Curriculum Handbook 2019

(Spring Students)

Curriculum Handbook v1.6

Issued by Discovery Program for Global Learners

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Contents

1 Curriculum Overview

The Discovery Program is a multi-disciplinary, open curriculum program. You can select courses from a wide range of disciplines, combining them to fit your own academic interests and future goals. This handbook contains an overview of our curriculum, such as information and regulations regarding coursework, graduation, and advising. Read this handbook carefully before building your own curriculum in consultation with your advisors.

1.1 Tracks

Discovery Program offers two educational tracks defined by where you will complete your Senior Project in your final year.

- Discovery Track (English-based Discovery Track, a.k.a. "DT"): You will conduct your Senior Project with a Discovery faculty. In order to prepare for your Senior Project, DT students mainly take courses offered by the Discovery Program in English.
- Matching Track (Japanese-based Open Track, a.k.a. "MT"): You will conduct your Senior Project with a faculty member outside the Discovery Program. In order to prepare for your Senior Project, MT students mainly take courses offered by respective departments in Japanese. *

  * Generally, very high level of Japanese language proficiency (such as N1 level of Japanese Language Proficiency Test (JLPT)) is required to take courses outside the Discovery Program (exceptions may apply, e.g., Faculty of Agriculture, Faculty of Environment Science and Technology, and Faculty of Science (Biology Department only)).

NOTE: Discovery Track students can also take courses offered outside the Discovery Program in Japanese, and Matching Track students can also take courses offered by the Discovery Program as long as they meet the expectation of each course instructor.

1.2 Advisors

Multiple advisors will support you in different aspects of university life.

- Academic Advisor: aids you with matters pertaining to your program of study.
- Mentor: aids you with matters pertaining to university life. Your mentor is also your language advisor.

- Matching Advisor: assists you if you wish to pursue the Matching Track, and coordinate with departments outside the Discovery Program.
- Departmental Advisor: aids you if you are a Matching Track student in selecting courses in the department[1] where you wish to conduct your Senior Project.
- Senior Project Advisor: supervises your Senior Project in the final year of your study.

[1] For the purpose of this handbook, we use the term "department" to refer to Schools, Faculties, Departments, and Program within Okayama University.

2 Deciding on Your Field of Study

Unlike other departments where curriculum is mostly predetermined based on your major, the Discovery Program allows you to design your own program of study. To help you gradually narrow down your field of study and achieve specialization in timely manner, we have set several milestones (See Figure 1).

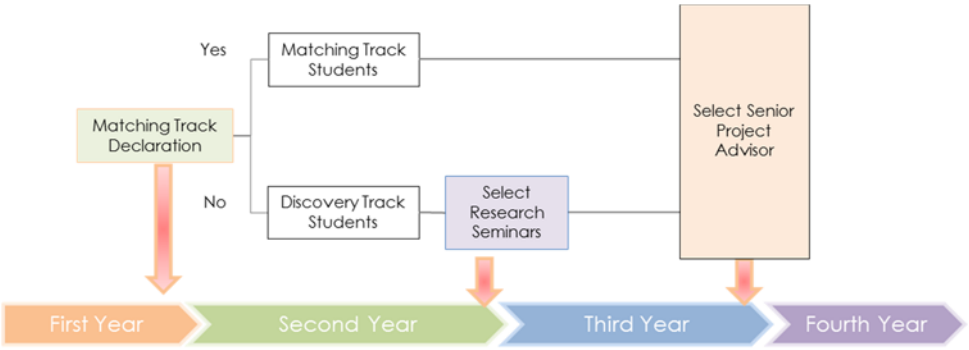


Figure 1. Timeline for Selecting Your Field of Study

Matching Track Declaration: If you wish to pursue the Matching Track, you should declare your intent to do so by the end of the first year. You must also declare the "major department" at this time. The major department is defined as the department in which you will complete the Senior Project. In order to pursue the Matching Track, very high level of Japanese language proficiency is necessary as you will be conducting most of the coursework in Japanese. Some departments may also require you to take specific courses from the first year.

Consult your Academic Advisor and Matching Advisor as early as possible so that they can start negotiating with the host department for you. Also, formulating your plan of study early is important to ensure that you achieve the level of expertise and knowledge on par with the students of that department.

- Students who make no declaration for the Matching Track remain in the Discovery Track, but you will be asked to name your intended area of focus (cluster) at the end of the first year.

Choosing Research Seminars (Discovery Track students): Most students in the Discovery Track start enrolling in Research Seminars in their third year. You may register and earn credits for multiple Research Seminars (up to 8 credits).

- Further information on Research Seminars will be announced in early summer before your 3rd year.

Choosing Senior Project Advisor (All students): Most students will select a Senior Project Advisor and obtain his/her approval by the end of the third year. Faculty members have the right not

to accept students who lack sufficient prerequisite knowledge to conduct a Senior Project in a particular field. Communicate with him/her well in advance to make sure you meet his/her standard.

3 Graduation Requirement

To graduate, you must earn at least 124 credits. The breakdown of the number of credits you need to accumulate for each course category is shown in Table 1.

Minimum of 124 Credits

Table 1. Graduation Requirement

Course Category			必修 (*Hisshuu*) Required	選択必修 (*Sentaku Hisshuu*) Required Elective	自由選択 (*Jiyuu Sentaku*) Elective	Total
教養教育 (*Kyoyo Kyoiku*) Liberal Arts			3	11	14	28
専門教育 (*Senmon Kyoiku*) Major	専門基礎 (*Senmon Kiso*) Major Foundational	共通セミナー Common Seminars	3	-	35*2 (※2・3)	96
		基盤科目 Basic Courses	-	6 (※1)		
		アカデミック英語 Academic English	-			
		アカデミック日本語 Academic Japanese	-	-		
	専門科目 (*Senmon Kamoku*) Major Courses	基本 (*Kihon*) Fundamental	-	40*1 (※2)		
		課題 (*Kadai*) Subject-Specific	-			
		実践 (*Jissen*) Practicum	-	2*3 (※4)		
		卒業研究 (*Sotsugyo Kenkyu*) Senior Project	10*4	-		
Total			16	59	49	124

※1 Must include 3 or more credits from Basic Courses.

※2 Credits acquired in 専門教育 *Senmon Kyoiku* (Major) courses offered by faculties other than the Program shall be counted as credits for 課題 *Kadai* (Subject-Specific) courses, unless they fall under the categories described below (i.e., ※3 & ※4).

※3 Credits acquired in 専門基礎 *Senmon Kiso* (Major Foundational) courses offered by other departments can be included here.

※4 Discovery students shall enroll in 実践 *Jissen* (Practicum) courses offered by the Program. If a student wishes to count credits acquired in courses offered by other departments as credits for 実践 *Jissen* (Practicum) courses, he/she must gain approval of the advisor and the permission of the Steering Committee.

*1 See Section 4.2.2.1 *2 See Section 4.2.1 *3 See Section 4.2.2.2 *4 See Section 4.2.2.3

NOTE:

- Required: All students must complete.
- Required Elective: You must earn a given number of credits from a specified course category.
- Elective: All other credits you earned in each category.

4 Course Categories

At Okayama University, courses are divided into two categories: *Kyoyo Kyoiku* (Liberal Arts) and *Senmon Kyoiku* (Major).

IMPORTANT: Credits accumulated under *Kyoyo Kyoiku* category do not carry over to *Senmon Kyoiku* category, and vice versa. However, depending on your chosen curriculum, you may need to take some courses (e.g. prerequisites for *Senmon* courses in science) even if the credits earned may exceed the required number of credits.

4.1 教養教育(*Kyoyo Kyoiku*) "Liberal Arts" Education

Kyoyo Kyoiku (a.k.a. "Kyoyo"), or "Liberal Arts" in Okayama University's official terms, is a category of courses that are designed to offer students a wide variety of fields and knowledge. Discovery students are required to earn a designated number of credits from the subcategories shown in Table 2:

Table 2. Subcategories of *Kyoyo* Courses

Course Categories	Description	Required	Required Elective	Elective	Total
導入教育 "Educational Orientation"	Orientation courses	2			2
知的理解 "Intellectual Understanding"	Introductory courses in each academic discipline		4	14	26
汎用的技能と健康 "Versatile Skills"	Information and Communication Technology	1			
言語 "Languages"	Language courses		6		
高年次教養 "Upper Division Liberal Arts"	A *Kyoyo* course taken in your 3rd year or above.		1		
Total		3	11	14	28

All *Kyoyo* courses offered by Discovery faculty are in English. Some other *Kyoyo* courses in English may be available through other departments, such as EPOK Program (For details, see *Liberal Arts Education Courses Study Guide and Class Timetable*).

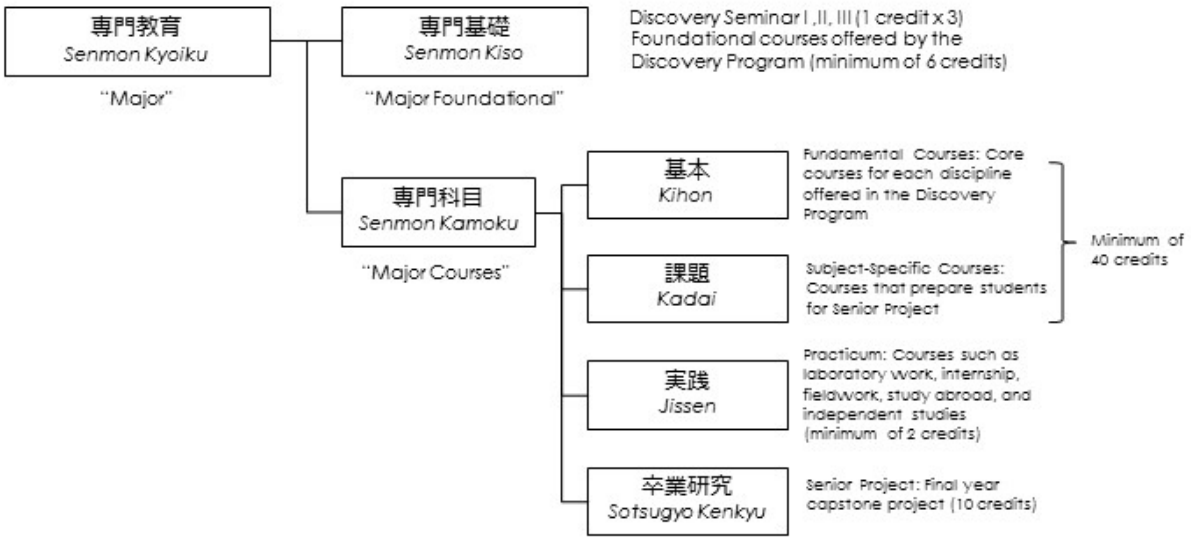
NOTE: Okayama University students are divided into three groups according to their departmental affiliation in order to facilitate even distribution of students in *Kyoyo* courses. For this purpose, Discovery students are grouped with Life Science students (生命系 *Seimei kei*).

- As an exception, Fall Admission Discovery students may also register for foreign language courses open to the other two groups (Social Science (社会系 *Shakai kei*) and Natural Science (自然系 *Shizen kei)*).
- Lottery system is used to decide who can register for some of the courses. For further detail, see Bulletin Board located in General Education Building A-C, 1st Floor.

4.2 専門教育(*Senmon Kyoiku*) "Major" Education

Discipline-specific courses offered by each department and the Discovery Program are called *Senmon Kyoiku* (a.k.a. "*Senmon*"), or "Major" in Okayama University's official terms. At Discovery, this category is further divided as follows:

Figure 2. Categories of *Senmon* Courses



4.2.1 専門基礎 (*Senmon Kiso*) "Major Foundational"

Minimum of 9 Credits

Senmon Kiso, or "Major Foundational" courses in Okayama University's official terms, are introductory courses offered by each department to their own students in order to expose them to a variety of sub-disciplines within a department. As Discovery is a multi-disciplinary program, Discovery students are encouraged to take courses across a wide range of academic disciplines.

This category also includes Discovery Seminars I, II, and III, Academic English courses, and Academic Japanese courses.

Table 1 *2 Some of the *Senmon Kiso* courses offered by each department are categorized as *Kyoyo* when taken by students who belong to other departments. For Discovery students, credits earned in such courses can be applied toward *Jiyu Sentaku* (Elective) credits under *Senmon Kyoiku*.

4.2.2 専門科目(*Senmon Kamoku*) "Major Courses"

In *Senmon Kamoku*, or "Major Courses" in Okayama University's official terms, you will get into the crux of specific field of studies at undergraduate level. As a Discovery student, you have the privilege of selecting one or more major fields of study depending on the desired topics, approaches, and the department in which you will conduct your Senior Project.

Discovery *Senmon Kamoku* are further divided into *Kihon* (Fundamental) courses, *Kadai* (Subject Specific) courses, *Jissen* (Practicum), and *Sotsugyo Kenkyu* (Senior Project). Please see Appendix C: "Curriculum Table" for further details.

4.2.2.1 基本 (*Kihon*) and 課題 (*Kadai*)

Minimum of 40 Credits

Table 1 *1 *Kihon* courses and *Kadai* courses are Discovery's own categories. When you enroll in *Senmon Courses* offered by other departments, the credits earned will be counted as *Kadai* courses (see Table 1).

4.2.2.2 実践 (*Jissen*) "Practicum"

Minimum of 2 Credits

Table 1 *3 Practicum includes courses that involve hands-on training and practical experiences, such as laboratory work, internship, fieldwork, study abroad, and independent studies (See Appendix A: 13 – 14 for further details). Practicum is also Discovery's own category. Some courses offered by other departments may also qualify for this category. Students may take Practicum courses starting from the long break—spring or summer break—prior to the beginning of their 2nd year. Consult your advisor for further information.

4.2.2.3 卒業研究 (*Sotsugyo Kenkyu*) "Senior Project"

10 Credits

Senior Project is a year-long capstone project in which you will conduct a research/project in the field of your interest. It is an opportunity for you to integrate what you have learned at Okayama University.

Table 1 *4 All Discovery students will register for Senior Project course at the Discovery Program regardless of their chosen track.

TO START your Senior Project, you must:

- find a faculty member who would agree to supervise your Senior Project
- have accumulated at least 92 credits* including 2 Required credits and 4.5 Required Elective credits from *Senmon Kiso*

*If you are a Matching Track student, follow the rules set by your host department.

Discovery Track students: You will conduct your Senior Project under one of the Discovery faculty members. The medium of instruction is English. The final product can be in the form of a thesis, business proposal, and visual product, such as videos, photos, and art pieces, accompanied by written documents (in English) explaining them. Consult your Senior Project Advisor to choose the most appropriate medium for your final project.

Matching Track students: Each department has its own criteria for Senior Project. You should follow the protocol of the department in which you pursue your Senior Project.

Presenting Senior Project: In the final academic term, all Discovery Students will make an oral presentation on their Senior Project in English in front of peers and faculty members. Discovery Seminar III will prepare you for the final presentation.

5 Features Specific to Discovery Courses

There are several features particular to Discovery Courses (the courses offered by the Discovery Program).

5.1 Discovery Core Courses

5.1.1 Discovery Seminars (a.k.a. "D-Seminars") (Required)

D-Seminars are some of the few courses all Discovery students are required to take. Here, you study with students who may come from very different backgrounds and have different academic interests. Taken in your first year, D-Seminars I and II are designed to nurture intercultural understandings and academic skills. In the final year of your study, in D-Seminar III, you will reconnect with the members of your cohort, and share the knowledge and insight gained by studying in different disciplines. These courses form the core components of the Discovery Program, nurturing its core spirit, which includes appreciation for diversity and sustainability, entrepreneurship, and inter-disciplinary sensibilities.

5.1.2 Academic English

The Discovery Program provides academic English classes specifically designed to equip you with the language ability and research skills necessary to complete coursework in English. These courses will help you develop both the language competence and intercultural communication skills needed to carry out internships, fieldworks, and Senior Projects in the third and fourth years. You will meet regularly with the English language advisor to evaluate your strengths and weaknesses, and to develop a personal study plan to suit your needs and goals.

5.1.3 Academic Japanese

For those students whose first language is not Japanese but seek to pursue the Matching Track, the Discovery Program provides academic Japanese classes specifically designed to equip you with the language ability and academic skills necessary to complete coursework in Japanese offered in departments outside the Discovery Program.

5.2 Prerequisites

Discovery students arrive with diverse educational backgrounds and life experiences. In order to enable flexible and incremental coursework, we have adopted a prerequisite system. Prerequisite courses specify what knowledge and skills you should have before taking more advanced courses. Consult the "Prerequisite Maps" (Appendix B) and "Course Descriptions" (Appendix A) carefully to plan ahead on how you would like to build your coursework. Also, if you think that you already have the equivalent knowledge, consult the instructor for permission

to skip the prerequisite course. When approved, please visit the Discovery Office and complete the necessary documentation process during the Registration Period.

5.3 Cluster and Modules

Discovery courses are roughly divided into three clusters. Each cluster is divided into modules to help you understand which courses have closer affinity to each other.

- Cluster: consists of a set of courses from related disciplines. Three clusters are:

  - Transdisciplinary Sciences for Global Sustainability
  - Social Innovation and Entrepreneurship
  - Cultural Diversity and Communities

- Module: a sub-set of courses within a cluster that share similar subject matters. See "Curriculum Table" (Appendix C) for further details.

NOTE: Clusters and modules are there only to help you identify related courses, not to confine you to one of them. Combining courses in different clusters and modules is strongly encouraged.

6 Coursework and Registration

6.1 Course Load and Credit Cap

Course load is the number of credit hours you will enroll in one academic term (8 weeks). Consider your other commitments and extracurricular activities carefully to decide on the course load most appropriate for you.

At Okayama University, 1 credit corresponds to 45 hours of study time. The number of hours spent in-class and outside the classroom will depend on the course type (see Table 3).

Table 3. Credit Calculation

	In-Class (hrs)	Assignments, Preparations, and Reviews (hrs)
Lecture	15	30
Seminar	15 - 30	30 - 15
Laboratory work and Practical Training	30 - 45	15 - 0

- Senior Project does not follow this general rule. 10 credits are granted for the tasks necessary to complete a Senior Project.

6.1.1 Guideline in Deciding on Course Load

Rule of Thumb: 1 credit corresponds to at least 6 hours of total study time per week

e.g. 1 credit (lecture) = (2 hours in-class/week + 4 hours self-study time/week) x 7.5 weeks = 45 hours.

Examples of Weekly Workloads

8 credits = 6 hours total study time per week/credit x 8 credits = 48 hours/week

10 credits = 6 hours total study time per week/credit x 10 credits = 60 hours/week

REMEMBER: There are 24 hours per day, and you also have to eat and sleep!

6.1.2 Credit Cap

The maximum number of credits a student can register is capped at 50 credits per year (4 terms). However, most advisors will recommend students to take less than 10 credits per term.

*For cap removal, consult Article 4 <Credit Cap> of the "Bylaws Regarding Curriculum" of the *Discovery Program Rules & Regulations*.

6.1.3 Minimum Cumulative Number of Credits

The Discovery Program has the minimum cumulative number of credits expected to be earned by the end of each academic year as stated below.

By the end of 1st year: 25 credits

By the end of 2nd year: 55 credits

By the end of 3rd year: 92 credits including 2 required credits and 4.5 Required Elective credits from *Senmon Kiso*

Note: Exceeding the minimum cumulative number of credits is not a requirement for advancing to the next academic year (except for the final year). However, it will be used to assess the eligibility for tuition waiver/deduction and scholarships at Okayama University.

6.2 Course Registration

6.2.1 Course Search

- Okayama University Syllabus Search Engine

Okayama University's syllabus database can be accessed at the following URL:

https://www.okayama-u.ac.jp/eng/current_students/Syllabus.html

Most of the Discovery Courses have prerequisites. Review the "Course Descriptions" (Appendix A) and "Prerequisite Map" (Appendix B).

6.2.2 Course Registration

- Okayama University Academic Affairs System (a.k.a. "GAKUMU System")

To register for courses, go to Okayama University GAKUMU System at the following URL:

http://kymx.adm.okayama-u.ac.jp/hp/gakunai/gakumu0.html

See *GAKUMU System Handbook* for further assistance.

NOTE: You can only register for courses via website under the following conditions:

- Using computers connected to the university network
- Between 8:30 AM and 10:00 PM (JST) during the Registration Period
- The Registration Period for each term is announced on the bulletin boards.

- During the Registration Period, you may add or drop courses. See "Bulletin Board" (10.1.1).
- During the Modification Period, you may only drop courses.
- Make sure you plan ahead and complete course registration during the designated period for each term. Changes requested beyond the designated periods will NOT be accepted (with an exception of medical or other emergency scenarios). Failure to register or drop courses during the designated period can jeopardize your academic progress and/or GPA.
- If you wish to register for *Senmon* Courses offered by other departments, please visit the Discovery Office and complete the documentation process during the

Registration Period after (1) consulting your academic advisor, and (2) getting an approval from the course instructor. For more details, see 6.2.3 below.

6.2.3 Enrolling in Courses Offered by Other Departments

If you wish to enroll in a course offered by other department, please follow the steps below:

1) Pick up 「他学部専門教育科目履修届」 (registration form for Senmon Courses offered by other department) from the Discovery Office and fill out the form except for 「担当教員許可印（又はｻｲﾝ）」(course instructor's signature) and 「登録確認欄」(registration completion mark) sections.
2) Email the instructor of the course of your interest (you can find the email address on the syllabus), and express your wish to enroll in the course, prior to the first class.
3) During the first class, introduce yourself to the course instructor once again and get the signature from the course instructor on the form.
   a. For variety of reasons (e.g., enrollment size, prerequisites needed, resource limitation, etc.), course instructors may not approve your enrolment. You may ask for the reasons but be ready to accept the decision.
   b. You may or may not hear back from the course instructor prior to the first class. Even if you did not hear back, go to the class and introduce yourself again.
4) By logging on to the GAKUMU System, register for the course which you have been given permission to take. On the following day, review your timetable in the GAKUMU System, and if you can locate the approved course appearing properly, put a check mark in 「登録確認欄」.
5) Submit 「他学部専門教育科目履修届」to the Discovery Office during the registration week.

7 Grading System, Academic Integrity, and Credit Transfers

7.1 Grades

The Grading System at the Discovery Program follows the standards of Okayama University.

Table 4. Grading Scale

Letter Grade	GP	Number Grade	Standards
A+	Refer to GP Calculations	90 - 100	Pass (credit(s) granted)
A		80 - 89	
B		70 - 79	
C		60 - 69	
F	0	0 - 59	Fail (credit(s) not granted)
W	N/A	N/A	Withdraw after registration
Certified	N/A	N/A	1) Credit(s) granted for courses taken prior to entering Okayama University 2) Credit(s) granted at other educational institutions that may be considered appropriate.
Pass	N/A	N/A	Applies to courses offered at Okayama University that are not suitable for assigning number grades, or courses in which credit(s) are granted for an attainment of course goals.
Fail	N/A	N/A	Failure to attain the goals in courses in which number grades are not assigned.

At Okayama University, Grade Point (GP) is calculated using the following equation:

$$GP = (\text{Number Grade} - 55) / 10$$

Similarly, GPA is calculated using the following equation:

$$GPA = \frac{\text{Sum of (GP} \times \text{Credits for Each Course)}}{\text{Total Registered Credits}}$$

ATTENTION: Your GPA is calculated with the total number of credits REGISTERED. All grades including "F" will be counted towards your GPA, even though you will not earn the credits. Please plan and register for courses carefully so as not to overload your coursework.

Some of the courses offered outside Discovery in two consecutive terms have strong continuity. For these courses, a student who receives a failing grade in the first course may be given an "H (Hold)" if he or she enrolls in the second course. If the student receives a passing grade in the second class, a "C" grade (60%) will be given for the first class.

7.2 Academic Integrity

The Discovery Program takes issues of academic dishonesty, including plagiarism and cheating, very seriously. Penalties for academic dishonesty may include failing an assignment, test, the course, or all the courses registered during that academic term. Academic dishonesty may be grounds for expulsion from the University.

Plagiarism includes but is not limited to the following:

- Submitting work, either in part or in whole, completed by someone else.
- Submitting direct quotes from an outside source without acknowledging the source.
- Failing to acknowledge ideas, statements, facts, or conclusions that belong to another.
- Close and lengthy paraphrasing of the writing of another.
- Submitting papers purchased from research companies as one's own, original work.

Cheating includes but is not limited to the following:

- Copying, in part or in whole, from another student's test or assignment.
- Using notes or other devices during a test not permitted by course instructors.
- Falsifying records, laboratory work, or other course data.
- Submitting work previously submitted in another course without the permission of the instructor.
- Knowingly assisting another student in any of the above.
- See "Rules Regarding Examination" of the *Discovery Program Rules & Regulations* for further details.

If you have questions or concerns as to what constitutes academic dishonesty, please contact your instructor.

7.3 Credit Recognition and Transfers

7.3.1 Courses Outside of the Discovery Program

Discovery students, whether pursuing their degree in the Discovery Track or the Matching Track, may enroll and earn credits for courses outside the Discovery Program if they meet certain conditions. See your advisors for more information.

7.3.2 Recognition of Credits based on External Language Proficiency Test Scores

The Discover Program does not grant credits based on external language proficiency test scores.

7.3.3 Courses Outside of Okayama University

In some special circumstances (see below), credits received outside of Okayama University may be petitioned, and if approved, counted towards your graduation requirement (up to 60 credits).

- ❖ University level credits earned prior to entering Okayama University
  - o University level credits earned prior to entering Okayama University may be transferred as Kyoyo credits. If interested, please complete the petition forms by the end of your first term at Okayama University. For more information, consult your Academic Advisor.
- ❖ University credits earned during study abroad
- ❖ Credits earned at other educational institutions with which Okayama University has a mutual relationship (e.g. University Consortium Okayama)

For more information, see Article 5 <Courses Offered by Other Universities &c.>, Article 6 <Courses Offered by Education Institutions &c. Other than Universities>, and Article 7 <Transfer of Credits Accumulated Prior to Admission to the Program> of the "Bylaws Regarding Curriculum" of the *Discovery Program Rules & Regulations*.

8 Early Graduation

The Discovery Program permits early graduation (duration of 3.5 years) for students with a strong academic standing (GPA 3.0 or higher). If you are considering early graduation, consult your Academic Advisor at an earliest opportunity.

For more information, refer to Article 10 <Early Graduation> of the "Bylaws Regarding Curriculum" of the *Discovery Program Rules & Regulations*.

9 Grades Notifications, Grade Appeal, and Parental Reports

9.1 Grades and Transcripts

Your grades can be viewed on the GAKUMU System. The release date will be notified on the bulletin board and by email. You may also access your grades from networks off campus.

9.2 Certificate Issuing Machines

Transcripts and other documents may be printed using Certificate Issuing Machines on campus.

Documents issued by Certificate Issuing Machines are:

- Academic Performance Certificate (Official Transcript)
- Enrollment Certificate
- Expected Graduation Certificate
- Medical Checkup Certificate
- Student Discount Certificate

Certificate Issuing Machines are located at:

- General Education building A, 1st Floor
- Peach Union Entrance Hall
- Faculty of Letters, Law, and Economics Building No.1, 1st Floor, Refresh Room
- Faculty of Education Main Building Entrance Hall
- Faculty of Science Main Building, 1st Floor, Career Information Section

9.3 Grades Appeal

If you have any questions or doubts regarding your grades, you can request the course instructor's explanation. If the problem cannot be resolved with the instructor, you can file an appeal to the Discovery Program. See "Grades Appeal" section of the *Discovery Program Rules & Regulations* for further information.

9.4 Notification of Grades to Parents/Guardians

Okayama University offers the service to send your grade report to your parents/guardians. If you would like to opt out from this service, please see Student Affairs of the Discovery Program.

10 Miscellaneous

10.1 Leave of Absence or Withdrawal

If you are considering taking a leave of absence or withdrawing from Okayama University, please consult your Academic Advisor, Mentor, and the Discovery Office well in advance. In order to proceed, several paperwork needs to be completed one month prior to the day of the leave or the withdrawal.

10.2 Additional Sources of Information

10.2.1 Bulletin Board

Important announcements and notices are posted on the bulletin board found in the following areas:

- *Discovery Program Bulletin Board* on MOODLE (Discovery students only)
- General Education Building A-C, 1st Floor
- Global Study Lounge (General Education Building D, 2nd Floor) *
- University Union, 1st Floor
- (Additionally, Matching Track students should consult their host departments)

The Global Study Lounge is a common study room for the Discovery students and the Global Human Resource Development (a.k.a. "G-Course") students. Open Hours: 8:00 am – 8:00 pm on weekdays. When using the room, please follow the rules posted on the bulletin board located in the lounge.

The bulletin boards may include information on:

- Class Cancellation and Make-up Class
- Course Registration
- Scholarships
- Qualification Test
- Language Proficiency Exam
- Study Abroad
- Internships
- Volunteering
- Careers

10.2.2 Okayama University Official Website

http://www.okayama-u.ac.jp/ (Japanese)

http://www.okayama-u.ac.jp/index_e.html (English)

10.2.3 Discovery Program for Global Learners' Official Website

https://discovery.okayama-u.ac.jp/jp/ (Japanese)

https://discovery.okayama-u.ac.jp/en/ (English)

10.2.4 Discovery Program for Global Learners' Official Facebook Page

https://www.facebook.com/discovery.at.ou

10.3 Purchasing Textbooks

The information on textbooks and reference books can be found on Okayama University syllabus database.

For *Kyoyo* courses, see the bulletin board on General Education Building B, 1st Floor for the information on where to purchase textbooks.

Discovery courses (*Kyoyo* and *Senmon*), see MOODLE *Discovery Program Bulletin Board* for the information on where to purchase textbooks.

For *Senmon* courses offered by other departments, consult the course instructors.

*Most textbooks are sold at *Okadai Co-op* book store. If you become a member of *Co-op,* you can get discounts on books (including textbooks) and magazines, as well as food at cafeteria. Refer to Student Affairs of the Discovery Program for further information.

10.4 Communication with Faculty and Staff

It is vital for your personal and professional development to get into the habit of maintaining an open line of communication with whomever you are working. Important information is sent to your Okayama University email account, and it is your responsibility to check your email regularly.

If faculty or staff is expecting a response from you, please do so in a timely manner. You should also expect the same from the faculty and staff. If you do not hear back from them, contact the person again (except when you are emailing the course instructor prior to registering for courses offered by another faculty/department).

Additionally, if you receive a telephone call from the Discovery Office, be alarmed that it may be an emergency. Call back immediately.

- Discovery Office Contact Information
    - Email: kyomu_discovery@adm.okayama-u.ac.jp
    - Telephone: 086-251-7915 – Emergency only
    - Office Hours: 8:30 AM. – 5:00 PM(JST)

Important! Faculty may be away for conferences and meetings, and may not be available to meet at a short notice. If you need to meet with them, make sure to set up an appointment well in advance, especially when you need to ask for their signature or letter.

APPENDIX

APPENDIX A: Discovery Course Descriptions

NOTE:

- *Course contents are subject to changes.*
- *Other course offerings may be announced at later time.*
- *Courses with 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. First letter "D" refers to "Discovery." Next three letters corresponding to each cluster as follows:

- COR: Core Courses (Discovery Seminars, Academic English, Senior Project, etc.)
- ENG: Advanced English
- CUL: Cultural Diversity and Communities
- SIE: Social Innovation and Entrepreneurship
- SCI: Transdisciplinary Science for Global Sustainability

These letter codes are followed by 3 digit numbers.

100s = *Kyoyo* courses

200s = *Senmon Kiso* courses

300s = *Kihon* courses

400s = *Kadai* courses

500s = Practicum courses

600s = Senior Project & related courses.

Prerequisites are expressed in course codes.

教養教育 (*Kyoyo Kyoiku*) "Liberal Arts" Education

DCOR 101 Discovery Guidance

This course introduces the curriculum overview of the Discovery Program as well as its components. The following items are introduced: 1) A variety of courses and the expertise of faculty members for the Discovery Track, 2) Ten Faculties where they can complete their Senior Project for the Matching Track.

DCOR 159 Introduction to Writing and Research Skills (1 credit): TBA

Introduction to the skills needed to complete independent research projects. Course content includes (1) identifying appropriate academic sources, both in print and online, (2) effectively summarizing and paraphrasing sources, (3) using quotations and citing works properly, and (4) creating a bibliography.

Prerequisite: 3rd year or above.

DCUL 110 Cross-Cultural Experiences (1 credit): HAENG-JA CHUNG

You can discover a new world when you step out of familiar surroundings by participating in cross-cultural settings. Whether traveling abroad or spending time with new people, you experience firsthand a way of life that you are not aware of. In this course, you will learn how to understand and negotiate different cultural systems.

Prerequisite: NONE

DCUL 120 Global Sociology: Understanding Diversity (1 credit): HARUNA MIYAGAWA

This is an introductory course on sociology. In this course, students will learn basic concepts such as socialization, social interaction, networks and institutions, conformity and deviance, and stratification and inequality. The goal of this course is to explore "diversity" by using these sociological concepts.

Prerequisite: NONE

DCUL 130 Health and Society (1 credit): TAK UESUGI

This is an introductory course on medical anthropology, which a subfield of anthropology that tries to understand health and illnesses from cross-cultural perspective. We ask questions such as: Are brain dead individuals really "dead"? Is a fetus a "person"? Is a parasite part of our body? Is shamanism a hoax? Through such questions, we re-consider categories such as life/death, body/mind, health/illness, and self/society via cross-cultural examinations of medical beliefs.

Prerequisite: NONE

DCUL 140 Current Political Events (1 credit): KIMIKO OSAWA

In this course, students get to know various political events in today's world. We also discuss political scientific concepts and theories that can help us gain deeper understanding and engage in systematic analysis of those events.

Prerequisite: NONE

DSIE 110 Principles of Management (1 credit): YUAN YUAN GONG

This course introduces the principles and functions of management in business organizations. It discusses the roles, functions and activities of management, i.e. planning, organizing, leading and controlling. By the completion of the course, students will understand that management is an on-going process geared to motivate the worker as an individual and as a member of a group.

Prerequisite: NONE

DSIE 130 Giving and Volunteering (1 credit): TAKA YOSHIOKA

This course examines patterns and motivations of charitable giving and volunteering across countries. Students will learn about the important role of giving and volunteering in a global context and gain exposure to the diverse practices of and responses to charity and philanthropy across countries. Students will also be given opportunities to reflect on their own motives for giving and volunteering, and consider how their motivations reflect or diverge from broader cultural trends.

Prerequisite: NONE

DSCI 110 Introductory Mathematics (1 credit): UDDIN MD. AZHAR & JIAN TANG

This is an introductory course in mathematics which will cover subjects including algebra, trigonometry, logarithm, probability and statistics.

Prerequisite: NONE

DSCI 115 Fundamentals of Mathematics (1 credit): JIAN TANG

In this course, we teach mathematics on complex numbers, linear algebras, series, calculus, and probability. Topics covered include: Complex numbers and Euler's form, vectors and tensors, matrices and determinants, Series and limits, Differentials and integrals, and Probability and statistics.

Prerequisite: DSCI 110 or equivalent knowledge.

DSCI 120 Introductory Physics (1 credit): JIAN TANG

This is a remedial course on physics including mechanics, thermal physics, wave phenomena, optics, electricity and magnetism, and atomic and nuclear physics, required for students at the pre-college level in Japan. Course content may vary depending on student needs.

Prerequisite: NONE

DSCI 125 Fundamentals of Physics (1 credit): JIAN TANG

In this course, students will learn college-level physics with limited use of mathematics. The emphasis will be on the concepts and principles of classical physics together with the historical origins for the ideas. Contents include mechanics (linear and angular momentum, kinetic and potential energy, conservation of momentum and energy), thermal physics and thermodynamics (enthalpy and entropy), oscillator and wave, electricity and magnetism, geometrical and wave optics.

Prerequisite: DSCI 120 or equivalent knowledge.

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

DSCI 135 Fundamental 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: DSCI 130 or equivalence knowledge.

DSCI 145 Fundamentals of Earth Science (1 credit): KATSUYUKI YAMASHITA

This is an introductory course focusing on Earth and Planetary Sciences. Topics include formation of planets, evolution of planetary atmosphere, geochemistry of the Earth's continental crust, and human impact on the environment.

Prerequisite: NONE

DSCI 155 Basic Biology (1 credit): MICHIHIRO SUGA

TBA

Prerequisite: NONE

<u>専門基礎 (*Senmon Kiso*) "Major Foundational"</u>

DCOR 201 Discovery Seminar I (1 credit): HAENG-JA CHUNG, HARUNA MIYAGAWA, TAK UESUGI

Discovery Seminar I will explore what it means to learn in a university setting among a diverse group of people. Inter-cultural communications, team building, information literacy, constructive criticism, and mutual respect will be covered.

Prerequisite: NONE

DCOR 202 Discovery Seminar II (1 credit): UDDIN MD. AZHAR, JIAN TANG, KIMIKO OSAWA, TAKA YOSHIOKA

Discovery Seminar II provides students with opportunities to learn and exercise important academic skills and activities such as presentation, discussion, and group work. The course will be taught by multiple instructors each with a specialisation in diverse fields of philanthropy, physical chemistry, chemistry, and political science.

Prerequisite: NONE

DCOR 203 Discovery Seminar III (1 credit): TBA

Discovery Seminar III will be taken concurrently with your Senior Project (DCOR 699). It is a year-long course in which Discovery students who are studying in different academic disciplines and departments come together and share their experience. It is also an occasion for you to prepare for your Senior Project presentation.

Co-requisite: DCOR 699

DCOR 251 Introduction to Composition (1 credit): TBA

Introduction to formality levels in different modes of written language including texting, email, essays, and online writings. Basics of academic writing, including an overview of discipline-specific patterns in the humanities, social sciences, and sciences, will also be covered.

Prerequisite: NONE

DCOR 252 Composition Skills (1 credit): TBA

Application of writing patterns introduced in DCOR 251 through essay-length assignments. Introduction to editing strategies for self-correction. Key issues in academic writing, including the ethical integration of outside sources, will also be addressed.

Prerequisite: DCOR 251 or permission of instructor.

DCOR 255 Interdisciplinary Reading Skills ESL (0.5 credits): TBA

Development of academic reading skills needed to successfully complete English-medium content courses in the sciences, social sciences, and humanities. Students will improve reading comprehension through strategies such as skimming for general meaning, scanning for specific information, and understanding meaning through context.

Prerequisite: NONE

DCUL 210 Cultural Anthropology (1.5 credits): HAENG-JA CHUNG

What do anthropologists do? Can you define the term "anthropology?" In this course, we will learn some basics of this discipline—study of human-beings—by focusing on cultural aspects. We will examine other cultures as well as our own using comparative and reflective reference points.

Prerequisite: NONE

Recommended: DCUL 110

DCUL 211* Peoples of Japan (1.5 credits): HAENG-JA CHUNG

By deconstructing the assumed homogenous concept of "Japanese people," we will investigate diverse populations and cultures in Japan. We will critically analyze one of the most frequently used notions of "culture" in anthropology as well.

Prerequisite: NONE

DCUL 216* Korean Diaspora (1.5 credits): HAENG-JA CHUNG

Through the lens of Korean diasporic communities around the world, we will learn about sending countries, migration and its implications, ethnic communities, and host societies.

Prerequisite: NONE

DCUL 220 Introduction to Social Inquiry (1.5 credits): HARUNA MIYAGAWA

In this course, students will learn the basic concepts and research methods in social sciences. We explore what roles research methods play in generating scientific knowledge, and why they are integral components of social science research. Through an introduction to qualitative and quantitative methods, students will learn how to turn simple wonders into scientific inquiries. Students will also learn about ethics of conducting research.

Prerequisite: NONE

Recommended: DCUL 120

DCUL 221* Family in Motion (1.5 credits): HARUNA MIYAGAWA

Family is a place of nurturance and conflict. It is a fundamental institution in modern society where customs are passed down from one generation to the next, and privileges and inequalities are reproduced in everyday life. By engaging with the empirical research on macro-structural changes involved in globalization, we will explore how these events have transformed the meanings and practices of family, and how society in turn is influenced by the changing nature of family.

Prerequisite: NONE

Recommended: DCUL 120

DCUL 226* Aging in Globalized World (1.5 credits): HARUNA MIYAGAWA

Humans go through various stages of life. In each stage, individuals are given various roles by society, some of which are founded on biological differences while others are "socially constructed." These ways of defining roles often weld into each other, solidifying the roles to create a stable society. Yet the notion of stability is often questioned. This course will explore how aging and events throughout one's life course are changing with time and space.

Prerequisite: NONE

Recommended: DCUL 120

DCUL 231* Environmental Anthropology (1.5 credits): TAK UESUGI

This is an introductory course on environmental anthropology. We ask questions such as: How are our beliefs about nature and culture related? Why do different cultures have different ethical beliefs regarding nature, and how are international agreements built on contested issues such as whale hunting? How are industrial pollution, pesticides and genetic modification technologies altering the relationship between humans and nature?

Prerequisite: NONE

DCUL 233* Anthropology of Disaster (1.5 credits): TAK UESUGI

Disasters such as the Tohoku earthquake of 2011 can force wide social transformations. How are "disasters" described by the media? How is "reconstruction" organized? By examining various frictions that may emerge between actors such as victims, volunteers, journalists, government and military, we explore cultural, political, and economic issues that emerge out of disasters.

Prerequisite: NONE

DCUL 236* Anthropology of Food (1.5 credits): TAK UESUGI

What food tastes good to you? What food do you find risky? What food sends your imagination to your bygone childhood, or to exotic lands? Study of cultural dimension of food allows us to explore how perceptions and sentiments such as taste, risk, and nostalgia are culturally conditioned. In this course we will study how such ephemeral experiences are also entangled with global economy and power structure.

Prerequisite: NONE

DCUL 238* Energy and Society (1.5 credits): TAK UESUGI

From depletion of fossil fuel to global warming, bleak prospects for the global energy situation have given rise to many new energy alternatives including solar, biomass, and geothermal energy. Such technological developments also have implications for the society by reorganizing labor, human habitation, as well as aesthetic sensibility of the consumers. In this course we will explore the relationship between forms of energy sources and the types of society they engender.

Prerequisite: NONE

DCUL 240 Introduction to Politics (1.5 credits): KIMIKO OSAWA

Politics is everywhere. Whether you like it or not, it affects you and you affect it. As such, it is imperative for any citizen of a political community to understand how politics works and why it works in the ways it does. This is an introductory course to the study of politics. You will learn a systematic way of analyzing it by learning the concepts and methods 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 as well as major actors such as political parties and interest groups.

Prerequisite: NONE

DCUL 241* Populism (1.5 credits): KIMIKO OSAWA

In this course, we will examine the phenomena called populism by situating it in a larger context of democracy. Does populism endanger democracy? Is it a manifestation of manipulation of ignorant people by political leaders? We are going to analyze these questions both theoretically and empirically. By analyzing populism, you will be able to deepen your understanding about democracy, political leaders, and the roles of citizens, including yourselves, in the process of democracy.

Prerequisite: NONE

DCUL 242* Politics of Local Government: The Case of Okayama (1.5 credits): KIMIKO OSAWA

While many studies of politics focus on the level of nation-states, politics can be also found at local levels (region, prefecture, town, village, etc.). In this course, we are going to examine the theories and case studies dealing with the relationship between the central government and local governments around the world with a particular focus on Japan. In the latter half of the course, we will examine the case of Okayama (either prefecture or city) to understand how politics works in the community we currently live in. By taking this course, you will become able to understand different ways in which political entities are organized within one country and how politics works at local levels, in particular in Okayama.

Prerequisite: NONE

DSIE 218* Negotiation Theories and Practices (1.5 credit): YUAN YUAN GONG

This course is designed to expand students' understanding of negotiations through theories such as social judgment, social cognition, and decision making, etc. Students will learn how to analyze their negotiation experiences based on the theories and experience various negotiations on class.

Prerequisite: NONE

DSIE 210 Introduction to Microeconomics (1.5 credits): TBA

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 212* Human Resource Management (Basic) (1.5 credits): YUAN YUAN GONG

This is an introductory course to Human Resources Management (HRM). It provides students with a general sense of the job of a human resources manager as well as various HRM functions such as selection, compensation, training & development and performance management.

Prerequisite: NONE

DSIE 215 Introduction to Macroeconomics (1.5 credits): TBA

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, Unemployment, Banks and Money Supply, Money Growth and Inflation.

Prerequisite: NONE

DSIE 216 Organizational Behaviour (Basic) (1.5 credit): YUAN YUAN GONG

Organizational Behavior is concerned with explaining, predicting, and enhancing the effectiveness of individuals and groups in work organizations. This is an introductory course to organizational behaviors. It focuses on the individual level of phenomenon and provides students with a general sense of management issues related to people within the organization.

Prerequisite: NONE

DSIE 227* Business Ethics (1.5 credit): YUAN YUAN GONG

Business Ethics studies moral dilemmas and problems that arise in business and considers the defensible ways ethical principles and standards ought to be applied to business. The course will develop and deepen students' understanding of our moral obligations to each other, the importance of moral character in business, and the goodness the business promises to bring to society.

Prerequisite: NONE

DSIE 230 Comparative Global Perspectives on Nonprofits, Volunteering, and Giving (1.5 credits): TAKA YOSHIOKA

In this course, students will explore the size, scope, and roles of nonprofits, volunteering, and giving across countries, and understand the diverse forms of philanthropic action. In addition, students will learn about the relationships and dynamics between the government, nonprofits, and businesses in a global context. Students will also study theoretical explanations for philanthropic action from political, sociological, and economic perspectives.

Prerequisite: NONE

Recommended: DSIE 130

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.

Prerequisites: NONE

Recommended: DSCI 110, DSCI 115

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

Recommended: DSCI 120, DSCI 125

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

Recommended: DSCI 130, DSCI 135

DSCI 255 Genetics and Molecular Biology (1.5 credits): AKIRA SATO

TBA

Prerequisite: NONE

DSCI 260 Introduction to Agricultural Sciences (1.5 credits): YUKI ICHINOSE

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

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

DCUL 310 Fieldwork and Ethnography (2 credits): HAENG-JA CHUNG

You will learn the basics of fieldwork, conduct your own research, and present your findings.

Prerequisites: DCUL 210 or permission of instructor.

Recommended: DCUL 110, DCUL 220

DCUL 312* Film and Literature (2 credits): HAENG-JA CHUNG

We will deepen and widen our understanding of Japanese society through film and literature.

Prerequisite: Three of DCUL or DSIE 2xx~4xx or permission of instructor.

DCUL 316* Popular Cultures (2 credits): HAENG-JA CHUNG

What kind of popular cultures are you familiar with? In this course we will pay special attention to contemporary pop cultures. We may investigate celebrity, fashion, music, theatre, literature, anime (Japanese animation), video game, and/or manga (Japanese graphic novels and comics) that are created and consumed in Japan and beyond. We will compare these cultural products and analyze their relationship to various social phenomena in larger contexts.

Prerequisite: Three of DCUL or DSIE 2xx~4xx or permission of instructor.

DCUL 320 Contemporary Migration in Global Perspective (2 credits): HARUNA MIYAGAWA

Often coupled with the question of rights, migration draws not only academic interests but political and economic interests. This course will explore the issues of migration primarily from a sociological perspective, supplemented by the perspectives of social demography, economics, and public policy. Students will be introduced to theories that attempt to explain why people migrate (and why others stay), where they head to (and where they avoid), why they stay at the destination (and why others return), and how they create a new "home" while being connected to their origin. The course will also explore how the act of migration and the presence of migrants challenge the existent norms and values as well as social institutions such as family, school, and legal system. Throughout the course, we will draw upon various case studies around the world.

Prerequisite: NONE

Recommended: DCUL 210, DCUL 216, DCUL 211, DCUL 221, DCUL 236, DCUL 240, DSIE 210, DSIE 215, DCUL 310

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, race, and ethnicity. In this course, we will explore how history and culture interact with a place and define the rhythm of life using empirical studies from the USA as well as Japan. We will focus specifically on some areas within Setouchi Region and examine how people navigate their daily life.

Prerequisite: NONE

Recommended: DCUL 220, DCUL 327

DCUL 327* History of Social Thought (2 credits): HARUNA MIYAGAWA

In this course, students will be introduced to philosophers and theorists from the past and present. We will draw insights from social sciences (e.g. sociology, history, etc.) as well as arts such as architecture, literature, and paintings. Thinkers we will refer to may range from Plato and Lao Tzu to the contemporaries such as Edward Said, Arundhati Roy, D.T. Suzuki, and Francisco Romero.

Prerequisite: DCUL 220 or permission of instructor.

Recommended: DCUL 337

DCUL 330 Medical Anthropology (2 credits): TAK UESUGI

With increased global movements, healthcare workers today frequently face the "problem" of cultural differences. Medical anthropologists attempt to make sense of different medical beliefs and explore the possibility of cultural translation. We also examine how social structures and cultural beliefs also affect the reality of illnesses and well-beings. Topics covered are: Medical belief systems, illness narrative, structural violence, social suffering, life, death and personhood, biosociality, global health, transcultural psychiatry, and environmental health.

Prerequisite: NONE

Recommended: Two of DCUL 2xx

DCUL 337 History of Science (2 credits): TAK UESUGI

In this class, students will learn about the basic concepts in philosophy, history and sociology of science. Through the discussion of concrete historical accounts of scientific discoveries, we will explore what distinguishes a scientist from a mad person or a sorcerer, scientific knowledge from witchcraft or art, and how scientific knowledge influences society today.

Prerequisite: NONE

Recommended: Two of DCUL 2xx

DCUL 340 Comparative Politics (2 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 patterns of citizens' political participation. As the factors that can produce similarities and differences among countries, this course examines regime types, political institutions, cultural and ideational factors, and major political organizations and actors such as political parties, bureaucracy, courts, interest groups, and social movements. While there are some overlaps of topics with Introduction to Politics, this course will examine these topics more in more depth and with analysis of different countries as cases.

Prerequisite: NONE

Recommended: DCUL 240

DCUL 344* Japanese Politics (2 credits): KIMIKO OSAWA

This course will examine how Japanese politics works in depth. We will examine the history of Japanese politics since the Meiji Restoration, the major actors, organizations, institutions, and dynamics of post-war Japanese politics, and current political events and policies. As we analyze why Japanese politics works as it does, you will be also introduced to the concepts and theories of political science that can help us understand the case of Japanese politics.

Prerequisite: NONE

Recommended: DCUL 240, DCUL 211

DCUL 346* International Politics (2 credits): KIMIKO OSAWA

This course examines dynamics and mechanisms of international politics. By focusing on the question of how actors, within sets of institutions, interact with each other, we will discuss puzzles of international politics such as why countries engage in wars, why there are civil wars and terrorism, why countries engage in international trade in certain ways, and why countries care about international human rights and global environment.

Prerequisite: NONE

Recommended: DCUL 240

DSIE 310* Microeconomics (2 credits): TBA

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 210 or permission of instructor.

DSIE 312* Training & Development (2 credits): YUAN YUAN GONG

Training & Development helps change employees' attitude towards work and towards the organization. It helps enhance employees' knowledge to embrace the changing environments. In this course, we will discuss various issues in T&D, for example, the relationship between training and strategy, training needs assessment, training methods/skills, and cross-cultural issues in training.

Prerequisite: NONE

DSIE 313* Development Economics (2 credits): TBA

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.

Prerequisite: NONE

DSIE 315* Macroeconomics (2 credits): TBA

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 215 or permission of instructor.

DSIE 316 Organizational Behaviour (Advanced) (2 credits): YUAN YUAN GONG

This is an advanced course to organizational behaviors. It focuses on how individuals, groups, organizations, and the surrounding environment interact and affect organizational effectiveness. Students are expected to understand the complex interplay of these multi-level effects is important in enhancing the effectiveness of the role as a manager (or manager-to-be) in managing subordinates, peers, and supervisors and contributing to organizational effectiveness.

Prerequisite: NONE

DSIE 317* Japanese Economy (2 credits): KEN AOO

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.

Prerequisite: NONE

DSIE 321* Innovation and Entrepreneurship (2 credits): TBA

Innovation helps enterprises differentiate themselves and innovation is driven by entrepreneurship. The aim of this course is to provide students with the fundamental theories and contemporary practices of innovation and entrepreneurship. Students will learn how to identify innovation and entrepreneurship opportunities, how to develop a business plan, how to acquire resources for their ventures and create and capture value from the ventures.

Prerequisite: NONE

DSIE 324* Leadership (2 credits): YUAN YUAN GONG

This course examines leadership theory and research, and emphasizing the development of leadership and interpersonal skills through self-assessment case analysis, and experiential exercises. Important fields within personnel management and human resource management, such as recruitment, working environment and health, are also discussed.

Prerequisite: NONE

DSIE 326* Marketing (Basic) (2 credits): YUAN YUAN GONG

This is an introductory course to marketing. The course focuses on the role of marketing and its importance in contemporary organizations and society. During the session, students will critically explore marketing principles, concepts and models from a practical perspective. Beyond studying the theory of marketing, students will analyze a variety of real-world examples and case studies.

Prerequisite: NONE

DSIE 330 Nonprofit Management and Governance (2 credits): TAKA YOSHIOKA

This course covers nonprofit governing boards and executives as well as management topics such as leadership, strategic management, and collaboration. First, students will understand how the role and functions of nonprofit governing boards and executives differ from those in the public and for-profit sectors. Second, students will examine the relationship between governing boards and executives in nonprofits. Third, students will become familiar with organizational theories and behavior as well as theories of leadership and leadership styles as they apply in nonprofits. Fourth, students will learn strategic management and organizational planning, including ways to identify, assess, and formulate appropriate strategies. Finally, students will explore networks, partnerships, and collaborative activity between nonprofits, the government, and businesses in achieving organizational missions.

Prerequisite: DSIE 130 or DSIE 230, or permission of instructor.

DSIE 350* Survey Methods (2 credits): TAKA YOSHIOKA

This course is designed to provide students with an overview of the survey process, including the development of survey objectives, questionnaire design, survey execution, and analysis of the survey data. Through this course, students will learn how to design and implement mail surveys and web surveys.

Prerequisite: DCUL 220 or permission of instructor.

DSIE 355* Basic Statistical Methods (2 credits): TAKA YOSHIOKA

This course introduces students to descriptive and inferential statistics often used in social science. The course aims to provide students with a solid foundation for analyzing data, and conveying analyses in convincing and appropriate ways. Topics covered include measures of central tendency and dispersion, probability and probability distributions, random variables, hypothesis testing and confidence intervals, statistical power, correlation, simple regression, and an introduction to multivariate regression. Students will use SPSS or Stata (a statistical software application) to develop their data analysis skills.

Prerequisite: DCUL 220 or permission of instructor.

DSCI 310* Elementary Mathematical Science (1 credit): Faculty of Environ. Science and Tech.: FUTOSHI HAYASAKA, TORU SASAKI, TAKASHI ISHIHARA

This course introduces the basic concepts and principles of single variable calculus using concrete examples and applications. The topics covered are: differentiation and integration, limits and continuity of functions and elementary properties of real numbers.

Prerequisites**:** NONE

DSCI 315* Elementary Statistical Science (1 credit): Faculty of Environ. Science and Tech.: WATARU SAKAMOTO

The occurrence of any phenomena in both the natural and social environment display a certain extent of chance fluctuation. Statistics provides methods for extracting useful information from data with such fluctuations. This course explains the concepts and basic methods

of statistics, such as probability and sampling distribution, statistical inference (estimation and test), and statistical analysis.

Prerequisites**:** NONE

DSCI 320 Atomic Physics (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

Recommended: DSCI 220

DSCI 325 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

Recommended: DSCI 320

DSCI 331 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 analyse the data obtained from a catalytic reaction and how it can be used to determine the mechanism.

Prerequisite: NONE

Recommended: DSCI 130, DSCI 135, DSCI 230

DSCI 333 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

Recommended: DSCI 130, DSCI 135, DSCI 230

DSCI 335 Fundamentals of Physical Chemistry (1 credit): Faculty of Environ. Science and Tech.: YOSHIKAZU KAMESHIMA, YUTAKA TAKAGUCHI

This is an introductory course on physical chemistry. Physical chemistry aims to understand the structures and properties of materials, compounds, molecules, etc. using the knowledge of physics. In particular, physical chemistry is essential for developing and interpreting the modern techniques used in determining the structure and properties of new synthetic materials. The topics covered include: atomic and molecular quantum mechanics, thermodynamics, kinetics theories, phase equilibrium, and electrochemistry.

Prerequisite: NONE

DSCI 337 Introduction to Environmental Chemistry (1 credit): Faculty of Environ. Science and Tech.: KUNIO KIMURA, TOKURO NANBA

Chemical industry has contributed to riches and comforts of today's life; but their products have also induced serious environmental problems. It is imperative, therefore, to understand chemical properties of materials for the construction of sustainable society. This course explores the relationship between materials used in everyday life such as plastics and ceramics and environmental issues from the perspective of chemistry. In addition, environmental topics such as acid rain, ozone hole, and waste recycling will also be introduced.

Prerequisites: NONE

DSCI 341/342 Civil Engineering I/II (1 credit/ea.): Faculty of Environ. Science and Tech.: KAZUSHI KIMOTO, BYEONGSU KIM, KEISUKE YOSHIDA, SEIJI HASHIMOTO, HIDEAKI NAGARE

In order for our civil life to be safe and comfortable, it is highly important to build and maintain an environmentally friendly urban system and infrastructures that are resistant to natural disasters. In this course, students will learn about the fundamental knowledge of civil and environmental engineering necessary for sustainable development of our society and the national land.

(*It is recommended that Civil Engineering I and II are both taken, but taking one or the other is also permitted)

Prerequisites: NONE

DSCI 350 Basic Physics Laboratory (1 credit): MICHINOBU MINO

TBA

Prerequisites: NONE

DSCI 353 Laboratory in Analytical Chemistry (2 credits): MINORU IZUMI

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): HIDETAKA NISHIDA

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): KUNIYUKI SAITO

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): YOSHIMASA NAKAMURA

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

Recommended: DSCI 260

DSCI 370 Introduction to Environmental Ecology (1 credit): KEIJI SAKAMOTO

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

Recommended: DSCI 260

DSCI 381/382 Introduction to Applied Plant Science I/II (1 credit ea.): YASUTAKA KUBO, YUICHI YOSHIDA

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

Recommended: DSCI 260

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

Recommended: DSCI 260

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

DCUL 410* Life History (2 credits): HAENG-JA CHUNG

In this course, you will learn life history and its techniques. Narrators of the life history can come from a variety of class, ethnic, racial, social, and geographic backgrounds. Contents may cover childhood and growing-up experiences; education and employment; family, identity, relationships, and community.

Prerequisite: Four of DCUL or DSIE 2xx~4xx or permission of instructor.

DCUL 413* Sex Work and Emotional Labor (2 credits): HAENG-JA CHUNG

This course introduces the theoretical notions of "sex work" and "emotional labor" (managing emotion of self and others), examines lives of sex workers, emotional laborers, and their customers in depth, and investigates intersections of sex work and emotional labor. It emphasizes critical analyses of the historical, structural, and social contexts. We will pay special attention to race/ethnicity/nationality, gender, religion, and/or class. This course requires an open mindedness. Capacity to discuss taboo issues and evaluate social biases as well as our own biases is also crucial.

Prerequisite: Four of DCUL or DSIE 2xx~4xx or permission of instructor.

DCUL 416* Visual Sociology (2 credits): HARUNA MIYAGAWA

Visual sociology is both a method and a theory course that examines how people "see." Influenced by our position in society, our optical senses and interpretations of phenomena at hand conspire together to form visual perceptions. Such perceptions also define who we are. Visual sociology offers concepts to analyze visual products critically. Using insights gained in this course, students will conduct their own visual project with a sociological sensitivity.

Prerequisite: DCUL 220 or permission of instructor.

Recommended: DCUL 312, DCUL 316, DCUL 327

DCUL 419* Anthropology of the Self (2 credits): TAK UESUGI

Violence, destitution, isolation, and oppression often contribute to mental health problems. In this course, we will explore how different notions of the self and individual's relationship to society affect the ways in which illnesses and well-beings are defined and experienced. Topics covered in this course may include: trauma, depression, adolescent social withdrawal (*hikikomori*), "sick society", and transcultural psychiatry.

Prerequisite: DCUL 330 or permission of instructor.

DCUL 421* Globalization and Development (2 credits): HARUNA MIYAGAWA

International development is neither neutral nor innocent. Taking a critical approach to the world of international development, this course explores 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. Professionals in the field of international development may be invited as guest lecturers.

Prerequisite: DCUL 320 or permission of instructor.

Recommended: DCUL 220, DSIE 230, DCUL 327, DCUL 346, DSIE 313, DCUL 440, DCUL 441

DCUL 423* Gender in Global Context (2 credits): HARUNA MIYAGAWA

Gender, as with race and ethnicity, is a social construct. In this course, students will explore how gender plays out in the lives of both sexes 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 critical look into the socioeconomic and political

context. The goal of this course is to contextualize gender as we explore how women and men interpret their circumstances, negotiate challenges they face, and make various life decisions.

Prerequisite: DCUL 320 or permission of instructor.

Recommended: DCUL 221, DCUL 312, DCUL316, DCUL 327, DCUL 413, DCUL 443

DCUL 426* Ethnicity, Sexuality, and Class (2 credits): HAENG-JA CHUNG

We analyze social issues at the intersection of multiple variables, such as class, gender, and ethnicity.

Prerequisite: Four of DCUL or DSIE 2xx~4xx or permission of instructor.

DCUL 428* Anthropology of Memory (2 credits): TAK UESUGI

This course is about memory and community in relation to traumatic experiences of violence and exodus. By exploring the intersection of psychological discourse and literary/ethnographic works on trauma we ponder upon the question of justice and responsibility for past atrocities.

Prerequisite: DCUL 330 or permission of instructor.

DCUL 431* Environment and Ethics (2 credits): TAK UESUGI

Threats of industrial chemicals and nuclear materials on human health and the environment have become significant topics of social justice. How do environmental catastrophes take shape and become recognized by each society? What kinds of cases lead to mass grievance? What are the legal, cultural and institutional instruments that enable or obstruct the pursuit of justice? Through case studies of various environmental catastrophes, we will explore the relationship between justice and knowledge.

Prerequisite: DCUL 337 or permission of instructor.

DCUL 433* Body and Mind (2 credits): HAENG-JA CHUNG

We will explore the body, mind, and their relationship.

Prerequisite: Four of DCUL or DSIE 2xx~4xx or permission of instructor.

Recommended: DCUL236, DCUL330

DCUL 435* Migration and Health (2 credits): HARUNA MIYAGAWA

Today, movements of people occur at unprecedented rate. Technological development, increased trade, and mass media have rendered foreign lands much more accessible to many people. This interconnectedness, in turn, has increased conflicts and exploitation around the world engendering new issues such as medical crises among refugees, global organ trade, global epidemics, and medical tourism. Human movements also challenge the capacity of local health care providers and services. We will explore the questions of human rights and global justice with a particular focus on the differential impacts of migration on health by gender, race, and ethnicity.

Prerequisite: DCUL 320 or permission of instructor.

Recommended: DCUL 221, DCUL 226, DCUL 330, DCUL 421, DCUL 419, DCUL 423, DCUL 426, DCUL 433, DCUL440, DCUL 428

DCUL 437* Science and Law (2 credits): TAK UESUGI

Most societies have some means of delivering justice based on certain forms of evidence; but what counts as evidence differs vastly in each society. Scientific evidence has become one of the most privileged forms of evidence in courts of law in many countries. Nonetheless, which scientific evidence should be admitted in courtroom still comes under heated debate. In this class, we will explore how scientific evidence is used in court cases and government regulations. The topics covered in this course may include: DNA fingerprinting technology, toxic tort litigations, and environmental regulations.

Prerequisite: DCUL 337 or permission of instructor.

DCUL 440* Nation-State (2 credits): KIMIKO OSAWA

In today's world, we often refer to the politics of a given "country," such as "politics of Japan." But what is this thing called "country"? The entity we casually call as "country" can be in fact more precisely named as "nation-state." In this course, we will examine the concept and realities of nation-state by exploring histories and theories of its development. We will also discuss if a nation-state is the most desirable way of dividing human beings into political groups. We are going to discuss real-world examples that pertain to these questions, such as the Brexit and the rise of nationalist far-right parties in various parts of the world.

Prerequisite: NONE

DCUL 441* Democracy (2 credits): KIMIKO OSAWA

In this course, we will examine democracy as a political system in depth. Questions we are going to discuss include: Is democracy better than non-democracy? Is direct democracy better than representative democracy? Why is distrust in existing political parties increasing in established democracies? Should we pursue deliberative democracy? Is populism a pure form of democracy or a threat to democracy? By taking this course, you can gain deeper understandings of democracy not only as an abstract idea but also as a set of practices that can be adopted in real world politics and that have significant effects on how we live our lives.

Prerequisite: NONE

Recommended: DCUL 240, DCUL 340

DCUL 443* Politics and Gender (2 credits): KIMIKO OSAWA

How do gender norms and gendered roles of men and women influence politics and vice versa? In this course, we are going to explore this question by examining such issues as: women and men as political actors and leaders, how policies can influence men and women differently, and if it is necessary to increase female politicians to improve women's status and situations. By taking this course, you can deepen your understandings of politics by realizing the powerful influence of gender on political processes and dynamics. You can also deepen your understandings of gender by realizing how gender norms and roles in our everyday lives can be constructed and contested by and in political processes.

Prerequisite: NONE

Recommended: DCUL 240, DCUL 340, DCUL 423

DCUL 445* Conducting Research in Political Science (2 credits): KIMIKO OSAWA

This course will help you learn how to write a research paper in the field of political science. Starting from the discussion of what a research paper is, this course will help you find topics for research, develop research questions, review the existing studies, collect and analyze the data, develop your arguments, and write the research design. Although the course can be useful for the students who do not focus on politics as their target of research, you will be asked to choose political events and phenomena as your topics.

Prerequisite: DCUL 240 or permission of instructor.

Recommended: DCUL 220, DCUL 340

DSIE 412* Human Resource Management (Advanced) (2 credits): YUAN YUAN GONG

This is an advanced HRM course that is designed to provide both a conceptual and practical study of human resource planning and staffing within organizations. Upon completing the course, the students will be able to develop an integrative framework and activities of HR planning and strategic staffing in an organization in accordance with the business strategies.

Prerequisite: NONE

DSIE 421* Social Entrepreneurship (2 credits): TBA

An increasing number of talented, ambitious individuals around the world, out of their concern for the varied problems faced by humanity,

are trying to solve these problems; some at a local level, some at an international level. Social entrepreneurship is about such people, what their organizations do, how they function and what challenges they face. The course aims to introduce students to the concept, theories and cases of social entrepreneurship which is an emerging field about how business and non-business leaders design, build and manage mission-driven enterprises. It will help students understand how social entrepreneurs help deliver solutions when markets and governments fail to do the same.

Prerequisite: TBA

DSIE 426* Marketing (Advanced) (2 credits): YUAN YUAN GONG

This is an advanced course to marketing. The course focuses on the marketing strategy and tactics, such as identifying target customers, creating customer value and company value, managing products, services, and brands. Students will develop a deeper understanding of the marketing practices and learn to apply them in real-world marketing activities.

Prerequisite: NONE

DSIE 430* Performance Evaluation and Impact Measurement (2 credits): TAKA YOSHIOKA

This course covers the use of both quantitative and qualitative data in evaluating performance and measuring social impact at both organizational and programmatic levels, as well as the application of decision-making models in improving the effectiveness of nonprofits. Students will also learn evaluation and assessment methods to develop organizational culture that embraces continuous improvement strategies.

Prerequisite: DSIE 330 or permission of instructor.

DSIE 431* Nonprofit and Social Marketing (2 credits): TAKA YOSHIOKA

This course covers marketing principles, theories, and techniques and their application in nonprofit settings. In particular, students will learn social marketing as a tool for mission attainment of a nonprofit. Students will also explore how technology is used to advance the marketing and communication strategies of a nonprofit.

Prerequisite: DSIE 330 or permission of instructor.

DSIE 432* Public Policy, Law, Advocacy, and Social Change (2 credits): TAKA YOSHIOKA

This course covers key public policy and legal framework that affect nonprofits as well as legal and tax implications related to nonprofit activities, including but not limited to giving, advocacy, lobbying, and any commercial activities of nonprofits. Students will also explore how individuals and nonprofits affect public policy or public opinions through such strategies as public education, policy research, community organizing, lobbying, and litigation.

Prerequisite: DSIE 330 or permission of instructor.

DSIE 433* Managing Staff and Volunteers (2 credits): TAKA YOSHIOKA

This course covers principles of strategic human resources management and their use in a nonprofit context, and implications for recruitment, supervision, motivation, engagement, retention, and development of staff and volunteers. Students will learn strategies for advancing teamwork and group dynamics and the implications for organizational performance and mission attainment. Students will also understand the role, value, and dynamics of volunteerism in carrying out nonprofit work and fulfilling nonprofit missions.

Prerequisite: DSIE 330 or permission of instructor.

DSIE 434* Social Finance and Fundraising (2 credits): TAKA YOSHIOKA

This course covers various forms of organized fundraising and resource development, including annual fundraising, planned and major giving, corporate fundraising, and special events for charitable giving, in addition to social investments. Students will learn important elements that are part of a comprehensive fund development process as well as ethical processes and practices of different fundraising strategies. Students will also explore generational and cultural differences in giving and implications for fundraising as well as trends in fundraising approaches such as the role of on-line giving, the use of social media, and crowdsourcing strategies.

Prerequisite: DSIE 330 or permission of instructor.

DSIE 455* Statistical Analysis for Social Sciences (2 credits): TAKAYUKI YOSHIOKA

In this course, students will further study multivariate regression analysis with a main focus on ordinary least squares (OLS) regression. Topics include hypothesis testing, heteroskedasticity, omitted variable bias, measurement error, and topics related to model specification. Students will use SPSS or Stata (a statistical software application) to develop their data analysis skills.

Prerequisite: DSIE 355 or permission of instructor.

DSCI 411* Seminar on Foundation of Mathematical Science (1 credit): Faculty of Environ. Science and Tech.: FUTOSHI HAYASAKA

In this course, students will systematically learn mathematical analysis by reading textbooks, solving exercise questions, giving presentations and making discussions. One or some of the following topics will be covered: Polynomials, Abstract algebra, Real analysis, Complex analysis, Probability theory, Topology of smooth manifolds, Nonnegative matrix theory, Differential equations and applications, Fundamentals of numerical methods and programming, etc.

Prerequisite: NONE

DSCI 412* Seminar on Applied Mathematical Science (1 credit): Faculty of Environ. Science and Tech.: TORU SASAKI

In this course, students will systematically learn elements of applied mathematics by reading textbooks, solving exercise questions, giving presentations and making discussions. One or some of the following topics will be covered: Polynomials, Computational algebra, Real analysis, Complex analysis, Differential equations, Probability theory, etc.

Prerequisites: NONE

DSCI 415* Seminar on Computational Science (1 credit): Faculty of Environ. Science and Tech.: WATARU SAKAMOTO, TAKASHI ISHIHARA

In this course students will systematically learn elements of computational science by reading textbooks, solving exercises, giving presentations and making discussions. Some of the following topics will be covered: numerical methods and algorithms for systems of linear equations, differential equations, optimization and integration; simulation, visualization and so on.

Prerequisite: NONE

DSCI 416* Seminar on Statistical Science (1 credit): Faculty of Environ. Science and Tech.: WATARU SAKAMOTO

In this course students will systematically learn elements of statistical science by reading textbooks, solving exercises, giving presentations and making discussions. Some of the following topics will be covered: Data arrangement, Probability distribution, Sampling distribution, statistical inference (estimation and test), etc.

Prerequisite: NONE

DSCI 420 Molecular Spectroscopy (1 credit): 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

Recommended: DSCI 325

DSCI 421 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.

Recommended: DSCI 420

DSCI 421 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.

Prerequisites: NONE.

Recommended: DSCI 420

DSCI 425 Case Studies for Molecular Spectroscopy (1 credit): JIAN TANG

Atmospheric environmental molecules, such as SOx and NOx, can be either normal stable molecules or transient unstable molecules with short lifetimes. Different molecular structures with various types of vibrational and rotational motions give various molecular spectra, or fingerprints, which can be used for the analysis and monitoring of the environments. Studies on several typical environmental molecules will be presented in this course.

Prerequisite: NONE

Recommended: DSCI 420

DSCI 430 Biomass and Bioenergy (2 credit): UDDIN MD. AZHAR

The course of Biomass and Bioenergy will cover the following topics: renewable feedstocks, their production, availability and attributes of biofuel/bioenergy production; types of biomass derived fuels and energy; thermochemical conversion of biomass to heat, power and fuel; biochemical conversion of biomass to fuel; environmental aspects of biofuel production; economics and life-cycle analysis of biofuel; value adding of biofuel residues; case studies on biofuel production.

Prerequisite: NONE

Recommended: DSCI 130, DSCI 135, DSCI 230

DSCI 431 Advanced Catalysis (2 credit): UDDIN MD. AZHAR

Advanced Catalysis is a practically-oriented course designed to teach students the fundamentals and application of catalysts and processes utilized in the chemical, petroleum, environmental and alternative energy industries. The course will review the fundamental principles of kinetics, characterization, and preparation of catalysts. Emphasis will be placed on processes for the industrial production of hydrogen, petroleum products for conventional transportation fuels, commodity and specialty chemicals, polymers, and alternative sources of energy using catalysts, biomass conversion to fuels.

Prerequisite: DSCI 331 or permission of instructor.

DSCI 432* Heat and Mass Balances (1 credit): Faculty of Environ. Science and Tech.: TBA

An environmentally friendly chemical process should be analyzed by using two principles: equilibrium and kinetics of state change. Heat and mass balances which are based on the energy and mass conservation laws, respectively, are associated with the above principles. In this course, the calculation methods of heat and mass balances are introduced under the following conditions: batch and flow operations, steady and unsteady flow operations, exothermic, endothermic and adiabatic conditions, complicated process involving multiple reaction and separation plants, etc. Some calculation drills are also programed.

Prerequisite: DSCI 335 or permission of instructor.

DSCI 433* Environmental Process Engineering (1 credit): Faculty of Environ. Science and Tech.: YUKITAKA KIMURA

When designing a process of producing materials and energy, it is important for the process to have low-impact on the environment. This course covers some of the following subjects, which are important for providing environment-suitable process: concept of mass balance, diffusion, and unit operation in chemical processes.

Prerequisite: NONE

DSCI 434* Recycling Engineering (1 credit): Faculty of Environ. Science and Tech.: TOKURO NANBA

Recycling methods of wastes are classified into 3 types, that is, material recycle, chemical recycle, and thermal recycle. In the first half of this course, the lecturer introduces waste recycling methods from the viewpoint of engineering. And in the second half, the students will survey various issues of waste recycling, not only as a technical problem, but also as an economic or political problems in their own countries or regions. The results of the survey are presented in the class. Through the discussion, appropriate choice of recycling method will be explored for the establishment of a sound-resource recycling society.

Prerequisite: NONE

DSCI 435* Process Systems Engineering (1 credit): Faculty of Environ. Science and Tech.: TOSHINORI SHIMANOUCHI

This course will cover the following topics: Fundamental analysis of transport phenomena based on the balance equation of mass, heat, and momentum; Unit operations in chemical process; Safety and stability of chemical process; Process intensification. We will also survey the essence of chemical engineering science to design the chemical process based on the balance equation.

Prerequisite: NONE

DSCI 436* Ceramics Science for Renewable Energy Utilization (1 credit): Faculty of Environ. Science and Tech.: SHUNSUKE NISHIMOTO

This class will explain the fundamentals of ceramics to utilize solar energy. In particular, TiO_2 photocatalyst surfaces, which exhibit interesting self-cleaning property, will be explained as an example of widely used environmentally friendly materials. In addition to the recent studies about TiO_2-based self-cleaning surfaces, bio-inspired unique materials for self-cleaning surfaces will be explained in this class.

Prerequisite: NONE

DSCI 437* Glass Science for Resource Recycling (1 credit): Faculty of Environ. Science and Tech.: YASUHIKO BENINO

This course will cover the fundamentals of materials science and chemistry of inorganic glasses focusing on environmental issues in industrial setting, including energy and resource saving issues. Students will learn a series of material cycles of manufacturing, evaluating and utilizing the material's functions, and recycling the resource, based on fundamental inorganic chemistry and solid state chemistry. In the experimental part of this course, students will experience the preparation of glass samples in a laboratory and then a

Prerequisite: NONE

DSCI 438* Functional Organic Materials Chemistry (1 credit): Faculty of Environ. Science and Tech.: TOMOYUKI TAJIMA

In this course, students will learn photo chemistry, which results from the absorption of light, and the extraordinary influence of light on chemical behaviors. The course will cover the principles and applications of photochemistry from both a physical chemistry and organic chemistry angle. The latest developments in photochemistry, such as organic solar cell, photodynamic therapy applied to cancer,

photoreaction, and photochromatic imaging, will be presented in this course.

Prerequisite: NONE

DSCI 439* Structure and Properties of Biodegradable Polymer (1 credit): Faculty of Environ. Science and Tech.: SHINICHI YAMAZAKI

This course provides the fundamental knowledge of structure and properties of biodegradable polymers such as poly (L-lactic acid) and naturally occurring polymers. Students will learn the primary structure of polymeric materials, how to determine the molecular weight of polymers, statistical treatment of chain molecules, solution properties, thermal properties and solid state physics of polymers. This course also deals with the historical introduction and the recent application of biodegradable polymers.

Prerequisite: NONE

DSCI 441 Conservation and Utilization of Water Resources (2 credits): Faculty of Environ. Science and Tech.: KENJI OKUBO, MITSUYO SAITO

Local water resource is defined by the volume of water available in a typical year, which is generally determined by the difference between precipitation and evapotranspiration. It varies temporally and spatially, differs in quality and is affected by the global climate change and human activities. The course provides a hydrological overview to understand water resources such as water budget, water cycle and other water issues related watershed sciences.

Prerequisites: NONE

DSCI 442 Environmental Issues and Recycling Processes of Resources (2 credits): Faculty of Environ. Science and Tech.: YASUHIRO MATSUI, SATOSHI NISHIYAMA

This course provides a basic understanding of the solid waste management, and the transition of the energy security policies of major countries.

1. Solid waste management: The basic concept of solid waste management and 3R promotion, definition of solid waste, waste generation and characteristics, waste collection and transport, and technologies and systems for waste treatment and landfill will be lectured.

2. Energy security: Currently each country is carrying out various measures to strengthen their energy security that are based on factors such as their respective resource endowments, and energy industry structures. The lecture aims to show the direction of the energy policies from the viewpoint of geological disposal of radioactive waste related to nuclear power plants.

Prerequisites: NONE

DSCI 461 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: NONE

Recommended: DSCI 260, DSCI 360

DSCI 462 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: NONE

Recommended: DSCI 260, DSCI 360

DSCI 463 Biological Chemistry (1 credit): YOSHIYUKI MURATA

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: NONE

Recommended: DSCI 260, DSCI 360

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: NONE

Recommended: DSCI 260, DSCI 370

DSCI 472 Economics, Management and Technology Progress in Japanese Agriculture (1 credit): ISAO YOKOMIZU

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: NONE

Recommended: DSCI 260, DSCI 370

DSCI 473 Ecological Approach to Sustainable Agriculture (1 credit): KAZUTOO SHIMA

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: NONE

Recommended: DSCI 260, DSCI 370

DSCI 481 Vegetables 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.

Prerequisite: NONE

Recommended: DSCI 260, DSCI 381, DSCI 382**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.

Prerequisite: NONE

Recommended: DSCI 260, DSCI 381, DSCI 382

DSCI 483 Fruit Science (1 credit): YASUTAKA KUBO

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

Recommended: DSCI 260, DSCI 381, DSCI 382

DSCI 484 Crop Genetics and Breeding (1 credit): KENJI KATO

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.

Prerequisite: NONE

Recommended: DSCI 260, DSCI 381, DSCI 382

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.

Prerequisite: NONE

Recommended: DSCI 260, DSCI 381, DSCI 382

DSCI 491 Animal Production Science (1 credit): NOBORU SAITO

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: NONE

Recommended: DSCI 260, DSCI 390

DSCI 492 Food and Nutrition Science (1 credit): HIDETOSHI MORITA

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: NONE

Recommended: DSCI 260, DSCI 390

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: NONE

Recommended: DSCI 260, DSCI 390

Practicum 実践科目

DCOR 501 Study Abroad (2 credits): DISCOVERY FACULTY

When you study abroad, you can earn 2 credits, by completing the following tasks: (1) Preparing for your study abroad, including the planning of your course of study; (2) Sharing your activities and experiences on-line during your stay at a school you study at; and (3) Reflecting and reporting your experiences after you come back to Japan.

Prerequisite: Academic Advisor's permission in advance.

DCOR 591 Independent Study I-VIII (1~8 credit(s)): DISCOVERY 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 (2 credits): 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.

Recommended: DCUL 210, DCUL 220, DCUL 242, DCUL 310, DCUL 231, DSIE 230, DSIE 218

DSIE 511/512 Career Workshop I/II (1 credit/ea.): YUAN YUAN GONG, TAKA YOSHIOKA

In these courses, students will learn from professionals in the business and nonprofit sectors how to improve job-seeking skills and career development strategies, so that they can become more competitive in the job market in the future.

Prerequisite: 2nd year or above

DSIE 551 Internship (1~8 credit(s)): YUAN YUAN GONG, TAKA YOSHIOKA

From the 2nd year onwards all students can pursue internships at various small and large companies, nonprofits and the government offices within and outside Japan. Students are required to attend the pre-internship career workshop and to receive an approval from their Academic Advisor or Senior Project Advisor before commencing the internship. Students can earn a maximum of 8 credits by pursuing multiple internships in the course of their 4-year degree program. Credits are awarded based on a weekly log of work done, internship report and evaluation submitted by the organisation.

Prerequisite: Academic Advisor's permission in advance.

DSCI 543 Laboratory in Water Management (1 credit): Faculty of Environ. and Tech.: HIDETAKA CHIKAMORI

In this laboratory course for water flow mechanism, irrigation and drainage, students observe hydraulic phenomena by using a number of experimental devices such as experimental open channel and experimental pipeline system, and understand the hydraulic mechanism of these phenomena. Hydraulic jump, flow over weir and flow under the gate are typical examples of these phenomena of open channel flow, and Venturi effect, flow velocity distribution, and friction loss head are those of closed conduit flow. The students will understand fundamental hydraulic principle governing water flow by analyzing the results of the hydraulic experiments, which is important for designing drainage and irrigation system.

Prerequisite: NONE

DSCI 544 Laboratory in Environmental Biology (1 credit): Faculty of Environ. and Tech.: YOSHITAKA NAKASHIMA, KAZUYOSHI NAKATA

The purpose of this laboratory course is to acquire the methods and learn the procedures for analyzing the relationships between general environmental factors (e.g., light, temperature, water environment) and the ecological aspects of life stage, distribution and behavior in plant and aquatic animals.

Prerequisite: NONE

DSCI 545 Laboratory in Environmental Soil Science (1 credit): Faculty of Environ. and Tech.: YASUSHI MORI

Soil is regarded as one of the environmental resources along with air and water. This experimental course covers the physical, chemical and biological properties of soils, such as particle size, water content, hydraulic conductivity and nitrogen concentration. The characteristics of soils are evaluated through laboratory experiments and field survey.

Prerequisite: NONE

DSCI 546 Laboratory in Soil and Concrete Mechanics (1 credit): Faculty of Environ. and Tech.: TOSHIFUMI SHIBATA, TAKAYUKI SHUKU

To understand mechanical characteristics of construction materials such as soils and concretes is necessary to achieve safe and economical constructions of civil structures. This laboratory course provides the basics of laboratory experiments on soil and concrete materials from the viewpoint of engineering. Through some laboratory experiments in this course, students can learn how to evaluate physical/mechanical characteristics on the materials.

Prerequisite: NONE

DSCI 549 Community Development in Asia (2 credits): Faculty of Environ. Science and Tech.: DOO-CHUL KIM, FUMIKAZU UBUKATA, YASUAKI KUKI, YASUKO HONDA.

This course is designed to provide a comparative perspective on rural sustainability in Japan. Through field trips (full-day field trips on weekends) to rural areas in Okayama Prefecture and nearby, we focus on community development. Topics of field trips covered in this course are various dimensions of community development such as depopulation, revitalization of rural economy, and local governance of common resources. The main agenda will be to empower the local people for sustainable rural development. Students will develop their research skills on field survey, oral presentation, and group discussion.

We welcome students who are interested in field trips or social research. Though the main topics of this course are related to social sciences and humanities, we strongly encourage students to develop interdisciplinary perspectives, including both natural and social sciences.

Make sure to attend the first class, because the schedule will be arranged in consultation with students then. Field trips will be held on the weekends.

Prerequisites: Sign up prior to registration necessary

DSCI 561/562/563 Laboratory in Agrochemical Bioscience 1/2/3: 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.

Prerequisite: Instructor's permission in advance.

Recommended: DSCI 260, DSCI 360

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 (8 credits): HISASHI DATAI, KAZUTOO SHIMA, KAZUHIKO NANBA, KAZUO TAKAHASHI

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.

Prerequisite: Instructor's permission in advance.

Recommended: DSCI 260, DSCI 370

DSCI 581/582/583 Laboratory in Applied Plant Science 1/2/3 (6 credits): YUKI MONDEN

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.

Prerequisite: Instructor's permission in advance.

Recommended: DSCI 260, DSCI 381, DSCI 382**DSCI 591/592/593/594/595/596 Laboratory in Animal Science 1-1/1-2/2-1/2-2/3-1/3-2 (6 credits): 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.

Prerequisite: Instructor's permission in advance.

Recommended: DSCI 260, DSCI 390

Research Seminar and Senior Project 卒業研究等

DCOR 601-608 Research Seminar (1~8 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 650 Applied Writing and Research Skills (1 credit): TBA

Application of research skills introduced in DCOR 250, with increased emphasis on internet and electronic resources. Students will complete short, high-interest projects individually or in groups, and present findings to the class via multi-media formats.

Prerequisite: Instructor's permission in advance.

DCOR 699 Senior Project (10 credits): TBA

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 project in English before graduation.

Prerequisite: Instructor's permission in advance.

Appendix B: Prerequisite Maps

Prerequisite maps are there to help you understand how courses are connected, and in which academic term they are offered. Detailed prerequisites are indicated in the Course List in Appendix B.

Here are some explanations of the prerequisite maps to follow.

1) Academic Term Color Key:

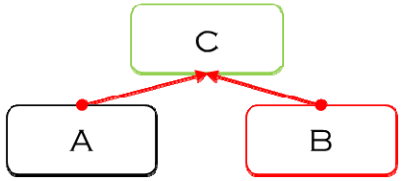
2) Arrow Key:

- Solid arrows ●⟶ indicate prerequisites (or co-requisites) (see Example 1).
- Dashed arrows ●- - -▸ indicate prerequisites (or co-requisites) with options (see Example 2).

3) Course Group Key:

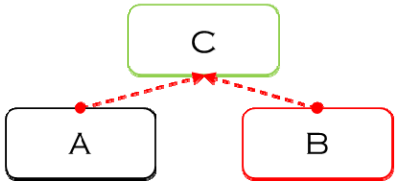
- Dashed lines surrounding multiple courses indicate courses with the same prerequisites (or co-requisites) (see example A).
- Solid lines surrounding multiple courses indicate multiple prerequisites (or co-requisites) (see example B).
- Dashed lines surrounding multiple courses indicate prerequisites (or co-requisites) with options (see example C).

Example 1



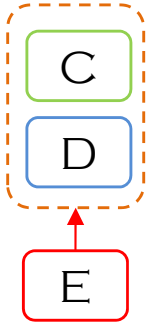
<A> AND <B> are required to take <C>

Example 2



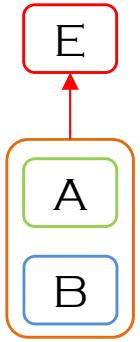
<A> OR <B> are required to take <C>

Example A



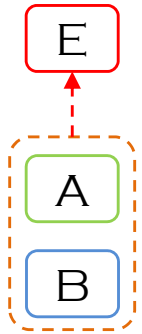
<E> is a prerequisite for <C> and <D>

Example B



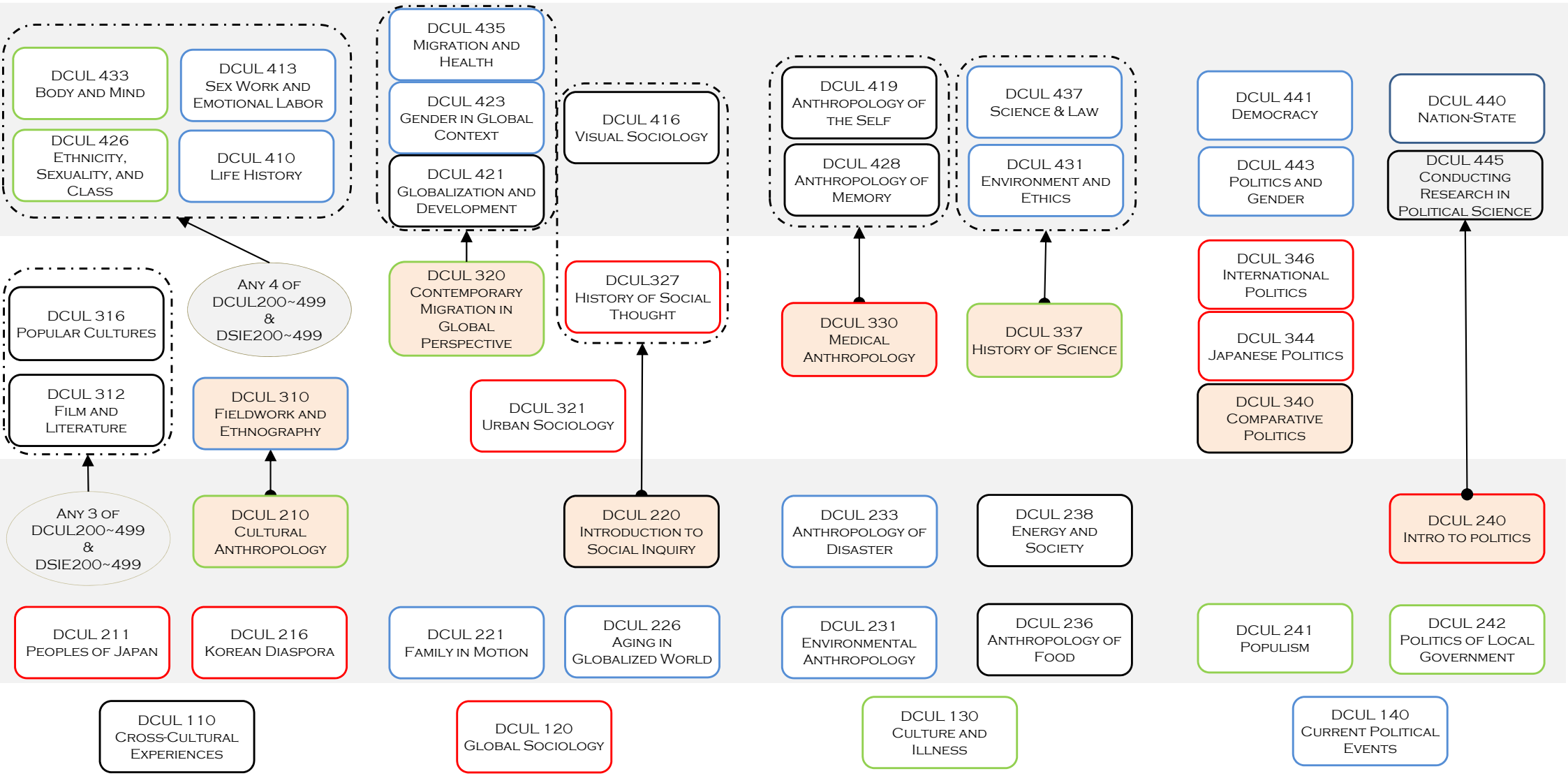
<A> AND <B> are prerequisite for <E>

Example C

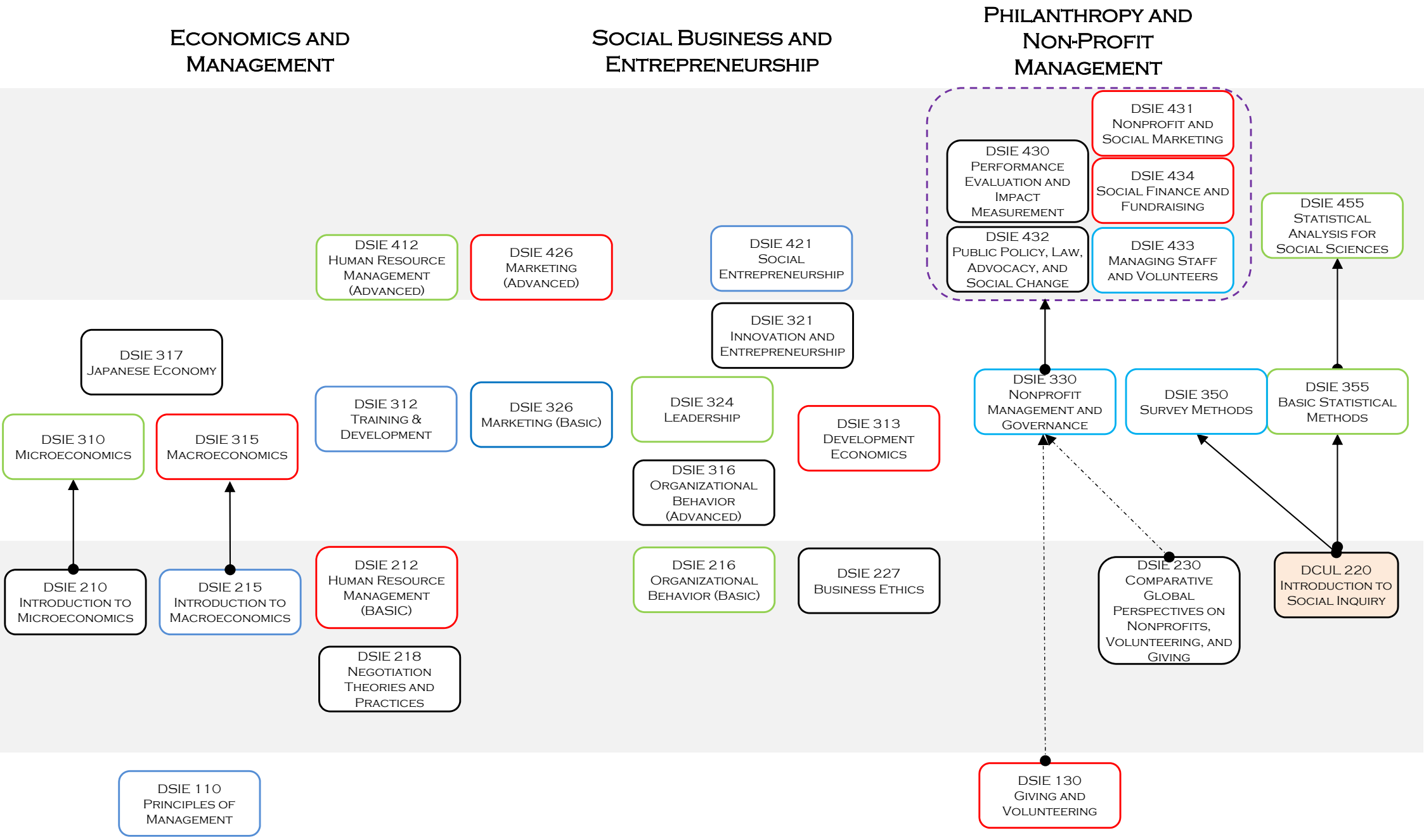


<A> OR <B> is prerequisite for <E>

Cultural Diversity and Communities

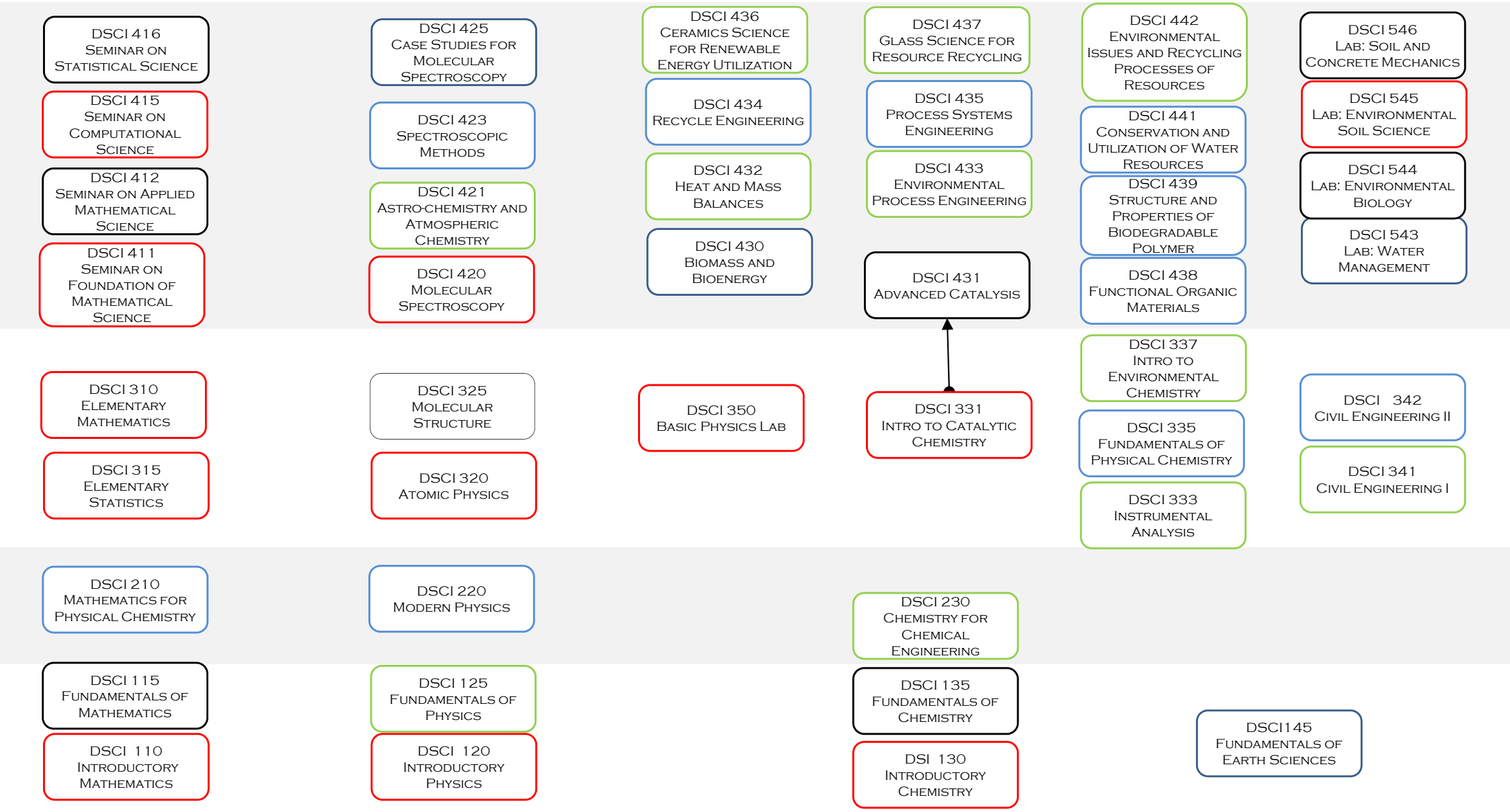


Social Innovation and Entrepreneurship

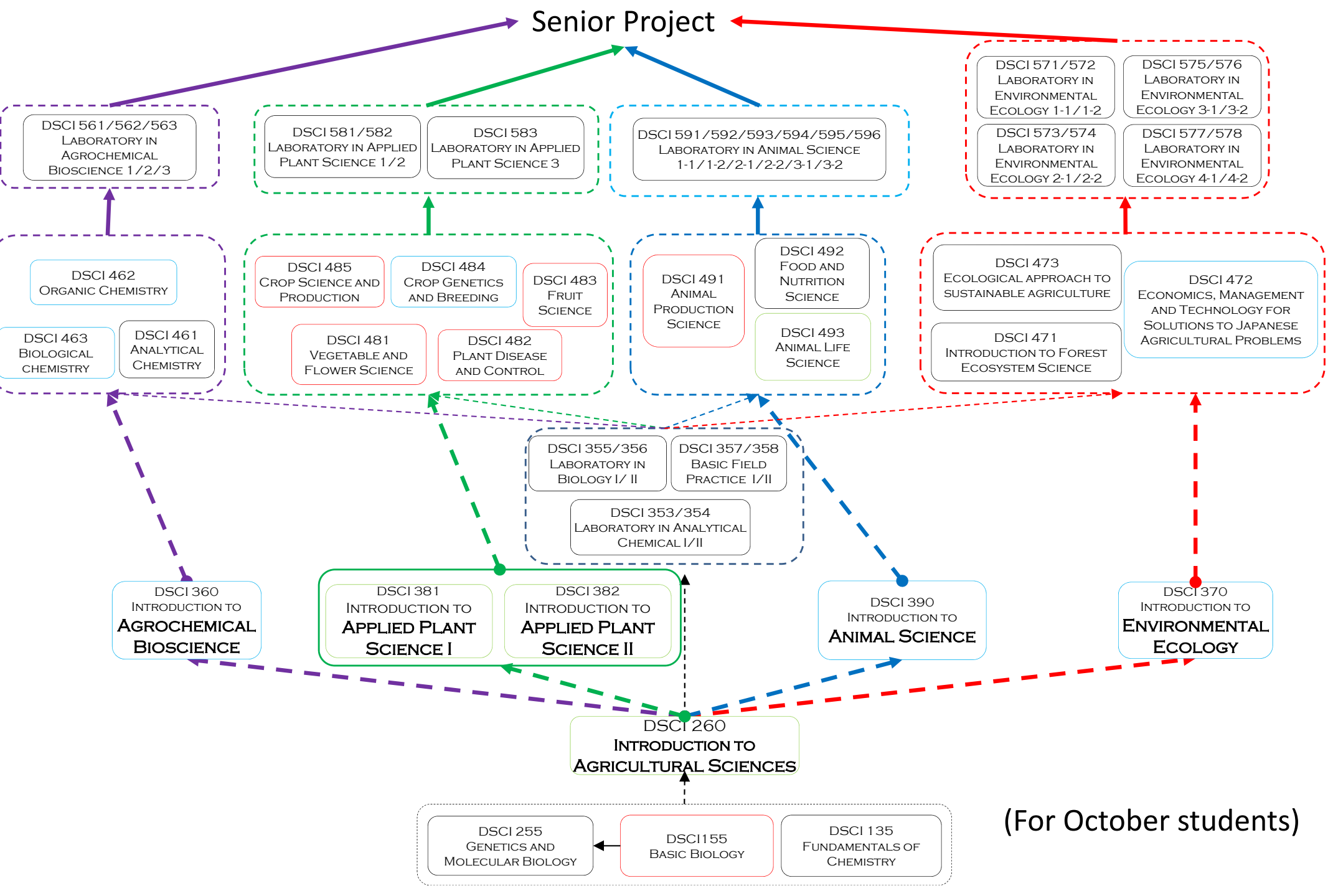


DSCI

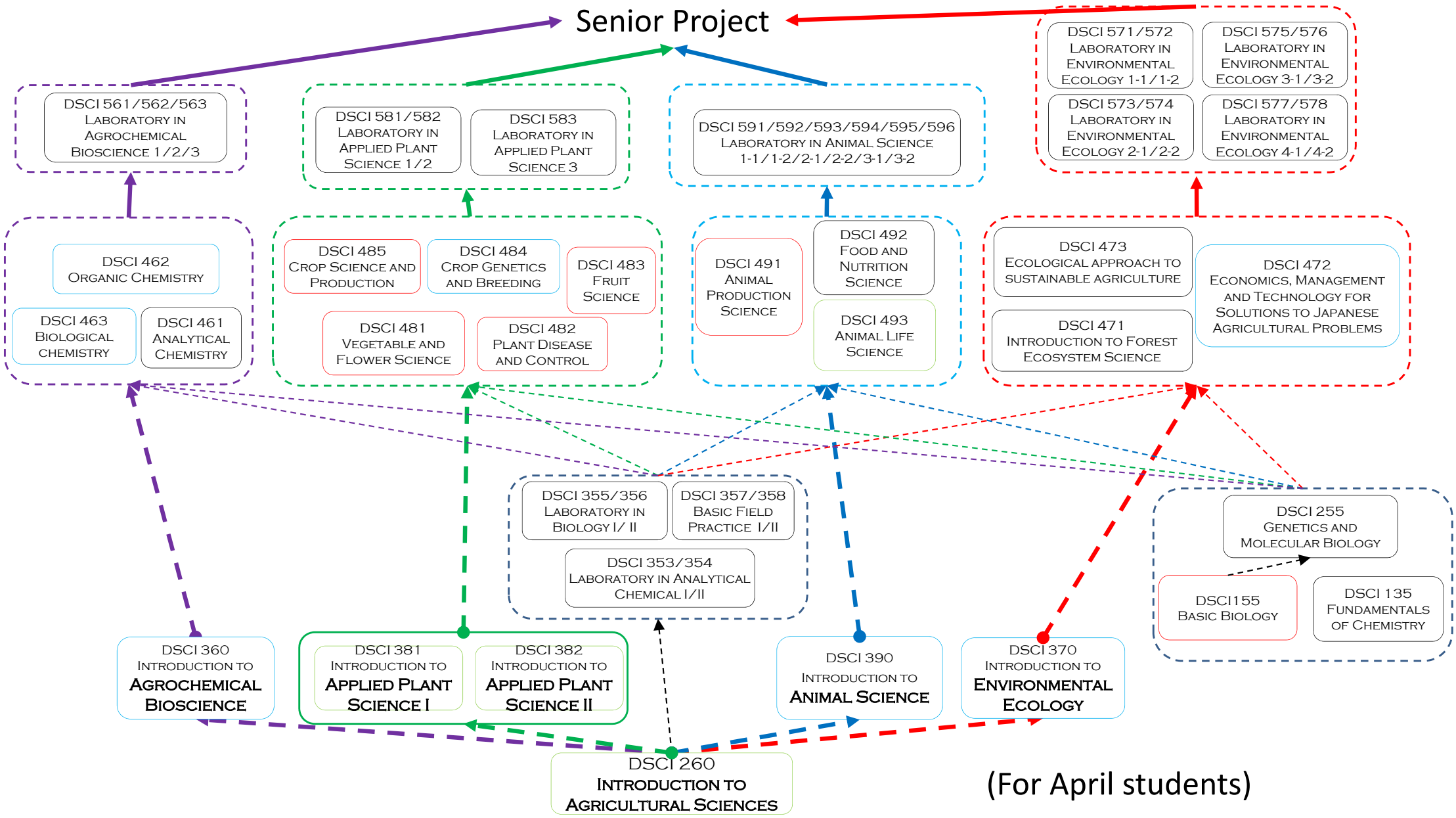
Transdisciplinary Sciences for Global Sustainability



DSCI, Transdisciplinary Sciences for Global Sustainability



DSCI, Transdisciplinary Sciences for Global Sustainability



As of April 1, 2019
Note:Subject to change

Appendix C-1: Curriculum Table (*Kyoyo*)

Course Category	Graduation Requirements				Subcategories	Course Code	Course Title	Course Title in Japanese	Instructor(s)	Credits	2019				2020				2021				2022			
	Required	Elective Required	Elective	Total							1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
教養教育(Kyoyo Kyoiku) Libeart Arts	0.5			28	Educational Orientation 導入教育	DCOR 105	Career Design Basic Course	キャリア形成基礎講座	All Faculties	0.5	OJ				OJ				OJ				OJ			
	0.5					DCOR 106	Introductory Course of Okayama University	岡山大学入門講座	All Faculties	0.5	OJ				OJ				OJ				OJ			
	1					DCOR 100	Discovery Guidance (Summer/Winter)	ディスカバリー・ガイダンス	Faculty of Agriculture	1		OJ		OE		OJ		OE		OJ		OE		OJ		OE
		4	14		Intellectual Understanding 知的理解	DCUL 110	Cross-Cultural Experiences	比較文化理解	Haeng-ja Chung	1				O				O				O				O
						DCUL 120	Global Sociology: Understanding Diversity	国際社会学：多様性を理解する	Haruna Miyagawa	1			O		O				O				O			
						DCUL 130	Culture and Illness	文化と病	Tak Uesugi	1	O				O				O				O			
						DSIE 110	Principles of Management	経営学原理	Yuan Yuan Gong	1		O				O				O				O		
						DSIE 130	Giving and Volunteering	寄附とボランティア	Taka Yoshioka	1			O				O				O				O	
						DCUL 140	Current Political Events	時事問題	Kimiko Osawa	1		O				O				O				O		
						DSCI 110	Introductory Mathematics I	数学入門　Ⅰ	Part-Time Instructor	1			O				O				O					
						DSCI 111	Introductory Mathematics II	数学入門　Ⅱ Ⅰ	Azhar Uddin/Jian Tang	1				O				O				O				O	
						DSCI 120	Fundamentals of Physics Ⅰ	物理学基礎Ⅰ	Jian Tang	1			O				O				O					O
						DSCI 130	Introductory Chemistry	化学入門	Azhar Uddin	1			O				O				O				O	
						DSCI 115	Fundamentals of Mathematics	数学基礎	Jian Tang	1	O				O				O				O			
						DSCI 125	Fundamentals of Physics Ⅱ	物理学基礎Ⅱ	Jian Tang	1	O				O				O				O			
						DSCI 135	Fundamentals of Chemistry	化学基礎	Azhar Uddin	1				O				O				O				
						DSCI 155	Basic Biology	生物学基礎	Michihiro Suga	1			O				O				O					O
						DSCI 145	Fundamentals of Earth Sciences	地学基礎	Katsuyuki Yamashita	1		O				O				O				O		
		6			Language 言語		Introductory Foreign Language Courses (other than English or Japanese)	初修外国語系科目	Various		O	O	O	O	O	O	O	O	O	O	O	O	O	O		O
							Japanese Language (Sogo)	日本語：総合	Various		O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
							Japanese Language (Theme & Skill)	日本語：テーマ別・技能別	Various		O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
					Art and Practices 実践知・感性																				O	O
	1				Versatile Skills 汎用的技能と健康	DCOR 109	Introduction to Information Processing 1	情報処理入門Ⅰ	Masaki Murakami	1	OJ		OE		OJ		OE		OJ		OE		OJ		OE	
		1			Upper Division Liberal Arts 高年次教養	DCOR 159	Introduction to Writing and Research Skills	ライティング・アンド・リサーチ・スキルズ入門	TBA	1			O		O		O		O		O		O		O	
								他学部提供の高年次教養科目・留学先での高年次教養に当たる科目の読み替え		1																

As of April 1, 2019
Note:Subject to change
** Not counted towards the fullfillment of 6 Required Elective （選択必修）credits of *Senmon Kiso*.

Appendix C-2: Curriculum Table (*Senmon*)

Course Category	Graduation Requirements: Required	Elective Required	Elective	Total	Modules		Course No. for GAKUMU (academic) System	Course Code	Course Title	Course Title in Japanese	Prerequisite 科目 (Course Codeで記載)	Recommended 科目 (Course Codeで記載)	2019Instructor(s)	2019授業担当教員	2019 1	2019 2	2019 3	2019 4	2020 1	2020 2	2020 3	2020 4	2021 1	2021 2	2021 3	2021 4	2022 1	2022 2	2022 3	2022 4
専門基礎 Senmon Kiso	3				Common Seminars		131001-131004	DCOR 201	Discovery Seminar I	ディスカバリーセミナー Ⅰ			Haeng-ja Chung, Haruna Miyagawa, Tak Uesugi, Yuan Yuan Gong	鄭 幸子, 宮川 陽名, 上杉 健志, Yuan Yuan Gong			○				○				○			
							131011-131014	DCOR 202	Discovery Seminar II	ディスカバリーセミナー II			Taka Yoshioka, Kimiko Osawa, Jian Tang/Azhar Uddin	吉岡 貴之, 大澤 貴美子, Jian Tang/Azhar Uddin	○				○				○				○			
							131021-131023	DCOR 203	Discovery Seminar III	ディスカバリーセミナー III	DCOR201, DCOR202		TBA	TBA							○	○	○	○	○	○	○	○	○	○
		6			Academic English		131052 131056	DCOR 251	Introduction to Composition	コンポジション入門			Ian Nakamura/TBA	Ian Nakamura/TBA	○		○		○		○		○		○		○		○	
							131053 131057	DCOR 252	Composition Skills	コンポジション・スキルズ	DCOR251		Ian Nakamura/TBA	Ian Nakamura/TBA		○		○		○		○		○		○		○		○
							131054	DCOR 255	Interdisciplinary Reading Skills ESL	学問分野を横断するリーディング			Ian Nakamura/TBA	Ian Nakamura/TBA		○			○				○				○			
					Academic Japanese		131901	DCOR 291	Academic Japanese Training I**	アカデミック・ジャパニーズ・トレーニング Ⅰ**			Eiko Ushida	牛田 英子	○		○		○		○		○		○		○		○	
							131902	DCOR 292	Academic Japanese Training II**	アカデミック・ジャパニーズ・トレーニング ⅡI**	DOR 291		Eiko Ushida	牛田 英子		○		○		○		○		○		○		○		○
					Cultural Diversity and Communities	Basic Courses	131039	DCUL 210	Cultural Anthropology	文化人類学		DCUL110	Haeng-ja Chung	鄭 幸子	○				○				○				○			
							131031	DCUL 211	Peoples of Japan	日本の多様な人たち			Haeng-ja Chung	鄭 幸子			○										○			
							131032	DCUL 216	Korean Diaspora	世界のコリアン・コミュニティ			Haeng-ja Chung	鄭 幸子							○						○			
							131040	DCUL 220	Introduction to Social Inquiry	社会調査法入門		DCUL120	Haruna Miyagawa	宮川 陽名				○				○							○
							131033	DCUL 221	Family in Motion	「動く」家族		DCUL120	Haruna Miyagawa	宮川 陽名										○					
							131034	DCUL 226	Aging in Globalizing World	高齢化とグローバル社会		DCUL120	Haruna Miyagawa	宮川 陽名						○						○			
							131035	DCUL 231	Environmental Anthropology	環境人類学			Tak Uesugi	上杉 健志						○						○			
							131036	DCUL 233	Anthropology of Disaster	災害人類学			Tak Uesugi	上杉 健志		○								○					
							131037	DCUL 236	Anthropology of Food	食の人類学			Tak Uesugi	上杉 健志				○								○			
							131038	DCUL 238	Energy and Society	エネルギーと社会			Tak Uesugi	上杉 健志								○							○
							131044	DCUL 240	Introduction to Politics	政治学入門			Kimiko Osawa	大澤 貴美子			○				○				○			
							131045	DCUL 241	Populism	ポピュリズム			Kimiko Osawa	大澤 貴美子					○						○			
							131046	DCUL 242	Politics of Local Government: The Case of Okayama	地方政治：岡山の場合			Kimiko Osawa	大澤 貴美子	○								○						
						Social Innovation and Entrepreneurship	131041	DSIE 210	Introduction to Microeconomics	ミクロ経済学入門			TBA	未定				○				○				○			○
							131059	DSIE 212	Human Resource Management (Basic)	人的資源管理論入門			Yuan Yuan Gong	Yuan Yuan Gong							○						○		
							131042	DSIE 215	Introduction to Macroeconomics	マクロ経済学入門			TBA	未定			(○)	(○)		○				○				○	
							131050	DSIE 216	Organizational Behaviour (Basic)	組織行動論入門			Yuan Yuan Gong	Yuan Yuan Gong	○				○				○				○		
							131060	DSIE 218	Negotiation Theories and Practices	交渉の理論と実践			Yuan Yuan Gong	Yuan Yuan Gong				○								○			
							131058	DSIE 227	Business Ethics	ビジネス倫理			Yuan Yuan Gong	Yuan Yuan Gong								○							○
							131043	DSIE 230	Comparative Global Perspectives on Nonprofits, Volunteering, and Giving	非営利組織、ボランティア、寄附の国際比較研究		DSIE130	Taka Yoshioka	吉岡 貴之				○				○				○			○
						Transdisciplinary Sciences for Global Sustainability	131047	DSCI 210	Mathematics for Physical Chemistry	物理化学のための数学		DSCI110, DSCI115	Azhar Uddin	Azhar Uddin		○				○				○				○		
							131048	DSCI 220	Modern Physics	現代物理学		DSCI 120, DSCI 125	Jian Tang	唐 健		○				○				○				○		
							131049	DSCI 230	Chemistry for Chemical Engineering	化学工学のための化学		DSCI130, DSCI135	Azhar Uddin	Azhar Uddin	○				○				○				○			
							131055	DSCI 255	Genetics and Molecular Biology	遺伝学と分子生物学			Akira Sato	佐藤 伸				○				○				○				○
							131051	DSCI 260	Introduction to Agricultural Sciences	農学入門			Faculty of Agriculture	稲垣 賢二ほか	○			○				○				○				○
					Cultural Diversity and Communities	Japan and Beyond	132007	DCUL 310	Fieldwork and Ethnography	フィールドワークとエスノグラフィ	DCUL210	DCUL110, DCUL220	Haeng-ja Chung	鄭 幸子		○				○				○				○		
							132001	DCUL 312	Film and Literature	映画と文学	DCULとDSIE200~400番台から合わせて3科目以上単位取得済		Haeng-ja Chung	鄭 幸子								○							○
							132002	DCUL 316	Popular Cultures	ポップカルチャー	DCULとDSIEの200~400番台合わせて3科目以上単位取得済		Haeng-ja Chung	鄭 幸子				○								○			
						Migration and Community	132003	DCUL 320	Contemporary Migration in Global Perspective	現代における人の国際移動		DCUL210, DCUL216, DCUL 211, DCUL221, DCUL236, DCUL240, DSIE210, DSIE215,	Haruna Miyagawa	宮川 陽名	○				○				○				○			
							132004	DCUL 321	Urban Sociology	都市と地域の社会学		DCUL220, DCUL327	Haruna Miyagawa	宮川 陽名			○							○					
							132008	DCUL 327	History of Social Thought	歴史の中の社会科学	DCUL220	DCUL337	Haruna Miyagawa	宮川 陽名							○						○		
						Environment and Health	132005	DCUL 330	Medical Anthropology	医療人類学		2 of DCUL 200s	Tak Uesugi	上杉 健志			○				○				○			
							132006	DCUL 337	History of Science	科学史		2 of DCUL 200s	Tak Uesugi	上杉 健志	○				○				○				○		
						Governance	132017	DCUL 340	Comparative Politics	比較政治		DCUL240	Kimiko Osawa	大澤 貴美子				○				○				○			○
							132018	DCUL 344	Japanese Politics	日本政治		DCUL240, DCUL211	Kimiko Osawa	大澤 貴美子							○						○		
							132019	DCUL 346	International Politics	国際政治		DCUL240	Kimiko Osawa	大澤 貴美子			○							○					
					Entrepreneurship	Economics and Management	132009	DSIE 310	Microeconomics	ミクロ経済学			TBA	未定					○						○			
							132040	DSIE 312	Training & Development	トレーニング&デベロップメント			Yuan Yuan Gong	Yuan Yuan Gong						○						○		
							132011	DSIE 313	Development Economics	開発経済学			TBA	未定		(○)												
							132010	DSIE 315	Macroeconomics	マクロ経済学			TBA	未定							○						○		

Course Category	Graduation Requirements				Modules		Course No. for GAKUMU (academic) System	Course Code	Course Title	Course Title in Japanese	Prerequisite 科目 (Course Codeで記載)	Recommended 科目 (Course Codeで記載)	2019Instructor(s)	2019授業担当教員	2019				2020				2021				2022			
	Required	Elective Required	Elective	Total											1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
基本 Kihon					Social Innovation and Entrepreneurship		132039	DSIE 316	Organizational Behaviour (Advanced)	組織行動論			Yuan Yuan Gong	Yuan Yuan Gong				○				○				○				○	
							132012	DSIE 317	Japanese Economy	日本の経済			Ken Aoo	青尾 謙			○	○											
							132013	DSIE321	Innovation and Entrepreneurship	イノベーションと起業			TBA	未定															
						Socal Business and Entrepreneurship	132041	DSIE 324	Leadership	リーダーシップ論			Yuan Yuan Gong	Yuan Yuan Gong					○								○			
							132042	DSIE 326	Marketing (Basic)	マーケティング論（基礎）			Yuan Yuan Gong	Yuan Yuan Gong		○								○						
						Philanthropy and Nonprofit Management	132014	DSIE 330	Nonprofit Management and Governance	非営利組織の経営とガバナンス	DSIE 130またはDSIE 230		Taka Yoshioka	吉岡 貴之		○				○				○				○		
						Social Science Methods	132015	DSIE 350	Survey Methods	アンケート調査技法	DCUL 220		Taka Yoshioka	吉岡 貴之						○								○		
							132016	DSIE 355	Basic Statistical Methods	基本統計技法	DCUL 220		Taka Yoshioka	吉岡 貴之	○								○							
					Transdisciplinary Sciences for Global Sustainability	Environmental Science	132020	DSCI 310	Elementary Mathematical Science	初等数理科学			Takashi Ishihara, Takahiro Aoyama	石原 卓 , 青山 崇洋			○							○						
							132021	DSCI 315	Elementary Statistical Science	初等統計科学			Wataru Sakamoto	坂本 亘						○							○		
						Science and Engineering	132031	DSCI 320	Atomic Physics	原子物理学		DSCI 220	Jian Tang	唐 健			○				○			○			○		
							132032	DSCI 325	Molecular Structures	分子構造論		DSCI 320	Jian Tang	唐 健				○				○						○
							132034	DSCI 331	Introduction to Catalytic Chemistry	触媒化学入門		DSCI130, DSCI135, DSCI230	Azhar Uddin	Azhar Uddin			○				○			○					
							132033	DSCI 333	Instrumental Analysis	機器分析		DSCI130, DSCI135, DSCI230	Azhar Uddin	Azhar Uddin	○				○				○				○			
						Environmental Science	132022	DSCI 335	Fundamentals of Physical Chemistry	基礎物理化学			Yoshikazu Kameshima, Yutaka Takaguchi	亀島 欣一 , 高口 豊		○				○				○				○		
							132023	DSCI 337	Introduction to Environmental Chemistry	環境化学概論			Kunio Kimura, Tokuro Nanba	木村 邦生 , 難波 徳郎	○				○				○				○			
							132024	DSCI 341	Civil Engineering I	土木工学 I			Kazushi Kimoto, Keisuke Yoshida, Seiji Hashimoto, Hideaki Nagare, Kim Byeong-Su	木本 和志, 吉田 圭介, 橋本 成仁, 永禮 英明, 金 秉洙	○				○				○				○			
							132025	DSCI 342	Civil Engineering II	土木工学 II			Kazushi Kimoto, Keisuke Yoshida, Seiji Hashimoto, Hideaki Nagare, Kim Byeong-Su	木本 和志, 吉田 圭介, 橋本 成仁, 永禮 英明, 金 秉洙		○				○				○				○			
						Science Laboratory	132038	DSCI 350	Basic Physics Laboratory	基礎物理学実験			Nobu Mino	味野 道信			○				○			○				○		
							132035	DSCI 353	Laboratory of Analytical Chemistry	基礎分析化学実験	permission is required	DSCI 260	Faculty of Agriculture	泉 実ほか			○				○			○				○		
							132036	DSCI 355	Laboratory in Biology	基礎生物学実験	permission is required	DSCI 260	Faculty of Agriculture	西田 英隆ほか		○				○				○				○		
							132037	DSCI 357	Basic Field Practice	フィールド基礎実習	permission is required	DSCI 260	Faculty of Agriculture	斉藤 邦行ほか		○				○				○				○		
						Agricultural and Life Science	132026	DSCI 360	Introduction to Agrochemical Bioscience	農芸化学入門		DSCI 260	Faculty of Agriculture	中村宣督		○				○				○				○		
							132027	DSCI 370	Introduction to Environmental Ecology	環境生態学入門		DSCI 260	Faculty of Agriculture	坂本圭児ほか		○				○				○				○		
							132028	DSCI 381	Introduction to Applied Plant Science I	応用植物科学入門 I		DSCI 260	Faculty of Agriculture	久保 康隆ほか	○				○				○				○			
							132029	DSCI 382	Introduction to Applied Plant Science II	応用植物科学入門 II		DSCI 260	Faculty of Agriculture	吉田 裕一ほか	○				○				○				○			
							132030	DSCI 390	Introduction to Animal Science	応用動物科学入門		DSCI 260	Faculty of Agriculture	西野直樹		○				○				○				○		
							132030	特別開講	Environmental Planning for Sustainable Development	環境計画学概論		DSCI 155, DCUL 231, DSCI 370, DSCI 471	Global Human Resource Development (G-Course)	加藤 禎久			○													
						Other	132903	特別開講	Global Citizenship	グローバル・シチズンシップ			Tom Fast	トム・ファスト		○														
					Cultural Diversity and Communities	Japan and Beyond	133002	DCUL 410	Life History	ライフ・ヒストリー	DCULとDSIEの200~400番台から合わせて4科目以上単位取得済		Haeng-ja Chung	鄭 幸子										○						
							133001	DCUL 413	Sex Work and Emotional Labor	性労働と感情労働	DCULとDSIEの200~400番台から合わせて4科目以上単位取得済		Haeng-ja Chung	鄭 幸子						○							○		
							133003	DCUL 416	Visual Sociology	映像社会学	DCUL220	DCUL312, DCUL316, DCUL327	Haruna Miyagawa	宮川 陽名								○							○
							133004	DCUL 419	Anthropology of the Self	自己の人類学	DCUL 330 Medical Anthropology		Tak Uesugi	上杉 健志								○							○
						Migration and Community	133005	DCUL 421	Globalization and Development	グローバル化と開発	DCUL320	DCUL220, DSIE230, DCUL327, DCUL346, DSIE313, DCUL440, DCUL441	Haruna Miyagawa	宮川 陽名				○						○					
							133006	DCUL 423	Gender in Global Context	グローバル社会のジェンダー	DCUL320	DCUL221, DCUL312, DCUL316, DCUL320, DCUL327, DCUL413, DCUL443	Haruna Miyagawa	宮川 陽名						○						○		
							133007	DCUL 426	Ethnicity, Sexuality, and Class	エスニシティ・セクシュアリティ・階級	DCULとDSIEの200~400番台から合わせて4科目以上単位取得済		Haeng-ja Chung	鄭 幸子					○						○			
							133008	DCUL 428	Anthropology of Memory	記憶の人類学	DCUL 330 Medical Anthropology		Tak Uesugi	上杉 健志				○						○					
						Environment and Health	133009	DCUL 431	Environment and Ethics	環境と倫理	DCUL 337 History of Science		Tak Uesugi	上杉 健志										○					
							133011	DCUL 433	Body and Mind	カラダとココロ	DCULとDSIEの200~400番台から合わせて4科目以上単位取得済	DCUL236, DCUL330	Haeng-ja Chung	鄭 幸子									○						
							133012	DCUL 435	Migration and Health	人の移動と保健医療	DCUL320	DCUL221, DCUL226, DCUL330, DCUL421, DCUL419, DCUL423, DCUL426, DCUL433,	Haruna Miyagawa	宮川 陽名										○					
							133010	DCUL 437	Science and Law	科学と法	DCUL 337 History of Science		Tak Uesugi	上杉 健志						○							○		
						Governance	133022	DCUL 440	Nation-State	国民国家			Kimiko Osawa	大澤 貴美子				○						○					
							133023	DCUL 441	Democracy	民主主義		DCUL240, DCUL340	Kimiko Osawa	大澤 貴美子						○						○		
							133024	DCUL 443	Politics and Gender	政治とジェンダー		DCUL240, DCUL340, DCUL423	Kimiko Osawa	大澤 貴美子		○								○					
							133025	DCUL 445	Conducting Research in Political Science	政治学研究	DCUL240	DCUL340, DCUL220	Kimiko Osawa	大澤 貴美子								○							○
						Social Business and Entrepreneurship	133061	DSIE 412	Human Resource Management (Advanced)	人的資源管理論			Yuan Yuan Gong	Yuan Yuan Gong	○								○							
							133014	DSIE 421	Social Entrepreneurship	社会起業			TBA	未定		(○)														
							133060	DSIE 426	Marketing (Advanced)	マーケティング論（応用）			Yuan Yuan Gong	Yuan Yuan Gong			○							○						
						Philanthropy and Nonprofit Management	133016	DSIE 430	Performance Evaluation and Impact Measurement	業績評価とインパクト評価	DSIE 330		Taka Yoshioka	吉岡 貴之								○							○
							133017	DSIE 431	Nonprofit and Social Marketing	非営利組織のマーケティングとソーシャルマーケティング	DSIE 330		Taka Yoshioka	吉岡 貴之							○						○		
							133018	DSIE 432	Public Policy, Law, Advocacy, and Social Change	公共政策と非営利組織（法律・アドボカシー・社会改革）	DSIE 330		Taka Yoshioka	吉岡 貴之				○						○					
							133019	DSIE 433	Managing Staff and Volunteers	非営利組織の人事管理	DSIE 330		Taka Yoshioka	吉岡 貴之										○					

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Course Category	Graduation Requirements: Required	Elective Required	Elective	Total	Modules		Course No. for GAKUMU (academic) System	Course Code	Course Title	Course Title in Japanese	Prerequisite 科目 (Course Codeで記載)	Recommended 科目 (Course Codeで記載)	2019Instructor(s)	2019授業担当教員	2019 1	2019 2	2019 3	2019 4	2020 1	2020 2	2020 3	2020 4	2021 1	2021 2	2021 3	2021 4	2022 1	2022 2	2022 3	2022 4
課題 Kadai						Social Science Methods	113020	DSIE 434	Social Finance and Fundraising	ソーシャルファイナンスとファンドレイジング	DSIE 330		Taka Yoshioka	吉岡 貴之			○													
							133021	DSIE 455	Statistical Analysis for Social Sciences	社会科学のための統計技法	DSIE 355		Taka Yoshioka	吉岡 貴之					○						○					
					Transdisciplinary Sciences for Global Sustainability	Mathematical Science Seminars	133026	DSCI 411	Seminar on Foundation of Mathematical Science	基礎数理講究			Futoshi Hayasaka	早坂 太			○													
							133027	DSCI 412	Seminar on Applied Mathematical Science	応用数理講究			Toru Sasaki	佐々木 徹								○								○
							133028	DSCI 415	Seminar on Computational Science	計算科学講究			Wataru Sakamoto, Takashi Ishihara	坂本 亘, 石原 卓							○						○	
							133029	DSCI 416	Seminar on Statistical Science	統計科学講究			Wataru Sakamoto	坂本 亘				○						○				
						Astronomical and Atmospheric Spectroscopy	133030	DSCI 420	Molecular Spectroscopy	分子分光学		DSCI 325	Jian Tang	唐 健	○				○				○				○			
							133032	DSCI 421	Introduction to Astrochemistry and Atmospheric Chemistry	天文化学と大気化学概論		DSCI 420	Jian Tang	唐 健				○				○				○			○
							133031	DSCI 423	Spectroscopic Methods	分光法実践		DSCI 420	Jian Tang	唐 健			○				○				○		○	
							133033	DSCI 425	Case Studies for Molecular Spectroscopy	分子分光学事例研究		DSCI 420	Jian Tang	唐 健		○				○				○				○	
						Environmental Chemical Engineering	133034	DSCI 430	Biomass and Bioenergy	バイオマスとバイオエネルギー		DSCI130, DSCI135, DSCI230	Azhar Uddin	Azhar Uddin						○				○				○		
							133035	DSCI 431	Advanced Catalysis	先進触媒学	DSCI331		Azhar Uddin	Azhar Uddin				○				○				○			○
						Development of Environmentally Friendly Chemical Processes	133036	DSCI 432	Heat and Mass Balances	熱と物質の収支			TBA	TBA										○					
							133037	DSCI 433	Environmental Process Engineering	環境プロセス工学			Yukitaka Kimura	木村 幸敬					○								○		
							133038	DSCI 434	Recycle Engineering	リサイクル工学			Tokuro Nanba	難波 徳郎						○						○		
							133039	DSCI 435	Process Systems Engineering	プロセスシステム工学			Toshinori Shimanouchi	島内 寿徳						○								
						Development of Environmentally Friendly Materials	133040	DSCI 436	Ceramics Science for Renewable Energy Utilization	再生可能エネルギーの有効利用のためのセラミックス科学			Shunsuke Nishimoto	西本 俊介					○								○		
							133041	DSCI 437	Glass Science for Resource Recycling	資源循環再利用のためのガラス科学			Yasuhiko Benino	紅野 安彦										○				
							133042	DSCI 438	Functional Organic Materials Chemistry	環境有機化学材料			Tomoyuki Tajima	田嶋 智之						○						○		
							133043	DSCI 439	Structure and Properties of Biodegradable Polymer	生分解性高分子の構造と物性			Shinichi Yamazaki	山崎 慎一								○						
						Sustainability of Resources	133044	DSCI 441	Conservation and Utilization of Water Resources	水資源の確保と活用			Kenji Okubo	大久保 賢治						○				○				
							133045	DSCI 442	Environmental Issues and Recycling Processes of Resources	資源問題と循環プロセスの構築			Yasuhiro Matsui	松井 康弘					○				○				○		
						Applied Bioscience and Biofunctional Chemistry	133048	DSCI 461	Analytical Chemistry	分析化学	DSCI 360	DSCI 260	Takashi Tamura	田村 隆				○				○				○			○
							133047	DSCI 462	Organic Chemistry	有機化学	DSCI 360	DSCI 260	Hiromasa Kiyota	清田 洋正		○				○				○			○	
							133046	DSCI 463	Biological Chemistry	生物化学	DSCI 360	DSCI 260	Yoshiyuki Murata	村田 芳行		○				○				○			○	
						Applied Environmental Ecology and Sustainable Agriculture	133049	DSCI 471	Introduction to Forest Ecosystem Science	森林生態系科学概論	DSCI 370	DSCI 260	Muneto Hirobe	廣部 宗 ほか				○				○				○			○
							133051	DSCI 472	Economics, Management and Technology Progress in Japanese Agriculture	日本農業の技術進歩と経営	DSCI 370	DSCI 260	Faculty of Agriculture	横溝 功ほか		○				○				○			○	
							133050	DSCI 473	Ecological Approach to Sustainable Agriculture	持続可能な農業に向けての生態学的アプローチ	DSCI 370	DSCI 260	Faculty of Agriculture	嶋 一徹ほか				○				○				○			○
						Applied Plant Science for Sustainable Agriculture	133054	DSCI 481	Vegetable and Flower Science	野菜と花の科学	DSCI 381, DSCI 382	DSCI 260	Tanjuro Goto	後藤 丹十郎			○				○				○			
							133053	DSCI 482	Plant Disease and Control	植物の病気と防除	DSCI 381, DSCI 382	DSCI 260	Kazuhiro Toyoda	豊田 和弘			○				○				○			
							133056	DSCI 483	Fruit Science	果実の科学		DSCI 260, DSCI 381, DSCI 382	KuboYasutaka	久保 康隆			○				○				○			
							133055	DSCI 484	Crop Genetics and Breeding	作物の遺伝と育種	DSCI 381, DSCI 382	DSCI 260	Faculty of Agriculture	加藤 鎌司		○				○				○				
							133052	DSCI 485	Crop Science and Production	作物の科学と生産	DSCI 381, DSCI 382	DSCI 260	Faculty of Agriculture	平井 儀彦			○				○				○			
						Applied Animal Science	133058	DSCI 491	Animal Production Science	動物生産科学	DSCI 390	DSCI 260	Noboru Saito	齋藤 昇			○				○				○			
							133059	DSCI 492	Food and Nutrition Science	食品・栄養科学	DSCI 390	DSCI 260	Hidetoshi Morita	森田 英利				○				○				○			○
							133057	DSCI 493	Animal Life Science	動物生命科学	DSCI 390	DSCI 260	Faculty of Agriculture	畑生 俊光	○				○				○				○			
							133057	特別開講	Green Infrastructure Seminar	グリーンインフラストラクチャー・セミナー		DSCI 155, DCUL 231, DSCI 370, DSCI 471, Environmental Planning for Sustainable	Global Human Resource Development (G-Course)	加藤 禎久				○											
					Study Abroad		134039	DCOR 501	Study Abroad	海外留学	Instructor's permission in advance		Academic Adviser	ディスカバリーコア教員	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
					Career Workshop		134029	DSIE 511	Career Workshop I	キャリアワークショップ I			Part-Time Instructor	非常勤講師				○				○				○			○
							134030	DSIE 512	Career Workshop II	キャリアワークショップ II			Part-Time Instructor	非常勤講師		○				○				○					
					Independent Sudies		134040-134047	DCOR 591	Independent Study I - VIII	課題実践 I - VIII	Instructor's permission in advance		Academic Adviser	ディスカバリーコア教員	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
					Fieldwork		134026-134028	DCUL 501	Ethnographic Fieldwork I - III	エスノグラフィック・フィールドワーク I-III	Instructor's permission in advance	DCUL210, DCUL220, DCUL242, DCUL310, DCUL231, DSIE230, DSIE218	Haeng-ja Chung, Haruna Miyagawa, Tak Uesugi	鄭 幸子, 宮川 陽名, 上杉 健志			○	○	○	○	○	○	○	○	○	○	○	○	○	○
							134025	DSCI 549	Community Development in Asia	アジアにおけるコミュニティ開発	Sign up prior to registration necessary		Doo-Chul Kim, Fumikazu Ubukata, Yasuaki Kuki ,Yasuko Honda	キム ドゥチュル, 生方 史数, 九鬼 康彰 , 本田 恭子				○				○				○			○
Practicum		2			Laboratory Courses in Agricultural and Life Science		134001	DSCI 561	Laboratory in Agrochemical Bioscience 1	農芸化学コース実験 1	DSCI 360 and permission	DSCI 260	Faculty of Agriculture	担当教員						○				○				○		
							134002	DSCI 562	Laboratory in Agrochemical Bioscience 2	農芸化学コース実験 2	DSCI 360 and permission	DSCI 260	Faculty of Agriculture	担当教員						○				○				○		
							134003	DSCI 563	Laboratory in Agrochemical Bioscience 3	農芸化学コース実験 3	DSCI 360 and permission	DSCI 260	Faculty of Agriculture	担当教員						○				○				○		
							134004	DSCI 571	Laboratory in Environmental Ecology 1-1	環境生態学コース実験 1-1	DSCI 370 and permission	DSCI 260	Hisashi Datai	駄田井 久			○				○				○			
							134005	DSCI 572	Laboratory in Environmental Ecology 1-2	環境生態学コース実験 1-2	DSCI 370 and permission	DSCI 260	Hisashi Datai	駄田井 久				○				○				○			○
							134006	DSCI 573	Laboratory in Environmental Ecology 2-1	環境生態学コース実験 2-1	DSCI 370 and permission	DSCI 260	Kazutoo Shima	嶋 一徹			○				○				○			
							134007	DSCI 574	Laboratory in Environmental Ecology 2-2	環境生態学コース実験 2-2	DSCI 370 and permission	DSCI 260	Kazutoo Shima	嶋 一徹				○				○				○			○
							134008	DSCI 575	Laboratory in Environmental Ecology 3-1	環境生態学コース実験 3-1	DSCI 370 and permission	DSCI 260	Kazuhiko Nanba	難波 和彦	○				○				○				○			
							134009	DSCI 576	Laboratory in Environmental Ecology 3-2	環境生態学コース実験 3-2	DSCI 370 and permission	DSCI 260	Kazuhiko Nanba	難波 和彦		○				○				○				○		
							134010	DSCI 577	Laboratory in Environmental Ecology 4-1	環境生態学コース実験 4-1	DSCI 370 and permission	DSCI 260	Kazuo Takahashi	高橋 一男	○				○				○				○			
							134011	DSCI 578	Laboratory in Environmental Ecology 4-2	環境生態学コース実験 4-2	DSCI 370 and permission	DSCI 260	Kazuo Takahashi	高橋 一男		○				○				○				○		
							134012	DSCI 581	Laboratory in Applied Plant Science 1	応用植物科学コース実験 1	DSCI 381, DSCI 382 and permission	DSCI 260	Yoshiyuki Tanaka	門田 有希		○				○				○				○		

Course Category	Graduation Requirements				Modules	Course No. for GAKUMU (academic) System	Course Code	Course Title	Course Title in Japanese	Prerequisite 科目 (Course Codeで記載)	Recommended 科目 (Course Codeで記載)	2019Instructor(s)	2019授業担当教員	2019				2020				2021				2022			
	Required	Elective Required	Elective	Total										1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
						134013	DSCI 582	Laboratory in Applied Plant Science 2	応用植物科学コース実験 2	DSCI 381, DSCI 382 and permission	DSCI 260	Yoshiyuki Tanaka	門田 有希		○				○				○				○			
						134014	DSCI 583	Laboratory in Applied Plant Science 3	応用植物科学コース実験 3	DSCI 381, DSCI 382 and permission	DSCI 260	Yoshiyuki Tanaka	門田 有希			○				○				○			
						134015	DSCI 591	Laboratory in Animal Science 1-1	応用動物科学コース実験 1-1	DSCI 390 and permission	DSCI 260	Faculty of Agriculture	担当教員					○				○				○			
						134016	DSCI 592	Laboratory in Animal Science 1-2	応用動物科学コース実験 1-2	DSCI 390 and permission	DSCI 260	Faculty of Agriculture	担当教員						○				○				○		
						134017	DSCI 593	Laboratory in Animal Science 2-1	応用動物科学コース実験 2-1	DSCI 390 and permission	DSCI 260	Faculty of Agriculture	担当教員					○				○				○			
						134018	DSCI 594	Laboratory in Animal Science 2-2	応用動物科学コース実験 2-2	DSCI 390 and permission	DSCI 260	Faculty of Agriculture	担当教員						○				○				○		
						134019	DSCI 595	Laboratory in Animal Science 3-1	応用動物科学コース実験 3-1	DSCI 390 and permission	DSCI 260	Faculty of Agriculture	担当教員					○				○				○			
						134020	DSCI 596	Laboratory in Animal Science 3-2	応用動物科学コース実験 3-2	DSCI 390 and permission	DSCI 260	Faculty of Agriculture	担当教員						○				○				○		
					Laboratory and Field Practice for Environmental Management	134021	DSCI 543	Laboratory in Water Management	水利実験			Hidetaka Chikamori	近森 秀高					○				○				○			
						134022	DSCI 544	Laboratory in Environmental Biology	環境生物学実験			Yoshitaka Nakashima, Kazuyoshi Nakata	中嶋 佳貴, 中田 和義					○				○				○			
						134023	DSCI 545	Laboratory in Environmental Soil Science	土壌環境実験			Yasushi Mori , Morihiro Maeda , Kumiko Tsujimoto	森 也寸志 , 辻本 久美子				○				○				○			
						134024	DSCI 546	Laboratory in Soil and Concrete Mechanics	土質・コンクリート実験			Toshifumi Shibata, Takayuki Shuku	柴田 俊文 , 珠玖 隆行				○				○				○			
					Internship	134031-134038	DSIE 551	Internship I - VIII	インターンシップ I-VIII	AA's permission in advance		Taka Yoshioka, Yuan Yuan Gong, TBA	吉岡 貴之, Yuan Yuan Gong, 未定	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Senior Project					Research Seminars	135001-135008	DCOR 601-DOCR 608	Research Seminar (3rd Year & 4th Year)	ディスカバリー演習 I-VIII	Instructor's permission in advance		Core Faculty	ディスカバリーコア教員			○	○	○	○	○	○	○	○	○	○	○	○	○	○
					Academic Writing	135009	DCOR 650	Applied Writing and Research Skills (2 sections: Regular and ESL)	応用ライティング・アンド・リサーチ・スキルズ	Instructor's permission in advance		TBA	未定				○		○		○		○		○		○		○
	10				Senior Project	135018	DCOR 699	Senior Project	卒業研究	Instructor's permission in advance		DT:Core Faculty MT:Other Faculty	DT:ディスカバリーコア教員, MT:他学部					○	○	○	○	○	○	○	○	○	○	○	○

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