring Semester	ONE-YEAR	SATRIA ZULKARNAEN BISRI	Under the guidance of each faculty member, the student will formulate an experimental plan and conduct preliminary and exploratory experiments in preparation for the master's thesis. The results obtained will be summarized and reported as appropriate, discussed with the supervisor, and the direction of the research for the master's thesis will be clarified based on the results of the discussions.
106u4370	Advanced Research in Applied Physics and Chemical Engineering	Fall Semester	ACROSS ACADEMIC YEAR	SATRIA ZULKARNAEN BISRI	Under the guidance of each faculty member, the student will formulate an experimental plan and conduct preliminary and exploratory experiments in preparation for the master's thesis. The results obtained will be summarized and reported as appropriate, discussed with the supervisor, and the direction of the research for the master's thesis will be clarified based on the results of the discussions.
108a0605	Selected Topics in Dependable Computing	Spring Semester	1st Quarter	KANEKO Keiichi	By taking interconnection networks as examples, we discuss them with respect to their classification, basic concepts, design metrics, deadlock and starvation, routing algorithms from the technical and engineering aspects.
108a0609	Parallel Processing	Fall Semester	3rd Quarter	NAKAJO Hironori	【目的】 並列処理，並列計算機アーキテクチャの構成を理解し，受講者自身の研究の促進のために並列処理を活用できるような基礎知識を身につけることを目的とします． 【概要】 今後の高性能計算機は、複数の計算機をネットワークで接続した形態を取り、並列に処理する方式が主流になります．この授業では、LAN,WANなどの従来のネットワーク技術に加え，System Area Network (SAN)と呼ばれる並列処理のためのネットワーク技術について触れ，そのためのアーキテクチャ、ハードウェア，ソフトウェアについて解説します. (*The course description is available only in Japanese)
108a0611	Electrical Engineering and Computer Science Advanced lecture I	Spring Semester	1st Quarter	SAMESHIMA Toshiyuki	This course covers introduction current semiconductor device physics.
108a6314	Research Proposition for Selected Topics	Spring Semester	ONE-YEAR	YAMADA Hiroshi	Students proceed with original researches for Ph.D. Dissertation.
108c3019	Applied Chemistry: Advanced Seminar Ⅲ	Spring Semester	ONE-YEAR	LOUIS Marine	[Purpose] It seems that you have acquired the basic skills necessary for conducting research in the three years leading up to the master's program, but learn more to continue your research after obtaining your doctoral degree. There are many things to do. The purpose of this course is to improve each student's ability and acquire the ability to become independent as a researcher. [Summary] The position of specialized subjects is to develop the doctoral course research under the guidance of academic advisors in each laboratory, and to develop the skills necessary to grow as an independent researcher In principle, it should be conducted in a seminar format.
108c3119	Applied Chemistry: Advanced Seminar Ⅳ	Spring Semester	ONE-YEAR	LOUIS Marine	[Purpose] It seems that you have acquired the basic skills necessary for conducting research in the three years leading up to the master's program, but learn more to continue your research after obtaining your doctoral degree. There are many things to do. The purpose of this course is to improve each student's ability and acquire the ability to become independent as a researcher. [Summary] The position of specialized subjects is to develop the doctoral course research under the guidance of academic advisors in each laboratory, and to develop the skills necessary to grow as an independent researcher In principle, it should be conducted in a seminar format.
108c3219	Applied Chemistry: Advanced Seminar Ⅴ	Spring Semester	ONE-YEAR	LOUIS Marine	The aim of this course is to help students acquire (i) a high level of expertise in the field of organic materials chemistry and the related interdisciplinary and integrated fields and (ii) the abilities as independent researchers/engineers through the research proposal for your Doctor Theses, the detailed literature surveys, and discussion about the experimental results. Following the success in “Advanced Seminar of Applied Chemistry IV”, the students will train the methods to propose and conduct the research projects independently. In addition, students will train how to organize and report the experimental results sophisticatedly through presentations and discussion.

English-Taught Courses List **As of April 2025**

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Code	Course Title	Semester	Quarter	Main Instructor	Course Description
108c3319	Applied Chemistry: Advanced Study	Spring Semester	ONE-YEAR	LOUIS Marine	[Purpose] By practicing planning, investigating, reporting, and discussing research issues in the doctoral course, students will gain the advanced expertise based on chemistry and materials science, as well as the skills required of proactive researchers and engineers. [Outline] Students learn how to set a research theme for their doctoral dissertation and formulate an implementation plan, as well as how to collect and understand materials related to the research theme. They also learn how to properly organize and communicate the results of their research and investigations to others, and engage in specialized discussions. In addition, students will conduct a literature survey on their own research topic, and summarize the contents equivalent to the introduction of a doctoral dissertation in a research report based on the background and purpose of the research.
108c3405	Applied Chemistry: Practical Presentation Ⅱ	Spring Semester	ONE-YEAR	MURAKAMI Yoshihiko	Purpose: It is the responsibility of researchers to publish the results of their research at conferences, etc. and to return the results to society. In the future, there will be many opportunities to present the results and progress of research at companies, etc., and this is highly important. The purpose of this course is to practice and master a series of tasks up to the presentation, such as preparation of a presentation draft, preparation of presentation materials, practice of presentation, and presentation at an academic conference. With the consent of the academic advisor, students will present their research at academic societies. The student will be evaluated on her/his ability to give a professional presentation at an academic conference and answer questions after preparing a presentation draft and presentation materials and practicing the presentation
108c3409	Applied Chemistry: Practical Presentation Ⅱ	Spring Semester	ONE-YEAR	MURAOKA Takahiro	Purpose: It is the responsibility of researchers to publish the results of their research at conferences, etc. and to return the results to society. In the future, there will be many opportunities to present the results and progress of research at companies, etc., and this is highly important. The purpose of this course is to practice and master a series of tasks up to the presentation, such as preparation of a presentation draft, preparation of presentation materials, practice of presentation, and presentation at an academic conference. With the consent of the academic advisor, students will present their research at academic societies. The student will be evaluated on her/his ability to give a professional presentation at an academic conference and answer questions after preparing a presentation draft and presentation materials and practicing the presentation
108c3419	Applied Chemistry: Practical Presentation Ⅱ	Spring Semester	ONE-YEAR	LOUIS Marine	The aim of this course is to develop logical and creative thinking in the fields of applied chemistry and materials science in order to develop into researchers who have both in-depth knowledge and insight into their own specialised fields and a broad perspective. The course is intended to be taken in the second year of the Master's course. The objective of the master's course is to select a research theme related to applied chemistry and materials science under the supervision of a supervisor, conduct practical master's thesis research, finally summarise the research as a master's thesis, and present and discuss the results at a master's thesis presentation meeting. To achieve these goals, daily research activities in the laboratory are important. In the process of conducting research, conducting research surveys, introducing research and exchanging opinions with supervisors, laboratory staff and students on a daily basis on your own research topic and related fields in the Master's course, you will develop the logical and creative thinking that you aim for in the process of promoting your research.
108c3459	Applied Chemistry: Practical Presentation Ⅱ	Fall Semester	ACROSS ACADEMIC YEAR	MURAOKA Takahiro	Purpose: It is the responsibility of researchers to publish the results of their research at conferences, etc. and to return the results to society. In the future, there will be many opportunities to present the results and progress of research at companies, etc., and this is highly important. The purpose of this course is to practice and master a series of tasks up to the presentation, such as preparation of a presentation draft, preparation of presentation materials, practice of presentation, and presentation at an academic conference. With the consent of the academic advisor, students will present their research at academic societies. The student will be evaluated on her/his ability to give a professional presentation at an academic conference and answer questions after preparing a presentation draft and presentation materials and practicing the presentation
108l0102	Bioinformatics	Fall Semester	3rd Quarter	KURODA Yutaka	In omics analysis, this course particularly focuses on metabolomics. Metabolomics refers to the technology for measuring metabolites (metabolome) within living organisms. In this lecture, you will learn the basics of mass spectrometry and informatics technologies used in metabolomics. Additionally, you will study the interpretation of metabolome data obtained, in order to understand life.

English-Taught Courses List **As of April 2025**

（Graduate School of Engineering） **This is for your reference only.**

Code	Course Title	Semester	Quarter	Main Instructor	Course Description
108l0111	Biomolecular Reaction	Spring Semester	1st Quarter	SAKURAI Kaori	The aim of this class is to introduce students with advanced organic chemistry and chemical biology for elucidating and understanding the biological phenomena key concepts for understanding structures of compounds at atomic level, which will be an important foundation to study higher level courses at the Department of Bioengineering and Life Science. While reviewing high school-level chemistry, classes will introduce the key principles in chemistry, which involves atomic orbitals, valence bond theory, molecular orbital theory, molecular representations, acids and bases, stereochemistry. A particular emphasis is placed on learning the structures of organic compounds, so that it will serve as an introductory course for Bioorganic Chemistry courses.
108l0124	Advanced Brainstorming in English	Fall Semester	3rd Quarter	JAMES BALDWIN	The aim of this course is to introduce and practice strategies in scientific communication in English. Class activities will focus on discussion and presentation of students' research. Skills to be covered include preparing a "science pitch", developing coping strategies for discussion, making persuasive arguments, asking critical and constructive questions, delivering an effective oral presentation, and handling Q&A sessions.
108l0129	Advanced Frontieres of Biofunction Engeneering	Fall Semester	3rd Quarter	MORI Tetsushi	Each faculty member of the Department of Biotechnology will introduce cutting-edge research related to biotechnology, focusing on their own research. They will explain how technology based on " biotechnology " is important for the development of science and explain about biotechnology. While learning the needs and seeds of the advanced area, learn the way of thinking for advancing cutting-edge research in the area. The lecture will be given in English. This subject is associated with perspectives A, B, and C of the Diploma Policy.
108l1004	Advanced Biofunction Engineering Presentation I	Spring Semester	ONE-YEAR	KURODA Yutaka	Students are to develop advanced level presentation skills relevant in the field of biofunctionengineering through poster or oral presentations at a scientific meeting or a conference.
108l1054	Advanced Biofunction Engineering Presentation II	Spring Semester	ONE-YEAR	KURODA Yutaka	Students are to develop advanced level presentation skills relevant in the field of biofunctionengineering through poster or oral presentations at a scientific meeting or a conference.
108l1104	Advanced Applied Bioengineering Presentation I	Spring Semester	ONE-YEAR	KURODA Yutaka	Students are to develop advanced level presentation skills relevant in the field of applied bioengineering through poster or oral presentations at a scientific meeting or a conference.
108l1154	Advanced Applied Bioengineering Presentation II	Spring Semester	ONE-YEAR	KURODA Yutaka	Students are to develop advanced level presentation skills relevant in the field of applied bioengineering through poster or oral presentations at a scientific meeting or a conference.
108l1204	Biotechnology and Life Science: Special Seminar Ⅰ	Spring Semester	ONE-YEAR	KURODA Yutaka	In order to bring up researchers with broad scientific vision, a detailed bibliographic survey, material preparation followed by a oral presentation would be performed by each student in the masteral program. The students should have to chose a topic different from their research theme.
108m0503	Advanced Analysis of Solid Deformation	Fall Semester	3rd Quarter	YAMANAKA Akinori	This lecture provides to students fundamental theory and principal of molecular dynamics simulation which enables us to analyze deformation of materials in atomic scales. This lecture includes practical exercise to perform molecular dynamics simulation using open software LAMMPS. Note that this lecture corresponds to a optional course under the department curriculum.
108m5010	Mechanical Systems Engineering: Special Seminar Ⅰ	Spring Semester	ONE-YEAR	RAKSINCHAROENSAK Pongsathorn	In the seminar, own research must be presented periodically. Through questions and answers, we aim at obtaining sequential development of line of investigation.
108m5110	Mechanical Systems Engineering: Special Seminar Ⅱ	Spring Semester	ONE-YEAR	RAKSINCHAROENSAK Pongsathorn	In the seminar, own research must be presented periodically. Through questions and answers, we aim at obtaining sequential development of line of investigation.
108m5210	Mechanical Systems Engineering: Special Seminar Ⅲ	Spring Semester	ONE-YEAR	RAKSINCHAROENSAK Pongsathorn	In the seminar, own research must be presented periodically. Through questions and answers, we aim at obtaining sequential development of line of investigation.

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108m5310	Research Proposition for Selected Topics	Spring Semester	ONE-YEAR	RAKSINCHAROENSAK Pongsathorn	The instructor and the student will discuss about a field which is different from the research topic and determine the case study based on survey and then write a report and make a presentation about the determined topic. Students have to submit the review reports, perform presentations, and answer questions about the given topic based on engineering knowledge. *Language is depend on the decision by the instructor.
108t0001	International Communication Ⅰ	Spring Semester	1st Quarter	ONWONA-AGYEMAN Siaw	（Lecture outline） This course is designed to provide graduate students with numerous opportunities to use English for scientific communication. The ultimate goal is to prepare students to write reports based on their own research work and to communicate effectively with other researchers and scientists in English. In addition to the topics below, there will also be discussions on global issues to deepen the understanding of students interested in working in a multicultural environment. There will also be discussions on the search for sustainable ways of utilizing global resources to satisfy our food, feed, fuel, fertilizer and fiber (5Fs) needs.
108t0002	International Communication Ⅰ	Fall Semester	3rd Quarter	ONWONA-AGYEMAN Siaw	（Lecture outline） This course is designed to provide graduate students with numerous opportunities to use English for scientific communication. The ultimate goal is to prepare students to write reports based on their own research work and to effectively communicate with other researchers and scientists in English. In addition to the topics below, there will also be discussions on global issues to deepen the understanding of students interested in working in a multicultural environment. There will also be discussions on the search for sustainable ways of utilizing global resources to satisfy our energy, food and fiber needs.
108u0404	Advanced Process Engineering II	Fall Semester	3rd Quarter	KIM Sanghong	This course will provide the student with the ability to manage process safety, abnormal situation management, and environmental health issues in chemical industry.
108u0410	Advanced Lecture for Applied Physics and Chemical Engineering V	Spring Semester	ONE-YEAR	RIYA Shohei	Acquire effective presentation techniques by actually presenting in English at international conferences and other public occasions. Participate in international conferences and research meetings in Japan and abroad and present in English through oral and poster presentations. Gain experience and receive guidance from supervisors, other faculty members and general conference participants to improve their presentation skills in English.
108u4007	Applied Physics and Chemical Engineering Seminar III	Spring Semester	ONE-YEAR	TERADA Akihiko	Ph.D students investigate, analyze and present with respect to research topics of their doctoral thesis.
108u4067	Applied Physics and Chemical Engineering Seminar III	Fall Semester	ACROSS ACADEMIC YEAR	SATRIA ZULKARNAEN BISRI	Under the guidance of a faculty advisor, students learn methodologies for finding and approaching important unknown issues by themselves through the execution of doctoral research and research results obtained up to that point, as well as through literature research, in preparation for their doctoral dissertation. In addition, students will acquire the ability to make academic presentations in English and to write logically. Through these activities, students will eventually acquire sufficient skills to produce research results suitable for a doctoral degree and to become independent researchers.
108u4167	Applied Physics and Chemical Engineering Seminar IV	Fall Semester	ACROSS ACADEMIC YEAR	SATRIA ZULKARNAEN BISRI	Under the guidance of a faculty advisor, students learn methodologies for finding and approaching important unknown issues by themselves through the execution of doctoral research and research results obtained up to that point, as well as through literature research, in preparation for their doctoral dissertation. In addition, students will acquire the ability to make academic presentations in English and to write logically. Through these activities, students will eventually acquire sufficient skills to produce research results suitable for a doctoral degree and to become independent researchers.
108u4267	Applied Physics and Chemical Engineering Seminar V	Fall Semester	ACROSS ACADEMIC YEAR	SATRIA ZULKARNAEN BISRI	Credit is given to a doctoral student who is presenting a scientific talk at an international conference. The doctoral student must present an oral/poster talk at a prominent international conference, which can be held in Japan or abroad.
108u4307	Special Research Planning	Spring Semester	ONE-YEAR	TERADA Akihiko	No course description
108u4367	Special Research Planning	Fall Semester	ACROSS ACADEMIC YEAR	SATRIA ZULKARNAEN BISRI	Students will conduct research and make presentations on topics related to their doctoral dissertations, aiming to acquire "engineering design skills" such as problem-setting, conceptualization, creativity, planning and implementation, integration, expression, and communication skills necessary to compile a doctoral dissertation. In addition, the goal is to be able to clarify the position of the research by reviewing a wide range of previous research regarding the problem setting for the doctoral dissertation.

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1810101	Foundations of Sustainability Research A	Spring Semester	1st Quarter	NOMURA Yoshihiro	This course aims to enable students to comprehensively and systematically acquire the basic knowledge needed in the Joint Doctoral Program for Sustainability Research. In particular, the lectures are aimed at cultivating a sense that serves as the foundation of ethical and pluralistic ways of thinking called for in international settings. The students learn about SDGs, global issues, and intellectual properties. The lectures will deal with the essence of modern globalization and the issues and frameworks surrounding the modern international community. The lecture also offers the introduction of critical concepts to deepen the understandings of current globalized world and the Sustainable Development Goals (SDGs). Also, in order to deepen understanding of content learned in the lectures and to enhance the ability to apply the knowledge learned, workshops that provide opportunities for collaborative discussions in the humanities and sciences and for interdisciplinary debates will be held along with the lectures. In particular, students with different specializations will form a team and select a particular theme by which they will discuss ideas and formulate practical measures for resolving issues and for understanding the current state of social sustainability from a broad perspective.
1810102	Foundations of Sustainability Research B	Fall Semester	3rd Quarter	NOMURA Yoshihiro	The course is composed of two parts: 1st part includes lectures and practicum and 2nd part involves proposal-writing workshops. The 1st part (lectures) will teach scientific literacy and analysis methods (skills) basic to sustainability research. Students will learn the basic methods and principles in finding scientific evidence. In particular, lectures will deal with the basic theories in social mathematics (statistics, economics, etc.), experimental design and analysis, systems engineering, artificial intelligence, etc., as well as with analysis methods that have wide-ranging applications in the real world, such as big data analysis, GIS, and cost-benefit analysis. Also, in order to deepen understanding of content regarding scientific literacy and analysis methods learned in the lectures, case study workshops will be held along with the lectures. The 2nd part (academic writing workshops) is aimed at mastering practical techniques in writing English papers. In particular, as introduction to a proposal, students will individually write an abstract on an assigned theme, and in the process, check, evaluate, and improve the written contents as necessary, and submit a final draft, after gaining an understanding of the essential points in academic English writing (including important pointers and rules) as well as of the characteristics of humanities/social sciences and natural sciences.
1810103	Sustainability Research Advanced Practicum Ⅰ	Spring Semester	1st Quarter	NOMURA Yoshihiro	Students will undergo practicum on presentations and Q&As on their research concept prepared through the "Interdisciplinary Seminar I" course. Collaborative humanities and sciences colloquium to be attended by all 1st year students and faculty members of the Joint Program will be held to discuss and decide the triplet supervision scheme for each student, as well as to publicly present and discuss their doctoral dissertation research concept. Also, along with an introduction of the faculty members of the Joint Program, lectures will be given on common research ethics that all students must understand in the conduct of their doctoral research.
1810104	Sustainability Research Advanced Practicum Ⅱ	Fall Semester	3rd Quarter	NOMURA Yoshihiro	In this course, students will undergo practicum on presentations and Q&As on their research concept and implementation plan prepared through the "Interdisciplinary Seminar II" course. Collaborative humanities and sciences colloquium to be attended by all 1st year students and faculty members of the Joint Program will be held for students to publicly present and discuss their doctoral dissertation research concept, implementation plan, and internship experience. Also, as necessary, the colloquium will include lectures on research ethics.
1810105	Sustainability Research Advanced Practicum Ⅲ	Spring Semester	1st Quarter	NOMURA Yoshihiro	Sustainability Research Advanced Practicum III is organized by all the professors of the course as an occasion to discuss the participants' research outcomes intensively and interdisciplinary. The collaborative humanities and sciences colloquium will be held in an intensive format, where students will report on the progress of their doctoral dissertation (including research results) and internship experience, as well as hold Q&A sessions regarding the report from a broad perspective.
1810106	Sustainability Research Advanced Practicum Ⅳ	Fall Semester	3rd Quarter	NOMURA Yoshihiro	Sustainability Research Advanced Practicum is organized by all the professors of the course as an occasion to discuss the participants' research outcomes intensively in an interdisciplinary setting.

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1811001	Interdisciplinary Seminar Ⅰ	Spring Semester	1st Quarter	MISAWA Kazuhiko	Seminar). The Joint Tutorial Sessions are designed to deepen students' understanding of key academic questions within their research fields. These sessions provide opportunities to explain the purpose and significance of students' research in relation to existing research through discussions with tutors and peers. Students will develop skills in organizing and orientating their own research through feedback and collaborative reflections. The course will emphasize the distinction between a "research topic" and a "research question," which will help students identify the most appropriate starting point for their research. These sessions will complement and support the research seminars led by their academic supervisors.
1811002	Interdisciplinary Seminar Ⅰ	Spring Semester	1st Quarter	KATORI Hiroko	No course description
1811004	Interdisciplinary Seminar Ⅰ	Spring Semester	1st Quarter	NOMURA Yoshihiro	The course is aimed at enhancing core competency in the doctoral dissertation research field and at enabling students to explain the purpose and significance of their research in relation to current research trend. Students attend tutorial under a triplet research supervision scheme: one academic principal supervisor and two co-supervisors. In addition, the course trains students in each aspect of research, namely, comprehension, analysis, and implementation, which require a higher level of competency, through discussions with supervisors. The course helps students acquire consensus-building skills and the capacity to adapt to diverse value systems and environments, while leveraging new ideas, knowledge, and information obtained through meaningful academic exchanges with researchers not only in their specialized fields but also from other disciplines, into the design of their doctoral dissertation research. Interdisciplinary Seminars consist of the three parts noted below: 1. Tutorial under Triplet Research Supervision Scheme Students take seminars tutorially by academic principal supervisor. While holding regular seminars with an academic principal supervisor, students attend seminars provided by co-supervisor or laboratory work. Students are expected to actively engage in discussions with the co-supervisors and research laboratory members and in communicating their own experience, analytical approach, and ideas. 2. Workshop Discussions with the principal supervisor and the two co-supervisors will be held to help students clarify the academic contributions of their research, narrow down their research themes, and improve their doctoral dissertation research plans in consideration of opinions of faculty members in other disciplines. 3. Academic Literacy provided by the three universities (TUFS, UEC and TUAT) The lecture trains students that enable to acquire the basic skills on scientific writing, presentation and literacy on modern technology at the university level. At the end of the course, students will prepare to write a report regarding their research concept for the collaborative humanities and sciences colloquium as part of the "Advanced Practicum in Sustainability Research I" Course. Remote videoconference systems or other media may be used as necessary.
1811005	Interdisciplinary Seminar Ⅰ	Spring Semester	1st Quarter	ITO Terumasa	Seminar). The Joint Tutorial Sessions are designed to deepen students' understanding of key academic questions within their research fields. These sessions provide opportunities to explain the purpose and significance of students' research in relation to existing research through discussions with tutors and peers. Students will develop skills in organizing and orientating their own research through feedback and collaborative reflections. The course will emphasize the distinction between a "research topic" and a "research question," which will help students identify the most appropriate starting point for their research. These sessions will complement and support the research seminars led by their academic supervisors.
1811011	Interdisciplinary Seminar Ⅰ	Spring Semester	1st Quarter	MISAWA Kazuhiko	The course is aimed at enhancing core competency in the doctoral dissertation research field and at enabling students to explain the purpose and significance of their research in relation to current research trend. Students attend tutorial under a triplet research supervision scheme: one academic principal supervisor and two co-supervisors. In addition, the course trains students in each aspect of research, namely, comprehension, analysis, and implementation, which require a higher level of competency, through discussions with supervisors. The course helps students acquire consensus-building skills and the capacity to adapt to diverse value systems and environments, while leveraging new ideas, knowledge, and information obtained through meaningful academic exchanges with researchers not only in their specialized fields but also from other disciplines, into the design of their doctoral dissertation research. Interdisciplinary Seminars consist of the three parts noted below: 1. Tutorial under Triplet Research Supervision Scheme Students take seminars tutorially by academic principal supervisor. While holding regular seminars with an academic principal supervisor, students attend seminars provided by co-supervisor or laboratory work. Students are expected to actively engage in discussions with the co-supervisors and research laboratory members and in communicating their own experience, analytical approach, and ideas. 2. Workshop Discussions with the principal supervisor and the two co-supervisors will be held to help students clarify the academic contributions of their research, narrow down their research themes, and improve their doctoral dissertation research plans in consideration of opinions of faculty members in other disciplines. 3. Academic Literacy provided by the three universities (TUFS, UEC and TUAT) The lecture trains students that enable to acquire the basic skills on scientific writing, presentation and literacy on modern technology at the university level. At the end of the course, students will prepare to write a report regarding their research concept for the collaborative humanities and sciences colloquium as part of the "Advanced Practicum in Sustainability Research I" Course.

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1811101	Interdisciplinary Seminar Ⅱ	Fall Semester	3rd Quarter	MISAWA Kazuhiko	The course is aimed at enhancing core competency in the doctoral dissertation research field and at enabling students to explain the purpose and significance of their research in relation to current research trend. Students attend tutorial under a triplet research supervision scheme: one academic principal supervisor and two co-supervisors. In addition, the course trains students in each aspect of research, namely, comprehension, analysis, and implementation, which require a higher level of competency, through discussions with supervisors. The course helps students acquire consensus-building skills and the capacity to adapt to diverse value systems and environments, while leveraging new ideas, knowledge, and information obtained through meaningful academic exchanges with researchers not only in their specialized fields but also from other disciplines, into the design of their doctoral dissertation research. Interdisciplinary Seminars consist of the three parts noted below: 1. Tutorial under Triplet Research Supervision Scheme Students take seminars tutorially by academic principal supervisor. While holding regular seminars with an academic principal supervisor, students attend seminars provided by co-supervisor or laboratory work. Students are expected to actively engage in discussions with the co-supervisors and research laboratory members and in communicating their own experience, analytical approach, and ideas. 2. Workshop Discussions with the principal supervisor and the two co-supervisors will be held to help students clarify the academic contributions of their research, narrow down their research themes, and improve their doctoral dissertation research plans in consideration of opinions of faculty members in other disciplines. 3. Academic Literacy provided by the three universities (TUFS, UEC and TUAT) The lecture trains students that enable to acquire the basic skills on scientific writing, presentation and literacy on modern technology at the university level. At the end of the course, students will prepare to write a report regarding their research concept for the collaborative humanities and sciences colloquium as part of the "Advanced Practicum in Sustainability Research II" Course.
1811102	Interdisciplinary Seminar Ⅱ	Fall Semester	3rd Quarter	KATORI Hiroko	Development Economics Instructor: CHITOSE, Atsushi Summary and goals of the course: Learn the theory and application of modern econometrics or development economics through reading the text to be selected. ---- - Academic Literacy Seminar provided by UEC (online or hybrid) The seminar on the keywords below will be held when there is a request from students. Please contact with your academic principal supervisor if you want to attend. Venue: TBD Instructors: YOKOI, Hiroshi & OKADA-SHUDO, Yoshiko (UEC) Keywords: Medical Welfare Mechanics, Robotics, Visual functional device, and Nanophotonics
1811104	Interdisciplinary Seminar Ⅱ	Fall Semester	3rd Quarter	NOMURA Yoshihiro	The course is aimed at enhancing core competency in the doctoral dissertation research field and at enabling students to explain the purpose and significance of their research in relation to current research trend. Students attend tutorial under a triplet research supervision scheme: one academic principal supervisor and two co-supervisors. In addition, the course trains students in each aspect of research, namely, comprehension, analysis, and implementation, which require a higher level of competency, through discussions with supervisors. The course helps students acquire consensus-building skills and the capacity to adapt to diverse value systems and environments, while leveraging new ideas, knowledge, and information obtained through meaningful academic exchanges with researchers not only in their specialized fields but also from other disciplines, into the design of their doctoral dissertation research. Interdisciplinary Seminars consist of the three parts noted below: 1. Tutorial under Triplet Research Supervision Scheme Students take seminars tutorially by academic principal supervisor. While holding regular seminars with an academic principal supervisor, students attend seminars provided by co-supervisor or laboratory work. Students are expected to actively engage in discussions with the co-supervisors and research laboratory members and in communicating their own experience, analytical approach, and ideas. 2. Workshop Discussions with the principal supervisor and the two co-supervisors will be held to help students clarify the academic contributions of their research, narrow down their research themes, and improve their doctoral dissertation research plans in consideration of opinions of faculty members in other disciplines. 3. Academic Literacy provided by the three universities (TUFS, UEC and TUAT) The lecture trains students that enable to acquire the basic skills on scientific writing, presentation and literacy on modern technology at the university level. At the end of the course, students will prepare to write a report regarding their research concept for the collaborative humanities and sciences colloquium as part of the "Advanced Practicum in Sustainability Research II" Course. Remote videoconference systems or other media may be used as necessary.

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1811105	Interdisciplinary Seminar Ⅱ	Fall Semester	3rd Quarter	ITO Terumasa	The course is aimed at enhancing core competency in the doctoral dissertation research field and at enabling students to explain the purpose and significance of their research in relation to current research trend. Students attend tutorial under a triplet research supervision scheme: one academic principal supervisor and two co-supervisors. In addition, the course trains students in each aspect of research, namely, comprehension, analysis, and implementation, which require a higher level of competency, through discussions with supervisors. The course helps students acquire consensus-building skills and the capacity to adapt to diverse value systems and environments, while leveraging new ideas, knowledge, and information obtained through meaningful academic exchanges with researchers not only in their specialized fields but also from other disciplines, into the design of their doctoral dissertation research. Interdisciplinary Seminars consist of the three parts noted below: 1. Tutorial under Triplet Research Supervision Scheme Students take seminars tutorially by academic principal supervisor. While holding regular seminars with an academic principal supervisor, students attend seminars provided by co-supervisor or laboratory work. Students are expected to actively engage in discussions with the co-supervisors and research laboratory members and in communicating their own experience, analytical approach, and ideas. 2. Workshop Discussions with the principal supervisor and the two co-supervisors will be held to help students clarify the academic contributions of their research, narrow down their research themes, and improve their doctoral dissertation research plans in consideration of opinions of faculty members in other disciplines. 3. Academic Literacy provided by the three universities (TUFS, UEC and TUAT) The lecture trains students that enable to acquire the basic skills on scientific writing, presentation and literacy on modern technology at the university level. At the end of the course, students will prepare to write a report regarding their research concept for the collaborative humanities and sciences colloquium as part of the "Advanced Practicum in Sustainability Research II" Course.
1811111	Interdisciplinary Seminar Ⅱ	Fall Semester	3rd Quarter	MISAWA Kazuhiko	The course is aimed at enhancing core competency in the doctoral dissertation research field and at enabling students to explain the purpose and significance of their research in relation to current research trend. Students attend tutorial under a triplet research supervision scheme: one academic principal supervisor and two co-supervisors. In addition, the course trains students in each aspect of research, namely, comprehension, analysis, and implementation, which require a higher level of competency, through discussions with supervisors. The course helps students acquire consensus-building skills and the capacity to adapt to diverse value systems and environments, while leveraging new ideas, knowledge, and information obtained through meaningful academic exchanges with researchers not only in their specialized fields but also from other disciplines, into the design of their doctoral dissertation research. Interdisciplinary Seminars consist of the three parts noted below:1. Tutorial under Triplet Research Supervision Scheme Students take seminars tutorially by academic principal supervisor. While holding regular seminars with an academic principal supervisor, students attend seminars provided by co-supervisor or laboratory work. Students are expected to actively engage in discussions with the co-supervisors and research laboratory members and in communicating their own experience, analytical approach, and ideas. 2. Workshop Discussions with the principal supervisor and the two co-supervisors will be held to help students clarify the academic contributions of their research, narrow down their research themes, and improve their doctoral dissertation research plans in consideration of opinions of faculty members in other disciplines. 3. Academic Literacy provided by the three universities (TUFS, UEC and TUAT) The lecture trains students that enable to acquire the basic skills on scientific writing, presentation and literacy on modern technology at the university level. At the end of the course, students will prepare to write a report regarding their research concept for the collaborative humanities and sciences colloquium as part of the "Advanced Practicum in Sustainability Research I" Course. Remote videoconference systems or other media may be used as necessary.
1811201	Interdisciplinary Seminar Ⅲ	Spring Semester	1st Quarter	MISAWA Kazuhiko	Students will attend seminars under a triplet research supervision scheme: one principal supervisor and two co-supervisors. The seminars are centered on discussion and laboratory work under the supervision of three research supervisors. Students will finalize their research plan as well as improve their competency through seminars and laboratory work at the research laboratory of the principal supervisor. In the process, students are expected to recognize the relationship and relevance of their research theme with related fields of study. Students are also expected to acquire a diverse academic perspective, which is essential in sustainability research, and understand the usefulness of learning and conceptualization methods used in other disciplines. In order to instill an interdisciplinary perspective centered on their doctoral dissertation theme, students will hold discussions from various perspectives with students taking Interdisciplinary Seminar I to IV, and learn knowledge and approaches to analysis and social implementation in other fields.

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1811301	Interdisciplinary Seminar Ⅳ	Fall Semester	3rd Quarter	MISAWA Kazuhiko	Students will attend seminars under a triplet research supervision scheme: one principal supervisor and two assistant supervisors. The seminars are centered on discussion and laboratory work under the supervision of three research supervisors. Students will finalize their research plan as well as improve their competency through seminars and laboratory work at the research laboratory of the principal supervisor. In the seminars, students will prepare a presentation at an international conference and publication of their drafts to an international scholarly journal. In the process, students are expected to recognize the relationship and relevance of their research theme with related fields of study. Students are also expected to acquire a diverse academic perspective, which is essential in sustainability research, and understand the usefulness of learning and conceptualization methods used in other disciplines. In order to instill an interdisciplinary perspective centered on their doctoral dissertation theme, students will hold discussions from various perspectives with students taking Interdisciplinary Seminar I to IV, and learn knowledge and approaches to analysis and social implementation in other fields.
1811401	Interdisciplinary Seminar Ⅴ	Spring Semester	1st Quarter	MISAWA Kazuhiko	The seminars are centered on discussion and laboratory work under the supervision of three academic supervisors. Students will report the content of their doctoral dissertation at seminars and improve the degree of completion of their dissertation under a triplet research supervision scheme: one principal supervisor and two co-supervisors. Students will finalize their research plan, vision and structure of their drafts of dissertations, as well as improve their competency through seminars and laboratory work at the research laboratory of the principal supervisor. In the process, students are expected to recognize the relationship and relevance of their research theme with related fields of study. Students are also expected to acquire a diverse academic perspective, which is essential in sustainability research, and understand the usefulness of learning and conceptualization methods used in other disciplines. In order to instill an interdisciplinary perspective centered on their doctoral dissertation theme, students will hold discussions from various perspectives with students taking Interdisciplinary Seminar I to IV, and learn knowledge and approaches to analysis and social implementation in other fields.
1811501	Interdisciplinary Seminar Ⅵ	Fall Semester	3rd Quarter	MISAWA Kazuhiko	In this seminar, students will be required to complete their doctoral dissertation. Using the opportunities to report the content of their doctoral dissertation at seminars held under a triplet research supervision scheme (one principal supervisor and two co-supervisors), students will finalize their dissertation by going through the cycle of writing the draft, reporting and receiving comments from faculty members and research laboratory members, and revising (including additional research/experiments). In the process of finalizing their doctoral dissertation, they will endeavor to enhance the competency and implementability of their doctoral dissertation by incorporating comments from the principal supervisor, research laboratory members, as well as the co-supervisors. The principal supervisor and/or the co-supervisors shall give advices and instructions from perspectives in the their research disciplines to facilitate the completion of the student’s doctoral dissertation.
1811601	Extramural Internship	Spring Semester	1st Quarter	MISAWA Kazuhiko	NGOs, and other public organizations (including research institutions), as well as development consulting firms, multinational manufacturers, and other private companies.
1811602	Extramural Internship	Spring Semester	1st Quarter	KATORI Hiroko	NGOs, and other public organizations (including research institutions), as well as development consulting firms, multinational manufacturers, and other private companies.
1811605	Extramural Internship	Spring Semester	1st Quarter	ITO Terumasa	NGOs, and other public organizations (including research institutions), as well as development consulting firms, multinational manufacturers, and other private companies.
1811612	Extramural Internship	Fall Semester	3rd Quarter	KATORI Hiroko	NGOs, and other public organizations (including research institutions), as well as development consulting firms, multinational manufacturers, and other private companies.
1811615	Extramural Internship	Fall Semester	3rd Quarter	ITO Terumasa	NGOs, and other public organizations (including research institutions), as well as development consulting firms, multinational manufacturers, and other private companies.

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1811701	Intramural Internship	Spring Semester	1st Quarter	MISAWA Kazuhiko	The internship is aimed at working students who are unable to intern at the candidate host institutions and companies. Students will conduct laboratory work at the research laboratories of faculty members in other research institutes within the three universities. Students will learn ideas and social implementation approaches in other fields as well as improve their ability to adapt and communicate in different research environments by conducting laboratory work (equivalent to 30 classes) at the research laboratories of faculty members in other research institutes within the three universities.
1811702	Intramural Internship	Spring Semester	1st Quarter	KATORI Hiroko	The internship is aimed at working students who are unable to intern at the candidate host institutions and companies. Students will conduct laboratory work at the research laboratories of faculty members in other research institutes within the three universities. Students will learn ideas and social implementation approaches in other fields as well as improve their ability to adapt and communicate in different research environments by conducting laboratory work (equivalent to 30 classes) at the research laboratories of faculty members in other research institutes within the three universities.
1811705	Intramural Internship	Spring Semester	1st Quarter	ITO Terumasa	The internship is aimed at working students who are unable to intern at the candidate host institutions and companies. Students will conduct laboratory work at the research laboratories of faculty members in other research institutes within the three universities. Students will learn ideas and social implementation approaches in other fields as well as improve their ability to adapt and communicate in different research environments by conducting laboratory work (equivalent to 30 classes) at the research laboratories of faculty members in other research institutes within the three universities.
1811711	Intramural Internship	Fall Semester	3rd Quarter	MISAWA Kazuhiko	The internship is aimed at working students who are unable to intern at the candidate host institutions and companies. Students will conduct laboratory work at the research laboratories of faculty members in other research institutes within the three universities. Students will learn ideas and social implementation approaches in other fields as well as improve their ability to adapt and communicate in different research environments by conducting laboratory work (equivalent to 30 classes) at the research laboratories of faculty members in other research institutes within the three universities.
1811712	Intramural Internship	Fall Semester	3rd Quarter	KATORI Hiroko	The internship is aimed at working students who are unable to intern at the candidate host institutions and companies. Students will conduct laboratory work at the research laboratories of faculty members in other research institutes within the three universities. Students will learn ideas and social implementation approaches in other fields as well as improve their ability to adapt and communicate in different research environments by conducting laboratory work (equivalent to 30 classes) at the research laboratories of faculty members in other research institutes within the three universities.
1811713	Intramural Internship	Fall Semester	3rd Quarter	CHITOSE Atsushi	The internship is aimed at working students who are unable to intern at the candidate host institutions and companies. Students will conduct laboratory work at the research laboratories of faculty members in other research institutes within the three universities. Students will learn ideas and social implementation approaches in other fields as well as improve their ability to adapt and communicate in different research environments by conducting laboratory work (equivalent to 30 classes) at the research laboratories of faculty members in other research institutes within the three universities.
1811715	Intramural Internship	Fall Semester	3rd Quarter	ITO Terumasa	The internship is aimed at working students who are unable to intern at the candidate host institutions and companies. Students will conduct laboratory work at the research laboratories of faculty members in other research institutes within the three universities. Students will learn ideas and social implementation approaches in other fields as well as improve their ability to adapt and communicate in different research environments by conducting laboratory work (equivalent to 30 classes) at the research laboratories of faculty members in other research institutes within the three universities.