

Special Subjects of the Department of Evolutionary Studies of Biosystems

Field	Course Code	Subject	Credit	Content of subject	Instructor
General and International Education	30DESa02**	Life Science & Society I	1	This course explores ethical and social issues surrounding the current life science studies, through lectures on some historical background, discussions, and workshops.	ONISHI Yukinori
	30DESa03**	Life Science & Society II	1	This course explores ethical and social issues surrounding the current life science studies, through lectures with historical, philosophical, and sociological perspectives. 【Not offered in 2022】	IIDA Kaori
	30DESa04**	Science, Technology and Society I	1	It is essential for researchers to understand the social foundation of their research activities. This lecture course examines the institutions and policies that have supported and affected scientific and technological research from historical and contemporary perspectives. We also discuss research ethics and problems arising from interaction between scientific research and society. Japanese (first term)/English (second term) 【Not offered in 2022】	
	30DESa05**	Science, Technology and Society II	1	Because of the huge impacts that science and technology can have on society, as well as the large amount of funding they require, researchers today are required to have a deep understanding of the relation between science and society and to explain the social impact of their research, including its significance for society. This course provides students with an opportunity to consider and discuss the social impacts of their own research and research activity in general.	ITO Kenji
Basic Education	10DESB07**	Introduction to the "Science & Society" Sub-thesis	1	This course is designed to provide students with working steps necessary to produce a research proposal for the sub-thesis. Each student is expected to develop an individual thesis topic based on his/her interest and submit written pieces including the final draft of the proposal.	IIDA Kaori
	10DESB14**	Introduction to the "Biological Science" Sub-thesis	1	This course is designed to provide students with working steps necessary to produce a research proposal for the sub-thesis. Each student is expected to develop an individual thesis topic based on his/her interest and submit written pieces including the final draft of the proposal.	INNAN Hideki
	10DESB08**	Introduction to Science and Technology Studies	1	This is an introductory reading seminar mainly for those who would write a dissertation on science and society. Reading assignments are mostly essential classics in science and technology studies. Enrollees are expected to read all the reading assignments and to submit a summary for each. Those who wish to enroll must contact the instructor at least one week before the first class.	ITO Kenji
	10DESB02**	Biostatistics	2	Introductory lectures on basic theories of statistical analysis with practical work on biological data using statistical packages.	SASAKI Akira OHTSUKI Hisashi
	10DESB15**	Micro- and Macro-scopic Biology	2	To learn the basics of theoretical biology, evolutionary biology, integrative anthropology, and neurobiology in order to comprehensively understand the mechanisms of evolution.	WATANABE Takayuki
	10DESB05**	Integrated Evolutionary Biology	2	Biosystems on the earth can be classified into systems with different levels of complexity, from a cell to society. This course is to discuss evolution of such systems from the viewpoints of "elements (members) in each system", "interaction between elements" and "theory to describe this interaction".	SATTA Yoko
	10DESB06**	Laboratory of Basic Biology	2	Laboratory courses. The program will include fields; ecology, molecular biology, cellular biology, histology, physiology, computer programming and scientific writing.	KINOSHITA Michiyo

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Basic Education	10DEsb16**	Academic English (Basic) I	1	This course is based on an education program developed by scientists at NIG. The contents cover various issues and weak points that are frequently observed in scientific situations. Ample opportunity is provided to practice various skills necessary for various aspects of scientific presentation and discussion. Students will receive advice and guidance from a native speaker of English. The basic course covers topics such as structure of oral presentations and useful phrases for discussions. In the advanced course, students will learn more specific skills about explanation of slides and discussions, and exercise these skills thorough making presentations of their research. 【Advanced Course: Not offered in 2022】	ONISHI Yukinori
	10DEsb17**	Academic English (Basic) II	1		
	10DEsb18**	Academic English (Basic) III	1		
	10DEsb19**	Academic English (Basic) IV	1		
	10DEsb20**	Academic English (Basic) V	1		
	10DEsb21**	Academic English (Advance) I	1		
	10DEsb22**	Academic English (Advance) II	1		
	10DEsb23**	Academic English (Advance) III	1		
	10DEsb24**	Academic English (Advance) IV	1		
	10DEsb25**	Academic English (Advance) V	1		
Anthropology	20DESc04**	Integrative Anthropology	1	Introduction to various fields of anthropology, including bioanthropology, cultural anthropology, archaeology, primatology, and human behavioral ecology. The lecture will discuss both the biological and social aspects of humans, with particular focus on the relationship between environment and humans.	HONGOU Hitomi KUTSUKAKE Nobuyuki
	20DESc02**	Environmental Archaeology	1	Learn various methods in environmental archaeology and discuss about the relationship between humans and environment in the past. Introduction to analytical methods in zooarchaeology and ethnoarchaeobotany including laboratory practice. 【Not offered in 2022】	HONGOU Hitomi
	20DESc03**	Human Genetics	1	This course is to introduce how the origin of the human beings is understood through genetics. We discuss how far the acquisition of human specificity is explained genetically and how far the genetic diversity of the present human beings are clarified with the latest research results. We will also discuss the role of genetic approaches in the development of physical anthropology. 【Not offered in 2022】	GOJOBORI Jun
Evolutionary Biology	20DEsd01**	Evolutionary Physiology	1	An overview of physiological traits from the viewpoint of molecular evolution. Evolution of genes for sensory receptors, immune molecules, and components in metabolic pathways are addressed.	SATTA Yoko
	20DEsd02**	Cell Biology	1	Topics in molecular cytogenetics. A series of lectures will include molecular structure and function of the intra-cellular supermolecules, DNA, chromatin, and chromosomes in relation to cell cycle dynamics, gene expression, epigenetics, and genome evolution. 【Not offered in 2022】	TANABE Hideyuki
	20DEsd03**	Molecular Evolution	1	Fundamental concepts of molecular evolution (e.g., neutral theory of molecular evolution, natural selection, molecular clock) are introduced with deepening the knowledge on the pattern and underlying molecular mechanism of evolution. 【Not offered in 2022】	OTA Tatsuya
Behavioral Biology	20DESe01**	Sensory Physiology	1	Topics in sensory physiology. A series of lectures will be provided about the cellular and molecular mechanisms underlying various senses in animals. 【Not offered in 2022】	TBA
	20DESe02**	Neuroethology	1	Neuroethology is a field to study the neural basis underlying animal behavior by using different scientific approaches. In order to understand the coordination of the sensory, motor and central processes, students will learn about examples of neuroethological research including the actual experimental approaches. 【Not offered in 2022】	KINOSHITA Michiyo
	20DESe03**	Evolutionary Behavioral Ecology	1	This lecture aims to explain both ultimate and proximate approaches for understanding animal behaviour. Particularly, I will talk about fundamental concepts and types of approaches with empirical examples. Students need to read important literatures for discussion. 【Not offered in 2022】	KUTSUKAKE Nobuyuki

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Advanced Theoretical Biology	20DESf01**	Mathematical Biology	1	Introduction to population demography, dynamics of interacting species, epidemics, character displacement and speciation, behavioural ecology and game theory, sexual selection, biological pattern formation, and stochastic process in population genetics.	SASAKI Akira
	20DESf02**	Population Genetics	1	Population genetics primarily considers the changes of allele frequencies in a population as a factor of evolution. This class introduces the history and basic theories of population genetics, and the near-future perspective will be discussed.【Not offered in 2022】	INNAN Hideki
	20DESf03**	Evolutionary Game Theory	1	Evolutionary game theory provides a theoretical framework for analyzing conflicts of interests among individuals. It has rich applications to problems in evolutionary ecology as well as in evolutionary studies of human behavior. This introductory course offers an overview of this theory through various examples. 【Not offered in 2022】	OHTSUKI Hisashi
Social Studies of Science	20DESG05**	STS and History of Science I	1	Introduction to the field of Science, Technology, and Society (STS). After reading a textbook, we will explore some specific topics related to public engagement and/or gender studies of science. This class is for students specialized in "science and society."	OONISHI Yukinori
	20DESG06**	STS and History of Science II	1	This is an advanced seminar for graduate students specialized in science and technology studies. Enrollees are expected to read all the reading assignments and to be ready to discuss them in class. Those who wish to enroll must contact the instructor at least one week before the first class.	ITO Kenji
	20DESG07**	STS and History of Science III	1	In this seminar, students will read both primary and secondary sources in history of science (mostly 20th century) and write a mini research paper. This class is for students specialized in "science and society".【Not offered in 2022】	IIDA Kaori
Advanced Course	20DESh01**	Advanced Course I	1	Molecular evolutionary and phylogenetic analysis is an essential technology to study the process and mechanism of organismal evolution. Therefore, nowadays, it is widely used in a variety of study fields in biology and life sciences. However, its fundamentals of theoretical background are complicated and analyses are usually practiced with the aid of computer programs. Therefore, in this course, by learning its theoretical background and practical means, students are expected to become able to apply molecular evolutionary and phylogenetic analysis to their own research project.【Not offered in 2022】	TAMURA Kouichiro (Tokyo Metropolitan University)
	20DESh02**	Advanced course II	1	【Not offered in 2022】	
	20DESh03**	Advanced Course III	1	【Not offered in 2022】	
	20DESh04**	Advanced Course IV	1	Embryophytes landed approximately 480 million years ago. Embryophytes include five monophyletic groups: Bryophytes, Lycopods, Pteridophytes, Gymnosperms, and Angiosperms. Morphological characters evolved during the evolution of land plants will be lectured. 【Not offered in 2022】	HASEBE Mitsuyasu (The National Institute for Basic Biology)
	20DESh05**	Advanced Course V	1	【Not offered in 2022】	
	20DESh06**	Advanced Course VI	1	【Not offered in 2022】	
	20DESh07**	Advanced Course VII	1	【Not offered in 2022】	
	20DESh08**	Advanced Course VIII	1	【Not offered in 2022】	
	20DESh09**	Advanced Course IX	1	【Not offered in 2022】	
	20DESh10**	Advanced Course X (Evolutionary Genomics)	1	This lecture, evolutionary genomics, consists with three parts; 1)basic processes of genome evolution, 2)evolving genes and genomes, and 3)methods for evolutionary genomics.	OTA Hiroki (The University of Tokyo)

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Advanced Course	20DESh11**	Advanced Course X I	1	Population ecology, once said by young researchers a few decades ago to have ended its role, has fully faced on the environmental problems. Conservation of endangered species and the overexploitation and its recovery of bioresources are the most important topics in biodiversity and ecosystem conservation. Population ecology has developed systematic theories as well as statistical techniques to deal with uncertainty. Due to the progress in population genetics and adaptive dynamics in evolution, population ecology is now fused with evolutionary ecology originated from the other field. In this lecture, we will introduce the basis of population ecology and its application to environmental problems, as well as the developmental process of the discipline. 【Not offered in 2022】	MATSUDA Hiroyuki (Yokohama National University)
	20DESh12**	Advanced Course X II	1	Biodiversity is generated by interaction of numerous number of different species. In this class, students will learn and consider the mechanism of generation and maintenance of biodiversity. 【Not offered in 2022】	TERAI Yohey
	20DESh13**	Advanced Course X III (Computational approaches in neuroethology)	1	【Not offered in 2022】	
	20DESh14**	Advanced Course X IV	1	【Not offered in 2022】	
	20DESh15**	Advanced Course X V (Human environmental history)	1	This course introduces recent topics of environmental changes and human evolution from the Pleistocene to the present, and discusses how global climate change and anthropogenic environmental degradation have affected human history. Emergence of genus Homo, out-of-Africa, origins of agriculture, adaptations and collapses of civilizations will be addressed. 【Not offered in 2022】	
	20DESh16**	Advanced Course X VI (Evolutionary epigenetics and genomics)	1	The term epigenetics refers to heritable changes in gene expression that does not involve changes to the underlying DNA sequence. In this class, students will learn the basis of genetics and epigenetics, and will learn how genetic and epigenetic changes contribute to genome evolution. 【Not offered in 2022】	
	20DESh17**	Advanced Course X VII	1	This course is a general introduction to social research methods. We will cover basic concepts and techniques of research design, data collection, and data analysis of quantitative and qualitative approaches. We will also consider the ethical implications of social research in the class discussion. 【Not offered in 2022】	
	20DESh18**	Advanced Course X VIII	1	【Not offered in 2022】	Kalle Parvinen (University of Turku)
	20DESh19**	Advanced Course X IX (Biological anthropology)	1	Biological anthropology is a discipline that comprehensively investigates "humans as living organisms" from the perspective of evolution and diversity. In this lecture, we will learn what humans are through the results of research on human evolution, comparative analysis with non-human primates, and analysis of archaeological materials. We will also learn mismatches, that appear in modern society, of human characteristics acquired through evolution, and consider how the findings of biological anthropology can be useful for us to experience a richer life, love, child-rearing, and aging. 【Not offered in 2022】	TSUTAYA Takumi
	20DESh20**	Advanced Course X X	1	Most multicellular animals possess a nervous system with a variety of complexity. This course introduces topics in the evolutionary origin and the diversification of the nervous system in various animals including both vertebrates and invertebrates.	WATANABE Takayuki

Field	Course Code	Subject	Credit	Content of subject	Instructor
Special Seminar Series	30DESi01**	Special Seminar Series I	2	Series of eight lectures by leading scientists. Speakers are selected from five areas of the department. Each lecture consists of 1.5 hr talk followed by 1.5 hr discussion session.	TANABE Hideyuki
	30DESi02**	Special Seminar Series II	2		
	30DESi03**	Special Seminar Series III	2		
	30DESi04**	Special Seminar Series IV	2		
	30DESi05**	Special Seminar Series V	2		
Progress Report	90DESj01**	Progress Report I	2	Seminars based on progress report of students.	Main Supervisor
	90DESj02**	Progress Report II	2		
	90DESj03**	Progress Report III	2		
	90DESj04**	Progress Report IV	2		
	90DESj05**	Progress Report V	2		
Specific Research	90DESk01**	Specific Research I	4	Research for Doctoral thesis.	Main Supervisor
	90DESk02**	Specific Research II	4		
	90DESk03**	Specific Research III	4		
	90DESk04**	Specific Research IV	4		
	90DESk05**	Specific Research V	4		
	90DESk06**	Specific Research for Sub-thesis	4	Research for Sub thesis.	Sub-thesis advisor

: Compulsory Subjects

A two-digit number or letter will be entered to ** according to the semester or the lecturer in charge.