Appendix A: Course Descriptions

NOTE:

- *Course contents are subject to changes.*
- *Other course offerings may be announced at a later time.*
- *Courses with an asterisk (*) are offered every other year*

Course Code
Each course offered by the Discovery Program is associated with a course code (e.g., DCOR 699). A course code begins with four letters. The first letter "D" refers to "Discovery." The next three letters corresponding to each cluster are as follows:

- COR: Core Courses (Inquiries of Knowledge, Senior Project, etc.)
- AJP: Academic Japanese
- EAP: Academic English
- CUL: Cultural Diversity and Communities
- SIE: Social Innovation and Entrepreneurship
- SCI: Transdisciplinary Science

These letter codes are followed by 3-digit numbers.

100s = *Zengaku Koryu*
200s = *Gakusai Kiso* courses/Academic English・Japanese
300s = 「Senmon」 *Kihon* courses
400s = 「Senmon」 *Kadai* courses
500s = 「Senmon」 Practicum courses
600s = Senior Project & related courses.

Prerequisites are expressed in course codes.

全学交流科目 *(Zengaku Koryu)* "Integrated Learning" courses

DSCI 110 Introductory Mathematics I (1 credit): UDDIN MD. AZHAR
This is an introductory course in mathematics which will cover subjects including algebra, trigonometry, logarithm, probability and statistics.
Prerequisite: NONE

DSCI 111 Introductory Mathematics II (1 credit): JIAN TANG
This is a remedial course on mathematics at the pre-college level, which includes trigonometry, vectors, sequences, calculus, and statistics.
Prerequisite: NONE

DSCI 130 Introductory Chemistry (1 credit): UDDIN MD. AZHAR
This course introduces the core concepts and principles in chemistry at a foundation level. Topics that may be covered are: Matter, elements, atoms and ions, atomic and electronic structure, bonding and molecular structure, intermolecular associations, states of matter, gas laws, solutions, and acids and bases.
Prerequisite: NONE

学際基礎科目 (*Gakusai Kiso*) "*Interdisciplinary Foundational* courses"

Common Seminars

The existence of academic disciplines is a distinctive feature of research and education in universities. An inter-disciplinary education at undergraduate level must start with this assumption and then strive to go beyond it. Thus, 1) the first step in GDP's Inquiries of Knowledge I-III core seminars should be to instill the awareness of the existence of different disciplinary approaches. This should be followed by 2) theoretical reflections on these disciplinary approaches to knowledge production (methodologies, ethos, ethics), and practical exercises on operationalizing inquiries stemming from curiosities. Finally, we should explore 3) the possibilities for collaborating and communicating across disciplinary boundaries.

DCOR 211 Inquiries of Knowledge (IOK) I (2 credits): HARUNA MIYAGAWA, JIAN TANG
In Inquiries of Knowledge I, students will explore critical approaches to "data" from different disciplines by exploring how data is collected and turned into evidence for knowledge, how data and theories are related, and the ethical concerns in data collections in different academic disciplines.
Prerequisite: NONE

DCOR 212 Inquiries of Knowledge (IOK) II (1 credit): YUMIKO YAMAMOTO, TAK UESUGI
In Inquiries of Knowledge II, students will learn about the purposes of GDP's liberal arts education and explore differences in disciplinary approaches to knowledge. Following introductory sessions on liberal arts education and interdisciplinary inquiries, students will critically examine different approaches to knowledge inquiry (epistemologies) at university level.
Prerequisite: NONE

DCOR 213 Inquiries of Knowledge (IOK) III (1 credit): TBD
In Inquiries of Knowledge III, students in the final term of their university education will be reminded of the diversity of academic fields through concrete examples of the Senior Project of their peers. First, appreciation of other disciplinary approaches begins with reflexive understanding and articulation of the specificity of one's own disciplinary knowledge. Following this, students will explore different strategies of interdisciplinary communication. Finally, they will practice their presentation. Throughout the course, students will explore the potential connections between Senior Projects in different fields and find insights applicable to their own.
Prerequisites: DCOR 211 IOK I and DCOR 212 IOK II

Basic courses

DCUL 211 Feminist Ethnic Studies (3 credits): HAENG-JA CHUNG
Japan ranked 121st out of 153 countries in the 2020 Global Gender Gap Report compiled by the World Economic Forum. In addition, the false assumption of ethnic homogeneity is prevalent. Yet, gender and ethnic diversity is an asset to overcome economic stagnation. How can each one of us take a step to realize gender and ethnic equality? This anthropological course emulates fieldwork; Learning, thinking, and acting are essential.
Prerequisite: NONE

DCUL 216 Korean Diaspora (3 credits): HAENG-JA CHUNG
About three million foreigners live in Japan. You or your friend may be one of them. Koreans used to be the largest "foreign" community in Japan. Its long history and rich livelihood offer insights to succeed in cross-cultural and multi-ethnic settings. While learning from Koreans in Japan and beyond, pay attention to many other ethnic groups. This anthropological course emulates fieldwork; Learn, think, and act accordingly.
Prerequisite: NONE

DCUL 220 Sociological Imagination (2 credits): HARUNA MIYAGAWA
This is an introductory course on sociology. What does it mean to "think sociologically"? Students will be introduced to sociological perspectives and insights as we read a novel and engage in discussions.
Prerequisite: NONE

DCUL 225 Global Sociology (3 credits): HARUNA MIYAGAWA
This is a foundational course on sociology from a global perspective. Students will be introduced to basic sociological concepts, theories, and methods, while being attentive to the global forces such as rapid and intensified movements and exchanges of goods, capital, people, and ideas that affect the realms of economy, civic life, arts and sciences, and technology.
Prerequisite: NONE

DCUL 230 Culture and Illness (2 credits): TAK UESUGI
This is an introductory course in medical anthropology. It examines cross-cultural issues in medical practices and the consequences of the expansion of western medicine on the ideas of who we are.
Prerequisite: NONE

DCUL 233 Anthropology of Disaster (2 credits): TAK UESUGI
This course examines how local cultures affect disaster vulnerability and responses, as well as how certain phenomena are recognized as "disasters," and open up the space for new development dreams as well as further marginalization.
Prerequisite: NONE

DCUL 236 Anthropology of Food (2 credits): TAK UESUGI
This course examines the relationship between culinary culture (and "taste") and identities, and explores the possibilities of alternative futures through food.
Recommended: DCUL 230 Culture and Illness OR DCUL 233 Anthropology of Disaster

DCUL 240 Introduction to Political Science (3 credits): KIMIKO OSAWA
This is an introductory course for the study of politics through the lens of political science. Starting with the discussion of what politics is, this course examines fundamental building blocks of political systems such as states, regime types, governing institutions, electoral systems, political ideologies and cultures, and major actors such as political parties and interest groups. Students will also learn major concepts and theories of political science. No prior knowledge of political science is necessary.
Prerequisite: NONE

DCUL 241 Introduction to Japanese Politics (1.5 credits): KIMIKO OSAWA
This is an introductory course for the study of Japanese politics and examines Japanese political history since the Meiji Restoration, major political institutions and actors, and contemporary political topics. By taking this course, students will understand how Japanese politics has developed, how major political institutions work, how major political actors operate within the institutional settings, and major contemporary issues that Japanese politics is facing. Students are also encouraged to develop skills to analyze Japanese politics objectively by using concepts/theories of political science. No prior knowledge of Japanese history or politics is necessary.
Prerequisite: NONE

DSIE 212 Topics in Management I (1.5 credits): TBD

TBD

DSIE 216 Topics in Management II (1.5 credits): TBD

TBD

DSIE 218 Topics in Management III (1.5 credits): TBD

TBD

DSIE 219 Topics in Management IV (1.5 credits): TBD

TBD

DSIE 220 Introduction to Microeconomics (1.5 credits): YUMIKO YAMAMOTO
Some of us face questions like "*Why are rents higher in some cities? What price should I charge for the English lessons that I give? How many years should I spend in school? Should I take up a part-time job?"* This course will help answer such questions through basic economic concepts. Introduction to Microeconomics will explain the principles of economics that apply to the functions of individual decision makers, including both consumers and producers within the economic system. Important topics include supply and demand, trade theory, elasticity, externalities and firm behavior.
Prerequisite: NONE

DSIE 225 Introduction to Macroeconomics (1.5 credits): YUMIKO YAMAMOTO
Macroeconomics is the study of the whole economy. The goal of macroeconomics is to explain theories and phenomena such as booms and recessions, unemployment, inflation etc. that affect all households, firms and markets in the economy. This course will help students understand the reasons behind changing prices, the differences in income levels across countries, how governments promote a rise in incomes and stabilize employment. The important topics include GDP and its measurement, Consumer Price Index, Banks and Money Supply, Money Growth and Inflation.
Prerequisite: NONE

DSIE 231 Philanthropy and Nonprofit Organizations (2 credits): TAKAYUKI YOSHIOKA
This course provides an introduction to philanthropy and nonprofit organizations. Through this course, students will study the concept of philanthropy, patterns of giving and volunteering, and the definition, distinctive features, and various roles of nonprofit organizations. Also, students will understand the diverse forms of philanthropic action.
Prerequisite: NONE

DSIE 232 Global Philanthropy and Comparative Nonprofit Sectors (2 credits): TAKAYUKI YOSHIOKA
In this course, students will explore the scope, structure, and financing of nonprofit sectors in various countries as well as the historical development and recent trends of those nonprofit sectors. In addition, students will learn about various roles and functions of nonprofit organizations from political, social, and economic perspectives. Also, students will study the relationship between the government, nonprofits, and businesses across a variety of countries.
Prerequisite: DSIE 231 Philanthropy and Nonprofit Organizations

DSIE 250 Introduction to Data Analysis (1 credit): TAKAYUKI YOSHIOKA
The course aims to provide students with a solid foundation for inferential statistics. Topics covered include data description, probability and counting rules, and discrete probability distributions.
Prerequisite: DCOR 108 Basic Mathematical and Data Sciences

DSCI 210 Mathematics for Physical Chemistry (1.5 credits): UDDIN MD. AZHAR
This course will introduce students to various basic mathematical methods used in physical chemistry. The methods involve error analysis, probability and statistics, linear algebra, vectors and matrices, first and second order differential equations and their solution.

Prerequisite: NONE

DSCI 220 Modern Physics (1.5 credits): JIAN TANG
In this course, students will learn college-level physics with moderate use of mathematics. The emphasis will be on the concepts and principles of modern physics. Contents include electromagnetic wave, relativity, quantum theory, atom and molecule, and nucleus and elementary particle.
Prerequisite: NONE

DSCI 230 Chemistry for Chemical Engineering (1.5 credits): UDDIN MD. AZHAR
Chemistry for Chemical Engineers provides background in the topics of mass and energy balances specific to chemical engineering. This course will help students understand the chemical reactions and relate them to the main themes of mass and energy balances.
Prerequisite: NONE

DSCI 211 Fundamentals of Mathematics (1 credit): JIAN TANG
In this course, the following topics are covered: complex numbers and Euler's form, vectors and tensors, matrices and determinants, series and limits, differential equations, and statistics.
Prerequisite: NONE

DSCI 221 Fundamentals of Physics I (1 credit): JIAN TANG
In this course, classical mechanics including kinematics and dynamics of motion, work and energy, conservation of energy and momentum, rotational motion and torque, and oscillations and waves from a high-school level to a college level will be covered.
Prerequisite: NONE

DSCI 222 Fundamentals of Physics II (1 credit): JIAN TANG
In this course, classical physics on thermal physics, electricity and magnetism, and optics from a high-school level to a college level will be covered.
Prerequisite: NONE

DSCI 223 Quantum Physics and Atomic Structure (1 credit): JIAN TANG
Atoms are observed through atomic spectra, which can be described by the energy levels of atoms with the use of quantum mechanics. In this course, students will learn the general principles of quantum mechanics, energy levels for hydrogen atom and multi-electron atoms, and atomic spectra.
Prerequisite: NONE

DSCI 224 Introduction to Thermodynamics (1 credit): MICHINOBU MINO
This course will introduce you to the basics of thermodynamics. It contains important concepts such as the relationship between mechanical energy and thermal energy and the law of conservation of energy. Related physical terms will be explained in English and Japanese.
Prerequisite: NONE

DSCI 225 Chemical Bonding and Molecular Structures (1 credit): JIAN TANG
Molecular structures or geometric shapes are determined by the molecular bonds, which result from the molecular electronic structures. Molecules with various structures are classified into several types. Accordingly, several types of energy levels are shown for the molecular rotational and vibrational motions in the electronic states. In this course, students will learn point group theory, and different types of electronic, vibrational, and rotational energy levels for various molecular structures.
Prerequisite: NONE

DSCI 231 Fundamentals of Chemistry (1 credit): UDDIN MD. AZHAR
Studies in fundamental chemistry deal with a range of fundamental concepts that can be used to explain various phenomena in chemistry, materials science and biology. The courses have been designed to provide students who have an interest in chemistry with the necessary knowledge and skills to undertake further studies in chemistry or pursue alternative pathways in the biological, environmental, earth and physical sciences. Fundamental chemistry focuses in the areas of stereochemistry, synthesis, properties and reactions of molecules, thermodynamics, kinetics and the principles of organic chemistry.
Prerequisite: NONE

DSCI 232 Instrumental Analysis (1 credit): UDDIN MD. AZHAR
The course will address the fundamental principles and applications of modern instrumental analysis relevant for chemical engineering and industrial chemistry. The subject consists of a series of interrelated lectures and tutorials. The analytical techniques covered in this course will range from spectroscopy, chromatography, electro-analytics, thermal analysis, to mass spectrometry. The lecture components will address the underpinning physical principles of each analytical technique in-detail and also include an introduction to statistical data analysis. At the completion of the course, the student will have developed a firm understanding of the analytical methods employed in his or her field of study and also gained experience in carrying out analytical experiments.
Prerequisite: NONE

DSCI 233 Introduction to Catalytic Chemistry (1 credit): UDDIN MD. AZHAR
This introductory course in homogeneous and heterogeneous catalysis will examine a number of catalytic reactions and their mechanism and process conditions. It will cover the preparation of catalysts and their use in specific chemical processes. Students will also learn how to analyze the data obtained from a catalytic reaction and how it can be used to determine the mechanism.
Prerequisite: NONE

DSCI 255 Genetics and Molecular Biology (1.5 credits): YOSUKE SENJU Etc.
This lecture is about basics of biology. The basics are discussed with recent insights. Hopefully, we will have small experiments in the lecture.
Prerequisite: Instructor's permission in advance

DSCI 260 Introduction to Agricultural Sciences (1 credit): TAKASHI TAMURA
In this course, students will learn about current issues related to food supply, bio-resources, bio-technology, and conservation of the environment. This course also introduces the basics of agricultural science and other related scientific fields that can be applied to resolve these problems.
Prerequisite: NONE

Academic English

DEAP 201 Intermediate Vocabulary and Grammar (0.5 credits): BULIN AUBRA LEAH
This course helps students expand their vocabulary and strengthen their understanding of intermediate grammar. Through class activities and self-study goals, students will improve their ability to use intermediate vocabulary and grammatical structures accurately in speaking and writing, enhancing both fluency and precision in English.
Prerequisite: NONE

DEAP 202 Introduction to Academic Reading and Writing (0.5 credits): BULIN AUBRA LEAH
This course is designed for first-year students who are building their English language proficiency which focuses on developing fundamental reading and writing skills that are essential for success in academic settings.
Prerequisite: NONE

DEAP 203 Voice and Articulation (0.5 credits): BULIN AUBRA LEAH
This course is designed for students who would like to improve their pronunciation of English. Students will practice English pronunciation through targeted vocal exercises.
Prerequisite: NONE

DEAP 211 English for Academic Purposes 1 (1.5 credits): BULIN AUBRA LEAH
This course serves as a foundational course for the use of English and academic skills for new students. Students will practice reading, writing, speaking, listening, and vocabulary while they also learn academic skills to help them succeed in their university classes.
Prerequisite: NONE

DEAP 212 English for Academic Purposes 2 (1.5 credits): BULIN AUBRA LEAH
This course is an advanced reading and writing class. Students will focus on the details of understanding longer texts and creating critical writing responses. Skills taught include organization of paragraphs and essays, using sources and citations effectively, and revision techniques.
Prerequisite: NONE

DEAP 213 Academic Communication (1.5 credits): BULIN AUBRA LEAH
This course is an intermediate listening and speaking course. The course integrates practice of listening and speaking with academic skills like discussion and communication styles.
Prerequisite: NONE

DEAP 221 Advanced Vocabulary and Grammar (1 credit): BULIN AUBRA LEAH
This course helps students expand their vocabulary and strengthen their understanding of advanced grammar. Through class activities and self-study goals, students will improve their ability to use advanced vocabulary and grammatical structures accurately in speaking and writing, enhancing both fluency and precision in English.
Prerequisite: NONE

DEAP 225 Advanced Presentation and Debate (1 credit): BULIN AUBRA LEAH
This course is an advanced listening and speaking course. Students will develop their skills using practice in debate and presentation techniques.
Prerequisite: NONE

DEAP 230 Advanced Writing (1 credit): BULIN AUBRA LEAH
This course provides activities and guidance to strengthen students' academic writing. The class includes a special focus on the research and writing process including brainstorming, choosing a research topic, using keywords to gather appropriate resources, practice with citations, summary, paraphrase, analysis of data, reporting result, and showcasing an academic project.
Prerequisite: NONE

DEAP 231 Global Education (1 credit): BULIN AUBRA LEAH
Students will study various educational models from around the world as an introduction to comparative education. The course is taught like a content course with directed language support.
Prerequisite: DEAP 230 Advanced Writing

DEAP 232 Multilingual Marketing and Community Connection (2 credits): BULIN AUBRA LEAH
This scholarship in practice course provides students with real-life experience in working with local community businesses. The course will give students the tools to develop a marketing plan in English for a community business of their choice. Students will work with organizations to help build the international reach of local businesses through English language and social media support.
Prerequisite: DEAP 230 Advanced Writing

DEAP 233 World Literature (2 credits): BULIN AUBRA LEAH
This advanced course is designed to expose students to literature from around the world. This course explores a variety of genres, themes, and cultural contexts, providing students with an in-depth understanding of the human experience as depicted through literature. By engaging with texts from different time periods and regions, students will develop advanced language skills, critical thinking, and a profound appreciation for the universality and diversity of literary expression.
Prerequisite: DEAP 230 Advanced Writing

DEAP 234 Methods in Teaching English (1.5 credits): BULIN AUBRA LEAH
This course is designed for anyone interested in understanding the pedagogical techniques and strategies used in teaching English as a second or foreign language. This course provides and introduction to the theoretical and practical aspects of English language teaching, preparing students to design and implement effective and engaging lessons.
Prerequisite: DEAP 230 Advanced Writing

DEAP 241 Writing Lab 1 (1 credit): BULIN AUBRA LEAH
This course is designed for third- and fourth-year students who want a structured environment to complete their senior research project. Students will work on their own writing assignments to meet their goals with customized support from the instructor. Semester 1.
Prerequisite: DEAP 230 Advanced Writing

DEAP 242 Writing Lab 2 (1 credit): BULIN AUBRA LEAH
This course is designed for third- and fourth-year students who want a structured environment to complete their senior research project. Students will work on their own writing assignments to meet their goals with customized support from the instructor. Semester 2.
Prerequisite: DEAP 230 Advanced Writing

Academic Japanese

DAJP 291 Academic Japanese Training I (1 credit): YUKA HAYASHI
Development of academic study skills and learning strategies needed to successfully complete Japanese-medium content courses offered by other departments/faculties outside the Discovery program through self-reflection and individual consultation. Students will explore learning strategies that best fit their own Japanese language proficiency and learning styles, identifying problems and find solutions.
Prerequisite: Instructor's permission in advance

DAJP 292 Academic Japanese Training II (1 credit): YUKA HAYASHI
Application of academic study skills and learning strategies explored in DJAP291 through self-reflection and individual consultation. Students will gain confidence in taking Japanese-medium content courses offered by other departments/faculties outside the Discovery program the rest of the school year.
Prerequisite: Instructor's permission in advance

DAJP 294 Career Japanese (JLPT N1) (1 credit): YUKA HAYASHI
Preparation for the Japanese-Language Proficiency Test (JLPT) N1, which is essential for academic advancement and career opportunities in Japan. Students will refine their Japanese language proficiency, test-taking skills, and learning strategies to pass the JLPT N2 through multiple practice tests, and analysis of the JLPT.
Prerequisite: Instructor's permission in advance

DAJP 293 Career Japanese (JLPT N2) (1 credit): YUKA HAYASHI

Preparation for the Japanese-Language Proficiency Test (JLPT) N2, which is essential for international students seeking employment in Japan. Students will enhance their Japanese language proficiency, test-taking skills, and learning strategies to pass the JLPT N2 through multiple practice tests, and analysis of the JLPT.
Prerequisite: Instructor's permission in advance

DAJP 295 Career Japanese (JLPT N3) (1 credit): YUKA HAYASHI
Preparation for the Japanese-Language Proficiency Test (JLPT) N3, which serves as a benchmark for the Japanese language proficiency needed for daily life in Japan. Students will enhance their Japanese language proficiency, test-taking skills, and learning strategies to pass the JLPT N3 through multiple practice tests and analysis of the exam.
Prerequisite: Instructor's permission in advance.

DAJP 298 Special Lecture in Japanese A (JLPT N1) (2 credits): YUKA HAYASHI
This course is a content-based instruction (CBI) class designed for learners at an upper-intermediate to advanced level of Japanese. It aims to develop critical thinking, academic expression, and academic skills in Japanese. Each week, students will review the assigned materials in advance, engage in content discussions, and give a presentation on a self-selected topic at the end of the course.
Prerequisite: NONE

DAJP 299 Special Lecture in Japanese B (2 credits): YUKA HAYASHI
This course provides basic knowledge of language and language learning. It also aims to familiarize international students with advanced Japanese language skills with university-level lectures in Japanese.
Prerequisite: NONE

DAJP 297 Academic Writing in Japanese (2 credits): YUKA HAYASHI
This course mainly involves writing practice to help students establish a solid foundation in basic kanji.
Prerequisite: NONE

DAJP 296 Academic Reading in Japanese (1 credits): YUKA HAYASHI
In this course, students will read academic texts on topics of interest, explain and discuss their content, and develop their academic Japanese language skills.
Prerequisite: NONE

DAJP 290 Advanced Kanji and Vocabulary (1 credit): YUKA HAYASHI
This course focuses on learning vocabulary and kanji used in academic contexts, enabling students to read specialized books in Japanese and attend lectures conducted in Japanese.
Prerequisite: NONE

DAJP 289 Kanji Practice (1 credit): YUKA HAYASHI
This course mainly involves writing practice to help students establish a solid foundation in basic kanji.
Prerequisite: NONE

専門科目 (*Senmon Kamoku*) "Major Courses" – 基本 *(Kihon)* Fundamental

DCUL 310 Cultural Anthropology (3 credits): HAENG-JA CHUNG
Question the common sense in order to have in-depth cross-cultural experiences. Cultural Anthropology helps and navigates you through this exhilarating path. Self-reflexivity, open-mindedness, flexibility, and ability to cope with unpredictability are required in addition to maturity, responsibility, and punctuality.
Prerequisite: DCUL 211 Feminist Ethnic Studies OR DCUL 216 Korean Diaspora

DCUL 316 Topics in Japan and Beyond (3 credits): HAENG-JA CHUNG
Through selected topics, you deepen your understanding of Japan and beyond. Like most Professor Chung's courses, this course emulates anthropological fieldwork. Self-reflexivity, open-mindedness, flexibility, and ability to cope with unpredictability are required in addition to maturity, responsibility, and punctuality.
Prerequisite: DCUL 211 Feminist Ethnic Studies OR DCUL 216 Korean Diaspora

DCUL 320 Sociology of Migration I (2 credits): HARUNA MIYAGAWA
This course will introduce theories of migration through ethnographies. Topics include (but are not limited to) the mechanisms and the decision-making processes of migration, gender, generation, social networks, and transnational ties. We will explore how the act of migration and the presence of "migrants" challenge the existent boundaries - both physical and symbolic - in the host society as well as in the society of origin.
Prerequisite: DCUL 225 Global Sociology

DCUL 321 Urban Sociology (2 credits): HARUNA MIYAGAWA
An urban setting is a site of human actions, interactions, and inactions. They occur in the structures of society that are bound not only by physical space but by class, gender/sexuality, race, religions, and ethnicity. In this course, we will explore how history and culture interact with a place, define the rhythm of life, and influence the destiny of individuals by referring to empirical studies from around the world.
Prerequisite: DCUL 225 Global Sociology

DCUL 323 Logic and Methods of Social Inquiry (3 credits): HARUNA MIYAGAWA
The course will guide students from simple curiosity to scientific inquiry. Conducting a study involves continuous dialogues between the researcher and the study participants, the "data," and the literature, as well as him/herself. Students will not only learn the basic research methods used in the social sciences (sociology in particular), but more importantly, how research methods are used to generate scientific knowledge and why they are an integral component of social science research. We will also bring ethics of engaging in research at the center of our discussion.
Prerequisite: DCUL 225 Global Sociology

DCUL 325 Sociology of Migration II (2 credits): HARUNA MIYAGAWA
This course will introduce theories of migration through ethnographies. Topics include (but are not limited to) the mechanisms and the decision-making processes of migration, gender, generation, social networks, and transnational ties. We will explore how the act of migration and the presence of "migrants" challenge the existent boundaries - both physical and symbolic - in the host society as well as in the society of origin.
Prerequisite: DCUL 225 Global Sociology

DCUL 327 History of Social Thought (2 credits): HARUNA MIYAGAWA
In this course, students will be introduced to philosophers and social theorists from the past and present. We will draw insights from the social sciences (e.g. sociology, anthropology, history, etc.) as well as various arts including architecture, literature, film, and painting.
Prerequisite: DCUL 225 Global Sociology

DCUL 330 Medical Anthropology (2 credits): TAK UESUGI
This course examines how different societies around the world conceptualize health and illness differently, and how the contemporary alliance of western medicine and the state is creating a particular kind of experiences, subjectivity, and citizenship.
Prerequisite: DCUL 230 Culture and Illness.

DCUL 333 Environmental Anthropology (3 credits): TAK UESUGI
This course examines how societies around the world conceptualize and engage with their environments, and how global capitalism and environmentalism are giving rise to new problems, possibilities, and "cosmo"-politics.
Prerequisite: DCUL 230 Culture and Illness OR DCUL 233 Anthropology of Disaster OR DCUL 236 Anthropology of Food

DCUL 340 Comparative Politics (1.5 credits): KIMIKO OSAWA
This course examines how politics works in different countries, trying to understand why we see similarities and differences in their political processes and dynamics. For example, we will discuss varieties we can find in democracies, non-democracies, welfare systems, relationships between politics and religion, types of political parties, and citizens' political participation patterns. While there are some overlaps of topics with Introduction to Political Science, this course will examine these topics in more depth and analyze different countries as cases.
Prerequisite: DCUL 240 Introduction to Political Science

DCUL 344 Japanese Politics (2 credits): KIMIKO OSAWA
This course examines various aspects of contemporary Japanese politics by reading and discussing the academic research on Japanese politics, mainly in the field of political science. By taking this course, students will obtain knowledge and skills to understand and analyze Japanese politics. They can also gain knowledge of concepts and theories of political science.
Prerequisite: DCUL 240 Introduction to Political Science

DCUL 346 International Politics (1.5 credits): KIMIKO OSAWA
This course examines the modern history of international politics and then the dynamics and mechanisms of international politics. By focusing on how actors interact with each other within sets of institutions, we will discuss why countries engage in wars and why countries care about international human rights and the global environment. Students can also gain knowledge of concepts and theories of political science.
Prerequisite: DCUL 240 Introduction to Political Science

DSIE 312 Topics in Management V (2 credits): TBD

TBD

DSIE 316 Topics in Management VI (2 credits): TBD

TBD

DSIE 318 Topics in Management VII (2 credits): TBD

TBD

DSIE 319 Topics in Management VIII (2 credits): TBD

TBD

DSIE 320 Microeconomics (2 credits): YUMIKO YAMAMOTO
Building on Introduction to Microeconomics (DSIE 210), this course will help students understand the decisions made by producers and consumers in different market structures like monopolies, oligopolies, competitive markets. For e.g.: "How is the market for oil different from the market for diamonds?" Other topics covered would be design of the tax system, theory of consumer choice and asymmetric information.
Prerequisite: DSIE 220 Introduction to Microeconomics OR permission of instructor

DSIE 321 International Economics (2 credits): YUMIKO YAMAMOTO
Changes in international trade volumes and exchange rates are not just newspaper headlines. They affect our lives when we purchase imported goods or travel abroad. This course aims to provide students with a good theoretical background to study international trade policies, international monetary systems, and international finance.
Prerequisites: DSIE 220 Introduction to Microeconomics AND DSIE 225 Introduction to Macroeconomics, OR permission of instructor

DSIE 323 Development Economics (2 credits): YUMIKO YAMAMOTO
Over a billion people survive on less than a dollar a day. These in turn constitute the malnourished, illiterate, unemployed and unorganized labor as poverty severely limits people's capabilities and well-being. This course aims to provide students with an understanding of the problems that developing countries face and the diversity in the developing world. The course will be based on the Human Capital approach to development and will focus on the economics of the central issues in the developing world today like poverty, population, child mortality, hunger, migration and environmental degradation etc. Students will learn the nature and causes of these problems and the appropriate policy design to address them.
Prerequisites: DSIE 220 Introduction to Microeconomics AND DSIE 225 Introduction to Macroeconomics, OR permission of instructor

DSIE 325 Macroeconomics (2 credits): YUMIKO YAMAMOTO
Applying the basic concepts studied in Introduction to Macroeconomics (DSIE 215), this course delves deeper into economy-wide issues like "How should governments fight recessions? How are inflation and unemployment related?" Exchange rates, financial systems, balance of payments, government debt, monetary and fiscal policies are some of the topics included.
Prerequisite: DSIE 225 Introduction to Macroeconomics OR permission of instructor

DSIE 327 Japanese Economy (2 credits): YUMIKO YAMAMOTO
This course presents an overview of the Japanese economy. It will discuss some of the past and present features, persistent problems and challenges faced by this economy. Japan's post war high growth rate, national income and savings, the lifelong employment system, current unemployment and irregular employment trends, Abenomics, current demographic challenges and sluggish growth rate, high public debt are some of the topics to be included.
Prerequisites: DSIE 220 Introduction to Microeconomics AND DSIE 225 Introduction to Macroeconomics, OR permission of instructor

DSIE 328 Japanese Economy and Gender (2 credits): YUMIKO YAMAMOTO
Japan, the world's third-largest economy, has been placed at near the bottom in the gender equality rankings. In addition to persistent gender inequality, income inequality among households is on the rise. Trickle-down effects of economic growth have weakened; why? In this course, students will learn about the labor market, business practices and relevant economic and social policies in Japan through a gender lens and discuss the ways to advance sustainable development. Through individual research and in-class discussion, students will have opportunities to apply

the similar gender analysis to other countries and discuss the case of Japan as a comparative study.
Prerequisites: DSIE 220 Introduction to Microeconomics AND DSIE 225 Introduction to Macroeconomics, OR permission of instructor

DSIE 331 Nonprofit Management and Social Entrepreneurship (4 credits): TAKAYUKI YOSHIOKA
This course is designed to provide current and future nonprofit leaders and social entrepreneurs with an overview of a range of nonprofit management and social entrepreneurship issues, skills, and practices. Topics covered include strategic planning and management, leadership, board governance, financial management, human resource management, marketing, program evaluation, advocacy, and accountability.
Prerequisites: DSIE 231 Philanthropy and Nonprofit Organizations AND DSIE 232 Global Philanthropy and Comparative Nonprofit Sectors

DSIE 350 Elementary Statistics (4 credits): TAKAYUKI YOSHIOKA
The course aims to provide students with a solid foundation for elementary statistics. Topics covered include the normal distribution, confidence intervals and sample size, hypothesis testing, testing the difference between two means, two proportions, and two variances, correlation and regression, other chi-square tests, analysis of variance, and nonparametric statistics. Students will generate results both manually and with the aid of a statistical software application to develop their data analysis skills.
Prerequisite: DSIE 250 Introduction to Data Analysis

DSIE 351 Qualitative Research Methods (2 credits): TAKAYUKI YOSHIOKA
This course is designed to provide students with an overview of the survey methodology, including the development of survey objectives, questionnaire design, and survey execution. Through this course, students will learn how to design and implement internet, phone, mail, and mixed-mode surveys.
Prerequisite: DCOR 108 Basic Mathematical and Data Sciences

DSCI 326 Fundamentals of Molecular Spectroscopy (2 credits): JIAN TANG
Molecular spectra are produced by molecular interaction with electromagnetic wave. They reflect electronic, vibrational, and rotational energy levels of molecules, and provide the fingerprints of molecules. In this course, students will learn how to understand molecular spectra of various molecules.
Prerequisite: NONE

DSCI 327 Spectroscopic Methods (1 credit): JIAN TANG
For observing molecular spectra, many spectroscopic methods are applied. Especially, laser spectroscopic techniques have been developed to observe high resolution molecular spectra in high sensitivity or fast time-scaled molecular spectra for molecular dynamics. In this course, principles for various spectroscopic methods will be presented.
Prerequisite: NONE

DSCI 328 Introduction to Astrochemistry and Atmospheric Chemistry (1 credit): JIAN TANG
Astrochemistry is an academic discipline that studies the chemical elements and molecules in the universe, especially focusing on their interaction with radiation. Atmospheric chemistry is a branch of atmospheric science that studies the chemistry of the Earth's atmosphere and that of other planets. In astrochemistry and atmospheric chemistry, molecular spectroscopy is a particularly important experimental tool. In this course, fundamental understanding on both astrochemistry and atmospheric chemistry is introduced and the application of spectroscopy is presented. Although this course requires some knowledge on molecular spectroscopy, it can also be taken as an independent unit by interested students.
Prerequisite: NONE

DSCI 329 Introduction to Solid State Physics (2 credits) : MICHINOBU MINO
Solid-state physics introduces the basics of electrical conduction and magnetic properties. Electrons play an important role there. You will also learn the basics of quantum mechanics and statistical mechanics.
Prerequisite: NONE

DSCI 350 Basic Physics Laboratory (1 credit): MICHINOBU MINO
This course will introduce students to use experimental equipment and understand the basic concepts of physics through various experiments. The main experimental themes are planned to be gravitational acceleration, refraction and polarization of light, interference and diffraction of ultrasonic waves.
Prerequisite: NONE

DSCI 353 Laboratory of Analytical Chemistry (2 credits): TOSHIYUKI NAKAMURA
This laboratory course in analytical chemistry aims to provide basic knowledge and skills for conducting chemical experiments. Analytical chemistry is composed of qualitative and quantitative characterization of substances. In this course, students will learn various methods for measuring substances and biological materials at molecular level. Furthermore, students will learn the skills for safety management of chemical substances, which are indispensable in further research in the third and fourth years including the research for Senior Project.
Prerequisite: Instructor's permission in advance

DSCI 355 Laboratory in Biology (2 credits): FUJIO HYODO
Through a series of observation and analysis, students will understand the basics of structures and functions of plants, animals, and microbes. The subjects dealt in this laboratory course includes: 1. Observation of mammalian oocyte, 2. Observation of external and internal plant morphology, 3. Experiment on insects - collection and specimen, 4. Field research on suburban forest, 5. Observation of plant genetics, 6. Plant growth analysis, 7. Observation of gastrointestinal and fermentation microbes, 8. Observation of hemocytes.
Prerequisite: Instructor's permission in advance

DSCI 357 Basic Field Practice (2 credits): FUMIO FUKUDA
This course deals with the basic practical training of agriculture at the Field Science Center including Okayama Farm, Tsudaka Livestock Farm, and Hachihama Farm. Students will experience the work in the agricultural field, and learn a basic cultivation and animal feeding techniques of field crops, horticultural crops, and beef cattle. This course also enhances the development of student's skills in farm work.
Prerequisite: Instructor's permission in advance

DSCI 360 Introduction to Agrochemical Bioscience (1 credit): TADAYOSHI KANAO
Agricultural Bioscience originated from a branch of applied sciences mainly specialized in processing raw agricultural products into foods and beverages. Now this branch has extended its applications to fields such as medical innovations and the improvement of natural environment in accordance with the advancement of modern civilization. In this course, students will learn topics and stories related to the Agricultural Bioscience, which has contributed to human society especially in the field of health, food, and environment. Students will also learn the wealth of organic chemistry and biochemistry, by which novel biological functions are elucidated with rationale and logics of science.
Prerequisite: NONE

DSCI 370 Introduction to Environmental Ecology (1 credit): HISASHI DATAI
The goal of this course is to understand fundamental concepts of sustainable agricultural production and environmental conservation from the viewpoints of ecology, engineering, and socio-economics. The course provides topics related to the

following fields of study: Physiological Plant Ecology, Forest Ecology, Environmental Soil Science, Conservation of Aquatic Biodiversity, Insect Ecology, Evolutionary Ecology, Bioproduction Systems Engineering, Resources Management, and Farm Management Systems and Information Processing.
Prerequisite: NONE

DSCI 381/382 Introduction to Applied Plant Science I/II (1 credit each): HIDENORI MATSUI/YOSHIHIKO HIRAI
This course offers an introductory lecture series regarding the production of both crops and horticulture crops. It deals with following topics: characterization and genetic improvement of useful crop traits, diseases and immunity mechanisms in plants, cultivation management techniques for maximum production, and technologies for transportation and preservation of farm harvests.
Prerequisite: NONE

DSCI 390 Introduction to Animal Science (1 credit): NAOKI NISHINO
The goal of this course is to understand fundamentals of animal science including physiology, anatomy, reproduction, breeding, genetics, nutrition, and microbiology. The course also introduces animal biotechnology, animal model for human diseases, assisted reproductive technology, and relation between food and human health. The student will learn overview of current status of animal science and related issues.
Prerequisite: NONE

専門科目 (*Senmon Kamoku*) "Major Courses" – 課題 *(Kadai)*
Subject- Specific

DCUL 410 Topics in Japan and Beyond II (3 credits): HAENG-JA CHUNG
Through selected topics, you deepen your understanding of Japan and beyond. Like most Professor Chung's courses, this course emulates anthropological fieldwork. Self-reflexivity, open-mindedness, flexibility, and ability to cope with unpredictability are required in addition to maturity, responsibility, and punctuality.
Prerequisite: DCUL 310: Cultural Anthropology OR DCUL 316: Topics in Japan and Beyond I

DCUL 413 Sex Work and Emotional Labor (3 credits): HAENG-JA CHUNG
What is sex work? What is emotional labor? How do sex workers and emotional laborers produce themselves and manage their businesses? And why and how do customers pursue these services? We respond to these questions at the intersection of sex work, emotional labor, and possibly spiritual care. Self-reflexivity, open-mindedness, flexibility, and ability to cope with unpredictability are required in addition to maturity, responsibility, and punctuality.
Prerequisite: DCUL 310: Cultural Anthropology OR DCUL 316: Topics in Japan and Beyond I

DCUL 433 Colonialism and War (3 credits): HAENG-JA CHUNG
Colonialism and war are deeply related. Colonization often happens before/during/after wars. Do you know which parts of the world Japan colonized? When and how did colonization occur and end at all? What are the (post-)colonial effects on the colonizers and colonized? If you wish for a peaceful world, it is necessary to learn colonialism and war. Self-reflexivity, open-mindedness, flexibility, and ability to cope with unpredictability are required in addition to maturity, responsibility, and punctuality.
Prerequisite: DCUL 310: Cultural Anthropology OR DCUL 316: Topics in Japan and Beyond I

DCUL 421 Globalization and Development (2 credits): HARUNA MIYAGAWA
Taking a critical approach to the world of international development, this course will explore the premises and goals of various actors involved in development projects through case studies. We will focus on the narratives of international development, and underlying forces that impact development, and its unintended consequences on the lives of people.
Prerequisite: DCUL 320 Sociology of Migration I or DCUL 325 Sociology of Migration II

DCUL 423 Gender in Global Context (2 credits): HARUNA MIYAGAWA
Gender, as with race and ethnicity, is a social construct. This course will explore how gender plays out in the lives of individuals and interacts with other aspects of our identity, reinforcing our social roles and positions in society. Through memoirs and biographies of both women and men, we will examine how gender influences pursuits of individuals with a close attention to the socioeconomic and political context.
Prerequisite: DCUL 320 Sociology of Migration I or DCUL 325 Sociology of Migration II

DCUL 430 Seminar in Medical Anthropology (2 credits): TAK UESUGI
This is a special topics course in medical anthropology.
Prerequisite: DCUL 330 Medical Anthropology or DCUL 333 Environmental Anthropology

DCUL 431 Ethnographies in Medical Anthropology (2 credits): TAK UESUGI
In this course, students apply conceptual understandings gained in DCUL 330 Medical Anthropology to read book-length ethnographies and write their own research paper.

Prerequisite: DCUL 330 Medical Anthropology

DCUL 435 Anthropology of Science (2 credits): TAK UESUGI
This course introduces social scientific and philosophical approach to natural sciences, and explores how anthropologists conduct ethnographies of scientific practices.
Prerequisite: DCUL 330 Medical Anthropology OR DCUL 333 Environmental Anthropology

DCUL 438 Anthropology of Memory (4 credits): TAK UESUGI
This course is about personal and collective memory of violence and trauma. By exploring the intersections of psychological discourse and literary/ethnographic works on trauma, we ponder upon the question of justice and responsibility for past atrocities.
Prerequisite: DCUL 330 Medical Anthropology

DCUL 439 Anthropology of the Self (4 credits): TAK UESUGI
This course explores the question "What is the self?" by examining the cases in which the confidence in one's sense of self crumbles through conflicting ethical values, mental illnesses, and abjection.
Prerequisite: DCUL 330 Medical Anthropology or DCUL 333 Environmental Anthropology

DCUL 440/441/443/445 Topics in Political Science I/II/III/IV (2 credits each): KIMIKO OSAWA
This course examines a specific political issue in depth. Details will be described in the syllabus.
Prerequisite: DCUL 240 Introduction to Political Science

DSIE 412 Topics in Management IX (2 credits): TBD

TBD

DSIE 416 Topics in Management X (2 credits): TBD

TBD

DSIE 420 Introduction to Feminist Economics (2 credits): YUMIKO YAMAMOTO
This course will introduce feminist economics and assumes that the students have some basic knowledge of economics. Specific topics include heteronormativity in economics, feminist approaches to economics research, the role of caring labor in the economy, feminist approaches to economic development, intrahousehold relationships, gender and property rights, differential effects of international trade and finance by gender, and feminist approaches to public finance and social welfare.
Prerequisites: DSIE 220 Introduction to Microeconomics AND DSIE 225 Introduction to Macroeconomics, OR permission of instructor

DSIE 421 Trade Policy and Development (2 credits): YUMIKO YAMAMOTO
This course will introduce the recent developments in international trade and monetary policy. International trade agenda now includes flows of goods, services, money, and people (temporary migrant workers) as well as trade-related investment and intellectual property rights. How does the global and regional integration affect people's lives? We will examine the WTO and regional trade agreements and their impacts on human development by examining case studies.
Prerequisites: DSIE 220 Introduction to Microeconomics AND DSIE 225 Introduction to Macroeconomics, OR permission of instructor

DSIE 422 Poverty (2 credits): YUMIKO YAMAMOTO
What is poverty? Who are the poor? What are the causes of and solutions to poverty? How do we measure poverty? How much poverty exists? Is a world free of poverty possible? In this course, we will examine poverty in the context of the history of economic thought and examine various poverty measures, and anti-poverty policies and programs. The discussions in this course are applicable to both high-and low-income economies.
Prerequisites: DSIE 220 Introduction to Microeconomics AND DSIE 225 Introduction to Macroeconomics, OR permission of instructor

DSIE 423 Inequality (2 credits): YUMIKO YAMAMOTO
Inequality, like poverty, is multidimensional. How does the history, the political and economic system, or technology affect inequality? How has the inequality within and among countries changed over the past decades? Should we care about inequality of outcome or of opportunity? In this course, we will examine inequality in the context of the history of economic thought and examine various inequality measures, and possible causes of and solutions to inequality. The discussions in this course are applicable to both high-and low-income economies.
Prerequisites: DSIE 220 Introduction to Microeconomics AND DSIE 225 Introduction to Macroeconomics, OR permission of instructor

DSIE 436/437/438 Nonprofit Management and Social Entrepreneurship Practicum I/II/III (4 credits each): TAKAYUKI YOSHIOKA
These practicum courses provide students with training in specific professional skill sets, such as program evaluation, social marketing, advocacy and public policy, and social finance and fundraising. Group projects, case studies, and discussions are designed to offer students plenty of practical opportunities to advance their management and analytical skills, leadership, and entrepreneurial mindset.
Prerequisite: DSIE 331 Nonprofit Management and Social Entrepreneurship

DSIE 450 Intermediate Statistics (4 credits): TAKAYUKI YOSHIOKA
In this course, students will study multiple regression analysis with a main focus on ordinary least squares (OLS) regression. Topics include multiple regression, inference, selection and specification of explanatory variables, indicator variables, heteroskedasticity, and data problems and estimation challenges. Students will generate results both manually and with the aid of a statistical software application to develop their data analysis skills.
Prerequisite: DSIE 350 Elementary Statistics

DSCI 461 Agrochemical Bioscience 1 – Analytical Chemistry (1 credit): TAKASHI TAMURA
This course uses the textbook Fundamentals of General, Organic, and Biological Chemistry. Students will learn the core knowledge and concepts in general chemistry by discussing the fundamental subjects such as atoms and bonds by which a molecule is composed of, mass balance and reaction rate by which a chemical reaction is described. In this course, lecturers, who conduct their research in the field of Agrochemical Biosciences, cover the early chapters of the volume. The curriculum starts with remedial-level of chemistry with limited use of physics and mathematics. The emphasis is rather on the basic concepts and principles of chemistry with a relatable context to ensure students of all disciplines gain an appreciation of chemistry's significance in everyday life.
Prerequisite: DSCI 360 Introduction to Agrochemical Bioscience

DSCI 463 Agrochemical Bioscience 2 – Biological Chemistry (1 credit): TADAYOSHI KANAO
This course uses the textbook Fundamentals of General, Organic, and Biological Chemistry. Students will learn the essential knowledge and ideas for biological chemistry by learning the practical subjects such as lipids, amino acids, and proteins. The topics also involve enzymes, vitamins, and nucleic acids, with which dynamic metabolism and genetic inheritance occur in cells. In this course, lecturers, who conduct their research in the field of Agrochemical Biosciences, cover the latter chapters of the volume. Students will learn college-level biological chemistry, and will understand the significance and potential of chemistry in understanding the mechanism of life.
Prerequisite: DSCI 360 Introduction to Agrochemical Bioscience

DSCI 462 Agrochemical Bioscience 3 – Organic Chemistry (1 credit): HIROMASA KIYOTA

This course uses the textbook Fundamentals of General, Organic, and Biological Chemistry. Students will learn the basic knowledge and framework of organic chemistry by discussing the characteristics of hydrocarbons, alcohols, aldehydes, and organic acids. In this course, lecturers, who conduct their research in the field of Agrochemical Biosciences, cover the middle chapters of the volume. Students will learn college-level organic chemistry with an aim to be familiarized with chemical structures and skills to draw chemical information underneath the structure of molecules.
Prerequisite: DSCI 360 Introduction to Agrochemical Bioscience

DSCI 471 Introduction to Forest Ecosystem Science (1 credit): MUNETO HIROBE
Forest Ecosystem Science covers a wide range of subjects in forest ecosystems relating to physiological ecology, population and community ecology, soil science, biogeochemistry etc. It also covers interactions between forest ecosystems and human society. This class provides topics in Forest Ecosystem Science including ecosystem concept and elemental cycles, regeneration mechanisms of forest ecosystems and the conservation, food web structure, ecophysiology of trees against drought stress, and economic evaluation of forests' multifunctional role.
Prerequisite: DSCI 370 Introduction to Environmental Ecology

DSCI 472 Economics, Management and Technology Progress in Japanese Agriculture (1 credit): KAZUHIKO NAMBA
Japan developed many agricultural machines along with the development of manufacturing industries after the World War II. If the farms were in good conditions, a couple can cultivate 10 hectares of rice paddies. But, in recent years, the food self-sufficiency rate has become almost 40 % in Japan. Is this a problem? The goal of this course is to find a problem and to come up with your own solution for it. Some general problems will be presented and the solutions from various fields, i.e., Economics, Management and Technology, will be introduced. We will discuss what was solved in the past, what should be solved at present, and the various approaches for the future.
Prerequisite: DSCI 370 Introduction to Environmental Ecology

DSCI 473 Ecological Approach to Sustainable Agriculture (1 credit): KENSUKE OKADA
The goal of this course is to understand fundamentals of ecological approach to sustainable agriculture. It includes nutrient dynamics in soil-plant ecosystems, systematics and conservation of molluscs, ecological evolutionary studies on insect population, ecological genetics and entomology. The course also introduces soil managements, taxonomic approaches, genetic ecological approaches, applied entomology, evolutional ecology and behavioral ecology. The student will learn the overview of the current status of ecological approach to sustainable agriculture and its related issues.
Prerequisite: DSCI 370 Introduction to Environmental Ecology

DSCI 481 Vegetable and Flower Science (1 credit): TANJURO GOTO
Vegetables and flowers are essential crops in human life. They were selected from the wild plants which had the origin in all parts of the world and have been improved. The efficient and sustainable production of these crops is a significant challenge. The productions have been achieved by scientific understandings of the crops and improvements of cultivation technology. This course introduces scientific knowledge of vegetables and flowers, including their origins, physiological and ecological characters, cultivation techniques and usages.
Prerequisites: DSCI 381 Introduction to Applied Plant Science I AND DSCI 382 Introduction to Applied Plant Science II

DSCI 482 Plant Disease and Control (1 credit): KAZUHIRO TOYODA
With a rising population, an integrated system of plant production must be sufficient to feed us now and in the near future. The Food and Agriculture Organization (FAO) suggests that more than 800 million people in the world do not have enough to eat, causing 24,000 people to die from hunger. Actually, plant diseases annually cause a 20% yield loss in food and cash crops. This class explores the past, present and future of the plant pathology to achieve sustainable global food production.
Prerequisites: DSCI 381 Introduction to Applied Plant Science I AND DSCI 382 Introduction to Applied Plant Science II

DSCI 483 Fruit Science (1 credit): FUMIO FUKUDA
This class covers the basics and applied aspects of fruit science, such as physiology, technology and marketing system. Major topics of fruit physiology are mechanisms of flowering, fruit growth, development and ripening, including control by plant hormones. Topics covered in this class include: technologies enabling seedless grape berries and high quality fruits with large and beautiful appearance and excellent flavors; year-round fruit providing systems using various cultivars, production and storage technique; and history and cultural aspects of fruit production in Japan.
Prerequisite: NONE

DSCI 484 Crop Genetics and Breeding (1 credit): HIDETAKA NISHIDA
Plant breeding is fundamental to improving crop productivity for food security. This class starts with introductory lectures on plant genetics including topics on Mendelian Genetics, linkage and molecular genetics. Subsequently, several topics related to plant breeding will be provided from foundational/theoretical and to applied perspective.
Prerequisites: DSCI 381 Introduction to Applied Plant Science I AND DSCI 382 Introduction to Applied Plant Science II

DSCI 485 Crop Science and Production (1 credit): YOSHIHIKO HIRAI
This lecture provides the basics and advanced knowledge of challenges to crop production. The goal of this lecture is to study ways to improve the yield and quality of products based on the understanding of the relationship between plant growth and field environment.
Prerequisites: DSCI 381 Introduction to Applied Plant Science I AND DSCI 382 Introduction to Applied Plant Science II

DSCI 491 Animal Production Science (1 credit): KOJI KIMURA
This course deals with the basics of fundamental animal science, with fundamental animal production related with reproduction, physiology, anatomy, and genetics. The goals of this course are to obtain basic knowledge about the animal reproduction, understand the relationship between structure and functions from the viewpoint of different animals (cow, pig and chicken etc.), and understand the theory and method for genetic improvement of domestic animals.
Prerequisite: DSCI 390 Introduction to Animal Science

DSCI 492 Food and Nutrition Science (1 credit): NAOKI NISHINO
The main subjects of this course are nutrition, food processing, and preservation, as well as food security and safety. This course deals with the fermentation processes using lactic acid bacteria for preserving and improving functional properties of animal products (milk, dairy products, and egg). This course also deals with t microbiota, obesity, and disease related with food and nutrition.
Prerequisite: DSCI 390 Introduction to Animal Science

DSCI 493 Animal Life Science (1 credit): TOSHIMITSU HATABU
Animals have abilities to adapt to the environmental changes and maintain internal homeostasis. Animals also reproduce a series of life. These events in the life are caused by the various mechanisms. This course deals with: 1) Animal physiology; exposition about the protective mechanisms from the pathogens, 2) Animal reproduction and development; physiology of reproduction and manipulation of embryos, 3) Animal breeding and genetics; genetic constitutions of animals and populations.
Prerequisite: DSCI 390 Introduction to Animal Science

専門科目 (*Senmon Kamoku*) "Major Courses" –実践 *(jissen)* Practicum

DCOR 591 Independent Study (1~16 credit(s)): DISCOVERY FACULTY OR OTHER FACULTY
Independent study course involves conducting a term-long project under the supervision of a faculty member. Typically, such projects include student-driven research, literature review, or other form of creative project. Independent study is permitted only in special circumstances in which proposed learning is not possible in courses already offered by the Discovery Program, and upon an endorsement of a supervising faculty.
Prerequisite: Instructor's permission in advance

DCUL 501 Ethnographic Fieldwork I/II/III (2 credits each): HAENG-JA CHUNG, HARUNA MIYAGAWA, TAK UESUGI
Ethnographic fieldwork is the bread-and-butter of sociological and anthropological research. It is a qualitative research method involving an extended engagement with a location and individuals. In this course, students conduct mini-ethnographic fieldwork. Students are required to write a proposal, conduct a field research, and write a report based on their experience.
The format of the report can vary. Consult your instructor for further details on the requirements.
Prerequisite: Instructor's permission in advance

DSIE 551 Internship (1~2 credit(s)) TAKAYUKI YOSHIOKA
From the 2nd year onwards, students can pursue internships at various small and large companies, nonprofits, and governments within and outside Japan. Students are required to receive an approval from their Academic Advisor or Senior Project Advisor and to submit their internship schedules to the course instructor before commencing the internship. Students can earn a maximum of 2 credits by pursuing internships in the course of their 4-year degree program. Credits are awarded based on daily logs of internship done, an internship report, and internship evaluation submitted by the organization where a student interned.
Prerequisite: Academic Advisor's permission in advance

DSCI 561/562/563 Laboratory in Agrochemical Bioscience 1/2/3 (2 credits each): TBA
This is a laboratory course on physico-chemistry, organic chemistry, and biological chemistry including microbiology. It aims to develop skills in carrying out experiments in a wide variety of branches in Agrochemical Biosciences with safety and efficiency. Students are expected to acquire necessary skills and knowledge needed for their Senior Project research. The course starts with the fundamental skills such as solvent extraction, buffer preparation, and then organic synthesis and the product identification. Biochemical subjects include protein extraction, fractionation by salting out and further analysis using electrophoresis. Additionally, students will learn kinetic analysis of the catalytic function of enzymes. Microbiological practice allows students to be familiar with the skills in isolating and growing useful microorganisms. In the latter part of the course, students will also learn genetic engineering skills.
Prerequisites: DSCI 360 Introduction to Agrochemical Bioscience AND Instructor's permission in advance

DSCI 571/572/573/574/575/576/577/578 Laboratory in Environmental Ecology 1-1/1-2/2-1/2-2/3-1/3-2/4-1/4-2 (1 credit each): TBA
1) In this course students learn about the structure of Japanese agriculture and cultivate the abilities required to do a statistical analysis of data.
2) Topics covered in this course are observation of tissues and organs of tree species, analysis of the physiological functions, observation of forest soil and trees, and practice for management of artificial forests.
3) This class is composed of two parts: 1) utilization of basic tools to conduct a performance test of agricultural machines, and 2) control using computer algorithm.
4) The following topics are included in this lab course: sampling of small animals such as insects and molluscs from the university campus and Handa-yama experimental forest, specimen preparation, identification, population density estimation, and heritability estimation.
Prerequisites: DSCI 370 Introduction to Environmental Ecology AND Instructor's permission in advance

DSCI 581/582/583 Laboratory in Applied Plant Science 1/2/3 (2 credits each): TBA
The course provides laboratory experiments of the basic techniques related to Plant Science and Molecular Biology, such as microscope operation to observe plant cells and micro-organisms, cross-pollination and pathogen-inoculation, nucleic acids and proteins extraction, and molecular biological analysis. It also provides the basic techniques related to Plant Science, Horticultural Science, and Crop Science, such as soil diagnosis, growth and physiological analysis of crops, compositional analysis of crops, and anatomical observation of crops.
Prerequisites: DSCI 381 Introduction to Applied Plant Science I AND DSCI 382 Introduction to Applied Plant Science II AND Instructor's permission in advance

DSCI 591/593/595 Laboratory in Animal Science 1/2/3 (2 credits each): TBA
1) Reproduction is a fundamental issue for the production/ breeding of animals. To develop a better understanding of animal reproduction, this course is designed to experience genetic analysis, handling of germ cells and embryos.
2) Laboratory course about animal physiology, genetics and behavior. Objective of this course is to acquire the basic technique for analysis of animal physiology, genetics and behavior, and to apply it to various research areas.
3) Laboratory course for practical training on animal experimentation and animal food analysis. Objective of this course is to acquire proper knowledge and technique for treatment of experimental animals and analysis of animal foods.
Prerequisites: DSCI 390 Introduction to Animal Science AND Instructor's permission in advance

卒業研究科目 *(Sotsugyo Kenkyu)* Senior Project

DCOR 601 Research Seminar (1~10 credit(s)): DISCOVERY FACULTY

Through research seminars, students will start narrowing down on the topics and research methods in preparation for the Senior Project. Each instructor will run the seminar differently, so take the first half of your third year to explore with whom you wish to work on your Senior Project by attending more than one research seminars.

Prerequisite: Instructor's permission in advance

DCOR 699 Senior Project (10 credits): Senior Project Advisor

Senior Project is an opportunity for you to highlight your finding (or discovery!). If you choose the Discovery Track, you will complete your Senior Project in English supervised by a Discovery Faculty. We encourage you to start thinking what you want to do for your Senior Project early on. While some writing component is necessary, you may propose an alternative medium for the main portion of your Senior Project. For example, you may choose to produce visual products, such as video, photos, and art pieces if you consider these mediums can better represent your work, along with short essays. If you choose the Matching Track, follow the protocol of the department in which you pursue your Senior Project. For both tracks, students are expected to present their projects in English before graduation.

Prerequisite: Instructor's permission in advance