(2) School of Life and Environmental Sciences: Interdisciplinary Program in Life and Environmental Sciences

School of Life and Environmental Sciences

Course Number	Course Name	Instructional Type	Credits	standard registration year	Term	Meeting Days,Period etc.	Classroom	Instructor	Course Overview	Remarks
EG00112	Technical English IS	2	1.5	2	SprABC	Wed5	2B206	Kamijo Takashi	This course aims to help students develop abilities necessary for science communication in English.	Permitted students only. Limited to Life and Environmental Sciences undergraduate students enrolled on or before 2019. Lecture is conducted in English. Hybrid or Others
EG00122	Technical English IF	2	1.5	2	FallABC	Wed5	2B206	Kamijo Takashi	This course aims to help students develop abilities necessary for science communication in English.	Permitted students only. Limited to Life and Environmental Sciences undergraduate students enrolled on or before 2019. Lecture is conducted in English. Hybrid or Others
EG02011	Physics	1	1.0	1	FallAB	Thu4		Neves Marcos Antonio,Kokawa Mito	Introduction to physics for life and environmental sciences. Basic areas of mechanics, thermodynamics, and waves will be covered.	Lecture is conducted in English. Online(Asynchronous) その他の実施形態.
EG02021	Mathematics	1	1.0	1	FallAB	Fri5		Tofael Ahamed	Introduction to mathematics for life and environmental sciences covers application of calculus using applied differentiation and integration, logarithmic and exponential functions, first order differential equations, matrix and probability. This course emphasizes to solve problems related to life and environmental sciences using a wide array of mathematical solutions.	Lecture is conducted in English. Online(Synchronous)
EG02031	Statistics	1	1.0	2	FallC	Tue2 Fri1	2C102	Irving Louis John	Introduction to statistics for life and environmental sciences.	Lecture is conducted in English. Online(Synchronous). face-to-face A part of this lecture is planned as face-to-face. Watch TWINS Bulletin Board and announcements on manaba for schedule of face-to-face classes. The class format and content may be changed due to COVID-19 infection status and other factors.
EG02041	Advanced Mathematics	1	1.0	2	SprAB	Thu6		Tofael Ahamed	In this course, students will have a short review of applied calculus and introduces with the advanced mathematics sections like geometrical meaning of differential equations, solution of ordinary and partial differential equations, numerical analysis and Laplace transformation. These advanced mathematical skills will be invaluable to them to interpret the concepts of modeling of real world problems related to life and environmental sciences.	Lecture is conducted in English. Online(Synchronous)
EG02211	Chemistry I	1	1.0	1	FallA	Tue/Fri 6		Kang Seung Won	Introduction to general chemistry for life and environmental sciences.	Lecture is conducted in English. Online(Synchronous)
EG02221	Chemistry II	1	1.0	1	FallB	Tue/Fri 6		Kang Seung Won	Introduction to general chemistry for life and environmental sciences.	Lecture is conducted in English. Online(Synchronous)
EG02231	Chemistry III	1	1.0	1	FallC	Tue5 Thu6		Kang Seung Won	Introduction to general chemistry for life and environmental sciences.	Lecture is conducted in English. Online(Synchronous)
EG03012	Paper Preparation and Presentation	2	1.0	4	FallC	by appointment		Kyono Atsushi,Kato Hiroaki,Kamijo Takashi	Preparation and help in writing the graduation thesis which is required towards the end of your fourth year. Also, preparation for the presentation of your results during the Presentation Meeting of all the graduation theses.	For students who started graduate research in spring semester Lecture is conducted in English. face-to-face Limited to Life and Environmental Sciences Undergraduate Students.

Course Number	Course Name	Instructional Type	Credits	standard registration year	Term	Meeting Days, Period etc.	Classroom	Instructor	Course Overview	Remarks
EG03022	Paper Preparation and Presentation	2	1.0	4	SprAB	by appointment		Kyono Atsushi, Kato Hiroaki, Kamijo Takashi	Preparation and help in writing the graduation thesis which is required towards the end of your fourth year. Also, preparation for the presentation of your results during the Presentation Meeting of all the graduation theses.	Lecture is conducted in English. face-to-face Limited to Life and Environmental Sciences Undergraduate Students.

College of Biological Sciences

Course Number	Course Name	Instructional Type	Credits	standard registration year	Term	Meeting Days, Period etc.	Classroom	Instructor	Course Overview	Remarks
EB16013	Laboratory and Field Studies in Marine Biology	3	1.5	2	Spr Vac	Intensive	Shimoda	Yaguchi Shunsuke, Nakano Hiroaki, Agostini Sylvain Leonard Georges	This course aims to understand biodiversity through the collection of coastal and planktonic marine organisms and observation of their body plan and development.	Lecture is conducted in English. 3/6-3/10 Approval following the registration arrangement.. Students must be enrolled in Gakkensai.. Will be registered by the office.. face-to-face Prerequisite; Introduction to Biology I, Marine Biology I.
EB50153	Animal Systematics, Laboratory II	3	1.5	2, 3	SprB	Mon/Tue 4-6	2B403	Morino Yoshiaki, Honda Masanao	In this course you learn about comparative anatomy of echinoderms (sea urchin, starfish and sea cucumber), molluscs (bivalves, gastropods, and cephalopods), and vertebrates (lamprey, hagfish, turtles). You also observe embryogenesis for some species to learn evolution of larval forms. In addition, you learn basic statistics in taxonomy.	Lecture is conducted in English. EG30153 credit holders are ineligible.
EB50171	Animal Systematics II	1	1.0	2, 3	FallC	Wed4, 5	2B208, 2B209	Wada Hiroshi	Students will learn the methodology to understand the diversity of multicellular animals from the viewpoint of evolutionary biology. In particular, learn in detail the origin of the metazoans, the evolution of the diploblasts, mollusks, echinoderms, and chordates, and learn how to reconstruct the evolutionary history by comparing modern animals.	This lecture is planned as face-to-face, but it may be changed to online depending on the situation. See Syllabus or recent information from manaba for detail. Open in even number years. Lecture is conducted in English. Biodiversity course. GloBE Course. JTP Who has credit of EB50121 or EB50131 is ineligible.
EB50211	Plant Taxonomy I	1	1.0	2, 3	SprAB	Fri2	2H101	Ishida Ken-ichiro	Diversity, classification, morphology, ultrastructure, life history and phylogeny of non-green algae – glaucophytes, rhodophytes, cryptophytes, chlorarachniophytes, euglenophytes, dinoflagellates, haptophytes, and stramenopiles.	This lecture is planned as face-to-face, but it may be changed to online depending on the situation. See Syllabus or recent information from manaba for detail. Lecture is conducted in English. Biodiversity course. GloBE Course. Expected to attend all I, II, III through a year.. JTP EG20211 credit holders are ineligible.
EB50221	Plant Taxonomy II	1	1.0	2, 3	FallAB	Fri2	2H101	Nakayama Takeshi	Diversity, classification, morphology, ultrastructure, life history and phylogeny of green plants, including chlorophytes and land plants.	This lecture is carried out online. See Syllabus or recent information from manaba for detail. Lecture is conducted in English. Biodiversity course. Expected to attend all I, II, III through a year.. JTP EG30221 credit holders are ineligible.

Course Number	Course Name	Instructional Type	Credits	standard registration year	Term	Meeting Days,Period etc.	Classroom	Instructor	Course Overview	Remarks
EB50263	Plant Systematics, Laboratory II	3	1.5	2, 3	SprB	Thu/Fri 4-6	2D417	Ishida Ken-ichiro,Nakayama Takeshi,Shirator i Takashi	Collecting, observing, identifying and culturing unicellular freshwater protists (algae and protozoa). Students will use light and electron microscopes and a few basic molecular techniques.	Prerequisite: Introduction to Biology I-IV, Plant Taxonomy I. Lecture is conducted in English. Approval following the registration arrangement.. Biodiversity course. Students must be enrolled in Gakkensai.. Will be registered by the office.. face-to-face
EB59101	Protistology	1	1.0	2 - 4	FallC	Fri2,3	2H101	Ishida Ken-ichiro,Degawa Yosuke,Numata Osamu,kuwayama hidekazu,Miyamur a Shinichi	Topics in protistology. Cellular evolution, cell biology, sex and reproduction, phylogeny and ecology of protists will be the subjects of this lecture.	This lecture is planned as face-to-face, but it may be changed to online depending on the situation. See Syllabus or recent information from manaba for detail. Lecture is conducted in English. Biodiversity course. JTP EG39101 credit holders are ineligible.
EB59141	Vertebrate Morphology	1	1.0	2, 3	FallC	Thu4,5	2B411	Wada Hiroshi,Tajima Yuko,Koyabu Daisuke	The morphology of various vertebrates is compared and its evolutionary biological background is explained. In particular, the ancestors of vertebrates, diversity of jawless fish, fin morphology of teleosts, morphological evolution associated with terrestrialization, diversity of mammals, and evolution of marine mammals are explained from a comparative morphological viewpoint.	Biennially conducted in English (odd-number years) or Japanese (even-number year). This lecture is planned as face-to-face, but it may be changed to online depending on the situation. See Syllabus or recent information from manaba for detail. Biodiversity course
EB59151	Vertebrate Evolution	1	1.0	2 - 4	FallAB	Mon3	2B208, 2B209	Irving Louis John	This course looks at the major transitions during vertebrate evolution, particularly focussing on the transition between water and land, and the adaptations which facilitated that transition. The diversification of animal life on land, and the subsequent return of some groups to water will be studied. This course will have a strong evolutionary biology focus.	This lecture is carried out online. See Syllabus or recent information from manaba for detail. Lecture is conducted in English. Biodiversity course. GloBE Course. JTP EB59131 is ineligible.
EB60014	Programming I	4	1.0	2, 3	FallAB	Thu1		Tokunaga(Toquena ga) Yukihiko	In this lecture, students learn programing techniques for manipulating a variety of data. They will also learn simulation techniques with individual-based models. The programming language used is Ruby.	Lecture is conducted in English. Computational Biology & Bioinformatics Course. JTP. Online(Synchronous) EG20014 credit holders are ineligible.
EB62011	Genome Biology I	1	1.0	2, 3	SprAB	Tue1		kuwayama hidekazu	Lectures will cover basic knowledge on the structure and function of the genome, as well as technologies for DNA and genome analyses.	This lecture is planned as on line style. See Syllabus or recent information from manaba for detail. Lecture is conducted in English. Computational Biology & Bioinformatics Course. GloBE Course. JTP EG22011 credit holders are ineligible.

Course Number	Course Name	Instructional Type	Credits	standard registration year	Term	Meeting Days, Period etc.	Classroom	Instructor	Course Overview	Remarks
EB63111	Molecular Evolution I	1	1.0	2, 3	SprAB	Mon2		Inagaki Yuji	Molecular evolution is a research field that aims to elucidate the evolution of organisms based on information macromolecules such as DNA and proteins. In this lecture, the basic concepts of molecular evolution and the basics of molecular phylogenetic methods will be explained.	オンラインで開講。試験は対面実施の予定。 COVID-19の感染状況等により授業形態や授業内容を変更する可能性があります。履修に際し、適宜、最新のシラバスやmanaba等の情報を確認してください Lecture is conducted in English. Computational Biology & Bioinformatics Course. GloBE Course. JTP
EB63141	Evolutionary Developmental Biology	1	1.0	2, 3				Wada Hiroshi	This course will focus on how molecular evolution of the genome and evolution of the morphology are related. After learned about several kinds of molecular evolutionary processes, students will learn how the genome construct the 3D morphology during embryogenesis. Combining what they learned about molecular evolution and developmental biology, students will learn several topics where the morphological evolution is linked with the molecular evolution of genome.	This lecture is planned as face-to-face, but it may be changed to online depending on the situation. See Syllabus or recent information from manaba for detail. Open in odd number years. Lecture is conducted in English. Computational Biology & Bioinformatics Course. JTP
EB64021	Biometry II	1	1.0	2, 3	FallAB	Fri3		Tokunaga(Toquenaga) Yukihiko	This lecture introduces the dark side of statistics. Starting with randomization techniques, students learn relationships among different domains of statistical ideas: parametric, nonparametric, null hypothesis significance testing, information-theoretic methods, and the Bayesian methods.	This lecture is planned as on line style. See Syllabus or recent information from manaba for detail. Lecture is conducted in English. Computational Biology & Bioinformatics Course. JTP. Online(Synchronous) EG34021 credit holders are ineligible.
EB64111	Theoretical Ecology	1	1.0	2, 3	SprAB	Thu1		Tokunaga(Toquenaga) Yukihiko	This course illustrates theoretical aspects of ecology with examples of laboratory experiments to connect mathematical expressions with ecological phenomena in nature.	Lecture is conducted in English. Computational Biology & Bioinformatics Course. JTP EG34111 credit holders are ineligible.
EB64153	Laboratory and Field Studies in Ecology [Terrestrial]	3	1.5	3	Sum Vac	Intensive		Tokunaga(Toquenaga) Yukihiko	Students learn theoretical thinking in the field in Japan by comparing results of field experiments and observation with thosegenerated by computer simulations.	Lecture is conducted in English. 9/24-9/28 Approval following the registration arrangement.. Computational Biology & Bioinformatics Course. Students must be enrolled in Gakkensai.. Will be registered by the office.. Online(Synchronous)
EB71031	Cell Biology III	1	1.0	2, 3	FallAB	Thu3	2B412	Chiba Tomoki	Proteins are in a dynamic state, which is regulated by protein synthesis and degradation pathways. Each protein is degraded in a degree of selectivity, and its regulation is essential for the cell homeostasis and viability. In this class, we will learn the latest findings on the molecular mechanism of selective protein degradation and its physiological importance.	This lecture is planned as face-to-face, but it may be changed to online depending on the situation. See Syllabus or recent information from manaba for detail. Lecture is conducted in English. Molecular and Cellular Biology Course. GloBE Course. JTP EB71131 or EG35131 credit holders are ineligible.

Course Number	Course Name	Instructional Type	Credits	standard registration year	Term	Meeting Days, Period etc.	Classroom	Instructor	Course Overview	Remarks
EB71153	Molecular Biology, Laboratory	3	1.5	2, 3	SprA	Thu/Fri 4-6	2D413	Sakamoto Kazuichi, Chiba Tomoki, Tsuruta Fuminori	Learn experimental techniques for molecular cell biology, such as gene knockdown experiments using nematodes by feeding RNAi method, gene expression analysis using mouse embryo and stress response analysis of cells.	Lecture is conducted in English. Approval following the registration arrangement.. Molecular and Cellular Biology Course. Including Genetic Recombination Experiment. Students must be enrolled in Gakkensai.. Will be registered by the office.. face-to-face Who has credit of EG35153 is ineligible.
EB72121	Developmental Biology II	1	1.0	2, 3	FallAB	Tue3	2H101	Niwa Ryusuke, Kobayashi Satoru, Sasakura Yasunori, Yaguchi Shunsuke, HAYASHI YOSHIKI, HAYASHI MAKOTO, shimada yuko, okamoto naoki	A goal of this course is to understand several important topics about animal developmental biology. Lectures in this course particularly focus on sex determination, gametogenesis, metamorphosis, axis specification, neural development, and diseases.	A part of this lecture is planned as face-to-face. Watch TWINS Bulletin Board and announcements on manaba for shedule of face-to-face classes. Lecture is conducted in English. Molecular and Cellular Biology Course. Human Biology course. GloBE Course. JTP
EB72911	Marine Biology I	1	1.0	2, 3	SprAB	Wed3		Inaba Kazuo, Agostini Sylvain Leonard Georges	Lecture will give you several topics on physical, chemical and biological properties of ocean to understand the physiology, reproduction, development, biodiversity and ecology of marine invertebrates and fish. This class will especially focus on the following aspects of marine life: life cycle, locomotion, sensory reception, biomineralization, biogeochemical distribution, photosynthesis, respiration, calcification, nitrogen fixation and the impact of climate change. We will give examples of marine organisms under planktonic and benthic conditions and coral reef. The history and present situation of marine biology research will be also included.	This lecture is planned as on line style. See Syllabus or recent information from manaba for detail. Lecture is conducted in English. Molecular and Cellular Biology Course. GloBE Course. JTP EG22911 credit holders are ineligible.
EB72921	Marine Biology II	1	1.0	2, 3	FallAB	Wed3		Inaba Kazuo, Sasakura Yasunori, Yaguchi Shunsuke, Shiba Kogiku, Nakano Hiroaki, Wada Shigeki, Horie Takeo, Agostini Sylvain Leonard Georges	Lecture will provide several topics on marine organisms, including fertilization, cilia and flagella, gene-manupulation, development, self-non-self recognition, evolution, animal behavior, population ecology and marine environment. The teaching staff of Shimoda Marine Research Center will tell you about recent progress of their own research.	This lecture is carried out online. See Syllabus or recent information from manaba for detail. Lecture is conducted in English. Molecular and Cellular Biology Course. JTP EG32921 credit holders are ineligible.
EB74111	Plant Physiology I	1	1.0	2, 3	SprAB	Fri1		Satoh Shinobu, Furukawa Jun, Miura Kenji, Irving Louis John, Ono Michiyuki	In this lecture, the relationship between various physiological phenomena and the environmental factors in the life history of higher plant will be overviewed for the understanding from the viewpoint at whole plant to cell levels with adding the latest molecular biological findings.	This lecture is planned as on line style. See Syllabus or recent information from manaba for detail. Lecture is conducted in English. Molecular and Cellular Biology Course. GloBE Course. JTP EG24111 credit holders are ineligible.
EB74131	Plant Physiology II	1	1.0	2, 3	FallAB	Fri1	2B208, 2B209	Iwai Hiroaki, Suzaki Takuya	This lecture introduces several important topics for your further understanding of plant physiology, which includes recent advances in the research of vegetative and reproductive development, and symbiosis with microorganisms in higher plants.	This lecture is carried out online.. See Syllabus or recent information from manaba for detail. Lecture is conducted in English. Molecular and Cellular Biology Course. JTP. Online(Asynchronous) 1-5 (1 Oct to 29-Oct): Hiroaki Iwai, Online (Asynchronous) 6-10 (12 Nov to 17-Dec): Takuya Suzaki, Online (Asynchronous)

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EB74163	Plant Physiology, Laboratory	3	1.5	2, 3	FallA	Mon/Tue 4-6	2D413	Iwai Hiroaki, Satoh Shinobu, Furukawa Jun, Irving Louis John	This course aims to provide an understanding of the roles of hormones, proteins, polysaccharides and genes in plant development and functions. It also covers basic laboratory skills for plant physiology and moelcular biology.	Including recombinant DNA experiments. Prerequisite; Introduction to Biology I-IV, Plant Physiology I, Training session for the registration of the students engaged in recombinant DNA experiments. Lecture is conducted in English. Approval following the registration arrangement.. Molecular and Cellular Biology Course. Including Genetic Recombination Experiment. Students must be enrolled in Gakkensai.. Will be registered by the office.. face-to-face
EB74211	Metabolic and Physiological Chemistry I	1	1.0	2, 3	SprAB	Thu1	2H101	Suzuki Iwane	The main topics for this course will be photosynthetic energy conversion, primary and secondary carbon metabolism including C3, C4 and CAM metabolisms, photorespiration, and mitochondrial respiration.	This lecture is planned as face-to-face, but it may be changed to online depending on the situation. See Syllabus or recent information from manaba for detail. Lecture is conducted in English. Molecular and Cellular Biology Course. GloBE Course. JTP EG24211 credit holders are ineligible.
EB74221	Metabolic and Physiological Chemistry II	1	1.0	2, 3	FallAB	Thu1	2B411	Minoda Ayumi, Irving Louis John	This course provides an overview of metabolism, which supports all life activities. In the first part of the course, we will discuss the following four topics; (1) Catabolism and Anabolism, (2) Energy conversion, (3) Nutrient transport and Assimilation, (4) Regulation of metabolic pathways. At the latter part, we will explore the environmental regulation of photosynthesis (light response, CO2 response) with the goal of understanding plant adaptations to different environments. We are welcome the students who did not take Metabolic Biochemistry Course I.	This lecture is carried out online. See Syllabus or recent information from manaba for detail. Lecture is conducted in English. Molecular and Cellular Biology Course. JTP Who has credit of EB74231 or EG34231 or EG34221 is ineligible.
EB74273	Metabolic and Physiological Chemistry, Laboratory	3	1.5	2, 3	FallA	Thu/Fri 4-6	2D410	Suzuki Iwane, Minoda Ayumi	Experimental measurements of gas metabolism in photosynthesis, photorespiration and respiration, and glycolate metabolism by microlagae. Mechanisms for acclimation to CO2 stress, N-limitation and P-limitation at molecular level in microlagae. Analysis of the function of selenium in marine coccolithophorids using radioactive Se-125.	Prerequisite; Introduction to Biology I-IV, Metabolic and Physiological Chemistry I. Lecture is conducted in English. Approval following the registration arrangement.. Molecular and Cellular Biology Course. Students must be enrolled in Gakkensai.. Will be registered by the office.. face-to-face
EB82131	Chemical Ecology	1	1.0	2, 3	FallAB	Fri4	2C107	Yokoi Tomoyuki, Matsuyama Shigeru, Yamaji Keiko, Kinoshita Natsuko	This lecture introduces chemical aspects of relationships between individual insects, animals, plants and microorganisms of the same (pheromone) or different (allelochemicals) species.	Lecture is conducted in English. Applied Biology course. JTP EB82131 credit holders are ineligible.
EB83141	Plant Biotechnology I	1	1.0	2, 3	SprC	Intensive		Watanabe Kazuo, Kikuchi Akira, Ono Michiyuki	Lectures will cover topics on plant biotechnology including control of flowering time, circadian rhuythms, photoperiodic responses, organ size and responses to environmental stresses.	This lecture is planned as on line style. See Syllabus or recent information from manaba for detail. Open in even number years. Lecture is conducted in English. 7/12, 7/14 Applied Biology course. JTP. Online(Synchronous). Online(Asynchronous) Who has credit of EB83111 or EG33111 is ineligible.

Course Number	Course Name	Instructional Type	Credits	standard registration year	Term	Meeting Days,Period etc.	Classroom	Instructor	Course Overview	Remarks
EB83161	Biotechnology Literacy	1	1.0	2, 3				Watanabe Kazuo,Kikuchi Akira,Ono Michiyuki,Oguchi Taichi	Topics covering ethical, legal and social issues in life & environmental sciences.	This lecture is planned as on line style. See Syllabus or recent information from manaba for detail. Open in odd number years. Lecture is conducted in English. Applied Biology course. JTP. CDP. G-course. Online(Synchronous). Online(Asynchronous) Who has credit of EB83131 or EG23131 is ineligible.
EG10013	Basic Biological Sciences, Laboratory	3	1.0	2	Annual	by appointment	2B301, 2D413	Dean	This course aims to train the ability of the observation and the experimental technique on the various biological phenonmena	Limited to G30 students who enrolled by 2018. Introduction to Biology I-V are prerequisite for non-Bio students. Lecture is conducted in English. Students must be enrolled in Gakkensai.. Will be registered by the office. The course will be offered only to those who are recognized as having special circumstances such as graduation requirements.
EG10212	Technical English IIS	2	1.5	3	Annual	by appointment		Dean	This course aims to help students develop abilities necessary for science communication in English.	For students of College of Biological Sciences, CBS. This course is only open to students who have been admitted as having special circumstances such as studying abroad. Lecture is conducted in English. Open under special circumstances, such as for studying abroad.. Will be registered by the office.
EG10222	Technical English IIF	2	1.5	3	Annual	by appointment		Dean	This course aims to help students develop abilities necessary for science communication in English.	For students of College of Biological Sciences, CBS. This course is only open to students who have been admitted as having special circumstances such as studying abroad. Lecture is conducted in English. Open under special circumstances, such as for studying abroad.. Will be registered by the office.
EG11442	English Communication for Biology I	2	1.0	2	Annual	by appointment		Dean	This course prepares students to communicate science both within their discipline and with a wider audience. Through active class discussions and practical assignments, students will develop understanding and practical skills in basic communication theory, and written and oral communication.	For students of College of Biological Sciences. This course is only open to students who have been admitted as having special circumstances such as studying abroad. Lecture is conducted in English. Open under special circumstances, such as for studying abroad.. Will be registered by the office.
EG11452	English Communication for Biology II	2	1.0	3	Annual	by appointment		Dean	This course prepares students to communicate science both within their discipline and with a wider audience. Through active class discussions and practical assignments, students will consider the relationship between science and society, and how science is communicated with the public.	For students of College of Biological Sciences, CBS. This course is only open to students who have been admitted as having special circumstances such as studying abroad. Lecture is conducted in English. Open under special circumstances, such as for studying abroad.. Will be registered by the office.

Course Number	Course Name	Instructional Type	Credits	standard registration year	Term	Meeting Days,Period etc.	Classroom	Instructor	Course Overview	Remarks
EG11462	English Communication for Biology III	2	1.0	3	Annual	by appointment		Dean	This course prepares students to communicate science both within their discipline and with a wider audience. Through active class discussion and practical assignments, students will discover how new and alternative media are providing greater opportunities for researchers to communicate their science.	For students of College of Biological Sciences, CBS. This course is only open to students who have been admitted as having special circumstances such as studying abroad. Lecture is conducted in English. Open under special circumstances, such as for studying abroad.. Will be registered by the office.
EG11882	Biology Seminar	2	1.0	3	SprAB	by appointment		Dean and others	Under the instruction of their supervisor, students read papers on topics related to their graduation research and write a mini-review.	CBS students only. Lecture is conducted in English. Will be registered by the office. The course will be offered only to those who are recognized as having special circumstances such as graduation requirements.
EG11892	Biology Seminar	2	1.0	3	FallC, Spr Vac	by appointment		Dean and others	Under the instruction of their supervisor, students read papers on topics related to their graduation research and write a mini-review.	for Students in Biology Lecture is conducted in English. Hybrid or Others The course will be offered only to those who are recognized as having special circumstances such as graduation requirements.
EG11912	Research Seminar I	2	1.0	4	SprAB	by appointment		Dean and others	Topics in biology will be discussed with laboratory members and supervisor.	The course will be offered only to those who are recognized as having special circumstances such as graduation requirements.
EG11922	Research Seminar II	2	1.0	4	SprC, FallA	by appointment		Dean and others	Topics in biology will be discussed with laboratory members and supervisor.	Hybrid or Others The course will be offered only to those who are recognized as having special circumstances such as graduation requirements.
EG11932	Research Seminar III	2	1.0	4	FallBC	by appointment		Dean and others	Topics in biology will be discussed with laboratory members and supervisor.	Hybrid or Others The course will be offered only to those who are recognized as having special circumstances such as graduation requirements.
EG11968	Graduation Research	8	6.0	3, 4	Annual	by request		Dean and others	Each student engages in research work in laboratory on specific theme under supervisor.	Hybrid or Others The course will be offered only to those who are recognized as having special circumstances such as graduation requirements.
EG11978	Graduation Research I	8	3.0	4	Fall Semester	by request		Dean and others	Laboratory research work on specific theme under supervision to obtain basic skill for self problem-solving.	Hybrid or Others The course will be offered only to those who are recognized as having special circumstances such as graduation requirements.
EG11988	Graduation Research II	8	3.0	4	SprABC	by request		Dean and others	Laboratory research work on specific theme under supervision to deepen skill obtained in Graduation Research I.	The course will be offered only to those who are recognized as having special circumstances such as graduation requirements.

College of Agro-Biological Resource Sciences

Course Number	Course Name	Instructional Type	Credits	standard registration year	Term	Meeting Days,Period etc.	Classroom	Instructor	Course Overview	Remarks
EG40012	Agro-Biological Resource Science, Exercises	2	1.0	1, 2	Sum Vac	Intensive		Utada Shinichi Andrew	In this cource, students improve understanding of future study by exercise and investigation of academic discipline and agenda in agrobiological resource sciences, and presetation of the results.	For English Program Students of the College of Agro-Biological Resource Sciences.Limited to students enrolled since 2020 (excepts students transferred in 2020). Lecture is conducted in English. Hybrid or Others

Course Number	Course Name	Instructional Type	Credits	standard registration year	Term	Meeting Days, Period etc.	Classroom	Instructor	Course Overview	Remarks
EG40013	Agro-Biological Resource Science, Practices	3	1.0	1, 2	Sum Vac	Intensive		Utada Shinichi Andrew	In this cource, students have practical image of agrobiological resource by field trip for agrobiological resource. In addition, students clarify standpoint when they consider agrobiological resource by briefing session about the field trip.	For English Program Students of the College of Agro-Biological Resource Sciences.Limited to students enrolled since 2020 (excepts students transferred in 2020). Lecture is conducted in English. Hybrid or Others
EG41012	Research Seminar I	2	1.5	4	SprABC	by request		Dean and others	Topics in agro-biological resource sciences will be discussed with laboratory members and supervisor.	For students who start a graduation research from Spring Semester. Lecture is conducted in English. Hybrid or Others
EG41022	Research Seminar II	2	1.5	4	FallABC	by request		Dean and others	Topics in agro-biological resource sciences will be discussed with laboratory members and supervisor.	For students who passed EG41012 or EG41032. Lecture is conducted in English. Hybrid or Others
EG41032	Research Seminar I	2	1.5	4	FallABC	by request		Dean and others	Topics in agro-biological resource sciences will be discussed with laboratory members and supervisor.	For Students who start a graduation research from Fall Semester. Lecture is conducted in English. Hybrid or Others
EG41042	Research Seminar II	2	1.5	4	SprABC	by request		Dean and others	Topics in agro-biological resource sciences will be discussed with laboratory members and supervisor.	For students who passed EG41012 or EG41032. Lecture is conducted in English. Hybrid or Others
EG41078	Graduation Research I	8	3.0	4	SprABC	by request		Dean and others	Each student engages in research work in laboratory on specific theme under supervisor.	For students who start the graduation research from Spring Semester. Required a special permission by the Dean of the college of Agro-Biological Resource Sciences. Lecture is conducted in English. Hybrid or Others
EG41088	Graduation Research II	8	3.0	4	FallABC	by request		Dean and others	Each student engages in research work in laboratory on specific theme under supervisor.	For students who passed EG41098 or EG41078. Required a special permission by the Dean of the college of Agro-Biological Resource Sciences. Lecture is conducted in English. Hybrid or Others
EG41098	Graduation Research I	8	3.0	4	FallABC	by request		Dean and others	Each student engages in research work in laboratory on specific theme under supervisor.	For Students who start the graduation research from Fall Semester. Lecture is conducted in English. Hybrid or Others
EG41108	Graduation Research II	8	3.0	4	SprABC	by request		Dean and others	Each student engages in research work in laboratory on specific theme under supervisor.	For students who passed EG41098 or EG41078. Lecture is conducted in English. Hybrid or Others
EG50011	World Food and Agriculture	1	1.0	1	FallAB	Fri2	2C102	Kang Seung Won	This course introduces crop plants, domestic animals and their production in the world, in relation to economic and environmental issues.	Lecture is conducted in English. Hybrid or Others
EG50013	Agricultural Internship Abroad I	3	2.0	2, 3	Annual	by appointment		Nomura Nakao,Dean and others	Field study program in foreign countries under 3 objectives; 1) To learn overview on agriculture and related industries 2) To discuss current issues related agriculture through seminars with local students 3) Field survey of the agricultural sites in the local areas	(インターンシップ) 国外。 履修登録は事務で行う。生物資源学類生優先 Identical to EC41013. Lecture is conducted in English. CDP. face-to-face

Course Number	Course Name	Instructional Type	Credits	standard registration year	Term	Meeting Days, Period etc.	Classroom	Instructor	Course Overview	Remarks
EG50023	Agricultural Internship Abroad III	3	2.0	2, 3	Annual	by appointment		Nomura Nakao, Dean and others	Field study program in European countries under 3 objectives; 1) To learn overview on agriculture and related industries 2) To discuss current issues related agriculture through seminars with local students 3) Field survey of the agricultural sites in the local areas	(インターンシップ)国外。履修登録は事務で行う。 Identical to EC41133. Lecture is conducted in English. CDP. face-to-face
EG50033	Agricultural Internship Abroad IV	3	2.0	2, 3	Annual	by appointment		Dean and others, Nomura Nakao	Field study program in North America under 3 objectives; 1) To learn overview on agriculture and related industries 2) To discuss current issues related agriculture through seminars with local students 3) Field survey of the agricultural sites in the local areas	(インターンシップ)国外。ユタ州立・スノー大学における短期研修。 Identical to EC41143. CDP. face-to-face 履修登録は事務で行う。
EG50041	Biochemistry	1	2.0	2, 3	SprAB	Thu4, 5	2C407	Kimura Keiji, Kusano Miyako, Hagiwara Daisuke, shimada yuko, Yanagisawa Hiromi	Advanced biochemistry covers a wide area including molecular cell biology, molecular genetics, biotechnology, metabolism, and relates all current biological sciences. In this year, experts of three major classes of the organisms (microorganisms, plants, animals) give lectures from the professional points of view. This course provides an introduction to biochemistry for the undergraduates who are able to learn basic to applied knowledge of life and environmental sciences.	Lecture is conducted in English. Hybrid or Others
EG50061	Vegetation Ecology	1	1.0	2, 3	FallC	Intensive		Kawada Kiyokazu, Tsuda Yoshiaki, Tsumura Yoshihiko, Kamijo Takashi	Vegetation is a basic component that characterizes land areas and needs to be properly understood in order to realize sustainable use of biological resources. The purpose of this lecture is to understand the basics of vegetation and to understand the sustainable use of vegetation. The lecture will cover not only Japanese vegetation but also vegetation throughout the world such as tropical forests and deserts.	Lecture is conducted in English. Hybrid or Others
EG50163	Fundamental Chemistry Laboratory	3	1.0	2	FallAB	Fri4-6	2B301 2B303 2B401	Yamada Kosumi, Shigemori Hideyuki, Kashiwabara Shin-ichi, Ishida Junji, Ogawa Kazuyoshi, Nakagawa-Izumi Akiko, Nomura Nakao, Yang Yingnan, Nagumo Yoko, Masuo Shunsuke	Chemical substances are existed around and within us everyday and everywhere. We will provide the students inorganic, physicochemical, and organic chemical property of them through the experiments. The students should be able to 1) separate, isolate, and identify chemical substances, 2) learn physicochemical property of them by analytical equipment, 3) know how to use labware and analytical equipment	Date and venue for orientation of G30: TBA; Number of G30 students are limited to 12. Identical to EC12163. 10/7-10/28, 11/9, 10/7-10/28, 11/9, 10/7-10/28, 11/9, 11/11-12/2, 11/11-12/2, 11/11-12/2 face-to-face
EG50193	Fundamental Biology Laboratory	3	1.0	2	FallBC	Fri4-6	2B301 2B303 2B401	Wang Ning, Nomura Koji, Furukawa Seiichi, Miyazaki Hitoshi, Daitoku Hiroaki, Hagiwara Daisuke, Hirakawa Hidehiko, Takeshita Norio, Matsuyama Shigeru, Yawata Yutaka	生物学の各分野から、生物資源学類に必要な観察・実験の項目を選んで実施し、生命現象の基本について理解させる。	Class enrollment onto TWINS should be done by the end of September. Identical to EC12173. 12/9-12/23, 12/9-12/23, 12/9-12/23, 1/6-2/10, 1/6-2/10, 1/6-2/10 face-to-face
EG60012	Current Topics in Plant Biology	2	1.0	2, 3	FallC	Mon3, 4	2B206	Kinoshita Natsuko	This class will focus on current developments in plant biology by focusing on current, groundbreaking research shaping the field. Topics will differ each year. Topics may include herbivory stress, abiotic stress, chemical ecology, plant communication, bio imaging, synthetic biology, and precision agriculture. Students will read as well as lead discussions about current literature. Novel experimental techniques used to answer central questions will be emphasized. There will be a final project where students present a topic of personal interest related to the literature covered in the class. This course is recommended for students considering graduate work or independent study in related fields. The class will be taught in Japanese and English in alternate years.	Same as EC31012 The class will be taught in Japanese and English in alternate years. Open in even number years. Open in even number years. Lecture is conducted in English. Hybrid or Others

Course Number	Course Name	Instructional Type	Credits	standard registration year	Term	Meeting Days,Period etc.	Classroom	Instructor	Course Overview	Remarks
EG60041	Animal Production	1	1.0	3, 4	SprAB	Thu3	2D307	Tajima Atsushi	Animal production and grain production are tow of the most important human inventions. In the present lecture, basic concepts of domestic animals production, i.e. animal husbandry, animal reproduction and animal nutrition will be covered.	Same as EC31081 Lecture is conducted in English. Hybrid or Others
EG60051	Biotechnology in Domestic Animals	1	1.0	2, 3				Dang Nguyen Thanh Quang	The aim of the course is to provide basic information on the current status of biotechnology in domestice animals.	Open in odd number years. Lecture is conducted in English. Hybrid or Others
EG60061	Animals and Animal Products in Human Life	1	1.0	2, 3	FallAB	Thu2		Miyaguchi Yuji	This course aims to provide an understanding on the basic principles of human-animal relationship. Topics on how animal and animal products contribute to the human life will be discussed.	Open in even number years. Lecture is conducted in English. Hybrid or Others
EG60071	Food Functionality	1	1.0	3, 4	FallC	Tue5,6	2G407	Isoda Hiroko,Villareal Myra Orlina	Lectures will cover the topics in advanced food functionality including anti cancer, anti allergy, anti stress, anti obesity, neuronal regulation, melanogenesis regulation and the bioavailability of functional food factors.	Same as EC31391 Lecture is conducted in English. Hybrid or Others
EG60101	Soil Science	1	2.0	3, 4	FallB	Intensive	2G304	Asano Maki	Fundamental ascpects of soils with regard to their genesis, physicochemical properties, management and the related environmental issues will be lectured, and the discussion on some selected topics will be treated as more advanced understanding of present status of soils in the changing world.	Same as EC32161 Lecture is conducted in English. Hybrid or Others
EG60111	Environmental Ecological Engineering	1	1.0	3	FallAB	Wed3		Nomura Nakao	Lecture covers eco-engineering technologies to restore deteriorated environments including following major existing issues: 1) Rehabilitation of enclosed water bodies in terms of water and sediment quality improvement, 2)Biomass energy as a renewable energy and its effect on reduction of green house gas emission, 3) Impact of aquacultural industries on coastal environment including mangrove forest.	横断領域科目「環境」 Identical to EC32111. Lecture is conducted in English. Hybrid or Others
EG60121	Food Process Engineering	1	1.0	3, 4	SprAB	Wed3	2G305	Neves Marcos Antonio,Kokawa Mito	This course introduces basic principles of fluid flow, heat transfer, and mass transfer phenomena, along with the application of these principles to the unit operations most commonly used in food processing, such as thermal processing, cooling, freezing, centrifugation, filtration, drying, size reduction and emulsification.	Same as EC42021 Lecture is conducted in English. Hybrid or Others
EG60161	Environmental Colloid Engineering	1	1.0	3, 4	SprC	Intensive	2C403	Adachi Yasuhisa	Applications of colloid and interface science to environmental issue and its basis are given. Focus will be placed on the floccuation which is important to control soil and water quality. Current topics related to microbiology and ecosystem will be lectured.	Lecture is conducted in English. Hybrid or Others
EG60191	Biomass Conversion	1	2.0	3, 4	Sum Vac	Intensive		Yang Yingnan	This course is designed to help you develop and understanding of the complex processes of biomass conversion. Lectures and discussions will focus on biomass sources, biomass conversion technology and process.	Limited to English Program students. Open in even number year. Lecture is conducted in English. Hybrid or Others
EG60232	Seminar in Applied Biological Chemistry	2	2.0	3, 4				Nomura Nakao	The purpose of the course is to introduce and discuss the applied life sciences related to biochemistry of plant molecules, molecular and developmental biology, biology for gene regulations, ecological molecular microbiology, biomimetic chemistry, bioreaction engineering.	Open in odd number years. Lecture is conducted in English. Hybrid or Others
EG60252	Seminar in Agricultural Economics and Sociology	2	2.0	3, 4	Annual	by appointment		Shuto Hisato	This course aims to introduce the present issues of agricultural and forestry economics, and discuss the roles of rural society, farm management and forestry planning.	Students who are supervised by faculties in the Course of Agriculture and Forestry Social Sciences are eligible to enroll. Lecture is conducted in English. Hybrid or Others
EG60272	Seminar in Quantitative Food Economics	2	2.0	2, 3	FallC	Mon3-6	2C107	Shuto Hisato	Exercises in estimation of food production and consumption based on economic theories, and discussions are performed to analyze the factors controlling supply and demand of foods.	Lecture is conducted in English. Hybrid or Others

Course Number	Course Name	Instructional Type	Credits	standard registration year	Term	Meeting Days, Period etc.	Classroom	Instructor	Course Overview	Remarks
EG60282	Seminar in International Agrobiological Resource Sciences	2	2.0	3, 4	FallAB	by appointment		Yang Yingnan	This course aims to provide information for resource plants and animals, methods and examples of field survey, and effective use for agriculture and industry.	13:30-21:30 Limited to English Program students. Open in even number years. Lecture is conducted in English. Hybrid or Others
EG60361	Introductory Microbiology	1	1.0	2, 3	FallC	Thu3,4	2G205	Utada Shinichi Andrew	This lecture will introduce you basic microbiology including; 1, Diversity of microorganisms 2, Cell-structures 3, Metabolisms 4, Genetics 5, Their use in our life	Lecture is conducted in English. Hybrid or Others
EG60401	Economics of Resource and Environment	1	2.0	3, 4	SprAB	Thu3,4	2C404	Shuto Hisato,Tachibana Satoshi	Lectures will cover the topics in agricultural economy and resouce and environment including forest.	Open in even number years. Lecture is conducted in English. Hybrid or Others
EG60411	Biomaterial Science	1	1.0	3, 4	FallAB	Tue2	2G205	Enomae Toshiharu,Nakagawa-Izumi Akiko	Fundamentals and applications of paper science and papermaking engineering will be provided and they cover chemical structures of polysaccharides constituting fibers, pulping methods for extracting fibers from wood, papermaking technology such as beating, forming, calendering and coating, and geometrical, mechanical, optical, water-related properties of paper as well as biomass plastics to replace petroleum-resourced plastics and latest research topics.	Lecture is conducted in English. Hybrid or Others. interdepartmental course
EG60421	Soil and Water Bio-Engineering	1	1.0	3					The course will be aimed at undergraduates and focus on discussing the science, technology and engineering for achieving sustainable soil and water systems. We will cover several important, emerging topics related to bio-technologies and bio-engineering for sustainable soil and water management. This course also covers a wide range of sectors of major concern in the development of bioengineering, including green energy, green water supply, green manufacturing, green agriculture, and green tourism / ecosystem service, from the perspective of soil-water nexus. This course generally covers three parts, namely (1) implementation of green sciences, (2) deployment of green technology and engineering, and (3) development of green services and its challenges.	It is recommended to take EG60161 together with this subject due to complementarity. EG60491 will also be helpful to understand this subject. Lecture is conducted in English. Not open in 2022. Hybrid or Others
EG60491	Elementary Applied Thermodynamics	1	1.0	2, 3	SprAB	Mon4	2C107	Adachi Yasuhisa	Thermodynamics is one of most fundamental subject when biological and envieromental issues are treated. In this lecture, the elementary thermodynamics will be explained with an orientation toward an application in life and environmental science. Lecture will start the concept of equilibrium system with an example of Brownian motion. It will be followed by the first and the second law of thermodynamics. Thermodynamic function, the concept of Gibbs free energy, chemical potential. Many example will be cited from the field of Colloid and Interface Science. Those, who want to join the lecture of environmental colloid engineering are strongly recommended to join this lecture.	Lecture is conducted in English. Hybrid or Others
EG60511	Practical Plant Biotechnology	1	1.0	3, 4	SprAB	Thu5	2D303	Matsukura Chiaki,Ezura Hiroshi,Ariizumi Tohru	Plant cell, tissue and organ cultures for crop improvement will be introduced as conventional biotechnologies. The current status of of genetically modified (GM) crops and the genome editing technology will be introduced.	Same as EC31231 and EG60021. A English Program Student who had taken EG60021 is not allowed. Lecture is conducted in English. Hybrid or Others
EG60551	Water Resources Management Engineering	1	1.0	3, 4	SprC	by appointment		Ishii Atsushi	This lecture aims to provide a fundamental understandings of water resources by giving introductory hydraulics and hydrology, natures of river flow, water use in various sectors with a special focus on irrigation, water resources development and management, hydrologic statistics, as well as institutional system for water.	Students are graduating on 31 Aug. have to contact an instructor. Lecture is conducted in English. Hybrid or Others. interdepartmental course

Course Number	Course Name	Instructional Type	Credits	standard registration year	Term	Meeting Days,Period etc.	Classroom	Instructor	Course Overview	Remarks
EG60561	Water Environmental Management Technology	1	1.0	3	SprC	by appointment		Nomura Nakao	Lecture covers ecological technologies to restore water environments in enclosed water bodies with deteriorated sediment and water quality. Lecture also covers a case study of Lake Kasumigaura Water Renovation Project where several research studies was performed to rehabilitate water environment in large scale.	横断領域科目「環境」. 特別聴講学生(CiCプロジェクト参加学生を含む)のみ履修可. Cross-disciplinary subjects 「Environment」.Limited to Exchange Student (Tokubetsu Chokogakusei) including CiC Project. Lecture is conducted in English. Hybrid or Others
EG60571	Introduction to Industrial Ecology	1	1.0	3	SprAB	Tue2	2G205	Yabar Helmut Friedrich	One of the biggest challenges societies face is decoupling economic growth from environmental pressure within the limits of the earth's carrying capacity. The highly inefficient use of natural resources from extraction to final disposal produces wastes and releases to air, water and soil. This course introduces the mechanisms and tools necessary to overcome this challenge through Industrial Ecology (IE). IE focuses on promoting industrial activities similar to processes in nature. This is achieved by optimizing energy and material resource use while minimizing and/or avoiding waste and pollution release. The course outlines the tools to achieve this goal including resource use optimization through the 3R Initiative, Life Cycle Assessment, and Material Flow Analysis. The course will also address the technical and management aspects including Environmental Management Systems, Cleaner Production and Design for Environment. At the end of the course the student will develop analytical skills and learn the tools necessary to design and implement solutions to the current production and consumption patterns.	Lecture is conducted in English. Hybrid or Others
EG60581	Animal Cell Culture Technology	1	1.0	3	SprAB	Fri3		Nomura Nakao	Lectures cover basic knowledge about animal cell culture(cell cycle, growth factors, extra-cellular matrixes, cancer cells) as well as application of cultured animal cells(hybrid artificial organ, production of monoclonal antibodies, alternative for experimental animals). Lectures also provides basic information about biotechnological approached for setting up animal cell bioreactors.	Identical to EC32071. Hybrid or Others
EG60591	Food and Nutritional Chemistry I	1	1.0	3, 4	FallAB	Fri5		Miyazaki Hitoshi,Fujii Nobuharu	The aims of this course are to understand i) structure-function relationship of gastrointestinal tract, ii) functions of food constituents such as carbohydrates, lipids, proteins, and vitamins, iii) mechanisms of their digestion and absorption, iv) relation of lifestyle-related disease with nutrition intake, and v) relation of exercise with nutrition intake.	Same as EC32241 English Program Students who had received credits from EG60081 are not allowed. Open in even number years. Lecture is conducted in English. Hybrid or Others
EG60601	Food and Nutritional Chemistry II	1	1.0	3, 4				Miyazaki Hitoshi,Fujii Nobuharu	The aims of this course are to understand i) physiological functions of nutrients such as carbohydrates, lipids, and proteins, ii) regulation of their metabolism, iii) relation of metabolic syndrome with exercise, overnutrition, and biological clock.	Same as EC32241 English Program Students who had received credits from EG60081 are not allowed. Open in odd number years. Lecture is conducted in English. Hybrid or Others
EG60611	International Agricultural and Forestry Policies I	1	1.0	2, 3	Sum Vac	Intensive		Hagiwara Hideki, Asai Masayasu	Lectures will cover the topics in policies for agriculture, food, forestry, and environmental management related to agriculture and forestry in the world.	English Program Students who had received credits from EG60201 are not allowed. Open in even number years. Identical to EC34281. Lecture is conducted in English. Work Experience faculty. Hybrid or Others

Course Number	Course Name	Instructional Type	Credits	standard registration year	Term	Meeting Days, Period etc.	Classroom	Instructor	Course Overview	Remarks
EG60621	International Agricultural and Forestry Policies II	1	1.0	2, 3				Shuto Hisato, Ishizaki, Ryoko	Lectures will cover the topics in policies for agriculture, food, forestry, and environmental management related to agriculture and forestry in the world.	English Program Students who had received credits from EG60201 are not allowed. Open in odd number years. Identical to EC34381. Lecture is conducted in English. Work Experience faculty. Hybrid or Others
EG60641	Precision Agriculture Technology	1	1.0	2, 3	SprAB	Fri5	2D206	Tofael Ahamed	Lectures will cover the topics of precision agricultural technology. Recent advancements in the agricultural field of automation, satellite remote sensing, and GIS. The Bigdata analytics, IoT in agriculture and machine learning systems are used in medium to large scale of agricultural production. The outdoor agricultural mechanization to indoor plant growth monitoring and machinery utilization are the core subjects of this course. Through this course students will get exposure of large satellite remote sensing systems for agriculture, UAV-based crop monitoring and IoT advancements in agriculture.	Lecture is conducted in English. Hybrid or Others
EG60651	Organic Chemistry	1	3.0	2	Annual	Tue1	2C107	Kajiyama Mikio	Basic structure and reactions of organic compounds are explained on the electronic theory.	Participation is permitted from spring semester of freshman. Lecture is conducted in English. face-to-face. interdepartmental course
EG60663	Fundamental Environmental Engineering Laboratory	3	1.0	2	SprAB	Fri4, 5	2D110-1	Utsumi Motoo, Kobayashi Motoyoshi, Neves Marcos Antonio, Mizunoya Takeshi, Yabar Helmut Friedrich, Lei Zhongfang, Nakagawa-Izumi Akiko, Enomae Toshiharu, Kajiyama Mikio, Adachi Yasuhisa, Ishii Atsushi, Zhang Zhen Ya, Yang Yingnan	水, 土, 圃場, 森林, 大気などの生産環境やバイオマス, 食品などの生物資源を対象として, これらの特性を明らかにする諸理論, 試験, 計測, 解析のための基礎的手法を理解・習得する。また実験を通じて, 環境工学的なアプローチや科学技術研究における問題の発見とその解決のための実践的能力を養成する。 This course aims to provide basic concepts of environmental engineering necessary to analyze various phenomena present in environments, biomass, or bioresources.	生物資源学類生に限る(受入上限数30名)。「計測工学実験」(EC23113)、EC23113、EC23123を修得済みの者は履修できない。 Identical to EC23133. face-to-face

College of Geoscience

Course Number	Course Name	Instructional Type	Credits	standard registration year	Term	Meeting Days, Period etc.	Classroom	Instructor	Course Overview	Remarks
EG70013	Laboratory Work in Basic Geoscience	3	1.0	1	SprAB	Thu4, 5		Yamanaka Tsutomu, Fujino Shigehiro, Tanaka Kohei, Matsui Keisuke, Yamashita Akio, Tanaka Hiroshi, Ikehata Kei, Kyono Atsushi, Kurosawa Masanori, Maruoka Teruyuki	Relevant tools and methods to study Earth's environment are the main topic of this lecture. Students are asked to participate in and carry out hand-on exercise in various geoscientific analyses.	Lecture is conducted in English. face-to-face 一部オンラインで実施する可能性がある。

Course Number	Course Name	Instructional Type	Credits	standard registration year	Term	Meeting Days, Period etc.	Classroom	Instructor	Course Overview	Remarks
EG70021	Introduction to Geoenvironmental Science	1	1.0	1	FallAB	Fri1	2C407	Tanaka Hiroshi, Hattanji Tsuyoshi, Morimoto Takehiro, Sugita Michiaki, Kato Hiroaki, Kureha Masaaki	Earth's environment is the main topic of this lecture. Emphasis is on the geoscientific aspects and features in the atmosphere, hydrosphere, topography, and human society among others are discussed.	Lecture is conducted in English. Hybrid or Others オンライン(オンデマンド型と同時双方向型の併用)
EG70031	Introduction to Earth Evolution Science	1	1.5	1	FallABC	Tue1	2C410	Kyono Atsushi, Ujiie Kohtaro, Yagi Yuji, Kamata Yoshihito, Tsunogae Toshiaki, Fujino Shigehiro, Maruoka Teruyuki, Tanaka Kohei, Agematsu Sachiko	This lecture introduces 4.6 billion years evolution of the earth, mainly focusing on the evolution of solid earth, and the birth and evolution of life.	Lecture is conducted in English. face-to-face This class is taught by several teachers. This class may be switched from face-to-face to online depending on the spread of infection and immigration status.
EG79018	Graduation Research A	8	3.0	4	SprABC	by appointment		Dean and others	Students undertake research in a laboratory where they become familiar with the most advanced research environments and practices.	For Geoscience English program students who start their graduation research in spring. Lecture is conducted in English. Hybrid or Others
EG79028	Graduation Research B	8	3.0	4	FallABC	by appointment		Dean and others	Students undertake research in a laboratory where they become familiar with the most advanced research environments and practices.	For Geoscience English program students. Prerequisite: Graduation Research A. Lecture is conducted in English. Hybrid or Others
EG79038	Graduation Research A	8	3.0	4	FallABC	by appointment		Dean and others	Students undertake research in a laboratory where they become familiar with the most advanced research environments and practices.	For Geoscience English program students who start their graduation research in fall. Lecture is conducted in English. Hybrid or Others
EG79068	Graduation Research B	8	3.0	4	SprAB	by appointment		Dean and others	Students undertake research in a laboratory where they become familiar with the most advanced research environments and practices.	For Geoscience English program students. Prerequisite: Graduation Research A. Lecture is conducted in English. Hybrid or Others
EG79118	Graduation Research A	8	6.0	4	SprABC	by appointment		Dean and others	Students undertake research in a laboratory where they become familiar with the most advanced research environments and practices.	For Geoscience English program students who entered after 2020 and start their graduation research in spring. Lecture is conducted in English. Hybrid or Others
EG79128	Graduation Research B	8	6.0	4	FallABC	by appointment		Dean and others	Students undertake research in a laboratory where they become familiar with the most advanced research environments and practices.	For Geoscience English program students who entered after 2020. Prerequisite: Graduation Research A. Lecture is conducted in English. Hybrid or Others
EG79138	Graduation Research A	8	6.0	4	FallABC	by appointment		Dean and others	Students undertake research in a laboratory where they become familiar with the most advanced research environments and practices.	For Geoscience English program students who entered after 2020 and start their graduation research in fall. Lecture is conducted in English. Hybrid or Others

Course Number	Course Name	Instructional Type	Credits	standard registration year	Term	Meeting Days,Period etc.	Classroom	Instructor	Course Overview	Remarks
EG79168	Graduation Research B	8	6.0	4	SprAB	by appointment		Dean and others	Students undertake research in a laboratory where they become familiar with the most advanced research environments and practices.	For Geoscience English program students who entered after 2020. Prerequisite: Graduation Research A. Lecture is conducted in English. Hybrid or Others
EG80032	Freshman Seminar in Geoscience I	2	1.0	1	FallAB	by appointment	1E203	Kamae Yoichi,Maruoka Teruyuki	Recent topics and future subjects on geoscience are discussed through short excursion, reading of related books, etc.	For G30 geoscience students. Identical to EE11512. CDP. face-to-face
EG80042	Freshman Seminar in Geoscience II	2	0.5	1	FallC	by appointment	1E203	Kamae Yoichi,Maruoka Teruyuki	Recent topics and future subjects on geoscience are discussed through short excursion, reading of related books, etc.	For G30 geoscience students. Identical to EE11532. CDP. face-to-face
EG90171	Topics on Geoscience C	1	1.0	2 - 4	Annual	Intensive			This course introduces knowledge and recent developments on specific topic(s) in Geoscience.	Offered in 2023. This course is offered every 4 years. Priority for Geoscience English program students. Students other than English program by permission of instructor. Up to 20 students. Lecture is conducted in English.
EG90181	Topics on Geoscience D	1	1.0	2 - 4	Annual	Intensive		Sugita Michiaki	This course introduces knowledge and recent developments on specific topic(s) in Geoscience.	Offered in 2022. This course is offered every 4 years. Priority for Geoscience English program students. Students other than English program by permission of instructor. Up to 20 students. Lecture is conducted in English.
EG90191	Topics on Geoscience E	1	1.0	2 - 4	Annual	Intensive			This course introduces knowledge and recent developments on specific topic(s) in Geoscience.	Offered in 2024. This course is offered every 4 years. Priority for Geoscience English program students. Students other than English program by permission of instructor. Up to 20 students. Lecture is conducted in English.
EG90211	Natural Hazards	1	1.0	2, 3	FallAB	Fri1		Yagi Yuji,Fujino Shigehiro,Ikehata Kei,Hattanji Tsuyoshi,Onda Yuichi,Tsujimura Maki,Sekiguchi Tomohiro,Yamashita Akio,Parkner Thomas,Tanaka Hiroshi	This lecture overviews various natural hazards and their triggers, reviews historical and recent hazards and explores future prediction and mitigation against possible hazards.	Offered in odd number years. Lecture is conducted in English. G-course. Online(Synchronous)
EG91011	Lecture on Geographical Information Systems	1	1.0	2, 3	FallC	Thu1,2	1D301-1	Morimoto Takehiro,Yamashita Akio,Tsutsumi Jun	This course introduces fundamentals of Geographical Information Systems and its application to geography.	Offered in even number years. Lecture is conducted in English. Online(Asynchronous). Online(Synchronous). face-to-face

Course Number	Course Name	Instructional Type	Credits	standard registration year	Term	Meeting Days, Period etc.	Classroom	Instructor	Course Overview	Remarks
EG91051	Geomorphology	1	1.0	2, 3	SprAB	Thu1	2B206	Parkner Thomas	This course provides an introduction to geomorphology - the study of earth`s landforms and the processes which produce and modify them.	Prerequisite: Introduction to Geoenvironmental Science, Laboratory Work in Basic Geoscience. Or permission by teacher. Up to 20 students. Lecture is conducted in English. face-to-face
EG91081	Environmental Hydrology	1	1.0	2, 3	SprAB	Wed6		Tsujimura Maki, Yamanaka Tsutomu, Sugita Michiaki, Asanuma Jun	Basics on the hydrologic cycle are introduced. In addition, hydrologic aspects on environmental problems and ecology are discussed.	Prerequisite: Introduction to Geoenvironmental Science (or permission by the instructor). Priority for degree students of the School of Life and Environmental Sciences. Students, who attended EG91091, are not permitted. Course is held online (Microsoft Teams, synchronous & asynchronous). Lecture is conducted in English. Online(Synchronous) 試験のみ対面。
EG91101	Meteorology and Climatology	1	1.5	2, 3	SprABC	Wed1	2C101	Tanaka Hiroshi, Matsueda Mio, Kamae Yoichi, Harada Mariko	Elementary course about the general circulation of the atomosphere and the energy budget, mechanism of climate and and climate change, weather forecasting and precipitation, interactions of the atmospheric environment and human activities.	Offered in even number years. Students, who attended EG91031, are not permitted. Lecture is conducted in English.
EG91141	Human and Regional Geography	1	1.5	2, 3	FallABC	Thu4	2D305	Matsui Kenichi, Matsui Keisuke, Tsutsumi Jun, Kubo Tomoko	This course introduces subjects and fundamentals of the human and regional geography by presenting actual examples of Japan and other regions of the world. Following the introduction of basic concepts of human geography, features of various regions will be explained from viewpoints of rural, urban, commercial, political, religious, recreational and ethic geographies.	Students, who attended EG80011, are not permitted. Lecture is conducted in English. Online(Asynchronous). Online(Synchronous). face-to-face
EG91161	Process Geomorphology	1	1.0	2, 3	SprAB	Fri4		Sekiguchi Tomohiro, Hattanji Tsuyoshi	This lecture focuses on physical processes that create and maintain landforms. Tectonic, glacial, fluvial and coastal processes, and weathering as well as mass movements are mainly discussed.	Offered in odd number years. Prerequisite: Both of "Introduction to Geoenvironmental Science" and "Introduction to Earth Evolution Science". Students, who attended EG91131, are not permitted. Lecture is conducted in English. Online(Asynchronous)
EG91171	Basic Analysis of Environmental Dynamics	1	1.5	2, 3	SprABC	Tue5		Onda Yuichi, Matsushita Bunkei, Kato Hiroaki, Takahashi Junko	This lecture provides basic knowledge for analyzing environmental dynamics. In addition, the present state of environmental problems and its analysis methods are discussed.	Offered in even number years. Lecture is conducted in English.
EG91181	Soil Erosion	1	1.0	2, 3	SprAB	Fri1	2B208, 2B209	Parkner Thomas	This lecture covers the processes of soil erosion and their environmental drivers. Control and prevention measures are also introduced.	Offered in even number years. Prerequisite: Introduction to Geoenvironmental Science, Laboratory Work in Basic Geoscience. Or permission by instructor. Up to 20 students. Lecture is conducted in English. face-to-face Depending on the COVID infection spread, the course may be switched to online.

Course Number	Course Name	Instructional Type	Credits	standard registration year	Term	Meeting Days,Period etc.	Classroom	Instructor	Course Overview	Remarks
EG91203	Field Work in Geoenvironmental Science I	3	1.5	2, 3	Annual	Intensive		Tsujimura Maki,Yamanaka Tsutomu,Sugita Michiaki,Asanuma Jun	The goal of this course is to provide experience and background in a variety of field methods used by researchers in geoenvironmental sciences. The course will focus on hands-on field techniques for data gathering (observation, measurement, and others), mapping, and data analysis.	Offered in 2022. This course is offered every 3 years. Prerequisite: EG70013, EG70021 and EG91091. Permission by teachers. Only for those entered after 2016. Lecture is conducted in English. face-to-face
EG91213	Field Work in Geoenvironmental Science II	3	1.5	2, 3	Annual	Intensive			The goal of this course is to provide experience and background in a variety of field methods used by researchers in geoenvironmental sciences. The course will focus on hands-on field techniques for data gathering (observation, measurement, and others), mapping, and data analysis.	Offered in 2022. This course is offered every 3 years. Permission by teachers. Only for these entered after 2016. Lecture are conducted in English. Limited undergraduate students who have earned credits of Introduction to Geoenvironmental Science, Introduction to Earth Evolution Science, Laboratory Work in Basic Geoscience. Lecture is conducted in English. face-to-face
EG91223	Field Work in Geoenvironmental Science III	3	1.5	2, 3	Annual	Intensive			The goal of this course is to provide experience and background in a variety of field methods used by researchers in geoenvironmental sciences. The course will focus on hands-on field techniques for data gathering (observation, measurement, and others), mapping, and data analysis.	Offered in 2023. This course is offered every 3 years. Permission by teachers. Only for those entered after 2016. Lecture is conducted in English. face-to-face
EG91233	Field Work in Geoenvironmental Science IV	3	1.5	2, 3	Annual	Intensive			The goal of this course is to provide experience and background in a variety of field methods used by researchers in geoenvironmental sciences. The course will focus on hands-on field techniques for data gathering (observation, measurement, and others), mapping, and data analysis.	Offered in 2023. This course is offered every 3 years. Prerequisite: EG91051 Geomorphology. Priority for degree students of the School of Life and Environmental Sciences. Others by permission of the instructor. Limited to several students. Lecture is conducted in English. face-to-face 平成28年以降入学者用。
EG91243	Field Work in Geoenvironmental Science V	3	1.5	2, 3	Annual	Intensive			The goal of this course is to provide experience and background in a variety of field methods used by researchers in geoenvironmental sciences. The course will focus on hands-on field techniques for data gathering (observation, measurement, and others), mapping, and data analysis.	Offered in 2021. This course is offered every 3 years. Prerequisite: Human and Regional Geography. Permission by teachers. Only for those entered after 2016. Lectures are conducted both in English and Japanese. Lecture is conducted in English. face-to-face
EG91253	Field Work in Geoenvironmental Science VI	3	1.5	2, 3	Annual	Intensive			The goal of this course is to provide experience and background in a variety of field methods used by researchers in geoenvironmental sciences. The course will focus on hands-on field techniques for data gathering (observation, measurement, and others), mapping, and data analysis.	Offered in 2021. This course is offered every 3 years. Permission by teachers. Only for those entered after 2016. Lecture is conducted in English. face-to-face

Course Number	Course Name	Instructional Type	Credits	standard registration year	Term	Meeting Days,Period etc.	Classroom	Instructor	Course Overview	Remarks
EG92011	Mineralogy and Petrology	1	1.0	2, 3	FallAB	Wed3		Tsunogae Toshiaki,Kurosawa Masanori	This lecture provides basic knowledge for various minerals and rocks in the earth's surface and interior. Main purposes are to learn classification, basic principles and processes of the formations of the minerals and rocks (mainly igneous and metamorphic rocks) in the earth.	Offered in even number years. Lecture is conducted in English. face-to-face
EG92021	Inorganic Geochemistry	1	1.0	2, 3	SprAB	Tue2		Maruoka Teruyuki,Mukai Hiroki,Fujisaki Wataru	This course aims to introduce students to the chemical feature of our planet and basic principles for geochemistry and mineral chemistry.	Offered in odd number years. Lecture is conducted in English. Online(Asynchronous)
EG92031	Stratigraphy and Paleontology	1	1.0	2, 3	FallAB	Tue2	2B309	Tanaka Kohei,Kamata Yoshihito,Fujino Shigehiro	This lecture provides basic knowledge for sedimentology and paleontology and historical geology. Main purposes are to learn interrelationship between life and environment of geological time.	Offered in even number years. Lecture is conducted in English. face-to-face
EG92041	Applied Structural Geology	1	1.0	2, 3	FallAB	Tue4		Yagi Yuji,Ujiie Kohtaro	Structural geology and seismology with emphasis on its application side is the main topics of this lecture.	Offered in odd number years. Lecture is conducted in English. Online(Asynchronous). Online(Synchronous)
EG92093	Field Work in Earth Evolution Science E	3	1.5	2, 3	Sum Vac	Intensive		Ujiie Kohtaro	In this field course students acquire basic field methods on geological science such as field description and mapping.	Offered in even number years. Prerequisite: Introduction to Geoenvironmental Science, Introduction to Earth Evolution Science, Laboratory Work in Basic Geoscience. Or permission by teachers. Lecture is conducted in English. face-to-face
EG92103	Field Work in Earth Evolution Science F	3	1.5	2, 3	Annual	Intensive			In this field course students acquire basic field methods on geological science such as field description and mapping.	Offered in odd number years. Prerequisite: Introduction to Geoenvironmental Science, Introduction to Earth Evolution Science, Laboratory Work in Basic Geoscience. Or permission by teachers. Lecture is conducted in English. face-to-face
EG92113	Field Work in Earth Evolution Science G	3	1.5	2, 3	Annual	Intensive			In this field course students acquire basic field methods in stratigraphy.	Prerequisite:(1) Introduction to Geoenvironmental Science, (2) Introduction to Earth Evolution Science, (3) Laboratory Work in Basic Geoscience.Or permission by instructors. Lecture are conducted in English. Lecture is conducted in English. face-to-face
EG90111	Topics on Earth Evolution Science A	1	1.0	2 - 4	Annual	Intensive			This course presents several Geoscience topics, with a special focus on the "Physics of the Earth". We will explore together how the Earth was formed and how it "works": what are the mechanisms that drive the movement of tectonic plates, why do earthquakes and volcanic eruptions occur and so on. The lectures provide, in particular, some basic knowledge in "Seismology" (or "Earthquake Science") and introduce some current research topics in this field.	Offered in 2021. This course is offered every 4 years. Lecture is conducted in English.
EG90121	Topics on Earth Evolution Science B	1	1.0	2 - 4	Annual	Intensive			This course introduces knowledge and recent developments on specific topic(s) in Earth Evolution Science.	Offered in 2023. This course is offered every 4 years. Lecture is conducted in English.

Course Number	Course Name	Instructional Type	Credits	standard registration year	Term	Meeting Days,Period etc.	Classroom	Instructor	Course Overview	Remarks
EG90131	Topics on Geoenvironmental Science A	1	1.0	2 - 4	Annual	Intensive			This course introduces knowledge and recent developments on specific topic(s) in Geoenvironmental Science.	Offered in 2022. This course is offered every 4 years. Lecture is conducted in English.
EG90141	Topics on Geoenvironmental Science B	1	1.0	2 - 4	Annual	Intensive			This course introduces knowledge and recent developments on specific topic(s) in Geoenvironmental Science.	Offered in 2024. This course is offered every 4 years. Lecture is conducted in English.
EG90151	Topics on Geoscience A	1	1.0	3, 4	SprAB	Intensive		Parkner Thomas	Students get in contact with the scientific community by attending the Japan Geoscience Union Meeting 2022 (5/22-27).	For Geoscience English program students only. Course is held hydrid (in-person and online). (Depending on the COVID infection spread, the course may be switched to online only.) Lecture is conducted in English. Hybrid or Others
EG90161	Topics on Geoscience B	1	1.0	3, 4	Annual	Intensive			This course introduces knowledge and recent developments on specific topic(s) in Geoscience.	Offered in 2021. This course is offered every 4 years. Priority for Geoscience English program students. Students other than English program by permission of instructor. Up to 20 students. Lecture is conducted in English.
EG90303	Internship Program in Geoscience	3	2.0	2 - 4	Annual	by appointment		Kusaka Hiroyuki,Agematsu Sachiko	Students gain work experience through on-the-job training at a non-university organization such as companies, research institutions, or a nonprofit organizations. The placement is from 5 days to 2 weeks. An agreement between the employer and our college needs to be obtained before starting work. The employer is requested to submit an evaluation of the student after the training.	For Geoscience English program students. Lecture is conducted in English. CDP. Hybrid or Others
EG92053	Field Work in Earth Evolution Science A	3	2.0	2, 3	FallC	Intensive		Kamata Yoshihito	In this field course students acquire basic field methods on geological science such as field description and mapping.	Offered in even number years. Students, who attended EG92013, are not permitted. Prerequisite: Introduction to Geoenvironmental Science, Introduction to Earth Evolution Science, Laboratory Work in Basic Geoscience. Or permission by teachers. Lecture is conducted in English. face-to-face
EG92063	Field Work in Earth Evolution Science B	3	2.0	2, 3	Annual	Intensive			In this field course students acquire basic field methods on geological science such as field description and mapping.	Offered in odd number years. Prerequisite: Introduction to Geoenvironmental Science, Introduction to Earth Evolution Science, Laboratory Work in Basic Geoscience. Or permission by teachers. Lecture is conducted in English. face-to-face

Course Number	Course Name	Instructional Type	Credits	standard registration year	Term	Meeting Days, Period etc.	Classroom	Instructor	Course Overview	Remarks
EG92073	Field Work in Earth Evolution Science C	3	1.5	2, 3	Spr Vac	Intensive		Kurosawa Masanori, Kyono Atsushi	In this field course students acquire basic field methods on geological science such as field description and mapping.	Offered in even number years. Prerequisite: Introduction to Geoenvironmental Science, Introduction to Earth Evolution Science, Laboratory Work in Basic Geoscience. Or permission by teachers. To be organized as a virtual field excursion. Please check manaba for further information. Lecture is conducted in English. face-to-face
EG92083	Field Work in Earth Evolution Science D	3	1.5	2, 3	Annual	Intensive			In this field course students acquire basic field methods on geological science such as field description and mapping.	Offered in odd number years. Prerequisite: Introduction to Geoenvironmental Science, Introduction to Earth Evolution Science, Laboratory Work in Basic Geoscience. Or permission by teachers. Lecture is conducted in English. face-to-face
EG71002	Seminar on Geoscience A	2	1.5	3	SprC	by appointment		Matsueda Mio, Sugihara Kaoru	This class provides an overview on all laboratories of the College of Geoscience. Topics on all geoscience desciplines are discussed with members of each laboratory. Students identify 3-4 laboratories of their main interest.	For Geoscience English program students who start their Seminar on Geoscience in spring. Lecture is conducted in English. Hybrid or Others
EG71012	Seminar on Geoscience B	2	1.5	3	FallABC	by appointment		Matsueda Mio, Sugihara Kaoru	In this class further information and discussion is provided on the laboratories identified by students in Seminar of Geoscience A. At the end of this class the laboratory for Graduation Research is identified.	For Geoscience English program students who started their Seminar on Geoscience A in spring. Lecture is conducted in English. Hybrid or Others
EG71022	Seminar on Geoscience A	2	1.5	3	FallC	by appointment		Matsueda Mio, Sugihara Kaoru	This class provides an overview on all laboratories of the College of Geoscience. Topics on all geoscience disciplines are discussed with members of each laboratory. Students identify 3-4 laboratories of their main interest.	For Geoscience English program students who start their Seminar on Geoscience in fall. Lecture is conducted in English. Hybrid or Others
EG71032	Seminar on Geoscience B	2	1.5	3	SprABC	by appointment		Matsueda Mio, Sugihara Kaoru	In this class further information and discussion is provided on the laboratories identified by students in Seminar of Geoscience A. At the end of this class the laboratory for Graduation Research is identified.	For Geoscience English program students who started their Seminar on Geoscience A in fall. Lecture is conducted in English. Hybrid or Others
EG71102	Research Seminar A	2	1.5	4	SprABC	by appointment		Dean and others	Topics on geoscience are discussed with members of a laboratory.	For Geoscience English program students who start their Research Seminar in spring. Lecture is conducted in English. Hybrid or Others
EG71112	Research Seminar B	2	1.5	4	FallABC	by appointment		Dean and others	Topics on geoscience are discussed with members of a laboratory.	For Geoscience English program students. Prerequisite: Research Seminar A. Lecture is conducted in English. Hybrid or Others

Course Number	Course Name	Instructional Type	Credits	standard registration year	Term	Meeting Days,Period etc.	Classroom	Instructor	Course Overview	Remarks
EG71122	Research Seminar A	2	1.5	4	FallABC	by appointment		Dean and others	Topics on geoscience are discussed with members of a laboratory.	For Geoscience English program students who start their Research Seminar in fall. Lecture is conducted in English. Hybrid or Others
EG71152	Research Seminar B	2	1.5	4	SprAB	by appointment		Dean and others	Topics on geoscience are discussed with members of a laboratory.	For Geoscience English program students. Prerequisite: Research Seminar A. Lecture is conducted in English. Hybrid or Others