

Advanced Regional Revitalization, Fostering of Responsible Researchers & Innovation of Future Generations, Promotion of Multicultural Coexistence			
Registration code	81601	Credits	2
Instructor	HAYASHI Masahide, SATO Satoru, KAKU Nobuo	Coordinator <small>in case of invited lectures</small>	NA
Academic year	1st year	Semester	Summer
Style of course	Lecture	Target major	All areas
How to use English	To interpret Japanese as main language		
<div>• Purpose and Learning Goals</div> <p>This course is designed to cultivate in first-year students of the Master's Program the rich human skills necessary to accurately grasp the issues that constantly arise and to resolve them for the future in order to respond to changes in the region and to the progress of globalization.</p> <p>The three main themes of this course are "Regional Development," "Next Generation Formation," and "Multicultural Conviviality," and four lectures will be given on each of these themes. By linking the three themes to the SDGs, the lectures will make clear that various issues related to "regional development," "next generation formation," and "multicultural conviviality" are consistent issues in the modern era.</p> <p>In addition, through lectures, students will experience how researchers and practitioners are dealing with various issues in science, technology, and society against the background of regional revitalization and globalization, based on their own ideas. This will allow students to envision their own future visions and, by backcasting from those visions, to think about how they will study at university. By asking students to clearly state the relationship between their research activities (and their future visions) in their final reports, we cultivate an awareness of the social significance and role of research, and the ability and qualities to explain this to others.</p>			
<div>• Course Category (Relations to DP, CP and other courses)</div> <p>All first-year students in the Master's course will work on common issues in each lecture across the graduate school and majors to gain a bird's-eye view of the world, which will form the basis for cooperation in developing their own expertise in society beyond the boundaries of their field of study.</p>			
<div>• Contents</div> <p>The course method for each theme consists of an introductory lecture for each theme and lectures given by experts and practitioners based on the lectures. By understanding the content of the lectures and lectures for each theme and working on minute papers and final reports for each lecture, students will cultivate the ability to think about science, technology, and society as well as their own expertise from a bird's eye viewpoint. Students are expected to engage in independent research in each lecture and literature survey, etc. so that they can explain their own understanding and approaches to "regional development," "next generation formation," and "multicultural conviviality" to others, while being aware of the relevance of their own studies to their own expertise in their final reports.</p> <p>1st Guidance 2nd-5th Lectures and presentations on Theme 1 "Regional Development" and "Regional Development and SDGs" Lectures on Theme 2 "Formation of the Next Generation" and "Formation of the Next Generation and the SDGs" and a lecture on "Research Ethics" will be given. Lectures and presentations on Theme 3 "Multicultural Conviviality" and "SDGs and Multicultural Conviviality" will be given. 14th-15th Preparation of final reports, publication, and review Submitted reports will be opened to the students, and mutual evaluation and critique will be conducted to exchange opinions.</p>			
<div>• Evaluation</div> <p>The degree of mastery will be evaluated based on a comprehensive evaluation of the minute papers on the lectures given by external lecturers and internal faculty members, and the final report (documents and reports). The criterion for passing the course is that the student has achieved the basic level of each of the objectives. The total score of the minute paper (45%) and the final report (55%) will be used as the grade.</p>			
<div>• Notice for Students</div> <p>As stated in the achievement objectives, students are expected to be interested in topics in other fields that they come into contact with for the first time, and to feed this knowledge back to their own studies, without limiting themselves to their own specialized fields. In addition, students are expected to express their own ideas explicitly through minute papers and final reports for each lecture.</p> <p>Advice for study outside of class time (preparation/revision)</p> <p>As stated in the achievement objectives, students are expected to digest the frontiers of science, technology, and social issues that lead to the three themes: regional development, next generation formation, and multicultural conviviality, and to strive to explain to others their understanding based on their own research and organization of that research, both in and outside the lecture time.</p>			
Textbook	NA		
Reference book	NA		
Contact	Anytime (e-mail)		

Intensive Scientific Communication Course in English			
Registration code	61005	Credits	1
Instructor	Edmund FEC	Coordinator <small>in case of invited lectures</small>	WATANABE Toru
Academic year	1st year	Semester	Summer
Style of course	Seminar	Target major	All areas
How to use English	Full use		
<div>• Purpose and Learning Goals</div> <p>This course will include practice of all 4 skills: reading, writing, listening and speaking. These skills will be practiced through discussions and other task-based learning. To be able to discuss both scientific and non-scientific topics in English.</p> <div>• Course Category (Relations to DP, CP and other courses)</div> <p>This course contributes to a diploma policy of Department of Agricultural Sciences: To be able to extract/identify challenges in one’s field of specialization in international and local communities and engage in research/development to solve these challenges</p> <div>• Contents</div> <p>In this 8-week course, students will be taught in a mixture of task-based learning and article-based discussions based on the PDR method (Preparation, Discussion and Reaction). Lesson 1. Self-introductions Lesson 2. PDR - Insects Lesson 3. UK: history and discussion Lesson 4. Self-selected PDR #1 Lesson 5. UK life and culture Lesson 6. Self-selected PDR #2 Lesson 7. US & UK English Lesson 8. Self-selected PDR #3</p> <div>• Evaluation</div> <p>According to the goal, the criteria is to be able to discuss both scientific and non-scientific topics in English. Students will be graded on their active participation in class (20%) and their Preparation, Discussion and Reaction scores for each PDR discussion (20% X 4).</p> <div>• Notice for Students</div> <p>This is a discussion-based course which will involve research, preparation, discussion and written reports ("reactions"). It will be important to prepare not only the material for discussion, but also to check how to talk about it in English. Students should be prepared to use dictionaries to check their pronunciation in order to have effective discussions. Students will need to research journal and newspaper articles and prepare questions for discussion. The preparation for the 4 PDR discussions will take up most of the homework time.</p>			
Textbook	NA		
Reference book	NA		
Contact	Students can contact the teacher at: edmundfec@gmail.com		

International Understanding (Domestic Seminar)			
Registration code	61950	Credits	1
Instructor	Academic Affairs Committee Chairperson	Coordinator <small>in case of invited lectures</small>	Teacher leading the program
Academic year	1st and 2nd year	Semester	Summer or Winter
Style of course	Seminar	Target major	All areas
How to use English	Full use		
<div>• Purpose and Learning Goals</div> <p>Through domestic training conducted together with international students, students acquire international knowledge and values. It will also lead to academic and international networking among students.</p> <p>By learning various things together with international students through training in Japan, you will be able to come into contact with different cultures and values, improve your cross-cultural communication skills, and develop your understanding and imagination with a broader perspective.</p> <div>• Course Category (Relations to DP, CP and other courses)</div> <p>This subject is domestic training and a practical subject in order to make the learning results useful in social and professional life (curriculum policy of the agricultural science major)</p> <div>• Contents</div> <p>[Class method]</p> <p>When international students from overseas universities (not limited to partner universities) come to Japan, we conduct domestic training (programs for domestic training) of 3 days or more.</p> <p>Please note that accommodation may be required.</p> <p>[Class schedule]</p> <p>Programs for domestic training will be announced on bulletin boards.</p> <div>• Evaluation</div> <p>Participants will be evaluated based on their proactive approach to the challenges presented during the training, the content of their presentations and report assignments, and their ability to collaborate with participants.</p> <p>A comprehensive evaluation will be made based on the training records, training results report, and training results and level of achievement as seen by the instructor.</p> <div>• Notice for Students</div> <p>In addition to acquiring knowledge and skills during the training, students will strive to communicate in English during the training period.</p> <p>In order to encourage active participation, we will ask participants to prepare materials related to the training content in English in advance and give a simple presentation, so we would like them to use the library or the Internet to gather information and engage in preparatory learning.</p> <p>[Notes]</p> <p>(1) The program for domestic training is planned and implemented by a leading teacher, so if there is no teacher planning this program, this subject will not be offered.</p> <p>(2) Transportation expenses to the training site and accommodation expenses if overnight stays are required during the training are to be paid by the participants themselves. However, depending on the domestic training program, subsidies may be available, so please check with your instructor.</p>			
Textbook	In this class, the instructor will distribute slides and handouts created by the instructor, and introduce textbooks and reference books as needed.		
Reference book	In this class, the instructor will distribute slides and handouts created by the instructor, and introduce textbooks and reference books as needed.		
Contact	Use WebClass, etc. to contact and inquire about your instructor.		

Seminar on Crop Science (1st year summer semester)			
Registration code	61154	Credits	2
Instructor	NASUKAWA Hisashi	Coordinator <small>in case of invited lectures</small>	NA
Academic year	1st year	Semester	Summer
Style of course	Seminar	Target major	Bioproduction Science
How to use English	To interpret Japanese as main language		
<div>• Purpose and Learning Goals</div> <p>To link current research with previous research, we will deepen our understanding of recent crop production trends by organizing domestic and international research.</p> <div><div>-To understand and explain terminology and experimental methods used in papers</div><div>[Knowledge/Understanding]</div><div>-To organize and summarize the content of a paper [skills]</div><div>-To understand the content of the paper and comprehensively discuss the validity of the research</div><div>[Attitudes/habits]</div></div> <div>• Course Category (Relations to DP, CP and other courses)</div> <p>We encourage students to actively participate in the class so that they develop skills to independently identify the challenges and present a beneficial resolution to these challenges(Curriculum Policy).</p> <div>• Contents</div> <p>1st Guidance</p> <p>2nd-14th: Introduction to academic papers</p> <p>Pick up and present an academic paper that includes the following content.</p> <div><div>-Relationship between plant inorganic components and crop production</div><div>-Relationship between soil nutrients and crop production</div><div>-Relationship between meteorological factors and crop production</div><div>-Root system of crops</div><div>-Utilization of geographic information systems in crop production</div><div>-Crop growth evaluation and simulation model</div><div>-Crop production technology that responds to climate change</div></div> <p>15th Final evaluation</p> <div>• Evaluation</div> <p>Evaluation of participants would be done based on attendance, participation, and presentations.</p> <div>• Notice for Students</div> <p>Presenters should use PowerPoint to summarize the points of the paper they are introducing in an easy-to-understand manner and explain how it relates to their research. Audiences are encouraged to understand the content of the presentation and actively ask questions.</p>			
Textbook	NA		
Reference book	NA		
Contact	anytime		

Seminar on Crop Science (1st year winter semester)			
Registration code	61155	Credits	2
Instructor	NASUKAWA Hisashi	Coordinator <small>in case of invited lectures</small>	NA
Academic year	1st year	Semester	Winter
Style of course	Seminar	Target major	Bioproduction Science
How to use English	To interpret Japanese as main language		
<div>• Purpose and Learning Goals</div> <p>To link current research with previous research, we will deepen our understanding of recent crop production trends by organizing domestic and international research.</p> <div><div>-To understand and explain terminology and experimental methods used in papers</div><div>[Knowledge/Understanding]</div><div>-To organize and summarize the content of a paper [skills]</div><div>-To understand the content of the paper and comprehensively discuss the validity of the research</div><div>[Attitudes/habits]</div></div> <div>• Course Category (Relations to DP, CP and other courses)</div> <p>We encourage students to actively participate in the class so that they develop skills to independently identify the challenges and present a beneficial resolution to these challenges(Curriculum Policy).</p> <div>• Contents</div> <p>1st Guidance</p> <p>2nd-14th: Introduction to academic papers</p> <p>Pick up and present an academic paper that includes the following content.</p> <div><div>-Relationship between plant inorganic components and crop production</div><div>-Relationship between soil nutrients and crop production</div><div>-Relationship between meteorological factors and crop production</div><div>-Root system of crops</div><div>-Utilization of geographic information systems in crop production</div><div>-Crop growth evaluation and simulation model</div><div>-Crop production technology that responds to climate change</div></div> <p>15th Final evaluation</p> <div>• Evaluation</div> <p>Evaluation of participants would be done based on attendance, participation, and presentations.</p> <div>• Notice for Students</div> <p>Presenters should use PowerPoint to summarize the points of the paper they are introducing in an easy-to-understand manner and explain how it relates to their research. Audiences are encouraged to understand the content of the presentation and actively ask questions.</p>			
Textbook	NA		
Reference book	NA		
Contact	anytime		

Seminar on Crop Science (2nd year summer semester)			
Registration code	61162	Credits	2
Instructor	NASUKAWA Hisashi	Coordinator <small>in case of invited lectures</small>	NA
Academic year	2nd year	Semester	Summer
Style of course	Seminar	Target major	Bioproduction Science
How to use English	To interpret Japanese as main language		
<div>• Purpose and Learning Goals</div> <p>To link current research with previous research, we will deepen our understanding of recent crop production trends by organizing domestic and international research.</p> <div><div>-To understand and explain terminology and experimental methods used in papers</div><div>[Knowledge/Understanding]</div><div>-To organize and summarize the content of a paper [skills]</div><div>-To understand the content of the paper and comprehensively discuss the validity of the research</div><div>[Attitudes/habits]</div></div> <div>• Course Category (Relations to DP, CP and other courses)</div> <p>We encourage students to actively participate in the class so that they develop skills to independently identify the challenges and present a beneficial resolution to these challenges(Curriculum Policy).</p> <div>• Contents</div> <p>1st Guidance</p> <p>2nd-14th: Introduction to academic papers</p> <p>Pick up and present an academic paper that includes the following content.</p> <div><div>-Relationship between plant inorganic components and crop production</div><div>-Relationship between soil nutrients and crop production</div><div>-Relationship between meteorological factors and crop production</div><div>-Root system of crops</div><div>-Utilization of geographic information systems in crop production</div><div>-Crop growth evaluation and simulation model</div><div>-Crop production technology that responds to climate change</div></div> <p>15th Final evaluation</p> <div>• Evaluation</div> <p>Evaluation of participants would be done based on attendance, participation, and presentations.</p> <div>• Notice for Students</div> <p>Presenters should use PowerPoint to summarize the points of the paper they are introducing in an easy-to-understand manner and explain how it relates to their research. Audiences are encouraged to understand the content of the presentation and actively ask questions.</p>			
Textbook	NA		
Reference book	NA		
Contact	anytime		

Seminar on Crop Science (2nd year winter semester)			
Registration code	61163	Credits	2
Instructor	NASUKAWA Hisashi	Coordinator <small>in case of invited lectures</small>	NA
Academic year	2nd year	Semester	Winter
Style of course	Seminar	Target major	Bioproduction Science
How to use English	To interpret Japanese as main language		
<div>• Purpose and Learning Goals</div> <p>To link current research with previous research, we will deepen our understanding of recent crop production trends by organizing domestic and international research.</p> <div>-To understand and explain terminology and experimental methods used in papers [Knowledge/Understanding]</div> <div>-To organize and summarize the content of a paper [skills]</div> <div>-To understand the content of the paper and comprehensively discuss the validity of the research [Attitudes/habits]</div> <div>• Course Category (Relations to DP, CP and other courses)</div> <p>We encourage students to actively participate in the class so that they develop skills to independently identify the challenges and present a beneficial resolution to these challenges(Curriculum Policy).</p> <div>• Contents</div> <p>1st Guidance</p> <p>2nd-14th: Introduction to academic papers</p> <p>Pick up and present an academic paper that includes the following content.</p> <div>-Relationship between plant inorganic components and crop production</div> <div>-Relationship between soil nutrients and crop production</div> <div>-Relationship between meteorological factors and crop production</div> <div>-Root system of crops</div> <div>-Utilization of geographic information systems in crop production</div> <div>-Crop growth evaluation and simulation model</div> <div>-Crop production technology that responds to climate change</div> <p>15th Final evaluation</p> <div>• Evaluation</div> <p>Evaluation of participants would be done based on attendance, participation, and presentations.</p> <div>• Notice for Students</div> <p>Presenters should use PowerPoint to summarize the points of the paper they are introducing in an easy-to-understand manner and explain how it relates to their research. Audiences are encouraged to understand the content of the presentation and actively ask questions.</p>			
Textbook	NA		
Reference book	NA		
Contact	anytime		

Seminar on Edaphology (1st year summer semester)			
Registration code	61123	Credits	2
Instructor	KAKUDA Ken-ichi, SASAKI Yuka	Coordinator <small>in case of invited lectures</small>	NA
Academic year	1st year	Semester	Summer
Style of course	Seminar	Target research area	Bioproduction Science
How to use English	To interpret Japanese as main language		
<div>• Purpose and Learning Goals</div> <div>【Purpose】</div> <div>(1) To understand master thesis from a view of Edaphology</div> <div>(2) To apply new information to master thesis</div> <div>【Learning goals】</div> <div>To explain the follows based on some references</div> <div>(1) What you confirm</div> <div>(2) What you get as new information</div> <div>• Course Category (Relations to DP, CP and other courses)</div> <div>To collect and understand the information relating to master thesis</div> <div>• Contents</div> <div>【Method】</div> <div>(1) To select some articles relating to master thesis</div> <div>(2) To make clear 1) what you confirm and 2) what you get</div> <div>(3) To make stories logically with these informations</div> <div>(4) To make powerpoint files with simple logic</div> <div>(5) To discuss about the articles and the relation with your master thesis</div> <div>【Schedule】</div> <div>-Some days you have presentation and some other days other members have presentation and you are a participant for discussion</div> <div>-The schedule will be decided by supervisor</div> <div>• Evaluation</div> <div>【Standard】</div> <div>Based on the learning goals and situation of participation for presentation and discussion</div> <div>【Method】</div> <div>Evaluate comprehensively by the contents of presentation and situation of participation for discussion</div> <div>• Notice for Students</div> <div>【Advice for attendance】</div> <div>(1) You have to submit the articles which you will use and the abstract of your presentation to all the participants in advance</div> <div>(2) Explain simply and make the participants understand</div> <div>(3) Discuss with participants actively</div> <div>【Advice for outside regular school hours】</div> <div>-To make simple presentation, you have to understand correctly and multidirectionally</div>			
Textbook	NA		
Reference book	NA		
Contact	Anytime		

Seminar on Edaphology (1st year winter semester)			
Registration code	61124	Credits	2
Instructor	KAKUDA Ken-ichi, SASAKI Yuka	Coordinator <small>in case of invited lectures</small>	NA
Academic year	1st year	Semester	Winter
Style of course	Seminar	Target research area	Bioproduction Science
How to use English	To interpret Japanese as main language		
<div>• Purpose and Learning Goals</div> <div>【Purpose】</div> <div>(1) To understand master thesis from a view of Edaphology</div> <div>(2) To apply new information to master thesis</div> <div>【Learning goals】</div> <div>To explain the follows based on some references</div> <div>(1) What you confirm</div> <div>(2) What you get as new information</div> <div>• Course Category (Relations to DP, CP and other courses)</div> <div>To collect and understand the information relating to master thesis</div> <div>• Contents</div> <div>【Method】</div> <div>(1) To select some articles relating to master thesis</div> <div>(2) To make clear 1) what you confirm and 2) what you get</div> <div>(3) To make stories logically with these informations</div> <div>(4) To make powerpoint files with simple logic</div> <div>(5) To discuss about the articles and the relation with your master thesis</div> <div>【Schedule】</div> <div>-Some days you have presentation and some other days other members have presentation and you are a participant for discussion</div> <div>-The schedule will be decided by supervisor</div> <div>• Evaluation</div> <div>【Standard】</div> <div>Based on the learning goals and situation of participation for presentation and discussion</div> <div>【Method】</div> <div>Evaluate comprehensively by the contents of presentation and situation of participation for discussion</div> <div>• Notice for Students</div> <div>【Advice for attendance】</div> <div>(1) You have to submit the articles which you will used and the abstract of your presentation to all the participants in advance</div> <div>(2) Explain simply and make the participants understand</div> <div>(3) Discuss with participants actively</div> <div>【Advice for outside regular school hours】</div> <div>-To make simple presentation, you have to understand correctly and multidirectionally</div>			
Textbook	NA		
Reference book	NA		
Contact	Anytime		

Seminar on Edaphology (2nd year summer semester)			
Registration code	61719	Credits	2
Instructor	KAKUDA Ken-ichi, SASAKI Yuka	Coordinator <small>in case of invited lectures</small>	NA
Academic year	2nd year	Semester	Summer
Style of course	Seminar	Target research area	Bioproduction Science
How to use English	To interpret Japanese as main language		
<div>• Purpose and Learning Goals</div> <div>【Purpose】</div> <div>(1) To understand master thesis from a view of Edaphology</div> <div>(2) To apply new information to master thesis</div> <div>【Learning goals】</div> <div>To explain the follows based on some references</div> <div>(1) What you confirm</div> <div>(2) What you get as new information</div> <div>• Course Category (Relations to DP, CP and other courses)</div> <div>To collect and understand the information relating to master thesis</div>			
<div>• Contents</div> <div>【Method】</div> <div>(1) To select some articles relating to master thesis</div> <div>(2) To make clear 1) what you confirm and 2) what you get</div> <div>(3) To make stories logically with these informations</div> <div>(4) To make powerpoint files with simple logic</div> <div>(5) To discuss about the articles and the relation with your master thesis</div> <div>【Schedule】</div> <div>-Some days you have presentation and some other days other members have presentation and you are a participant for discussion</div> <div>-The schedule will be decided by supervisor</div> <div>• Evaluation</div> <div>【Standard】</div> <div>Based on the learning goals and situation of participation for presentation and discussion</div> <div>【Method】</div> <div>Evaluate comprehensively by the contents of presentation and situation of participation for discussion</div>			
<div>• Notice for Students</div> <div>【Advice for attendance】</div> <div>(1) You have to submit the articles which you will used and the abstract of your presentation to all the participants in advance</div> <div>(2) Explain simply and make the participants understand</div> <div>(3) Discuss with participants actively</div> <div>【Advice for outside regular school hours】</div> <div>-To make simple presentation, you have to understand correctly and multidirectionally</div>			
Textbook	NA		
Reference book	NA		
Contact	Anytime		

Seminar on Edaphology (2nd year winter semester)			
Registration code	61720	Credits	2
Instructor	KAKUDA Ken-ichi, SASAKI Yuka	Coordinator <small>in case of invited lectures</small>	NA
Academic year	2nd year	Semester	Winter
Style of course	Seminar	Target research area	Bioproduction Science
How to use English	To interpret Japanese as main language		
<div>• Purpose and Learning Goals</div> <div>【Purpose】</div> <div>(1) To understand master thesis from a view of Edaphology</div> <div>(2) To apply new information to master thesis</div> <div>【Learning goals】</div> <div>To explain the follows based on some references</div> <div>(1) What you confirm</div> <div>(2) What you get as new information</div> <div>• Course Category (Relations to DP, CP and other courses)</div> <div>To collect and understand the information relating to master thesis</div> <div>• Contents</div> <div>【Method】</div> <div>(1) To select some articles relating to master thesis</div> <div>(2) To make clear 1) what you confirm and 2) what you get</div> <div>(3) To make stories logically with these informations</div> <div>(4) To make powerpoint files with simple logic</div> <div>(5) To discuss about the articles and the relation with your master thesis</div> <div>【Schedule】</div> <div>-Some days you have presentation and some other days other members have presentation and you are a participant for discussion</div> <div>-The schedule will be decided by supervisor</div> <div>• Evaluation</div> <div>【Standard】</div> <div>Based on the learning goals and situation of participation for presentation and discussion</div> <div>【Method】</div> <div>Evaluate comprehensively by the contents of presentation and situation of participation for discussion</div> <div>• Notice for Students</div> <div>【Advice for attendance】</div> <div>(1) You have to submit the articles which you will used and the abstract of your presentation to all the participants in advance</div> <div>(2) Explain simply and make the participants understand</div> <div>(3) Discuss with participants actively</div> <div>【Advice for outside regular school hours】</div> <div>-To make simple presentation, you have to understand correctly and multidirectionally</div>			
Textbook	NA		
Reference book	NA		
Contact	Anytime		

Edaphology			
Registration code	61137	Credits	1
Instructor	KAKUDA Ken-ichi	Coordinator <small>in case of invited lectures</small>	NA
Academic year	1st year	Semester	Summer
Style of course	Lecture	Target research area	Bioproduction Science
How to use English	To interpret Japanese as main language		
<div>• Purpose and Learning Goals</div> <div>【Purpose】</div> <div>(1) To understand site-specific nutrient management in rice cultivation</div> <div>(2) To understand techniques for field experiments on paddy field</div> <div>【Learning goals】</div> <div>(1) To explain the procedure and background of site-specific nutrient management in rice cultivation</div> <div>(2) To explain the procedure and logical background for establishment of field experiments on paddy field</div> <div>• Course Category (Relations to DP, CP and other courses)</div> <div>It relates to a lecture for paddy soil science and techniques for field experiments.</div> <div>• Contents</div> <div>I) Lectures with some discussions about the procedure and the logical background of nutrient management in rice cultivation</div> <div>1. Fundamental of nutrient management in rice cultivation</div> <div>2. The nutrient input-output budget in an irrigated rice field</div> <div>3. Fertilizer-use efficiency</div> <div>4. Managing organic manures, straw, and green manure</div> <div>5. Site-Specific Nutrient Management (SSNM)</div> <div>II) Lecture with some discussions about the basic and the application for establishment of field experiment on paddy field</div> <div>1. Experimental design</div> <div>2. Field technique</div> <div>3. Data collection on paddy field</div> <div>• Evaluation</div> <div>【Standard】</div> <div>The following two points are evaluated</div> <div>(1) Understandings on the procedure and background of nutrient management in rice cultivation</div> <div>(2) Understandings on the procedure and background of techniques for field experiments on paddy field</div> <div>【Method】</div> <div>Reports</div> <div>• Notice for Students</div> <div>Since the lectures will have discussion time, you can ask anything what you cannot understand.</div>			
Textbook	NA		
Reference book	NA		
Contact	Anytime		

Agronomy			
Registration code	61189	Credits	1
Instructor	SASAKI Yuka	Coordinator <small>in case of invited lectures</small>	NA
Academic year	1st year	Semester	Summer
Style of course	Seminar	Target research area	Bioproduction Science
How to use English	To interpret Japanese as main language		
<div>• Purpose and Learning Goals</div> <div>【Purpose】 To understand techniques for field experiments on paddy fields.</div> <div>【Learning goals】 To explain the procedure and logical background for the establishment of field experiments on paddy fields.</div> <div>• Course Category (Relations to DP, CP and other courses)</div> <div>It relates to a lecture on paddy soil science and techniques for field experiments.</div> <div>• Contents</div> <div>Lecture with some discussions about the basics and the application for establishing a field experiment on paddy fields.</div> <div>1. Experimental design</div> <div>2. Field technique</div> <div>3. Data collection on paddy field</div> <div>• Evaluation</div> <div>【Standard】 The following point is evaluated: Active participation in he class and understanding of the procedure and background of techniques for field experiments on paddy field</div> <div>【Method】 Questions and reactions during the class and reports</div> <div>• Notice for Students</div> <div>Since the lectures will have discussion time, you can ask anything you cannot understand and what you want to learn more about.</div>			
Textbook	NA		
Reference book	NA		
Contact	Anytime		

Animal Ecology			
Registration code	61136	Credits	1
Instructor	SATO Satoru	Coordinator <small>in case of invited lectures</small>	NA
Academic year	1st year	Semester	Winter
Style of course	Lecture	Target research area	Bioproduction Science
How to use English	Interpret Japanese as main language		
<div>• Purpose and Learning Goals</div> <p>Lectures in this class will draw on research papers and relevant books spanning the field of ecology, followed by discussions on related topics. Through this approach, students will gain an understanding of recent trends and developments in ecological research. Ultimately, they will be able to grasp and discuss the current trends, validity, and novelty of ecological studies.</p> <p>(Knowledge/Understanding)</p>			
<div>• Course Category (Relations to DP, CP and other courses)</div> <p>This class aims to cultivate the ability to identify issues related to food and the environment in both local and international communities, as well as to demonstrate ample creativity and strong initiative in addressing those issues (in accordance with the Curriculum Policy of the Graduate School of <u>Agriculture, Department of Agriculture</u>).</p>			
<div>• Contents</div> <p>This class combines both face-to-face and remote sessions. Instruction is given in a lecture format. Materials will be designated in advance, so please study them before attending the lecture. Additionally, ample time will be allocated for Q&A and discussion. Please attend class with a high level of focus.</p>			
<div>• Evaluation</div> <p>Evaluation is based on students’ attendance, class participation, and the extent to which they achieve the stated learning objectives, using an absolute grading scale. A correct understanding of the knowledge related to these objectives is the criterion for passing.</p>			
<div>• Notice for Students</div> <p>Please allocate sufficient time to prepare for the designated materials beforehand. In-depth reading of the assigned materials is crucial for a deeper understanding of the lecture content. Make sure to devote enough time to this preparation.</p>			
Textbook	Materials based on academic papers written in English will be prepared by the presenter for each session.		
Reference book	Not specified.		
Contact	Feel free to contact me via email at any time. As needed, inquiries or questions will be addressed either in person or remotely.		

Seminar on Animal Ecology (1st year summer semester)			
Registration code	61121	Credits	2
Instructor	SATO Satoru	Coordinator <small>in case of invited lectures</small>	NA
Academic year	1st year	Semester	Summer
Style of course	Seminar	Target research area	Bioproduction Science
How to use English	To interpret Japanese as main language		
<div>• Purpose and Learning Goals</div> <p>Students will review ecology-focused research papers and discuss their validity and novelty. Through this, they will understand current research trends and the positioning of their master’s thesis within the field, gaining the ability to debate ecological studies as well as their own work. (Knowledge/Understanding)</p> <div>• Course Category (Relations to DP, CP and other courses)</div> <p>This class develops the ability to pinpoint local/global food and environmental issues and tackle them creatively, in line with the Graduate School of Agriculture Curriculum Policy.</p> <div>• Contents</div> <p>This class blends face-to-face and remote sessions, using two seminar styles with PowerPoint or Word materials. Files are shared via Dropbox beforehand or afterward, and both materials and Q&A are in English.</p> <p>Eco Seminar: Word materials are shared at least a week in advance for supplementation. 8min. Seminar: Materials appear during the session; be ready for Q&A without prior prep. Slides are prepared in advance.</p> <div>• Evaluation</div> <p>Assessment is based on attendance, participation, and achievement of learning goals, using an absolute grading scale. A correct grasp of these objectives is required to pass.</p> <div>• Notice for Students</div> <p>Notice for Students</p> <p>Eco Seminar: Allocate 60 minutes for Q&A; prepare multiple questions in advance.</p>			
Textbook	Materials based on academic papers written in English will be prepared by the presenter for each session.		
Reference book	Not specified.		
Contact	Feel free to email me anytime. If needed, we can arrange face-to-face or remote sessions to address any questions.		

Seminar on Animal Ecology (1st year winter semester)			
Registration code	61122	Credits	2
Instructor	SATO Satoru	Coordinator <small>in case of invited lectures</small>	NA
Academic year	1st year	Semester	Winter
Style of course	Seminar	Target research area	Bioproduction Science
How to use English	To interpret Japanese as main language		
<div>• Purpose and Learning Goals</div> <p>Students will review ecology-focused research papers and discuss their validity and novelty. Through this, they will understand current research trends and the positioning of their master’s thesis within the field, gaining the ability to debate ecological studies as well as their own work. (Knowledge/Understanding)</p> <div>• Course Category (Relations to DP, CP and other courses)</div> <p>This class develops the ability to pinpoint local/global food and environmental issues and tackle them creatively, in line with the Graduate School of Agriculture Curriculum Policy.</p> <div>• Contents</div> <p>This class blends face-to-face and remote sessions, using two seminar styles with PowerPoint or Word materials. Files are shared via Dropbox beforehand or afterward, and both materials and Q&A are in English.</p> <p>Eco Seminar: Word materials are shared at least a week in advance for supplementation. 8min. Seminar: Materials appear during the session; be ready for Q&A without prior prep. Slides are</p> <div>• Evaluation</div> <p>Assessment is based on attendance, participation, and achievement of learning goals, using an absolute grading scale. A correct grasp of these objectives is required to pass.</p> <div>• Notice for Students</div> <p>Notice for Students</p> <p>Eco Seminar: Allocate 60 minutes for Q&A: prepare multiple questions in advance.</p>			
Textbook	Materials based on academic papers written in English will be prepared by the presenter for each session.		
Reference book	Not specified.		
Contact	Feel free to email me anytime. If needed, we can arrange face-to-face or remote sessions to address any questions.		

Seminar on Animal Ecology (2nd year summer semester)			
Registration code	61717	Credits	2
Instructor	SATO Satoru	Coordinator <small>in case of invited lectures</small>	NA
Academic year	2nd year	Semester	Summer
Style of course	Seminar	Target research area	Bioproduction Science
How to use English	To interpret Japanese as main language		
<div>• Purpose and Learning Goals</div> <p>Students will review ecology-focused research papers and discuss their validity and novelty. Through this, they will understand current research trends and the positioning of their master’s thesis within the field, gaining the ability to debate ecological studies as well as their own work. (Knowledge/Understanding)</p>			
<div>• Course Category (Relations to DP, CP and other courses)</div> <p>This class develops the ability to pinpoint local/global food and environmental issues and tackle them creatively, in line with the Graduate School of Agriculture Curriculum Policy.</p>			
<div>• Contents</div> <p>This class blends face-to-face and remote sessions, using two seminar styles with PowerPoint or Word materials. Files are shared via Dropbox beforehand or afterward, and both materials and Q&A are in English.</p> <p>Eco Seminar: Word materials are shared at least a week in advance for supplementation. 8min. Seminar: Materials appear during the session; be ready for Q&A without prior prep. Slides are shared afterward for review</p>			
<div>• Evaluation</div> <p>Assessment is based on attendance, participation, and achievement of learning goals, using an absolute grading scale. A correct grasp of these objectives is required to pass.</p>			
<div>• Notice for Students</div> <p>Notice for Students</p> <p>Eco Seminar: <u>Allocate 60 minutes for Q&A: prepare multiple questions in advance.</u></p>			
Textbook	Materials based on academic papers written in English will be prepared by the presenter for each session.		
Reference book	Not specified.		
Contact	Feel free to email me anytime. If needed, we can arrange face-to-face or remote sessions to address any questions.		

Seminar on Animal Ecology (2nd year winter semester)			
Registration code	61718	Credits	2
Instructor	SATO Satoru	Coordinator <small>in case of invited lectures</small>	NA
Academic year	2nd year	Semester	Winter
Style of course	Seminar	Target research area	Bioproduction Science
How to use English	To interpret Japanese as main language		
<div>• Purpose and Learning Goals</div> <p>Students will review ecology-focused research papers and discuss their validity and novelty. Through this, they will understand current research trends and the positioning of their master’s thesis within the field, gaining the ability to debate ecological studies as well as their own work. (Knowledge/Understanding)</p>			
<div>• Course Category (Relations to DP, CP and other courses)</div> <p>This class develops the ability to pinpoint local/global food and environmental issues and tackle them creatively, in line with the Graduate School of Agriculture Curriculum Policy.</p>			
<div>• Contents</div> <p>This class blends face-to-face and remote sessions, using two seminar styles with PowerPoint or Word materials. Files are shared via Dropbox beforehand or afterward, and both materials and Q&A are in English.</p> <p>Eco Seminar: Word materials are shared at least a week in advance for supplementation. 8min. Seminar: Materials appear during the session; be ready for Q&A without prior prep. Slides are shared afterward for review.</p>			
<div>• Evaluation</div> <p>Assessment is based on attendance, participation, and achievement of learning goals, using an absolute grading scale. A correct grasp of these objectives is required to pass.</p>			
<div>• Notice for Students</div> <p>Notice for Students</p> <p>Eco Seminar: Allocate 60 minutes for Q&A: prepare multiple questions in advance.</p>			
Textbook	Materials based on academic papers written in English will be prepared by the presenter for each session.		
Reference book	Not specified.		
Contact	Feel free to email me anytime. If needed, we can arrange face-to-face or remote sessions to address any questions.		

Advanced Pomology			
Registration code	61171	Credits	1
Instructor	IKEDA Kazuo, SHIBUYA Tomoki	Coordinator <small>in case of invited lectures</small>	NA
Academic year	1st year	Semester	Winter
Style of course	Lecture	Target research area	Bioproduction Science
How to use English	To interpret Japanese as main language		
<div>• Purpose and Learning Goals</div> <p>Topics of pomology, especially of the deciduous fruit tree, are reviewed. The recent reports are also induced. The purpose of this class is to comprehend the history of the academic research and prospectives on fruit production.</p> <div>• Course Category (Relations to DP, CP and other courses)</div> <p>This class is the advanced one of 'Pomology'.</p> <div>• Contents</div> <p>Lectures on the fpllowing topics will be delivered: 1:Guidance of this lecture 2: Flower development and dormancy of fruit trees 3: Fluit set and development of fruit trees. 4: Elucidation of astringency removal and long-storage of persimmon 5: Actuals and issues on the breeding of fruit trees 6: Mechanism of fruit coloring 7: Collection, evaluation and maintenance of local fruit cultivars 8:Summary of this lecture and Examination Each topic will be covered within two classes.</p> <div>• Evaluation</div> <p>Understanding levels of the recent topics of pomology and active participation are evaluated. Students are asked to take tests and/or to submit reports, to understand the topics much further.</p> <div>• Notice for Students</div> <p>Yamagata prefecture is known as the "fruit kingdom" in Japan. Understanding of the fruit trees cultivated in Yamagata will be good for you. Depending on the demand, this class might be conducted as an intensive seminar.</p>			
Textbook	NA		
Reference book	NA		
Contact	IKEDA Kazuo:As necessary (Take an appointment by Email) SHIBUYA Tomoki:As necessary (Take an appointment by Email)		

Seminar on Advanced Pomology (1st year summer semester)			
Registration code	61107	Credits	2
Instructor	IKEDA Kazuo, SHIBUYA Tomoki	Coordinator <small>in case of invited lectures</small>	NA
Academic year	1st year	Semester	Summer
Style of course	Seminar	Target research area	Bioproduction Science
How to use English	To interpret Japanese as main language		
<div>• Purpose and Learning Goals</div> <p>The objective of this seminar is to systematically understand the historically important research and recent research on fruit production and utilization of deciduous fruit trees including specialty fruit trees in Yamagata Prefecture.</p> <p>Objective criticism from a researcher's point of view. [Knowledge / Understanding] Have your own opinion on future research theme. [Attitude / Habit]</p> <div>• Course Category (Relations to DP, CP and other courses)</div> <p>You will be able to explain the specialized knowledge in the field of Pomology (Diploma Policy). You can also use it as a training subject to develop the ability to express the results obtained by exploring yourself, such as presentations at academic conferences (Curriculum policy) .</p> <div>• Contents</div> <p>Regarding on the themes shown in the following lecture plans, the lectures will be conducted in a discussion format with reference to actual academic papers.</p> <p>1.Flowering and fruiting physiology 2.Fruit growth and maturity 3.Fruit quality and post-harvest handling 4.Breeding of fruit trees</p> <div>• Evaluation</div> <p>Understanding of the presentation theme, recognition of problems, active opinion formation and presence / absence of dicussion are required. Comprehensively evaluate the positiveness and quality of the presentation about research and the appropriateness of the content.</p> <div>• Notice for Students</div> <p>Focus on preparation rather than review. However, also try to solve unclarified issue positively. Presenters must prepare for presentations, and listeners must prepare questions.</p>			
Textbook	NA		
Reference book	NA		
Contact	IKEDA Kazuo:As necessary (Take an appointment by Email) SHIBUYA Tomoki:As necessary (Take an appointment by Email)		

Seminar on Advanced Pomology (1st year winter semester)			
Registration code	61108	Credits	2
Instructor	IKEDA Kazuo, SHIBUYA Tomoki	Coordinator <small>in case of invited lectures</small>	NA
Academic year	1st year	Semester	Winter
Style of course	Seminar	Target research area	Bioproduction Science
How to use English	To interpret Japanese as main language		
<div>• Purpose and Learning Goals</div> <p>The objective of this seminar is to systematically understand the historically important research and recent research on fruit production and utilization of deciduous fruit trees including specialty fruit trees in Yamagata Prefecture..</p> <p>Objective criticism from a researcher's point of view. [Knowledge / Understanding] Have your own opinion on future research theme. [Attitude / Habit]</p> <div>• Course Category (Relations to DP, CP and other courses)</div> <p>You will be able to explain the specialized knowledge in the field of Pomology (Diploma Policy). You can also use it as a training subject to develop the ability to express the results obtained by exploring yourself, such as presentations at academic conferences (Curriculum policy) .</p> <div>• Contents</div> <p>Regarding on the themes shown in the following lecture plans, the lectures will be conducted in a discussion format with reference to actual academic papers.</p> <p>1.Flowering and fruiting physiology 2.Fruit growth and maturity 3.Fruit quality and post-harvest handling 4.Breeding of fruit trees</p> <div>• Evaluation</div> <p>Understanding of the presentation theme, recognition of problems, active opinion formation and presence / absence of dicussion are required. Comprehensively evaluate the positiveness and quality of the presentation about research and the appropriateness of the content.</p> <div>• Notice for Students</div> <p>Focus on preparation rather than review. However, also try to solve unclarified issue positively. Presenters must prepare for presentations, and listeners must prepare questions.</p>			
Textbook	NA		
Reference book	NA		
Contact	IKEDA Kazuo:As necessary (Take an appointment by Email) SHIBUYA Tomoki:As necessary (Take an appointment by Email)		

Seminar on Advanced Pomology (2nd year summer semester)			
Registration code	61125	Credits	2
Instructor	IKEDA Kazuo, SHIBUYA Tomoki	Coordinator <small>in case of invited lectures</small>	NA
Academic year	2nd year	Semester	Summer
Style of course	Seminar	Target research area	Bioproduction Science
How to use English	To interpret Japanese as main language		
<div>• Purpose and Learning Goals</div> <p>The objective of this seminar is to systematically understand the historically important research and recent research on fruit production and utilization of deciduous fruit trees including specialty fruit trees in Yamagata Prefecture..</p> <p>Objective criticism from a researcher's point of view. [Knowledge / Understanding] Have your own opinion on future research theme. [Attitude / Habit]</p> <div>• Course Category (Relations to DP, CP and other courses)</div> <p>You will be able to explain the specialized knowledge in the field of Pomology (Diploma Policy). You can also use it as a training subject to develop the ability to express the results obtained by exploring yourself, such as presentations at academic conferences (Curriculum policy) .</p> <div>• Contents</div> <p>Regarding on the themes shown in the following lecture plans, the lectures will be conducted in a discussion format with reference to actual academic papers.</p> <p>1.Flowering and fruiting physiology 2.Fruit growth and maturity 3.Fruit quality and post-harvest handling 4.Breeding of fruit trees</p> <div>• Evaluation</div> <p>Understanding of the presentation theme, recognition of problems, active opinion formation and presence / absence of dicussion are required. Comprehensively evaluate the positiveness and quality of the presentation about research and the appropriateness of the content.</p> <div>• Notice for Students</div> <p>Focus on preparation rather than review. However, also try to solve unclarified issue positively. Presenters must prepare for presentations, and listeners must prepare questions.</p>			
Textbook	NA		
Reference book	NA		
Contact	IKEDA Kazuo:As necessary (Take an appointment by Email) SHIBUYA Tomoki:As necessary (Take an appointment by Email)		

Seminar on Advanced Pomology (2nd year winter semester)			
Registration code	61126	Credits	2
Instructor	IKEDA Kazuo, SHIBUYA Tomoki	Coordinator <small>in case of invited lectures</small>	NA
Academic year	2nd year	Semester	Winter
Style of course	Seminar	Target research area	Bioproduction Science
How to use English	To interpret Japanese as main language		
<div>• Purpose and Learning Goals</div> <p>The objective of this seminar is to systematically understand the historically important research and recent research on fruit production and utilization of deciduous fruit trees including specialty fruit trees in Yamagata Prefecture..</p> <p>Objective criticism from a researcher's point of view. [Knowledge / Understanding] Have your own opinion on future research theme. [Attitude / Habit]</p> <div>• Course Category (Relations to DP, CP and other courses)</div> <p>You will be able to explain the specialized knowledge in the field of Pomology (Diploma Policy). You can also use it as a training subject to develop the ability to express the results obtained by exploring yourself, such as presentations at academic conferences (Curriculum policy) .</p> <div>• Contents</div> <p>Regarding on the themes shown in the following lecture plans, the lectures will be conducted in a discussion format with reference to actual academic papers.</p> <p>1.Flowering and fruiting physiology 2.Fruit growth and maturity 3.Fruit quality and post-harvest handling 4.Breeding of fruit trees</p> <div>• Evaluation</div> <p>Understanding of the presentation theme, recognition of problems, active opinion formation and presence / absence of dicussion are required. Comprehensively evaluate the positiveness and quality of the presentation about research and the appropriateness of the content.</p> <div>• Notice for Students</div> <p>Focus on preparation rather than review. However, also try to solve unclarified issue positively. Presenters must prepare for presentations, and listeners must prepare questions.</p>			
Textbook	NA		
Reference book	NA		
Contact	IKEDA Kazuo:As necessary (Take an appointment by Email) SHIBUYA Tomoki:As necessary (Take an appointment by Email)		

Advanced Plant Pathology			
Registration code	61135	Credits	1
Instructor	HASE Shu	Coordinator <small>in case of invited lectures</small>	NA
Academic year	1st year	Semester	Summer
Style of course	Lecture	Target research area	Bioproduction Science
How to use English	English and Japanese (Depending on the students)		
<div>• Purpose and Learning Goals</div> <p>The purpose of this course is to gain a better understanding of basic and applied plant pathological research leading to technology for controlling crop diseases. The goal is to describe major mechanisms of plant-pathogen interaction and technical skills in disease control.</p> <div>• Course Category (Relations to DP, CP and other courses)</div> <p>This course aims to acquire a broader range of advanced knowledge on plant pathology (curriculum policy of Graduate School of Agricultural science in YU, Other courses: Seminar on Plant Pathology, Special lecture on bio production).</p> <div>• Contents</div> <p>1: History of plant pathology 2: Major plant diseases and controls 3&4: Biological control and discussion 5&6: Plant-microbe interaction and discussion 7&8: Induced resistance by beneficial microbes and discussion</p> <div>• Evaluation</div> <p>I make the following criteria for evaluation. Students can understand the basic researches related to crop disease control technology and the outline of applied researches, and accurately respond to questions, quizzes and so on.I evaluate answers to the questions and quizzes in the lectures or short reports.</p> <div>• Notice for Students</div> <p>I welcome to have your questions during this course. Students should review the lectures as soon as possible.</p>			
Textbook	NA		
Reference book	Plant Pathology 5th ed (Agrios 2005)		
Contact	After 16:00		

Seminar on Plant Pathology (1st year summer semester)			
Registration code	61119	Credits	2
Instructor	HASE Shu, KOBAYASHI Takashi	Coordinator <small>in case of invited lectures</small>	NA
Academic year	1st year	Semester	Summer
Style of course	Seminar	Target research area	Bioproduction Science
How to use English	To interpret Japanese as main language		
<div>• Purpose and Learning Goals</div> <p>The purpose of this course is to collect domestic and international research papers related to plant pathology and to present their outlines. Furthermore, the course aims at overviewing the whole picture of researches and trends in the field. The goal is to strengthen students' background of master's thesis research.</p>			
<div>• Course Category (Relations to DP, CP and other courses)</div> <p>This seminar aims to learn the ability to search and analyze the background researches related to the master thesis research themes (curriculum policy of Graduate School of Agricultural science in YU, Other courses: Seminar on Plant Pathology, Special seminar on bio production).</p>			
<div>• Contents</div> <p>Students are required to search for academic papers related to their master's thesis researches, comprehend the paper contents, and explain the outlines. After that, all participants will have a discussion about the paper contents.</p>			
<div>• Evaluation</div> <p>Students need to prepare the presentation sufficiently and design contents to be easily understood. Students should fully respond to questions and general discussions.</p>			
<div>• Notice for Students</div> <p>Students are expected to provide active and aggressive discussions and questions during this seminar. Students should attend the training course of web of science.</p>			
Textbook	International academic journals and reviews (Annual review of Phytopathology、Phytopathology, Plant Disease, MPMI, Journal of General Plant Pathology etc.)		
Reference book	NA		
Contact	After 16:00		

Seminar on Plant Pathology (1st year winter semester)			
Registration code	61714	Credits	2
Instructor	HASE Shu, KOBAYASHI Takashi	Coordinator <small>in case of invited lectures</small>	NA
Academic year	1st year	Semester	Winter
Style of course	Seminar	Target research area	Bioproduction Science
How to use English	To interpret Japanese as main language		
<div>• Purpose and Learning Goals</div> <p>The purpose of this course is to collect domestic and international research papers related to plant pathology and to present their outlines. Furthermore, the course aims at overviewing the whole picture of researches and trends in the field. The goal is to strengthen students' background of master's thesis research.</p>			
<div>• Course Category (Relations to DP, CP and other courses)</div> <p>This seminar aims to learn the ability to search and analyze the background researches related to the master thesis research themes (curriculum policy of Graduate School of Agricultural science in YU, Other courses: Seminar on Plant Pathology, Special seminar on bio production).</p>			
<div>• Contents</div> <p>Students are required to search for academic papers related to their master's thesis researches, comprehend the paper contents, and explain the outlines. After that, all participants will have a discussion about the paper contents.</p>			
<div>• Evaluation</div> <p>Students need to prepare the presentation sufficiently and design contents to be easily understood. Students should fully respond to questions and general discussions.</p>			
<div>• Notice for Students</div> <p>Students are expected to provide active and aggressive discussions and questions during this seminar. Students should attend the traning course of web of science.</p>			
Textbook	International academic journals and reviews (Annual review of Phytopathology、Phytopathology, Plant Disease, MPMI, Journal of General Plant Pathology etc.)		
Reference book	NA		
Contact	After 16:00		

Seminar on Plant Pathology (2nd year summer semester)			
Registration code	61715	Credits	2
Instructor	HASE Shu, KOBAYASHI Takashi	Coordinator <small>in case of invited lectures</small>	NA
Academic year	2nd year	Semester	Summer
Style of course	Seminar	Target research area	Bioproduction Science
How to use English	To interpret Japanese as main language		
<div>• Purpose and Learning Goals</div> <p>The purpose of this course is to collect domestic and international research papers related to plant pathology and to present their outlines. Furthermore, the course aims at overviewing the whole picture of researches and trends in the field. The goal is to strengthen students' background of master's thesis research.</p> <div>• Course Category (Relations to DP, CP and other courses)</div> <p>This seminar aims to learn the ability to search and analyze the background researches related to the master thesis research themes (curriculum policy of Graduate School of Agricultural science in YU, Other courses: Seminar on Plant Pathology, Special seminar on bio production).</p> <div>• Contents</div> <p>Students are required to search for academic papers related to their master's thesis researches, comprehend the paper contents, and explain the outlines. After that, all participants will have a discussion about the paper contents.</p> <div>• Evaluation</div> <p>Students need to prepare the presentation sufficiently and design contents to be easily understood. Students should fully respond to questions and general discussions.</p> <div>• Notice for Students</div> <p>Students are expected to provide active and aggressive discussions and questions during this seminar. Students should attend the traning course of web of science.</p>			
Textbook	International academic journals and reviews (Annual review of Phytopathology、Phytopathology, Plant Disease, MPMI, Journal of General Plant Pathology etc.)		
Reference book	NA		
Contact	After 16:00		

Seminar on Plant Pathology (2nd year winter semester)			
Registration code	61716	Credits	2
Instructor	HASE Shu, KOBAYASHI Takashi	Coordinator <small>in case of invited lectures</small>	NA
Academic year	2nd year	Semester	Winter
Style of course	Seminar	Target research area	Bioproduction Science
How to use English	To interpret Japanese as main language		
<div>• Purpose and Learning Goals</div> <p>The purpose of this course is to collect domestic and international research papers related to plant pathology and to present their outlines. Furthermore, the course aims at overviewing the whole picture of researches and trends in the field. The goal is to strengthen students' background of master's thesis research.</p> <div>• Course Category (Relations to DP, CP and other courses)</div> <p>This seminar aims to learn the ability to search and analyze the background researches related to the master thesis research themes (curriculum policy of Graduate School of Agricultural science in YU, Other courses: Seminar on Plant Pathology, Special seminar on bio production).</p> <div>• Contents</div> <p>Students are required to search for academic papers related to their master's thesis researches, comprehend the paper contents, and explain the outlines. After that, all participants will have a discussion about the paper contents.</p> <div>• Evaluation</div> <p>Students need to prepare the presentation sufficiently and design contents to be easily understood. Students should fully respond to questions and general discussions.</p> <div>• Notice for Students</div> <p>Students are expected to provide active and aggressive discussions and questions during this seminar. Students should attend the traning course of web of science.</p>			
Textbook	International academic journals and reviews (Annual review of Phytopathology、Phytopathology, Plant Disease, MPMI, Journal of General Plant Pathology etc.)		
Reference book	NA		
Contact	After 16:00		

Enviroment Geography			
Registration code	61210	Credits	1
Instructor	WATANABE Rie	Coordinator <small>in case of invited lectures</small>	NA
Academic year	1st year	Semester	Summer
Style of course	Seminar	Target research area	Bioproduction Science
How to use English	To interpret Japanese as main language		
<div>• Purpose and Learning Goals</div> <p>This course deals with the basis of Enviroment Geography, with the history of changes of the natural environment and the landscape.</p> <p>The goals of this course are :</p> <p>(1) To obtain basic knowledge about Enviroment Geography.</p> <p>(2) To understand the relationship between human agency and the changes of natural environment from the viewpoint of the local history.</p> <div>• Course Category (Relations to DP, CP and other courses)</div> <p>The goal of this course is to get the comprehension related to the human agency (agriculture) and natural environment that have global perspectives.</p> <div>• Contents</div> <p>1. Introduction: What is Enviroment Geography?</p> <p>2. History of the theme of Enviroment Geography</p> <p>3. Principles of Rural Area Landscape</p> <p>4. Thinking: how to maintain landscape(1)</p> <p>5. Thinking: how to maintain landscape(2)</p> <p>6. Try to read research papers (1)</p> <p>7. Try to read research papers (2)</p> <p>8. Relationship between human agency and natural environment (1)</p> <p>9. Relationship between human agency and natural environment (2)</p> <p>10. Try to read research papers (3)</p> <p>11. Try to read research papers (4)</p> <p>12. Discussion</p> <p>13. Review</p> <p>14. Review</p> <p>15. Final Exam</p> <div>• Evaluation</div> <p>Your overall grade in the class will be decided as follows:</p> <p>- Class attendance and attitude in class: 20%</p> <p>- Short reports: 30%</p> <p>- Term-end examination: 50%</p> <div>• Notice for Students</div>			
Textbook	Will be introduced in the class		
Reference book	Diamond, Jared M. 1999 Guns, germs, and steel : the fates of human societies / W.W. Norton(Guns, germs, and steel : the fates of human societies / Jared Diamond (New York) Stephen Daniels 1994 Fields of vision : landscape imagery and national identity in England and the United States,Polity Press(Cambridge)		
Contact	Anytime is OK (on weekday am:9:00-pm5:00)		

Seminar on Vegetable Science (1st year summer semester)			
Registration code	61142	Credits	2
Instructor	NABESHIMA Tomoyuki	Coordinator <small>in case of invited lectures</small>	NA
Academic year	1st year	Semester	Summer
Style of course	Seminar	Target research area	Bioproduction Science
How to use English	Mainly Japanese		
<div>• Purpose and Learning Goals</div> <p>Understand the contents of newly published articles in the field of vegetable physiology.</p> <div>• Course Category (Relations to DP, CP and other courses)</div> <p>This course deals with the concepts and principles of vegetable physiology. It also enhances the development of students' skills in making oral presentation and self-regulated learning (CP of Bioproduction Science).</p> <div>• Contents</div> <p>Choose appropriate articles in the following fields, and introduce the contents:</p> <ol style="list-style-type: none">1. Photosynthesis, respiration and metabolism of photosynthates2. Cell walls3. Regulation of plant growth4. Storage of fruit vegetables5. Plant factory6. Physiological disorders7. Plant nutrition8. Metabolism of secondary products <div>• Evaluation</div> <p>Your overall grade in the class will be decided as follows:</p> <ol style="list-style-type: none">1. Class attendance and attitude in class: 20%2. Presentation: 80% <div>• Notice for Students</div> <p>This course will be taught in English.</p>			
Textbook	NA		
Reference book	NA		
Contact	Mon. 9:00-10:00 (a.m.)		

Seminar on Vegetable Science (1st year winter semester)			
Registration code	61143	Credits	2
Instructor	NABESHIMA Tomoyuki	Coordinator <small>in case of invited lectures</small>	NA
Academic year	1st year	Semester	Winter
Style of course	Seminar	Target research area	Bioproduction Science
How to use English	Mainly Japanese		
<div>• Purpose and Learning Goals</div> <p>Understand the contents of newly published articles in the field of vegetable physiology.</p> <div>• Course Category (Relations to DP, CP and other courses)</div> <p>This course deals with the concepts and principles of vegetable physiology. It also enhances the development of students' skills in making oral presentation and self-regulated learning (CP of Bioproduction Science).</p> <div>• Contents</div> <p>Choose appropriate articles in the following fields, and introduce the contents:</p> <div><div>1. Photosynthesis, respiration and metabolism of photosynthates</div><div>2. Cell walls</div><div>3. Regulation of plant growth</div><div>4. Storage of fruit vegetables</div><div>5. Plant factory</div><div>6. Physiological disorders</div><div>7. Plant nutrition</div><div>8. Metabolism of secondary products</div></div> <div>• Evaluation</div> <p>Your overall grade in the class will be decided as follows:</p> <div><div>1. Class attendance and attitude in class: 20%</div><div>2. Presentation: 80%</div></div> <div>• Notice for Students</div> <p>This course will be taught in English.</p>			
Textbook	NA		
Reference book	NA		
Contact	Mon. 9:00-10:00 (a.m.)		

Seminar on Vegetable Science (2nd year summer semester)			
Registration code	61152	Credits	2
Instructor	NABESHIMA Tomoyuki	Coordinator <small>in case of invited lectures</small>	NA
Academic year	2nd year	Semester	Summer
Style of course	Seminar	Target research area	Bioproduction Science
How to use English	Mainly Japanese		
<div>• Purpose and Learning Goals</div> <p>Understand the contents of newly published articles in the field of vegetable physiology.</p> <div>• Course Category (Relations to DP, CP and other courses)</div> <p>This course deals with the concepts and principles of vegetable physiology. It also enhances the development of students' skills in making oral presentation and self-regulated learning (CP of Bioproduction Science).</p> <div>• Contents</div> <p>Choose appropriate articles in the following fields, and introduce the contents:</p> <ol style="list-style-type: none">1. Photosynthesis, respiration and metabolism of photosynthates2. Cell walls3. Regulation of plant growth4. Storage of fruit vegetables5. Plant factory6. Physiological disorders7. Plant nutrition8. Metabolism of secondary products <div>• Evaluation</div> <p>Your overall grade in the class will be decided as follows:</p> <ol style="list-style-type: none">1. Class attendance and attitude in class: 20%2. Presentation: 80% <div>• Notice for Students</div> <p>This course will be taught in English.</p>			
Textbook	NA		
Reference book	NA		
Contact	Mon. 9:00-10:00 (a.m.)		

Seminar on Vegetable Science (2nd year winter semester)			
Registration code	61153	Credits	2
Instructor	NABESHIMA Tomoyuki	Coordinator <small>in case of invited lectures</small>	NA
Academic year	2nd year	Semester	Winter
Style of course	Seminar	Target research area	Bioproduction Science
How to use English	Mainly Japanese		
<div>• Purpose and Learning Goals</div> <p>Understand the contents of newly published articles in the field of vegetable physiology.</p> <div>• Course Category (Relations to DP, CP and other courses)</div> <p>This course deals with the concepts and principles of vegatable physiology. It also enhances the development of students' skills in making oral presentation and self-regulated learning (CP of Bioproduction Science).</p> <div>• Contents</div> <p>Choose appropriate articles in the following fields, and introduce the contents:</p> <ol style="list-style-type: none">1. Photosynthesis, respiration and metabolism of photosynthates2. Cell walls3. Regulation of plant growth4. Storage of fruit vegetables5. Plant factory6. Physiological disorders7. Plant nutrition8. Metabolism of secondary products <div>• Evaluation</div> <p>Your overall grade in the class will be decided as follows:</p> <ol style="list-style-type: none">1. Class attendance and attitude in class: 20%2. Presentation: 80% <div>• Notice for Students</div> <p>This course will be taught in English.</p>			
Textbook	NA		
Reference book	NA		
Contact	Mon. 9:00-10:00 (a.m.)		

Seminar on Sociology of Food, Agriculture, and Environment (1st year summer semester)			
Registration code	61150	Credits	2
Instructor	HOKIMOTO Toshiyuki	Coordinator <small>in case of invited lectures</small>	NA
Academic year	1st year	Semester	Summer
Style of course	Seminar	Target research area	Bioproduction Science
How to use English	To interpret Japanese as main language		
<div>• Purpose and Learning Goals</div> <p>The purpose of this seminar is to help students review the past publications related to their studies. The goal of this seminar is to be able to discuss about the outcome from the students' studies based on the research trends in the related fields.</p> <div>• Course Category (Relations to DP, CP and other courses)</div> <p>This course is to obtain "<u>the capacity to perform planning of survey and experiment, implementation, data analysis and discussion for solution of problems</u>" in the diploma policy of Department of Bioenvironmental Science.</p> <div>• Contents</div> <p>Participants read research articles and review papers on agricultural problems or data collection for the analysis. One or few students in each class make the presentations on the articles/papers for discussion with the other participants. The participants should attend all of 15 classess as speakers or audiences.</p> <div>• Evaluation</div> <p>Grading will be decided based on your presentation (60%) and attitude in discussion (40%).</p> <div>• Notice for Students</div> <p>Your active participation in discussion is expected.</p>			
Textbook	Handouts will be provided in the classes.		
Reference book	NA		
Contact	My office is on the 3rd floor of the 1st building. You can contact me anytime via email (hokimoto@tds1.tr.yamagata-u.ac.jp).		

Seminar on Sociology of Food, Agriculture, and Environment (1st year winter semester)			
Registration code	61151	Credits	2
Instructor	HOKIMOTO Toshiyuki	Coordinator <small>in case of invited lectures</small>	NA
Academic year	1st year	Semester	Winter
Style of course	Seminar	Target research area	Bioproduction Science
How to use English	To interpret Japanese as main language		
<div>• Purpose and Learning Goals</div> <p>The purpose of this seminar is to help students review the past publications related to their studies. The goal of this seminar is to be able to discuss about the outcome from the students' studies based on the research trends in the related fields.</p>			
<div>• Course Category (Relations to DP, CP and other courses)</div> <p>This course is to obtain <u>"the capacity to perform planning of survey and experiment, implementation, data analysis and discussion for solution of problems"</u> in the diploma policy of Department of Bioenvironmental Science.</p>			
<div>• Contents</div> <p>Participants read research articles and review papers on agricultural problems or data collection for the analysis. One or few students in each class make the presentations on the articles/papers for discussion with the other participants. The participants should attend all of 15 classes as speakers or audiences.</p>			
<div>• Evaluation</div> <p>Grading will be decided based on your presentation (60%) and attitude in discussion (40%).</p>			
<div>• Notice for Students</div> <p>Your active participation in discussion is expected.</p>			
Textbook	Handouts will be provided in the classes.		
Reference book	NA		
Contact	My office is on the 3rd floor of the 1st building. You can contact me anytime via email (hokimoto@tds1.tr.yamagata-u.ac.jp).		

Seminar on Sociology of Food, Agriculture, and Environment (2nd year summer semester)			
Registration code	61727	Credits	2
Instructor	HOKIMOTO Toshiyuki	Coordinator <small>in case of invited lectures</small>	NA
Academic year	2nd year	Semester	Summer
Style of course	Seminar	Target research area	Bioproduction Science
How to use English	To interpret Japanese as main language		
<div>• Purpose and Learning Goals</div> <p>The purpose of this seminar is to help students review the past publications related to their studies. The goal of this seminar is to be able to discuss about the outcome from the students' studies based on the research trends in the related fields.</p>			
<div>• Course Category (Relations to DP, CP and other courses)</div> <p>This course is to obtain "<u>the capacity to perform planning of survey and experiment, implementation, data analysis and discussion for solution of problems</u>" in the diploma policy of Department of <u>Bioenvironmental Science</u>.</p>			
<div>• Contents</div> <p>Participants read research articles and review papers on agricultural problems or data collection for the analysis. One or few students in each class make the presentations on the articles/papers for discussion with the other participants. The participants should attend all of 15 classes as speakers or audiences.</p>			
<div>• Evaluation</div> <p>Grading will be decided based on your presentation (60%) and attitude in discussion (40%).</p>			
<div>• Notice for Students</div> <p>Your active participation in discussion is expected.</p>			
Textbook	Handouts will be provided in the classes.		
Reference book	NA		
Contact	My office is on the 3rd floor of the 1st building. You can contact me anytime via email (hokimoto@tds1.tr.yamagata-u.ac.jp).		

Seminar on Sociology of Food, Agriculture, and Environment (2nd year winter semester)			
Registration code	61728	Credits	2
Instructor	HOKIMOTO Toshiyuki	Coordinator <small>in case of invited lectures</small>	NA
Academic year	2nd year	Semester	Winter
Style of course	Seminar	Target research area	Bioproduction Science
How to use English	To interpret Japanese as main language		
<div>• Purpose and Learning Goals</div> <p>The purpose of this seminar is to help students review the past publications related to their studies. The goal of this seminar is to be able to discuss about the outcome from the students' studies based on the research trends in the related fields.</p>			
<div>• Course Category (Relations to DP, CP and other courses)</div> <p>This course is to obtain <u>"the capacity to perform planning of survey and experiment, implementation, data analysis and discussion for solution of problems"</u> in the diploma policy of Department of Bioenvironmental Science.</p>			
<div>• Contents</div> <p>Participants read research articles and review papers on agricultural problems or data collection for the analysis. One or few students in each class make the presentations on the articles/papers for discussion with the other participants. The participants should attend all of 15 classes as speakers or audiences.</p>			
<div>• Evaluation</div> <p>Grading will be decided based on your presentation (60%) and attitude in discussion (40%).</p>			
<div>• Notice for Students</div> <p>Your active participation in discussion is expected.</p>			
Textbook	Handouts will be provided in the classes.		
Reference book	NA		
Contact	My office is on the 3rd floor of the 1st building. You can contact me anytime via email (hokimoto@tds1.tr.yamagata-u.ac.jp).		

Sociology of Food, Agriculture, and Environment			
Registration code	61161	Credits	1
Instructor	HOKIMOTO Toshiyuki	Coordinator <small>in case of invited lectures</small>	NA
Academic year	1st year	Semester	Summer
Style of course	Lecture	Target research area	Bioproduction Science
How to use English	To interpret Japanese as main language		
<div>• Purpose and Learning Goals</div> <p>This course introduces how to think about agricultural problems based on historical sociology, political economy and peasant study viewpoints. The goal of this course is to be able to understand basic concepts of and analytical methods for agricultural problems.</p>			
<div>• Course Category (Relations to DP, CP and other courses)</div> <p>This course is to obtain <u>"the capacity to perform planning of survey and experiment, implementation, data analysis and discussion for solution of problems"</u> in the diploma policy of Department of Bioenvironmental Science.</p>			
<div>• Contents</div> <p>1st to 4th classes: Lectures on concept of agricultural problems. 5th to 8th classes: Lectures on analytical method for agricultural problems. 9th to 13th classes: Lectures on application of agricultural problem analysis. 14th & 15th classes: Discussion on agricultural problems.</p>			
<div>• Evaluation</div> <p>Grading will be decided based on class attendance and attitude in class (20%) and final report (80%).</p>			
<div>• Notice for Students</div> <p>Your active participation in discussion is expected.</p>			
Textbook	Handouts will be provided in the classes.		
Reference book	NA		
Contact	My office is on the 3rd floor of the 1st building. You can contact me anytime via email (hokimoto@tds1.tr.yamagata-u.ac.jp).		

Seminar on Bioresources Chemistry (1st year summer semester)			
Registration code	61313	Credits	2
Instructor	SHIONO Yoshihito	Coordinator <small>in case of invited lectures</small>	NA
Academic year	1st year	Semester	Summer
Style of course	Seminar	Target research area	Bioresource Science
How to use English	To interpret Japanese as main language		
<div>• Purpose and Learning Goals</div> <div>1) The purpose is to learn about the cultivation methods of physiologically active substances produced by microorganisms.</div> <div>2) The aim is to acquire knowledge about enzymes and other substances produced by microorganisms.</div>			
<div>• Course Category (Relations to DP, CP and other courses)</div> <div>This course is designed to provide a broader range of specialized knowledge and problem-solving skills related to biological resources, enabling students to address various issues in both local and international communities. It aims to equip students with practical skills necessary for engaging in research and development activities.</div>			
<div>• Contents</div> <div>In this course, we will use the following paper as a textbook, covering the following topics:</div> <div>Recent advances in microorganisms producing physiologically active substances</div> <div>Sources for isolating microorganisms producing physiologically active substances</div> <div>Methods for isolating microorganisms</div> <div>Cultivation methods for microorganisms</div> <div>Liquid culture media for microorganisms</div> <div>Solid culture media for microorganisms</div> <div>Cultivation conditions and environments for microorganisms</div> <div>Physiologically active substances produced by microorganisms</div> <div>Challenges in culturing difficult microorganisms</div> <div>Enzymes produced by microorganisms</div>			
<div>• Evaluation</div> <div>Criteria:</div> <div>Understanding the fundamental aspects of responses during participation in exercises, questioning and answering sessions, as well as the attainment goals of the class, including the sources for microbial isolation, cultivation conditions, and enzymes produced by microorganisms, will be the criteria for passing.</div>			
<div>• Notice for Students</div> <div>Beforehand understanding of organic chemistry is necessary</div>			
Textbook	Not text prepared.		
Reference book	NA		
Contact	yshiono@tds1.tr.yamagata-u.ac.jp		

Seminar on Bioresources Chemistry (1st year winter semester)			
Registration code	61314	Credits	2
Instructor	SHIONO Yoshihito	Coordinator <small>in case of invited lectures</small>	NA
Academic year	1st year	Semester	Winter
Style of course	Seminar	Target research area	Bioresource Science
How to use English	To interpret Japanese as main language		
<div>• Purpose and Learning Goals</div> <div>1)The objective is to learn about the bioactive substances produced by basidiomycetes and ascomycetes.</div> <div>2) The goal is to acquire knowledge about microbial cultivation methods and methods for enzyme purification.</div> <div>• Course Category (Relations to DP, CP and other courses)</div> <div>This course aims to provide students with an understanding of naturally occurring organic compounds produced by microorganisms, particularly basidiomycetes and ascomycetes, as biological resources. It focuses on acquiring specialized knowledge in the field of natural organic chemistry, developing skills in problem exploration, practical abilities essential for engaging in research and development activities, and gaining knowledge in purification methods and characterization of enzymes produced by food microorganisms.</div> <div>• Contents</div> <div>Bioactive Compounds Produced by Filamentous Fungi</div> <div>Isolation Sources of Filamentous Fungi Producing Bioactive Compounds</div> <div>Microbial Cultivation Methods</div> <div>Bioactive Compounds Produced by Basidiomycetes and Ascomycetes</div> <div>Medium Composition and Cultivation Environment in Natural Product Discovery</div> <div>Microbial Contribution to Natural Product Exploration</div> <div>Enzymes Produced by Microorganisms</div> <div>• Evaluation</div> <div>Evaluation will be based on participation in class (20 points), presentation (40 points), and Q&A sessions (40 points). Participation will consider the frequency and quality of questions asked. Presentation and Q&A sessions will assess the organization of presentation content, comprehension of fundamental topics from provided materials, and responsiveness during Q&A interactions.</div> <div>• Notice for Students</div> <div>Beforehand understanding of organic chemistry is necessary</div>			
Textbook	Not text prepared.		
Reference book	NA		
Contact	yshiono@tds1.tr.yamagata-u.ac.jp		

Seminar on Bioresources Chemistry (2nd year summer semester)			
Registration code	61377	Credits	2
Instructor	SHIONO Yoshihito	Coordinator <small>in case of invited lectures</small>	NA
Academic year	2nd year	Semester	Summer
Style of course	Seminar	Target research area	Bioresource Science
How to use English	To interpret Japanese as main language		
<div>• Purpose and Learning Goals</div> <div>1) The objective is to learn about the isolation and purification methods of bioactive substances produced by filamentous fungi.</div> <div>2) The objective is to learn about the analysis and identification methods of bioactive substances, which are secondary metabolites produced by filamentous fungi.</div> <div>3)The objective is to learn about the characteristics of enzymes produced by microorganisms.</div> <div>• Course Category (Relations to DP, CP and other courses)</div> <div>This course aims to provide an understanding of naturally occurring organic compounds produced by microorganisms as biological resources. It is designed to impart specialized knowledge in the field of natural organic chemistry, develop skills in problem exploration, practical abilities essential for engaging in research and development activities, and impart knowledge about enzymes produced by microorganisms.</div> <div>• Contents</div> <div>About microorganisms producing bioactive substances</div> <div>Purification of bioactive substances from microorganisms</div> <div>Efficient purification methods for bioactive substances</div> <div>Basic purification of bioactive substances using HPLC</div> <div>Identification of bioactive substances using LC/MS</div> <div>Purification of bioactive substances using flash column chromatography</div> <div>Efficient extraction methods</div> <div>Identification of bioactive substances using GC/MS</div> <div>Colorimetric tests on TLC</div> <div>Applications of column chromatography in the purification of bioactive substances</div> <div>Ion exchange chromatography in the purification of bioactive substances</div> <div>• Evaluation</div> <div>Attendance (20 points), Presentation (40 points), and Q&A (40 points) will be evaluated. Attendance will be assessed based on the frequency and quality of questions asked. Presentation and Q&A will be evaluated based on the organization of presentation content, understanding of fundamental topics from provided materials, and responsiveness during Q&A interactions.</div> <div>• Notice for Students</div> <div>Beforehand understanding of organic chemistry is necessary</div>			
Textbook	Not text prepared.		
Reference book	NA		
Contact	yshiono@tdsl.tr.yamagata-u.ac.jp		

Seminar on Bioresources Chemistry (2nd year winter semester)			
Registration code	61378	Credits	2
Instructor	SHIONO Yoshihito	Coordinator <small>in case of invited lectures</small>	NA
Academic year	2nd year	Semester	Winter
Style of course	Seminar	Target research area	Bioresource Science
How to use English	To interpret Japanese as main language		
<div>• Purpose and Learning Goals</div> <div>1) The objective is to learn about the chemical structure analysis of small bioactive molecules produced by filamentous fungi.</div> <div>2) The objective is to learn about the characteristics of enzymes produced by microorganisms.</div> <div>• Course Category (Relations to DP, CP and other courses)</div> <div>This course aims to provide a comprehensive understanding of naturally occurring organic compounds produced by microorganisms as biological resources. It is designed to impart specialized knowledge in the field of natural organic chemistry, develop skills in problem exploration, practical abilities essential for engaging in research and development activities, and impart knowledge about hydrolytic enzymes produced by microorganisms.</div> <div>• Contents</div> <div>Handling methods for bioactive compounds as organic compounds</div> <div>Pre-treatment methods for measurement using various spectrophotometers</div> <div>General chemical structure analysis of bioactive compounds</div> <div>Molecular spectroscopic analysis of bioactive compounds</div> <div>Ultraviolet spectroscopy (principles and data analysis methods)</div> <div>Near-infrared spectroscopy (principles and data analysis methods)</div> <div>Nuclear magnetic resonance spectroscopy</div> <div>Analysis methods for nuclear magnetic resonance spectra</div> <div>Analysis methods for mass spectra</div> <div>Characteristics of enzymes produced by microorganisms</div> <div>• Evaluation</div> <div>Attendance (20 points), Presentation (40 points), and Q&A (40 points) will be evaluated. Attendance will be assessed based on the frequency and quality of questions asked. Presentation and Q&A will be evaluated based on the organization of presentation content, understanding of fundamental topics from provided materials, and responsiveness during Q&A interactions.</div> <div>• Notice for Students</div> <div>Beforehand understanding of organic chemistry is necessary</div>			
Textbook	Not text prepared.		
Reference book	NA		
Contact	yshiono@tds1.tr.yamagata-u.ac.jp		

Functional Food Science			
Registration code	61421	Credits	1
Instructor	KANOH Naomi	Coordinator <small>in case of invited lectures</small>	NA
Academic year	1st year	Semester	Winter
Style of course	Lecture	Target major	Bioresource Science
How to use English	Handsout only		
<div>• Purpose and Learning Goals</div> <div>[Purpose] To acquire advanced specialized knowledge in functional food science.</div> <div>[Learning goals] To understand and explain the functionality of food related to human health maintenance and enhancement, as well as the experimental methods to scientifically demonstrate it.</div> <div>• Course Category (Relations to DP, CP and other courses)</div> <div>This course aims to acquire basic knowledge, learn the latest insights, and gain advanced specialized knowledge on functional food science (DP and CP).</div> <div>• Contents</div> <div>[Teaching Methods] This course primarily consists of face-to-face lectures, but remote teaching methods (such as web classes and Zoom) will also be utilized. Lectures will cover examples of research on functional mechanisms of food components related to human health maintenance and disease prevention. Students will be assigned research tasks. Students will research the assigned topics, create materials, and deliver oral presentations. Additionally, students will deepen their understanding through discussions among students about the presentation content, with the supplementary explanations by teaching staff as needed.</div> <div>[Schedule] 1. Orientation (Overview Explanation, Assignment Setting) 2. Examples of Food Functional Science Research (1) 3. Examples of Food Functional Science Research (2) 4. Examples of Food Functional Science Research (3) 5. Student Assignment Presentations 1 6. Student Assignment Presentations 2 7. Student Assignment Presentations 3 8. Summary</div> <div>• Evaluation</div> <div>[Criteria] Evaluation will be based on whether students correctly understand and can explain advanced specialized matters related to functional food science through the assignment presentations, along with an overall assessment of the attitude toward participation in class, with a passing grade set at 60 points out of 100.</div> <div>[Methods] Assignment presentations: 60 points Attitude toward participation in class (participation points, questions and answers, participation in discussions, etc.): 40 points</div> <div>• Notice for Students</div> <div>[Approach to Learning] Students should strive to understand the lecture content and other student's presentations, think scientifically and critically, and express questions and opinions. Also, Students should make efforts to understand the content by consulting reference books and related literature if there are areas of difficulty.</div> <div>[Advice for Study Outside of Class (Preparation/Review)] Students should acquire basic knowledge from textbooks and other materials related to functional food science. Also, students should confirm the understanding of lecture content and strive to understand unclear points by researching on your own as much as possible.</div>			
Textbook	NA		
Reference book	NA		
Contact	Mondays, 4:00 PM - 5:00 PM. Please contact in advance via email or other means.		

Seminar on Functional Food Science (1st year summer semester)			
Registration code	61416	Credits	2
Instructor	KANOHI Naomi	Coordinator <small>in case of invited lectures</small>	NA
Academic year	1st year	Semester	Summer
Style of course	Seminar	Target major	Bioresource Science
How to use English	Handsout only		
<div>• Purpose and Learning Goals</div> <div>[Purpose] To acquire advanced specialized knowledge and experimental techniques in functional food science, English paper reading comprehension, and presentation skills.</div> <div>[Learning goals] •To understand and explain specialized topics and experimental techniques in functional food science. •To read English papers accurately and explain their contents clearly to others through presentations.</div> <div>• Course Category (Relations to DP, CP and other courses)</div> <div>This course aims to aquire advanced knowledge, experimental techniques, and problem-solving abilities related to functional food science to address diverse issues in local and international communities (DP and CP).</div> <div>• Contents</div> <div>[Teaching Methods] Primarily face-to-face seminar, supplemented by remote teaching methods (web classes, Zoom). Students will take turns presenting PowerPoint materials prepared in advance.</div> <div>[Schedule] Sessions 1-15: Students will individually read the latest English papers on functional food science, summarize them in PowerPoint presentations, and answer questions from fellow students and the teaching staff.</div> <div>• Evaluation</div> <div>[Criteria] Evaluation will be based on the understanding of advanced specialized knowledge and experimental techniques in functional food science through reading and presenting English papers, as well as through question and answer sessions and discussions, with a passing grade set at 60 points out of 100.</div> <div>[Methods] Presentation: 60 points Attitude toward participation in class (participation points, questions and answers, participation in discussions, etc.): 40 points</div> <div>• Notice for Students</div> <div>[Approach to Learning] Presenters should thoroughly research any unclear points in English papers on functional food science, create PowerPoint materials that accurately convey the content to others, and prepare to answer questions from the audience. Audience members should actively listen, strive to understand the content, think critically, and ideally ask questions or share opinions at least once per session.</div> <div>[Advice for Study Outside of Class (Preparation/Review)] Students should acquire foundational knowledge from textbooks and other materials related to functional food science. Also, students should research unclear points using reference books or related literature to enhance understanding.</div>			
Textbook	NA		
Reference book	NA		
Contact	Mondays, 4:00 PM - 5:00 PM. Please contact in advance via email or other means.		

Seminar on Functional Food Science (1st year winter semester)			
Registration code	61417	Credits	2
Instructor	KANOH Naomi	Coordinator <small>in case of invited lectures</small>	NA
Academic year	1st year	Semester	Winter
Style of course	Seminar	Target major	Bioresource Science
How to use English	Handsout only		
<div>• Purpose and Learning Goals</div> <div>[Purpose] To acquire advanced specialized knowledge and experimental techniques in functional food science, English paper reading comprehension, and presentation skills.</div> <div>[Learning goals] •To understand and explain specialized topics and experimental techniques in functional food science. •To read English papers accurately and explain their contents clearly to others through presentations.</div> <div>• Course Category (Relations to DP, CP and other courses)</div> <div>This course aims to aquire advanced knowledge, experimental techniques, and problem-solving abilities related to functional food science to address diverse issues in local and international communities (DP and CP).</div> <div>• Contents</div> <div>[Teaching Methods] Primarily face-to-face seminar, supplemented by remote teaching methods (web classes, Zoom). Students will take turns presenting PowerPoint materials prepared in advance.</div> <div>[Schedule] Sessions 1-15: Students will individually read the latest English papers on functional food science, summarize them in PowerPoint presentations, and answer questions from fellow students and the teaching staff.</div> <div>• Evaluation</div> <div>[Criteria] Evaluation will be based on the understanding of advanced specialized knowledge and experimental techniques in functional food science through reading and presenting English papers, as well as through question and answer sessions and discussions, with a passing grade set at 60 points out of 100.</div> <div>[Methods] Presentation: 60 points Attitude toward participation in class (participation points, questions and answers, participation in discussions, etc.): 40 points</div> <div>• Notice for Students</div> <div>[Approach to Learning] Presenters should thoroughly research any unclear points in English papers on functional food science, create PowerPoint materials that accurately convey the content to others, and prepare to answer questions from the audience. Audience members should actively listen, strive to understand the content, think critically, and ideally ask questions or share opinions at least once per session.</div>			
Textbook	NA		
Reference book	NA		
Contact	Mondays, 4:00 PM - 5:00 PM. Please contact in advance via email or other means.		

Seminar on Functional Food Science (2nd year summer semester)			
Registration code	61418	Credits	2
Instructor	KANOHI Naomi	Coordinator <small>in case of invited lectures</small>	NA
Academic year	2nd year	Semester	Summer
Style of course	Seminar	Target major	Bioresource Science
How to use English	Handsout only		
<div>• Purpose and Learning Goals</div> <div>[Purpose] To acquire advanced specialized knowledge and experimental techniques in functional food science, English paper reading comprehension, and presentation skills.</div> <div>[Learning goals] •To understand and explain specialized topics and experimental techniques in functional food science. •To read English papers accurately and explain their contents clearly to others through presentations.</div> <div>• Course Category (Relations to DP, CP and other courses)</div> <div>This course aims to acquire advanced knowledge, experimental techniques, and problem-solving abilities related to functional food science to address diverse issues in local and international communities (DP and CP).</div> <div>• Contents</div> <div>[Teaching Methods] Primarily face-to-face seminar, supplemented by remote teaching methods (web classes, Zoom). Students will take turns presenting PowerPoint materials prepared in advance.</div> <div>[Schedule] Sessions 1-15: Students will individually read the latest English papers on functional food science, summarize them in PowerPoint presentations, and answer questions from fellow students and the teaching staff.</div> <div>• Evaluation</div> <div>[Criteria] Evaluation will be based on the understanding of advanced specialized knowledge and experimental techniques in functional food science through reading and presenting English papers, as well as through question and answer sessions and discussions, with a passing grade set at 60 points out of 100.</div> <div>[Methods] Presentation: 60 points Attitude toward participation in class (participation points, questions and answers, participation in discussions, etc.): 40 points</div> <div>• Notice for Students</div> <div>[Approach to Learning] Presenters should thoroughly research any unclear points in English papers on functional food science, create PowerPoint materials that accurately convey the content to others, and prepare to answer questions from the audience. Audience members should actively listen, strive to understand the content, think critically, and ideally ask questions or share opinions at least once per session.</div> <div>[Advice for Study Outside of Class (Preparation/Review)] Students should acquire foundational knowledge from textbooks and other materials related to functional food science. Also, students should research unclear points using reference books or related literature to enhance understanding.</div>			
Textbook	NA		
Reference book	NA		
Contact	Mondays, 4:00 PM - 5:00 PM. Please contact in advance via email or other means.		

Seminar on Functional Food Science (2nd year winter semester)			
Registration code	61419	Credits	2
Instructor	KANOH Naomi	Coordinator <small>in case of invited lectures</small>	NA
Academic year	2nd year	Semester	Winter
Style of course	Seminar	Target major	Bioresource Science
How to use English	Handsout only		
<div>• Purpose and Learning Goals</div> <div>[Purpose] To acquire advanced specialized knowledge and experimental techniques in functional food science, English paper reading comprehension, and presentation skills.</div> <div>[Learning goals] •To understand and explain specialized topics and experimental techniques in functional food science. •To read English papers accurately and explain their contents clearly to others through presentations.</div> <div>• Course Category (Relations to DP, CP and other courses)</div> <div>This course aims to aquire advanced knowledge, experimental techniques, and problem-solving abilities related to functional food science to address diverse issues in local and international communities (DP and CP).</div> <div>• Contents</div> <div>[Teaching Methods] Primarily face-to-face seminar, supplemented by remote teaching methods (web classes, Zoom). Students will take turns presenting PowerPoint materials prepared in advance.</div> <div>[Schedule] Sessions 1-15: Students will individually read the latest English papers on functional food science, summarize them in PowerPoint presentations, and answer questions from fellow students and the teaching staff.</div> <div>• Evaluation</div> <div>[Criteria] Evaluation will be based on the understanding of advanced specialized knowledge and experimental techniques in functional food science through reading and presenting English papers, as well as through question and answer sessions and discussions, with a passing grade set at 60 points out of 100.</div> <div>[Methods] Presentation: 60 points Attitude toward participation in class (participation points, questions and answers, participation in discussions, etc.): 40 points</div> <div>• Notice for Students</div> <div>[Approach to Learning] Presenters should thoroughly research any unclear points in English papers on functional food science, create PowerPoint materials that accurately convey the content to others, and prepare to answer questions from the audience. Audience members should actively listen, strive to understand the content, think critically, and ideally ask questions or share opinions at least once per session.</div> <div>[Advice for Study Outside of Class (Preparation/Review)] Students should acquire foundational knowledge from textbooks and other materials related to functional food science. Also, students should research unclear points using reference books or related literature to enhance understanding.</div>			
Textbook	NA		
Reference book	NA		
Contact	Mondays, 4:00 PM - 5:00 PM. Please contact in advance via email or other means.		

Applied Metabolomics			
Registration code	61357	Credits	1
Instructor	MIYAGI Atsuko	Coordinator <small>in case of invited lectures</small>	NA
Academic year	1st year	Semester	Summer
Style of course	Seminar	Target research area	Bioresource Science
How to use English	Japanese as the primary language (English is also used in conjunction)		
<div>• Purpose and Learning Goals</div> <p>The purpose of this seminar is to understand basic knowledge on metabolic biochemistry, especially in metabolomics of phytochemistry and food sciences. By the end of the course, students should be able to recognize basic information of metabolomics and metabolic biochemistry.</p> <div>• Course Category (Relations to DP, CP and other courses)</div> <p>Along with DP and CP of Bioresource Science program, the participants of this seminar can understand the concepts of metabolomics</p> <div>• Contents</div> <div>1. Metabolism</div> <div>1-1. Metabolites</div> <div>1-2. Metabolism</div> <div>1-3. Databases</div> <div>2. Metabolomics</div> <div>2-1. Metabolomics</div> <div>2-2. Mass Spectrometers</div> <div>2-3. Bioinformatics for metabolomics</div> <div>2-4. Databases</div> <div>3. Applications</div> <div>3-1. Characterization of unknown genes</div> <div>3-2. Visualization of metabolic disorders</div> <div>3-3. Localization and dynamics of metabolites</div> <div>3-4. Food metabolomics</div> <div>• Evaluation</div> <p>Comprehensive judgement from discussion on the lecture</p> <div>• Notice for Students</div>			
Textbook	NA		
Reference book	NA		
Contact	miyagi@tds1.tr.yamagata-u.ac.jp		

Seminar on Applied Metabolomics (1st year summer semester)			
Registration code	61340	Credits	1
Instructor	MIYAGI Atsuko	Coordinator <small>in case of invited lectures</small>	NA
Academic year	1st year	Semester	Summer
Style of course	Seminar	Target research area	Bioresource Science
How to use English	Japanese as the primary language (English is also used in conjunction)		
<div>• Purpose and Learning Goals</div> <p>The purpose of this seminar is to understand basic knowledge on metabolic biochemistry, especially in metabolomics of phytochemistry and food sciences. It also enhances the development of student's skills in carrying out a metabolomics experiment. By the end of the course, students should be able to do the following tasks:</p> <ul style="list-style-type: none">- Recognize basic information of metabolomics and metabolic biochemistry- Extract and prepare samples for metabolomic experiments- Operate liquid chromatography and mass spectrometry basically <div>• Course Category (Relations to DP, CP and other courses)</div> <p>Along with DP and CP of Bioresource Science program, the participants of this seminar can understand the basic concepts of metabolic biochemistry.</p> <div>• Contents</div> <p>This seminar consists of discussions and experiments of the student's theme in the laboratory.</p> <div>• Evaluation</div> <p>Comprehensive conclusion from the student's understanding, practice, and discussion of the study theme.</p> <div>• Notice for Students</div>			
Textbook	NA		
Reference book	NA		
Contact	miyagi@tds1.tr.yamagata-u.ac.jp		

Seminar on Applied Metabolomics (1st year winter semester)			
Registration code	61341	Credits	1
Instructor	MIYAGI Atsuko	Coordinator <small>in case of invited lectures</small>	NA
Academic year	1st year	Semester	Winter
Style of course	Seminar	Target research area	Bioresource Science
How to use English	Japanese as the primary language (English is also used in conjunction)		
<div>• Purpose and Learning Goals</div> <p>The purpose of this seminar is to understand basic knowledge on metabolic biochemistry, especially in metabolomics of phytochemistry and food sciences. It also enhances the development of student's skills in carrying out a metabolomics experiment. By the end of the course, students should be able to do the following tasks:</p> <ul style="list-style-type: none">- Recognize basic information of metabolomics and metabolic biochemistry- Extract and prepare samples for metabolomic experiments- Operate liquid chromatography and mass spectrometry basically <div>• Course Category (Relations to DP, CP and other courses)</div> <p>Along with DP and CP of Bioresource Science program, the participants of this seminar can understand the basic concepts of metabolic biochemistry.</p> <div>• Contents</div> <p>This seminar consists of discussions and experiments of the student's theme in the laboratory.</p> <div>• Evaluation</div> <p>Comprehensive conclusion from the student's understanding, practice, and discussion of the study theme.</p> <div>• Notice for Students</div>			
Textbook	NA		
Reference book	NA		
Contact	miyagi@tds1.tr.yamagata-u.ac.jp		

Seminar on Applied Metabolomics (2nd year summer semester)			
Registration code	61395	Credits	1
Instructor	MIYAGI Atsuko	Coordinator <small>in case of invited lectures</small>	NA
Academic year	2nd year	Semester	Summer
Style of course	Seminar	Target research area	Bioresource Science
How to use English	Japanese as the primary language (English is also used in conjunction)		
<div>• Purpose and Learning Goals</div> <p>The purpose of this seminar is to understand basic knowledge on metabolic biochemistry, especially in metabolomics of phytochemistry and food sciences. It also enhances the development of student's skills in carrying out a metabolomics experiment. By the end of the course, students should be able to do the following tasks:</p> <ul style="list-style-type: none">- Recognize basic information of metabolomics and metabolic biochemistry- Extract and prepare samples for metabolomic experiments- Operate liquid chromatography and mass spectrometry basically <div>• Course Category (Relations to DP, CP and other courses)</div> <p>long with DP and CP of Bioresource Science program, the participants of this seminar can understand the detail concepts of metabolic biochemistry.</p> <div>• Contents</div> <p>This seminar consists of discussions and experiments of the student's theme in the laboratory.</p> <div>• Evaluation</div> <p>Comprehensive conclusion from the student's understanding, practice, and discussion of the study theme.</p> <div>• Notice for Students</div>			
Textbook	NA		
Reference book	NA		
Contact	miyagi@tds1.tr.yamagata-u.ac.jp		

Seminar on Applied Metabolomics (2nd year Winter semester)			
Registration code	61396	Credits	1
Instructor	MIYAGI Atsuko	Coordinator <small>in case of invited lectures</small>	NA
Academic year	2nd year	Semester	Winter
Style of course	Seminar	Target major	Bioresource Science
How to use English	Japanese as the primary language (English is also used in conjunction)		
<div>• Purpose and Learning Goals</div> <p>The purpose of this seminar is to understand basic knowledge on metabolic biochemistry, especially in metabolomics of phytochemistry and food sciences. It also enhances the development of student's skills in carrying out a metabolomics experiment. By the end of the course, students should be able to do the following tasks:</p> <ul style="list-style-type: none">- Recognize basic information of metabolomics and metabolic biochemistry- Extract and prepare samples for metabolomic experiments- Operate liquid chromatography and mass spectrometry basically <div>• Course Category (Relations to DP, CP and other courses)</div> <p>Along with DP and CP of Bioresource Science program, the participants of this seminar can understand the detail concepts of metabolic biochemistry.</p> <div>• Contents</div> <p>This seminar consists of discussions and experiments of the student's theme in the laboratory.</p> <div>• Evaluation</div> <p>Comprehensive conclusion from the student's understanding, practice, and discussion of the study theme.</p> <div>• Notice for Students</div>			
Textbook	NA		
Reference book	NA		
Contact	miyagi@tds1.tr.yamagata-u.ac.jp		

Seminar on Food and Nutritional Science (1st year summer semester)			
Registration code	61968	Credits	2
Instructor	KOBAYASHI Sho	Coordinator <small>in case of invited lectures</small>	NA
Academic year	1st year	Semester	Summer
Style of course	Seminar	Target major	Bioresource Science
How to use English	Handsout only		
<div>• Purpose and Learning Goals</div> <p>The objective of this course is to provide students with advanced specialized knowledge and skills in nutritional chemistry and food functional chemistry, experimental techniques, English language skills, and presentation skills. The goals of this course are as follows.</p> <ol style="list-style-type: none">1. The students should be able to explain the effects of food components on the maintenance of human health and the development of pathological conditions.2. The students will acquire the ability to plan, execute, and verify research, scientific thinking skills, and presentation skills by introducing papers they have read carefully. <div>• Course Category (Relations to DP, CP and other courses)</div> <p>This course is designed to provide students with advanced knowledge, skills, and experimental techniques related to nutritional chemistry and food functional chemistry, as well as ability to explore problem (Graduate School of Agricultural Science DP, CP).</p> <div>• Contents</div> <p>An overview of nutritional chemistry and food functional chemistry and how to prepare for the presentation will be given in the frist three classes. From the 4th class, students will take turns to prepare presentation materials (resumes and PowerPoint presentations) in advance and use them in the presentation.</p> <div>• Evaluation</div> <p>The grade for passing this course will be 60 or higher, based on comprehensive evaluation of the student's understanding of advanced specialized knowledge, techniques, and experimental methods related to nutritional chemistry and food functional chemistry through preparation, presentation, question-and-answer session, and discussion of paper introduction.</p> <div>• Notice for Students</div> <ol style="list-style-type: none">1. Students are expected to fully investigate the questions raised during a carefully reading of paper.2. Students are expected to prepare well in advance (resume and power point presentation) and to make a presentation that can withstand question and answer session.3. In discussions, students are expected to think scientifically and critically, and to ask questions and express their opinions.			
Textbook	NA		
Reference book	NA		
Contact	anytime. Please firstly send me an Email. Email: skobayashi@tds1.tr.yamagata-u.ac.jp		

Seminar on Food and Nutritional Science (1st year winter semester)			
Registration code	61969	Credits	2
Instructor	KOBAYASHI Sho	Coordinator <small>in case of invited lectures</small>	NA
Academic year	1st year	Semester	Winter
Style of course	Seminar	Target major	Bioresource Science
How to use English	Handsout only		
<div>• Purpose and Learning Goals</div> <p>The objective of the this course is to provide students with advanced specialized knowledge and skills in nutritional chemistry and food functional chemistry, experimental techniques, English language skills, and presentation skills. The goals of this course are as follows.</p> <div><div>1. The students should be able to explain the effects of food components on the maintenance of human health and the development of pathological conditions.</div><div>2. The students will acquire the ability to plan, execute, and verify research, scientific thinking skills, and presentation skills by introducing papers they have read carefully.</div></div> <div>• Course Category (Relations to DP, CP and other courses)</div> <p>This course is designed to provide students with advanced knowledge, skills, and experimental techniques related to nutritional chemistry and food functional chemistry, as well as ability to explore problem (Graduate School of Agricultural Science DP, CP).</p> <div>• Contents</div> <p>The course procedure will be explained in the first class. From the 2nd class, students will take turns to prepare presentation materials (resumes and PowerPoint presentations) in advance and use them in the presentation.</p> <div>• Evaluation</div> <p>The grade for passing this course will be 60 or higher, based on comprehensive evaluation of the student's understanding of advanced specialized knowledge, techniques, and experimental methods related to nutritional chemistry and food functional chemistry through preparation, presentation, question-and-answer session, and discussion of paper introduction.</p> <div>• Notice for Students</div> <div><div>1. Students are expected to fully investigate the questions raised during a carefully reading of paper.</div><div>2. Students are expected to prepare well in advance (resume and power point presentation) and to make a presentation that can withstand question and answer session.</div><div>3. In discussions, students are expected to think scientifically and critically, and to ask questions and express their opinions.</div></div>			
Textbook	NA		
Reference book	NA		
Contact	anytime. Please firstly send me an Email. Email: skobayashi@tds1.tr.yamagata-u.ac.jp		

Seminar on Food and Nutritional Science (2nd year summer semester)			
Registration code	61970	Credits	2
Instructor	KOBAYASHI Sho	Coordinator <small>in case of invited lectures</small>	NA
Academic year	2nd year	Semester	Summer
Style of course	Seminar	Target major	Bioresource Science
How to use English	Handsout only		
<div>• Purpose and Learning Goals</div> <p>The objective of this course is to provide students with advanced specialized knowledge and skills in nutritional chemistry and food functional chemistry, experimental techniques, English language skills, and presentation skills. The goals of this course are as follows.</p> <div><div>1. The students should be able to explain the effects of food components on the maintenance of human health and the development of pathological conditions.</div><div>2. The students will acquire the ability to plan, execute, and verify research, scientific thinking skills, and presentation skills by introducing papers they have read carefully.</div></div> <div>• Course Category (Relations to DP, CP and other courses)</div> <p>This course is designed to provide students with advanced knowledge, skills, and experimental techniques related to nutritional chemistry and food functional chemistry, as well as ability to explore problem (Graduate School of Agricultural Science DP, CP).</p> <div>• Contents</div> <p>An overview of nutritional chemistry and food functional chemistry and how to prepare for the presentation will be given in the frist three classes. From the 4th class, students will take turns to prepare presentation materials (resumes and PowerPoint presentations) in advance and use them in the presentation.</p> <div>• Evaluation</div> <p>The grade for passing this course will be 60 or higher, based on comprehensive evaluation of the student's understanding of advanced specialized knowledge, techniques, and experimental methods related to nutritional chemistry and food functional chemistry through preparation, presentation, question-and-answer session, and discussion of paper introduction.</p> <div>• Notice for Students</div> <div><div>1. Students are expected to fully investigate the questions raised during a carefully reading of paper.</div><div>2. Students are expected to prepare well in advance (resume and power point presentation) and to make a presentation that can withstand question and answer session.</div><div>3. In discussions, students are expected to think scientifically and critically, and to ask questions and express their opinions.</div></div>			
Textbook	NA		
Reference book	NA		
Contact	anytime. Please firstly send me an Email. Email: skobayashi@tds1.tr.yamagata-u.ac.jp		

Seminar on Food and Nutritional Science (2nd year winter semester)			
Registration code	61971	Credits	2
Instructor	KOBAYASHI Sho	Coordinator <small>in case of invited lectures</small>	NA
Academic year	2nd year	Semester	Winter
Style of course	Seminar	Target major	Bioresource Science
How to use English	Handsout only		
<div>• Purpose and Learning Goals</div> <p>The objective of the this course is to provide students with advanced specialized knowledge and skills in nutritional chemistry and food functional chemistry, experimental techniques, English language skills and presentation skills. The goals of this course are as follows.</p> <ol style="list-style-type: none">1. The students should be able to explain the effects of food components on the maintenance of human health and the development of pathological conditions.2. The students will acquire the ability to plan, execute, and verify research, scientific thinking skills, and presentation skills by introducing papers they have read carefully. <div>• Course Category (Relations to DP, CP and other courses)</div> <p>This course is designed to provide students with advanced knowledge, skills, and experimental techniques related to nutritional chemistry and food functional chemistry, as well as ability to explore problem (Graduate School of Agricultural Science DP, CP).</p> <div>• Contents</div> <p>The course procedure will be explained in the first class. From the 2nd class, students will take turns to prepare presentation materials (resumes and PowerPoint presentations) in advance and use them in the presentation.</p> <div>• Evaluation</div> <p>The grade for passing this course will be 60 or higher, based on comprehensive evaluation of the student's understanding of advanced specialized knowledge, techniques, and experimental methods related to nutritional chemistry and food functional chemistry through preparation, presentation, question-and-answer session, and discussion of paper introduction.</p> <div>• Notice for Students</div> <ol style="list-style-type: none">1. Students are expected to fully investigate the questions raised during a carefully reading of paper.2. Students are expected to prepare well in advance (resume and power point presentation) and to make a presentation that can withstand question and answer session.3. In discussions, students are expected to think scientifically and critically, and to ask questions and express their opinions.			
Textbook	NA		
Reference book	NA		
Contact	anytime. Please firstly send me an Email. Email: skobayashi@tds1.tr.yamagata-u.ac.jp		

Seminar on Postharvest Physiology (1st year summer semester)			
Registration code	61338	Credits	2
Instructor	MURAYAMA Hideki	Coordinator <small>in case of invited lectures</small>	NA
Academic year	1st year	Semester	Summer
Style of course	Seminar	Target research area	Bioresource Science
How to use English	Handouts only		
<div>• Purpose and Learning Goals</div> <p>The aim of this course is to help students acquire an understanding of the fundamental principles of postharvest physiology. This also enhances the development of students’ skills in making oral presentation and self-regulated learning.</p> <div>• Course Category (Relations to DP, CP and other courses)</div> <p>The aim of this seminar is to help students acquire the necessary skills and knowledge needed to achieve a better performance in their university studies.</p> <div>• Contents</div> <p>Each student introduces one recent paper appeared in journals having high impact factors. It is performed by using Power Point.</p> <div>• Evaluation</div> <p>Your overall grade in the class will be decided based on the following pattern:</p> <ul style="list-style-type: none">- Class attendance and attitude in class: 50%- Presentation: 50% <div>• Notice for Students</div> <p>Present clearly and concisely to audiences. When other students present, ask questions positively.</p>			
Textbook	NA		
Reference book	NA		
Contact	16 : 10 – 17 : 10 on Monday		

Seminar on Postharvest Physiology (1st year winter semester)			
Registration code	61339	Credits	2
Instructor	MURAYAMA Hideki	Coordinator <small>in case of invited lectures</small>	NA
Academic year	1st year	Semester	Winter
Style of course	Seminar	Target research area	Bioresource Science
How to use English	Handouts only		
<div>• Purpose and Learning Goals</div> <p>The aim of this course is to help students acquire an understanding of the fundamental principles of postharvest physiology. This also enhances the development of students’ skills in making oral presentation and self-regulated learning.</p> <div>• Course Category (Relations to DP, CP and other courses)</div> <p>The aim of this seminar is to help students acquire the necessary skills and knowledge needed to achieve a better performance in their university studies.</p> <div>• Contents</div> <p>Each student introduces one recent paper appeared in journals having high impact factors. It is performed by using Power Point.</p> <div>• Evaluation</div> <p>Your overall grade in the class will be decided based on the following pattern:</p> <ul style="list-style-type: none">- Class attendance and attitude in class: 50%- Presentation: 50% <div>• Notice for Students</div> <p>Present clearly and concisely to audiences. When other students present, ask questions positively.</p>			
Textbook	NA		
Reference book	NA		
Contact	16 : 10 – 17 : 10 on Monday		

Seminar on Postharvest Physiology (2nd year summer semester)			
Registration code	61393	Credits	2
Instructor	MURAYAMA Hideki	Coordinator <small>in case of invited lectures</small>	NA
Academic year	2nd year	Semester	Summer
Style of course	Seminar	Target research area	Bioresource Science
How to use English	Handouts only		
<div>• Purpose and Learning Goals</div> <p>The aim of this course is to help students acquire an understanding of the fundamental principles of postharvest physiology. This also enhances the development of students’ skills in making oral presentation and self-regulated learning.</p> <div>• Course Category (Relations to DP, CP and other courses)</div> <p>The aim of this seminar is to help students acquire the necessary skills and knowledge needed to achieve a better performance in their university studies.</p> <div>• Contents</div> <p>Each student introduces one recent paper appeared in journals having high impact factors. It is performed by using Power Point.</p> <div>• Evaluation</div> <p>Your overall grade in the class will be decided based on the following pattern:</p> <ul style="list-style-type: none">- Class attendance and attitude in class: 50%- Presentation: 50% <div>• Notice for Students</div> <p>Present clearly and concisely to audiences. When other students present, ask questions positively.</p>			
Textbook	NA		
Reference book	NA		
Contact	16 : 10 – 17 : 10 on Monday		

Seminar on Postharvest Physiology (2nd year winter semester)			
Registration code	61394	Credits	2
Instructor	MURAYAMA Hideki	Coordinator <small>in case of invited lectures</small>	NA
Academic year	2nd year	Semester	Winter
Style of course	Seminar	Target research area	Bioresource Science
How to use English	Handouts only		
<div>• Purpose and Learning Goals</div> <p>The aim of this course is to help students acquire an understanding of the fundamental principles of postharvest physiology. This also enhances the development of students’ skills in making oral presentation and self-regulated learning.</p> <div>• Course Category (Relations to DP, CP and other courses)</div> <p>The aim of this seminar is to help students acquire the necessary skills and knowledge needed to achieve a better performance in their university studies.</p> <div>• Contents</div> <p>Each student introduces one recent paper appeared in journals having high impact factors. It is performed by using Power Point.</p> <div>• Evaluation</div> <p>Your overall grade in the class will be decided based on the following pattern:</p> <ul style="list-style-type: none">- Class attendance and attitude in class: 50%- Presentation: 50% <div>• Notice for Students</div> <p>Present clearly and concisely to audiences. When other students present, ask questions positively.</p>			
Textbook	NA		
Reference book	NA		
Contact	16 : 10 – 17 : 10 on Monday		

Postharvest Physiology			
Registration code	61356	Credits	1
Instructor	MURAYAMA Hideki	Coordinator <small>in case of invited lectures</small>	NA
Academic year	1st year	Semester	Winter
Style of course	Lecture	Target research area	Bioresource Science
How to use English	Full use		
<div>• Purpose and Learning Goals</div> <p>The aim of this course is to help students acquire an understanding of the principles of postharvest physiology.</p> <div>• Course Category (Relations to DP, CP and other courses)</div> <p>The aim of this course is to help students acquire the necessary skills and knowledge needed to achieve a better performance in their university studies.</p> <div>• Contents</div> <div><div>1. Quality changes in agricultural products.</div><div>2. Fruit abscission</div><div>3. Ripening physiology</div><div>4. Chilling injury and physiological disorder</div></div> <div>• Evaluation</div> <p>Your overall grade in the class will be decided based on the following pattern:</p> <div><div>- Class attendance and attitude in class: 50%</div><div>- Short reports: 50%</div></div> <div>• Notice for Students</div>			
Textbook	NA		
Reference book	NA		
Contact	16 : 10 – 17 : 10 on Monday		

Seminar on Soil Biochemistry (1st year summer semester)			
Registration code	61346	Credits	2
Instructor	CHENG, Weiguo	Coordinator <small>in case of invited lectures</small>	NA
Academic year	1st year	Semester	Summer
Style of course	Seminar	Target research area	Soil biochemistry
How to use English	Full use		
<div>• Purpose and Learning Goals</div> <p>To learn the latest frontier of soil biochemistry research.</p> <p>To learn how soil use and management affect environmental issues.</p> <p>To learn the latest knowledge of C and N dynamics in soil-plant ecosystems with greenhouse gas emissions.</p> <p>To learn the latest knowledge of stable isotopes probing on biogeochemical processes.</p> <p>To learn the latest knowledge of organic farming, etc.</p> <div>• Course Category (Relations to DP, CP and other courses)</div> <p>Soil science is the most basic course in agricultural and environmental sciences and ecology.</p> <p>The knowledge of soil biochemistry, which related to soil physics, soil chemistry and soil biology is applied in many scientific fields.</p> <div>• Contents</div> <p>In this weekly seminar, participants introduce the newest journal papers and discuss the contents by oral presentation with other attendees.</p> <div>• Evaluation</div> <p>The evaluation will be based on an oral presentation from the presenter and attending attitude of participants in discussion process.</p> <div>• Notice for Students</div> <p>Participants must take a positive attitude to attend the seminar and enjoy the discussion with presenters.</p>			
Textbook	NA		
Reference book	NA		
Contact	Please contact Prof. Cheng at cheng@tds1.tr.yamagata-u.ac.jp . The office hour is 16:00-17:30 pm on every Friday .		

Seminar on Soil Biochemistry (1st year winter semester)			
Registration code	61347	Credits	2
Instructor	CHENG, Weiguo	Coordinator <small>in case of invited lectures</small>	NA
Academic year	1st year	Semester	Winter
Style of course	Seminar	Target research area	Soil biochemistry
How to use English	Full use		
<div>• Purpose and Learning Goals</div> <p>To learn the latest frontier of soil biochemistry research.</p> <p>To learn how soil use and management affect environmental issues.</p> <p>To learn the latest knowledge of C and N dynamics in soil-plant ecosystems with greenhouse gas emissions.</p> <p>To learn the latest knowledge of stable isotopes probing on biogeochemical processes.</p> <p>To learn the latest knowledge of organic farming, etc.</p> <div>• Course Category (Relations to DP, CP and other courses)</div> <p>Soil science is the most basic course in agricultural and environmental sciences and ecology.</p> <p>The knowledge of soil biochemistry, which related to soil physics, soil chemistry and soil biology is applied in many scientific fields.</p> <div>• Contents</div> <p>In this weekly seminar, participatants introduce the newest journal papers and discuss the contents by oral presentation with other attendees.</p> <div>• Evaluation</div> <p>The evaluation will be based on an oral presentation from the presenter and attending attitude of participatants in discussion process.</p> <div>• Notice for Students</div> <p>Participants must take a positive attitude to attend the seminar and enjoy the discussion with presenters.</p>			
Textbook	NA		
Reference book	NA		
Contact	Please contact Prof. Cheng at cheng@tds1.tr.yamagata-u.ac.jp . The office hour is 16:00-17:30 pm on every Friday .		

Soil Biochemistry			
Registration code	61361	Credits	1
Instructor	CHENG, Weiguo	Coordinator <small>in case of invited lectures</small>	NA
Academic year	1st year	Semester	Winter
Style of course	Lecture	Target research area	Soil biochemistry
How to use English	Full use		
<div>• Purpose and Learning Goals</div> <p>To learn the latest frontier of soil biochemistry research.</p> <p>To learn how soil use and management affect environmental issues.</p> <p>To learn the latest knowledge of C and N dynamics in soil-plant ecosystems with greenhouse gas emissions.</p> <p>To learn the latest knowledge of stable isotopes probing on biogeochemical processes.</p> <p>To learn the latest knowledge of organic farming, etc.</p> <div>• Course Category (Relations to DP, CP and other courses)</div> <p>Soil science is the most basic course in agricultural and environmental sciences and ecology.</p> <p>The knowledge of soil biochemistry, which related to soil physics, soil chemistry and soil biology is applied in many scientific fields.</p> <div>• Contents</div> <p>This lecture course will introduce the latest knowledges of soil biochemistry to students.</p> <p>The main contents are:</p> <ol style="list-style-type: none">1. Carbon and nitrogen dynamics in different terrestrial ecosystems;2. Stable isotopes probing on bio-geochemical processes;3. Greenhouse gas emissions with global warming;4. Organic rice farming;5. Compost etc. <div>• Evaluation</div> <p>The evaluation will be based on the attending attitude and tests.</p> <div>• Notice for Students</div> <p>Participants must take a positive attitude to attend the lecture and try to discuss with lecturer.</p>			
Textbook	No textbook is required for the course. Lecturer will hand out the prints for the lecture.		
Reference book	Journal papers published by Prof. Cheng http://www.tr.yamagata-u.ac.jp/~cheng/ https://www.researchgate.net/profile/Weiguo-Cheng-2/research		
Contact	Please contact Prof. Cheng at cheng@tdsl.tr.yamagata-u.ac.jp . The office hour is 16:00-17:30 pm on every Friday .		

Seminar on Soil Bioresource Science (2nd year summer semester)			
Registration code	61401	Credits	2
Instructor	CHENG, Weiguo	Coordinator <small>in case of invited lectures</small>	NA
Academic year	2nd year	Semester	Summer
Style of course	Seminar	Target research area	Bioresource Science
How to use English	Full use		
<div>• Purpose and Learning Goals</div> <p>To learn the latest frontier of soil science research.</p> <p>To learn how soil use and management affect environmental issues.</p> <p>To learn the latest knowledge of C and N dynamics in soil-plant ecosystems with greenhouse gas emissions.</p> <p>To learn the latest knowledge of stable isotopes probing on biogeochemical processes.</p> <p>To learn the latest knowledge of organic farming, etc.</p> <div>• Course Category (Relations to DP, CP and other courses)</div> <p>Soil science is the most basic course in agricultural and environmental sciences and ecology.</p> <p>The knowledge of soil physics, soil chemistry and soil biology are applied in many scientific fields.</p> <div>• Contents</div> <p>In this weekly seminar, participants introduce the newest journal papers and discuss the contents by oral presentation with other attendees.</p> <div>• Evaluation</div> <p>The evaluation will be based on an oral presentation from the presenter and attending attitude of participants in discussion process.</p> <div>• Notice for Students</div> <p>Participants must take a positive attitude to attend the seminar and enjoy the discussion with presenters.</p>			
Textbook	NA		
Reference book	NA		
Contact	Please contact Prof. Cheng at cheng@tds1.tr.yamagata-u.ac.jp . The office hour is 16:00-17:30 pm on every Friday .		

Seminar on Soil Bioresource Science (2nd year winter semester)			
Registration code	61402	Credits	2
Instructor	CHENG, Weiguo	Coordinator <small>in case of invited lectures</small>	NA
Academic year	2nd year	Semester	Winter
Style of course	Seminar	Target research area	Bioresource Science
How to use English	Full use		
<div>• Purpose and Learning Goals</div> <p>To learn the latest frontier of soil science research.</p> <p>To learn how soil use and management affect environmental issues.</p> <p>To learn the latest knowledge of C and N dynamics in soil-plant ecosystems with greenhouse gas emissions.</p> <p>To learn the latest knowledge of stable isotopes probing on biogeochemical processes.</p> <p>To learn the latest knowledge of organic farming, etc.</p> <div>• Course Category (Relations to DP, CP and other courses)</div> <p>Soil science is the most basic course in agricultural and environmental sciences and ecology.</p> <p>The knowledge of soil physics, soil chemistry and soil biology are applied in many scientific fields.</p> <div>• Contents</div> <p>In this weekly seminar, participants introduce the newest journal papers and discuss the contents by oral presentation with other attendees.</p> <div>• Evaluation</div> <p>The evaluation will be based on an oral presentation from the presenter and attending attitude of participants in discussion process.</p> <div>• Notice for Students</div> <p>Participants must take a positive attitude to attend the seminar and enjoy the discussion with presenters.</p>			
Textbook	NA		
Reference book	NA		
Contact	Please contact Prof. Cheng at cheng@tds1.tr.yamagata-u.ac.jp . The office hour is 16:00-17:30 pm on every Friday .		

Soil Bioresource Science			
Registration code	61360	Credits	1
Instructor	CHENG, Weiguo	Coordinator <small>in case of invited lectures</small>	NA
Academic year	1st year	Semester	Winter
Style of course	Lecture	Target research area	Bioresource Science
How to use English	Full use		
<div>• Purpose and Learning Goals</div> <p>To learn the latest frontier of soil science research.</p> <p>To learn how soil use and management affect environmental issues.</p> <p>To learn the latest knowledge of C and N dynamics in soil-plant ecosystems with greenhouse gas emissions.</p> <p>To learn the latest knowledge of stable isotopes probing on biogeochemical processes.</p> <p>To learn the latest knowledge of organic farming, etc.</p> <div>• Course Category (Relations to DP, CP and other courses)</div> <p>Soil science is the most basic course in agricultural and environmental sciences and ecology.</p> <p>The knowledge of soil physics, soil chemistry and soil biology are applied in many scientific fields.</p> <div>• Contents</div> <p>This lecture course will introduce the latest knowledges of soil sciences to students.</p> <p>The main contents are:</p> <ol style="list-style-type: none">1. Carbon and nitrogen dynamics in different terrestrial ecosystems;2. Stable isotopes probing on bio-geochemical processes;3. Greenhouse gas emissions with global warming;4. Organic rice farming;5. Compost etc. <div>• Evaluation</div> <p>The evaluation will be based on the attending attitude and tests.</p> <div>• Notice for Students</div> <p>Participants must take a positive attitude to attend the lecture and try to discuss with lecturer.</p>			
Textbook	No textbook is required for the course. Lecturer will hand out the prints for the lecture.		
Reference book	Journal papers published by Prof. Cheng http://www.tr.yamagata-u.ac.jp/~cheng/		
Contact	Please contact Prof. Cheng at cheng@tds1.tr.yamagata-u.ac.jp . The office hour is 16:00-17:30 pm on every Friday .		

Seminar on Plant Nutrition (1st year summer semester)			
Registration code	61344	Credits	2
Instructor	TAWARAYA Keitaro	Coordinator <small>in case of invited lectures</small>	NA
Academic year	1st year	Semester	Summer
Style of course	Seminar	Target research area	Bioresource Science
How to use English	Full use		
<div>• Purpose and Learning Goals</div> <p>The purpose of this course is to learn new knowledge of plant nutrition. The learning goal of this course is to obtain novel findings, research techniques, and application on research of plant nutrition.</p> <div>• Course Category (Relations to DP, CP and other courses)</div> <p>To discuss plant nutrition with wide viewpoints and to obtain wide knowledge.</p> <div>• Contents</div> <p>Reading, presentation, discussion about new publications related to plant nutrition</p> <div>• Evaluation</div> <p>Your overall grade in the class will be decided based on class attendance, oral presentation, and discussion.</p> <div>• Notice for Students</div> <p>Students have to read handouts before course and prepare topics to discuss.</p>			
Textbook	Original handouts will be prepaed and used.		
Reference book	Original handouts will be prepaed and used.		
Contact	16:00-18:00 Friday		

Seminar on Plant Nutrition (1st year winter semester)			
Registration code	61345	Credits	2
Instructor	TAWARAYA Keitaro	Coordinator <small>in case of invited lectures</small>	NA
Academic year	1st year	Semester	Winter
Style of course	Seminar	Target research area	Bioresource Science
How to use English	Full use		
<div>• Purpose and Learning Goals</div> <p>The purpose of this course is to learn new knowledge of plant nutrition. The learning goal of this course is to obtain novel findings, research techniques, and application on research of plant nutrition.</p> <div>• Course Category (Relations to DP, CP and other courses)</div> <p>To discuss plant nutrition with wide viewpoints and to obtain wide knowledge.</p> <div>• Contents</div> <p>Reading, presentation, discussion about new publications related to plant nutrition</p> <div>• Evaluation</div> <p>Your overall grade in the class will be decided based on class attendance, oral presentation, and discussion.</p> <div>• Notice for Students</div> <p>Students have to read handouts before course and prepare topics to discuss.</p>			
Textbook	Original handouts will be prepaed and used.		
Reference book	Original handouts will be prepaed and used.		
Contact	16:00-18:00 Friday		

Seminar on Plant Nutrition (2nd year summer semester)			
Registration code	61399	Credits	2
Instructor	TAWARAYA Keitaro	Coordinator <small>in case of invited lectures</small>	NA
Academic year	2nd year	Semester	Summer
Style of course	Seminar	Target research area	Bioresource Science
How to use English	Full use		
<div>• Purpose and Learning Goals</div> <p>The purpose of this course is to learn new knowledge of plant nutrition. The learning goal of this course is to obtain novel findings, research techniques, and application on research of plant nutrition.</p> <div>• Course Category (Relations to DP, CP and other courses)</div> <p>To discuss plant nutrition with wide viewpoints and to obtain wide knowledge.</p> <div>• Contents</div> <p>Reading, presentation, discussion about new publications related to plant nutrition</p> <div>• Evaluation</div> <p>Your overall grade in the class will be decided based on class attendance, oral presentation, and discussion.</p> <div>• Notice for Students</div> <p>Students have to read handouts before course and prepare topics to discuss.</p>			
Textbook	Original handouts will be prepaed and used.		
Reference book	Original handouts will be prepaed and used.		
Contact	16:00-18:00 Friday		

Seminar on Plant Nutrition (2nd year winter semester)			
Registration code	61400	Credits	2
Instructor	TAWARAYA Keitaro	Coordinator <small>in case of invited lectures</small>	NA
Academic year	2nd year	Semester	Winter
Style of course	Seminar	Target research area	Bioresource Science
How to use English	Full use		
<div>• Purpose and Learning Goals</div> <p>The purpose of this course is to learn new knowledge of plant nutrition. The learning goal of this course is to obtain novel findings, research techniques, and application on research of plant nutrition.</p> <div>• Course Category (Relations to DP, CP and other courses)</div> <p>To discuss plant nutrition with wide viewpoints and to obtain wide knowledge.</p> <div>• Contents</div> <p>Reading, presentation, discussion about new publications related to plant nutrition</p> <div>• Evaluation</div> <p>Your overall grade in the class will be decided based on class attendance, oral presentation, and discussion.</p> <div>• Notice for Students</div> <p>Students have to read handouts before course and prepare topics to discuss.</p>			
Textbook	Original handouts will be prepaed and used.		
Reference book	Original handouts will be prepaed and used.		
Contact	16:00-18:00 Friday		

Plant Nutrition			
Registration code	61359	Credits	1
Instructor	TAWARAYA Keitaro	Coordinator <small>in case of invited lectures</small>	NA
Academic year	1st year	Semester	Summer
Style of course	Lecture	Target research area	Bioresource Science
How to use English	Full use		
<div>• Purpose and Learning Goals</div> <p>The purpose of this course is to learn new knowledge of plant nutrition. The learning goal of this course is to obtain novel findings, research techniques, and application on research of plant nutrition.</p> <div>• Course Category (Relations to DP, CP and other courses)</div> <p>To discuss plant nutrition with wide viewpoints and to obtain wide knowledge.</p> <div>• Contents</div> <p>Introduction, phosphorus resource, low nutrient tolerance of plant, role of symbiotic microorganisms in plant growth, application of microorganisms in agriculture, forestry, and phytoremediation.</p> <div>• Evaluation</div> <p>Your overall grade in the class will be decided based on class attendance, oral presentation, and discussion.</p> <div>• Notice for Students</div> <p>This course will be taught in English.</p>			
Textbook	Original handouts will be prepared and used.		
Reference book	Original handouts will be prepared and used.		
Contact	16:00-18:00 Friday		

Functional Genomics and Biochemistry			
Registration code	61937	Credits	1
Instructor	KIMURA Yuri	Coordinator <small>in case of invited lectures</small>	NA
Academic year	1st year	Semester	Winter
Style of course	Seminar	Target major	Bioresource Science
How to use English	Full use		
<div>• Purpose and Learning Goals</div> <p>Plant metabolism and its evolutionary changes will be introduced in this class, with a focus on the latest research in cell wall biosynthesis. Through this approach, students will develop an understand of and be able to discuss biochemical phenomena related to intracellular metabolism of substances and their evolutionary history.</p> <div>• Course Category (Relations to DP, CP and other courses)</div> <p>Along with the DP of Graduate School of Agricultural Sciences, this seminar aims to acquire advanced knowledge of plant metabolism and its evolution.</p> <div>• Contents</div> <p>The following research topics will be introduced:</p> <div>(1) Metabolite diversification during plant evolution</div> <div>(2) Primary and specialized metabolism in plants</div> <div>(3) Plant cell wall biosynthesis and its diversity</div> <div>(4) Molecular regulation of plant cell wall synthesis</div> <div>(5) Cell wall structural modification through metabolic engineering</div> <div>• Evaluation</div> <p>Evaluation will be based on the content of discussion, including questions raised during the lecture and the quality of the post-lecture report.</p> <div>• Notice for Students</div> <p>Your active participation in the discussion will be expected.</p>			
Textbook	Handouts will be provided in the classes		
Reference book	References will be introduced in the classes		
Contact	Please email me in advance to make an appointment to come to the office		

Seminar on Functional Genomics and Biochemistry (1st year summer semester)			
Registration code	61972	Credits	2
Instructor	KIMURA Yuri	Coordinator <small>in case of invited lectures</small>	NA
Academic year	1st year	Semester	Summer
Style of course	Seminar	Target major	Bioresource Science
How to use English	To interpret Japanese as main language		
<div>• Purpose and Learning Goals</div> <p>Through close reading of scientific papers on plant metabolism and their evolution, students will acquire cutting-edge knowledge in the related field. Additionally, they will develop presentation skills to effectively communicate scientific research to others.</p>			
<div>• Course Category (Relations to DP, CP and other courses)</div> <p>Along with the DP of Graduate School of Agricultural Sciences, this course is designed to equip students with advanced knowledge and problem-solving skills related to the metabolism in plant cells.</p>			
<div>• Contents</div> <p>Each week, one or two designated individuals will give a presentation. Participants will listen to and engage in discussions about the presentations.</p>			
<div>• Evaluation</div> <p>Comprehensive evaluation will be conducted based on several factors, including understanding of the papers, the quality of the presentation, and active participation in the discussion.</p>			
<div>• Notice for Students</div> <p>To develop an interest in each research topic, it is essential to read relevant papers on a daily basis and accumulate the necessary knowledge.</p>			
Textbook	The textbook will be a scientific paper distributed each class		
Reference book	General textbooks on biochemistry, molecular biology and plant science		
Contact	anytime		

Seminar on Functional Genomics and Biochemistry (1st year winter semester)			
Registration code	61973	Credits	2
Instructor	KIMURA Yuri	Coordinator <small>in case of invited lectures</small>	NA
Academic year	1st year	Semester	Winter
Style of course	Seminar	Target major	Bioresource Science
How to use English	To interpret Japanese as main language		
<div>• Purpose and Learning Goals</div> <p>Through close reading of scientific papers on plant metabolism and their evolution, students will acquire cutting-edge knowledge in the related field. Additionally, they will develop presentation skills to effectively communicate scientific research to others.</p>			
<div>• Course Category (Relations to DP, CP and other courses)</div> <p>Along with the DP of Graduate School of Agricultural Sciences, this course is designed to equip students with advanced knowledge and problem-solving skills related to the metabolism in plant cells.</p>			
<div>• Contents</div> <p>Each week, one or two designated individuals will give a presentation. Participants will listen to and engage in discussions about the presentations.</p>			
<div>• Evaluation</div> <p>Comprehensive evaluation will be conducted based on several factors, including understanding of the papers, the quality of the presentation, and active participation in the discussion.</p>			
<div>• Notice for Students</div> <p>To develop an interest in each research topic, it is essential to read relevant papers on a daily basis and accumulate the necessary knowledge.</p>			
Textbook	The textbook will be a scientific paper distributed each class		
Reference book	General textbooks on biochemistry, molecular biology and plant science		
Contact	anytime		

Seminar on Functional Genomics and Biochemistry (2nd year summer semester)			
Registration code	61974	Credits	2
Instructor	KIMURA Yuri	Coordinator <small>in case of invited lectures</small>	NA
Academic year	1st year	Semester	Summer
Style of course	Seminar	Target major	Bioresource Science
How to use English	To interpret Japanene as main language		
<div>• Purpose and Learning Goals</div> <p>Through close reading of scientific papers on plant metabolism and their evolution, students will acquire cutting-edge knowledge in the related field. Additionally, they will develop presentation skills to effectively communicate scientific research to others.</p>			
<div>• Course Category (Relations to DP, CP and other courses)</div> <p>Along with the DP of Graduate School of Agricultural Sciences, this course is designed to equip students with advanced knowledge and problem-solving skills related to the metabolism in plant cells.</p>			
<div>• Contents</div> <p>Each week, one or two designated individuals will give a presentation. Participants will listen to and engage in discussions about the presentations. □</p>			
<div>• Evaluation</div> <p>Comprehensive evaluation will be conducted based on several factors, including understanding of the papers, the quality of the presentation, and active participation in the discussion.</p>			
<div>• Notice for Students</div> <p>To develop an interest in each research topic, it is essential to read relevant papers on a daily basis and accumulate the necessary knowledge.</p>			
Textbook	To develop an interest in each research topic, it is essential to read relevant papers on a daily basis and accumulate the necessary knowledge.		
Reference book	General textbooks on biochemistry, molecular biology and plant science		
Contact	anytime		

Seminar on Functional Genomics and Biochemistry (2nd year winter semester)			
Registration code	61975	Credits	2
Instructor	KIMURA Yuri	Coordinator <small>in case of invited lectures</small>	NA
Academic year	2nd year	Semester	Winter
Style of course	Seminar	Target major	Bioresource Science
How to use English	To interpret Japanene as main language		
<div>• Purpose and Learning Goals</div> <p>Through close reading of scientific papers on plant metabolism and their evolution, students will acquire cutting-edge knowledge in the related field. Additionally, they will develop presentation skills to effectively communicate scientific research to others.</p>			
<div>• Course Category (Relations to DP, CP and other courses)</div> <p>Along with the DP of Graduate School of Agricultural Sciences, this course is designed to equip students with advanced knowledge and problem-solving skills related to the metabolism in plant cells.</p>			
<div>• Contents</div> <p>Each week, one or two designated individuals will give a presentation. Participants will listen to and engage in discussions about the presentations.</p>			
<div>• Evaluation</div> <p>Comprehensive evaluation will be conducted based on several factors, including understanding of the papers, the quality of the presentation, and active participation in the discussion.</p>			
<div>• Notice for Students</div> <p>To develop an interest in each research topic, it is essential to read relevant papers on a daily basis and accumulate the necessary knowledge.</p>			
Textbook	The textbook will be a scientific paper distributed each class		
Reference book	General textbooks on biochemistry, molecular biology and plant science		
Contact	anytime		

Seminar on Molecular Animal Reproduction and Development (1st year summer semester)			
Registration code	61309	Credits	2
Instructor	KIMURA Naoko	Coordinator <small>in case of invited lectures</small>	NA
Academic year	1st year	Semester	Summer
Style of course	Seminar	Target research area	Bioresource Science
How to use English	To interpret Japanese as main language		
<div>• Purpose and Learning Goals</div> <p>This course introduces molecular mechanisms of reproduction and development in mammals to students taking this course. It also deal with analysis techniques and approaches for this reserch. The goals of this course are to</p> <p>1. be able to understand and explain molecular mechanisms of reproduction and development in mammals. 2. be able to discuss various aspects of reproductive physiology. 3. to be able to recognize cutting edge experimental technics.</p> <div>• Course Category (Relations to DP, CP and other courses)□</div> <p>Based on undergraduate classes of "Molecular Animal Reproduction and Development" and "Animal Reproductive Bioengineering", the aim of this course is to help students acquire an greater understanding of the fundamental principles of reproductive biology.</p> <div>• Contents</div> <p>This course will be divided in 4 steps as follows. Reading reserch articles or reviews in the region of animal reproductive physiology and animal reproductive bioengineering, writing research report's resume, presentation of the resume, questions and answers.</p> <div>• Evaluation</div> <p>Grading will be decided based on attitude, reports, and the quality of the students’ resume and presentation and questions and answers . To pass, students must earn at least 60 points out of 100.</p> <div>• Notice for Students</div>			
Textbook	NA		
Reference book	NA		
Contact	E-mail:naonao@tds1.tr.yamagata-u.ac.jp		

Seminar on Molecular Animal Reproduction and Development (1st year winter semester)			
Registration code	61310	Credits	2
Instructor	KIMURA Naoko	Coordinator <small>in case of invited lectures</small>	NA
Academic year	1st year	Semester	Winter
Style of course	Seminar	Target research area	Bioresource Science
How to use English	To interpret Japanese as main language		
<div>• Purpose and Learning Goals</div> <p>This course introduces molecular mechanisms of reproduction and development in mammals to students taking this course. It also deal with analysis techniques and approaches for this reserch. The goals of this course are to</p> <p>1. be able to understand and explain molecular mechanisms of reproduction and development in mammals. 2. be able to discuss various aspects of reproductive physiology. 3. to be able to recognize cutting edge experimental technics.</p> <div>• Course Category (Relations to DP, CP and other courses)□</div> <p>Based on undergraduate classes of "Molecular Animal Reproduction and Development" and "Animal Reproductive Bioengineering", the aim of this course is to help students acquire an greater understanding of the fundamental principles of reproductive biology.</p> <div>• Contents</div> <p>This course will be divided in 4 steps as follows. Reading reserch articles or reviews in the region of animal reproductive physiology and animal reproductive bioengineering, writing research report's resume, presentation of the resume, questions and answers.</p> <div>• Evaluation</div> <p>Grading will be decided based on attitude, reports, and the quality of the students' resume and presentation and questions and answers . To pass, students must earn at least 60 points out of 100.</p> <div>• Notice for Students</div>			
Textbook	NA		
Reference book	NA		
Contact	E-mail:naonao@tds1.tr.yamagata-u.ac.jp		

Seminar on Molecular Animal Reproduction and Development (2nd year summer semester)			
Registration code	61373	Credits	2
Instructor	KIMURA Naoko	Coordinator <small>in case of invited lectures</small>	NA
Academic year	2nd year	Semester	Summer
Style of course	Seminar	Target research area	Bioresource Science
How to use English	To interpret Japanese as main language		
<div>• Purpose and Learning Goals</div> <p>This course introduces molecular mechanisms of reproduction and development in mammals to students taking this course. It also deal with analysis techniques and approaches for this reserch. The goals of this course are to</p> <p>1. be able to understand and explain molecular mechanisms of reproduction and development in mammals. 2. be able to discuss various aspects of reproductive physiology. 3. to be able to recognize cutting edge experimental technics.</p> <div>• Course Category (Relations to DP, CP and other courses)□</div> <p>Based on undergraduate classes of "Molecular Animal Reproduction and Development" and "Animal Reproductive Bioengineering", the aim of this course is to help students acquire an greater understanding of the fundamental principles of reproductive biology.</p> <div>• Contents</div> <p>This course will be divided in 4 steps as follows. Reading reserch articles or reviews in the region of animal reproductive physiology and animal reproductive bioengineering, writing research report's resume, presentation of the resume, questions and answers.</p> <div>•Evaluation</div> <p>Grading will be decided based on attitude, reports, and the quality of the students' resume and presentation and questions and answers . To pass, students must earn at least 60 points out of 100.</p> <div>• Notice for Students</div>			
Textbook	NA		
Reference book	NA		
Contact	E-mail:naonao@tds1.tr.yamagata-u.ac.jp		

Seminar on Molecular Animal Reproduction and Development (2nd year winter semester)			
Registration code	61374	Credits	2
Instructor	KIMURA Naoko	Coordinator <small>in case of invited lectures</small>	NA
Academic year	2nd year	Semester	Winter
Style of course	Seminar	Target research area	Bioresource Science
How to use English	To interpret Japanese as main language		
<div>• Purpose and Learning Goals</div> <p>This course provides an overview of the latest findings of in order to understand the molecular mechanisms and physiological significance of reproductive phenomena, mainly in mammals, and to consider the significance and challenges of field applications of developmental and reproductive engineering. The goals of this course are to 1. To able to discuss the molecular mechanisms of mammalian reproductive physiology with a high level of expertise; 2. To be able to appropriately discuss the molecular functions and physiological significance of various reproductive physiological phenomena in mammals; 3. To be able to give an overview of the latest experimental techniques in the life sciences, and be able to perform some of them.</p> <div>• Course Category (Relations to DP, CP and other courses)□</div> <p>Based on undergraduate classes of "Molecular Animal Reproduction and Development" and "Animal Reproductive Bioengineering", the aim of this course is to help students acquire an greater understanding of the fundamental principles of reproductive biology.</p> <div>• Contents</div> <p>This course will be divided in 4 steps as follows. Reading reserch articles or reviews in the region of animal reproductive physiology and animal reproductive bioengineering, writing research report's resume, presentation of the resume, questions and answers.</p> <div>• Evaluation</div> <p>Grading will be decided based on attitude, reports, and the quality of the students’ resume and presentation and questions and answers . To pass, students must earn at least 60 points out of 100.</p> <div>• Notice for Students</div> <p>This lecture assumes that students have already mastered the undergraduate courses "Basic Animal Physiology" and "Animal Molecular Reproduction".</p>			
Textbook	NA		
Reference book	NA		
Contact	E-mail:naonao@tdsl.tr.yamagata-u.ac.jp		

Forest Digitalization			
Registration code	61940	Credits	1
Instructor	Larry Lopez	Coordinator <small>in case of invited lectures</small>	
Academic year	1st/2nd	Semester	Winter
Style of course	Lecture	Target major	Bioenvironment
Language	English and Japanese (Depending on the students)		
<div>• Purpose and Learning Goals</div> <p>The purpose of this course is to provide students with knowledge and the ability to acquire enough experience for an efficient application of precise remote sensing on the field of forestry. After this course, students will be able to understand the principle of UAVs, the knowledge involved in planning UAV flights as well as the criteria needed to solve problems during field image collection. They will also be able to analyze images using relevant software such as Metashape, ArcGIS (or QGIS) and Global Mapper. Students will also be introduced to the use of these images for Deep Learning Model applications.</p> <div>• Course Category (Relations to DP, CP and other courses)</div> <p>DP Humanity (1), (2); In-depth specialized knowledge/skills (1) and the capacity of understand diverse cultures (2).</p> <p>CP Curriculum composition and implementation (2); Teaching methods (1) and (2).</p> <div>• Contents</div> <p>The course will be held in the form of an intensive lectures. The content is as follows:</p> <p>Class 1: Comparison of satellites and UAVs.</p> <p>Class 2 UAVs and Sensors.</p> <p>Class 3: Flight Plans for UAVs.</p> <p>Class 4: Principles of Image Processing (Metashape)</p> <p>Class 5: Data provided from Orthomosaic, Dense Point Cloud and Digital Elevation Model.</p> <p>Class 6: Manual annotation of relevant vegetation in processed images.</p> <p>Class 7: Forest 3D data analysis and 3D Printing.</p> <p>Class 8: Summary and Exam</p> <div>• Evaluation</div> <p>A comprehensive evaluation will be made of the students' attitude in the seminar (30 points), reports (30 points) and Final Exam (40 points).</p> <div>• Notice for Students</div> <p>Handouts and videos (youtube) will be provided in advance, normally in English. Students should actively participate in the class and follow the discussion sessions with other students. The evaluation criteria include being able to understand and use the new technology explained in the course.</p>			
Textbook	Scientific Publications recommended in class		
Reference book	Unmanned Aerial Systems: Theoretical Foundation and Applications. Editors: Anis Koubaa, Ahmad Taher Azar Paperback ISBN: 9780128202760/eBook ISBN: 9780128202777		
Contact	Anytime		

Seminar on Precise Forest Management (1st year summer semester)			
Registration code	61976	Credits	2
Instructor	Larry Lopez	Coordinator <small>in case of invited lectures</small>	
Academic year	1st	Semester	summer
Style of course	Seminar	Target major	Bioenvironment
Language	English and Japanese (Depending on the students)		
<div>• Purpose and Learning Goals</div> <p>The objective of this course is to provide students with knowledge and the experience for an efficient application of precise remote sensing on forestry. Students will be able to understand the principle of UAVs, the knowledge involved in planning UAV flights as well as the criteria needed to solve problems during field image collection. They will also be able to analyze images using relevant software such as Metashape, ArcGIS (or QGIS) and Global Mapper. Students will also present scientific papers from related studies that they have to discuss with other students in weekly seminars.</p> <div>• Course Category (Relations to DP, CP and other courses)</div> <p>DP Humanity (1), (2); In-depth specialized knowledge/skills (1) and the capacity of understand diverse cultures (2).</p> <p>CP Curriculum composition and implementation (2); Teaching methods (1) and (2).</p> <div>• Contents</div> <p>Seminar format: Face-to-face and online:</p> <p>Seminar 1: Introduction of the activities in the semester.</p> <p>Seminar 2-5: Students' presentations of scientific papers.</p> <p>Seminar 6-7: Practical classes in Forest Research Sites.</p> <p>Seminar 8: Overall Discussion of studies presented.</p> <p>Seminar 9-12: Students' presentations of scientific papers.</p> <p>Seminar 13-14: Discussion and Presentation of Students' own studies.</p> <p>Seminar 15: Overall Discussion of topics dealt with in the semester .</p> <p>Class 8: Summary and Exam</p> <div>• Evaluation</div> <p>A comprehensive evaluation will be made of the students' attitude in the seminar (40 points), reports (40 points) and Final Exam (20 points).</p> <div>• Notice for Students</div> <p>I will explain the classes in Japanese and write the slides in English or vice-versa. Please feel free to ask when something is not clear.</p>			
Textbook	Scientific Publications recommended in class		
Reference book	Unmanned Aerial Systems: Theoretical Foundation and Applications. Editors: Anis Koubaa, Ahmad Taher Azar Paperback ISBN: 9780128202760/eBook ISBN: 9780128202777		
Contact	Anytime		

Seminar on Precise Forest Management (1st year winter semester)			
Registration code	61977	Credits	2
Instructor	Larry Lopez	Coordinator <small>in case of invited lectures</small>	
Academic year	1st	Semester	Winter
Style of course	Seminar	Target major	Bioenvironment
Language	English and Japanese (Depending on the students)		
<div>• Purpose and Learning Goals</div> <p>The objective of this course is to provide students with knowledge and the experience for an efficient application of precise remote sensing on forestry. Students will be able to understand the principle of UAVs, the knowledge involved in planning UAV flights as well as the criteria needed to solve problems during field image collection. They will also be able to analyze images using relevant software such as Metashape, ArcGIS (or QGIS) and Global Mapper. Students will also present scientific papers from related studies that they have to discuss with other students in weekly seminars.</p> <div>• Course Category (Relations to DP, CP and other courses)</div> <p>DP Humanity (1), (2); In-depth specialized knowledge/skills (1) and the capacity of understand diverse cultures (2).</p> <p>CP Curriculum composition and implementation (2); Teaching methods (1) and (2).</p> <div>• Contents</div> <p>Seminar format: Face-to-face and online:</p> <p>Seminar 1: Introduction of the activities in the semester.</p> <p>Seminar 2-5: Students' presentations of scientific papers.</p> <p>Seminar 6-7: Practical classes in Forest Research Sites.</p> <p>Seminar 8: Overall Discussion of studies presented.</p> <p>Seminar 9-12: Students' presentations of scientific papers.</p> <p>Seminar 13-14: Discussion and Presentation of Students' own studies.</p> <p>Seminar 15: Overall Discussion of topics dealt with in the semester .</p> <p>Class 8: Summary and Exam</p> <div>• Evaluation</div> <p>A comprehensive evaluation will be made of the students' attitude in the seminar (40 points), reports (40 points) and Final Exam (20 points).</p> <div>• Notice for Students</div> <p>I will explain the classes in Japanese and write the slides in English or vice-versa. Please feel free to ask when something is not clear.</p>			
Textbook	Scientific Publications recommended in class		
Reference book	Unmanned Aerial Systems: Theoretical Foundation and Applications. Editors: Anis Koubaa, Ahmad Taher Azar Paperback ISBN: 9780128202760/eBook ISBN: 9780128202777		
Contact	Anytime		

Seminar on Precise Forest Management (2nd year summer semester)			
Registration code	61978	Credits	2
Instructor	Larry Lopez	Coordinator <small>in case of invited lectures</small>	
Academic year	2nd	Semester	Summer
Style of course	Seminar	Target major	Bioenvironment
Language	English and Japanese (Depending on the students)		
<div>• Purpose and Learning Goals</div> <p>The objective of this course is to provide students with knowledge and the experience for an efficient application of precise remote sensing on forestry. Students will be able to understand the principle of UAVs, the knowledge involved in planning UAV flights as well as the criteria needed to solve problems during field image collection. They will also be able to analyze images using relevant software such as Metashape, ArcGIS (or QGIS) and Global Mapper. Students will also present scientific papers from related studies that they have to discuss with other students in weekly seminars.</p> <div>• Course Category (Relations to DP, CP and other courses)</div> <p>DP Humanity (1), (2); In-depth specialized knowledge/skills (1) and the capacity of understand diverse cultures (2).</p> <p>CP Curriculum composition and implementation (2); Teaching methods (1) and (2).</p> <div>• Contents</div> <p>Seminar format: Face-to-face and online:</p> <p>Seminar 1: Introduction of the activities in the semester.</p> <p>Seminar 2-5: Students' presentations of scientific papers.</p> <p>Seminar 6-7: Practical classes in Forest Research Sites.</p> <p>Seminar 8: Overall Discussion of studies presented.</p> <p>Seminar 9-12: Students' presentations of scientific papers.</p> <p>Seminar 13-14: Discussion and Presentation of Students' own studies.</p> <p>Seminar 15: Overall Discussion of topics dealt with in the semester .</p> <p>Class 8: Summary and Exam</p> <div>• Evaluation</div> <p>A comprehensive evaluation will be made of the students' attitude in the seminar (40 points), reports (40 points) and Final Exam (20 points).</p> <div>• Notice for Students</div> <p>I will explain the classes in Japanese and write the slides in English or vice-versa. Please feel free to ask when something is not clear.</p>			
Textbook	Scientific Publications recommended in class		
Reference book	Unmanned Aerial Systems: Theoretical Foundation and Applications. Editors: Anis Koubaa, Ahmad Taher Azar Paperback ISBN: 9780128202760/eBook ISBN: 9780128202777		
Contact	Anytime		

Seminar on Precise Forest Management (2nd year winter semester)			
Registration code	61979	Credits	2
Instructor	Larry Lopez	Coordinator <small>in case of invited lectures</small>	
Academic year	2nd	Semester	Winter
Style of course	Seminar	Target major	Bioenvironment
Language	English and Japanese (Depending on the students)		
<div>• Purpose and Learning Goals</div> <p>The objective of this course is to provide students with knowledge and the experience for an efficient application of precise remote sensing on forestry. Students will be able to understand the principle of UAVs, the knowledge involved in planning UAV flights as well as the criteria needed to solve problems during field image collection. They will also be able to analyze images using relevant software such as Metashape, ArcGIS (or QGIS) and Global Mapper. Students will also present scientific papers from related studies that they have to discuss with other students in weekly seminars.</p> <div>• Course Category (Relations to DP, CP and other courses)</div> <p>DP Humanity (1), (2); In-depth specialized knowledge/skills (1) and the capacity of understand diverse cultures (2).</p> <p>CP Curriculum composition and implementation (2); Teaching methods (1) and (2).</p> <div>• Contents</div> <p>Seminar format: Face-to-face and online:</p> <p>Seminar 1: Introduction of the activities in the semester.</p> <p>Seminar 2-5: Students' presentations of scientific papers.</p> <p>Seminar 6-7: Practical classes in Forest Research Sites.</p> <p>Seminar 8: Overall Discussion of studies presented.</p> <p>Seminar 9-12: Students' presentations of scientific papers.</p> <p>Seminar 13-14: Discussion and Presentation of Students' own studies.</p> <p>Seminar 15: Overall Discussion of topics dealt with in the semester .</p> <p>Class 8: Summary and Exam</p> <div>• Evaluation</div> <p>A comprehensive evaluation will be made of the students' attitude in the seminar (40 points), reports (40 points) and Final Exam (20 points).</p> <div>• Notice for Students</div> <p>I will explain the classes in Japanese and write the slides in English or vice-versa. Please feel free to ask when something is not clear.</p>			
Textbook	Scientific Publications recommended in class		
Reference book	Unmanned Aerial Systems: Theoretical Foundation and Applications. Editors: Anis Koubaa, Ahmad Taher Azar Paperback ISBN: 9780128202760/eBook ISBN: 9780128202777		
Contact	Anytime		

Forest Disturbances and Conservation			
Registration code	61598	Credits	1
Instructor	KIKUCHI Shun-ichi	Coordinator <small>in case of invited lectures</small>	NA
Academic year	1st year	Semester	Summer
Style of course	Lecture	Target research area	Bioenvironmental Science
How to use English	To interpret Japanese as main language		
<div>• Purpose and Learning Goals</div> <p>The purpose of this lecture is to acquire knowledge about foerst disturbances by means of reading related research articles. The goal of this lecture is to construct original logic that how to conserve and restore the interaction between forest ecosystem and surrounding environment.</p>			
<div>• Course Category (Relations to DP, CP and other courses)</div> <p>This lecture is to acquire <u>in-depth specialized knowledge and a wide perspective based on integrated sciences</u>.</p>			
<div>• Contents</div> <p>1. Forest plant development and environmental influences 2. What is forest disturbance? 3. Forest plant response to dynamic environmental changes 4. Forest effects on environment factors 5.Environmental conservation function of foest 6. How to develop conservation and restoration of the forest ecosystem?</p>			
<div>• Evaluation</div> <p>Grading will be decided based on oral presentation or report about described above lecture contents.</p>			
<div>• Notice for Students</div> <p>Your active participation in discussion is expected. Before and after class hour learning will enhance your learning performance.</p>			
Textbook	Handouts will be provided in the classes.		
Reference book	River Futures: An integrative scientific approach to river repair: Gary Brierley and Kirstie Fryirs, Island Press, ISBN-10:1-59726-112-2 Plant Disturbance Ecology: Edward johnson and Kiyoko Miyanishi, Academic Press, ISBN-10:0-12-088778-9		
Contact	The office is on the 5th floor of the 2nd building. You can contact me anytime via e-mail (kikku@tds1.tr.yamagata-u.ac.jp).		

Land Resource Sciences			
Registration code	61607	Credits	1
Instructor	ISHIKAWA Masaya	Coordinator <small>in case of invited lectures</small>	NA
Academic year	1st year	Semester	Summer
Style of course	Lecture	Target research area	Bioenvironmental Science
How to use English	Handouts only		
<div>• Purpose and Learning Goals</div> <p>This lecture will try to approach the topics of “creating environments for the efficient production of plants” and “creating environments for sustainable agricultural villages” from the viewpoint of land planning and environmental sciences. Especially, the lecture will explain the mechanisms of environmental stress concerning water pollution caused by agricultural uses. Students will also learn about the development and planning associated with technologies for creating land consolidation work that supports agriculture to conserve the soil and water environment and reduce environmental stress. The lecturer will describe the stages leading up to the completion of his own doctoral research concerning soil physics (identifying a problem, generating hypotheses, collecting data, analyzing the data, presenting results, writing a thesis, and submitting a manuscript for publication) for which he received an international award. He will speak both successes and failures from the viewpoint of writers, reviewers and editors. Students will not only acquire the knowledge from a completed piece of research but also learn the requisite ways of approaching their own research by reliving the processes for completing it.</p> <p>Upon successful completion of the lecture, students can understand the basic concepts of land resource sciences, as well as obtain basic knowledge about the history of changes of biota and the natural environment from the viewpoint of land planning.</p>			
<div>• Course Category (Relations to DP, CP and other courses)</div> <p>Students can contribute to the society as the skilled engineers and researchers by theoretically considering the natural environment from various aspects and acquiring wide social knowledge and problem-solving ability with a healthy spirit.</p>			
<div>• Contents</div> <p>This course will be divided in 15 chapters as follows:</p> <ol style="list-style-type: none">1. Field development and land consolidation for farmers,2. Reasonable construction method,3. Significant of levees, ponding and surface soil,4. Procedure for land consolidation,5. Soil conveyance and banking construction,6. Plow sole, surface soil filling and levee construction,7. Surface soil leveling and farm roads,8. Relating and unifying paddy fields and field structure for multi-utilization paddy field,9. Field structure for compound farming and consolidation of rice terrace,10. Environmental issues in farmland and earth-friendly agriculture,11. Benefits of paddy fields in ravines,12. Water purification in well-constructed field,13. Aiming to establish sustainable agriculture,14. New Notation and Equation for Predicting Ammonia Nitrogen Concentrations in Paddy Percolation Water,15. Adsorption and Movement of Ammonia Nitrogen into Soil Layers with Paddy Percolation Water. <p>All chapters will rely on the textbook, except 14 and 15 for which notes will be handed out.</p>			
<div>• Evaluation</div> <p>By the end of the course, students should be able to do the following:</p> <ul style="list-style-type: none">•The investigation and the examination for the problem solving can be planned, and the obtained sample should be able to be analyzed,•The understanding level to the event is deepened through the discussion, and the students should be able to be expressed adequately themselves,•The research process ability learned by this lecture can be demonstrated,•The content can be discussed logically. <p>Grading will be based on attendance (10%), reports (80%), and assessment (10%) of performance in the lab.</p>			
<div>• Notice for Students</div> <ol style="list-style-type: none">1. It is important to understand a lot of science articles via self-study.2. It is important to continue "Intellectual excitement" even after the amount of knowledge increases.3. Students in the laboratory of land resource sciences have to attend this lecture.			
Textbook	Consolidation to sustainable farmland Masaya ISHIKAWA IPB Press		
Reference book	NA		
Contact	12:00-13:00 of Thursday		

Seminar on Land Resource Sciences (1st year summer semester)			
Registration code	61537	Credits	2
Instructor	ISHIKAWA Masaya	Coordinator <small>in case of invited lectures</small>	NA
Academic year	1st year	Semester	Summer
Style of course	Seminar	Target research area	Bioenvironmental Science
How to use English	Full use		
<div>• Purpose and Learning Goals</div> <p>The aim of this seminar is to help students acquire an understanding of the fundamental principles of land resource sciences and the necessary skills and knowledge needed to achieve a better performance in their master's theses. By the end of the course, students should be able to do the following tasks:</p> <ul style="list-style-type: none">• Recognize and recall major terms and concepts in land resource sciences,• Describe and explain major methods and theories,• Compare and contrast alternative theories or approaches in terms of their underlying processes. <div>• Course Category (Relations to DP, CP and other courses)</div> <p>Students can contribute to the society as the skilled engineers and researchers by theoretically considering the natural environment from various aspects and acquiring wide social knowledge and problem-solving ability with a healthy spirit.</p> <div>• Contents</div> <p>Contents:</p> <ol style="list-style-type: none">1. Guidance of seminar:<ul style="list-style-type: none">• How to advance it2. Practice and deepen:<ul style="list-style-type: none">• Concrete method of advancing research <p>Class method:</p> <ol style="list-style-type: none">1. The speaker announces the progress report of the research,2. We discuss it,3. The class is advanced by not a one-sided class from the instructor but the students' questions and answers and discussion. <div>• Evaluation</div> <p>By the end of the course, students should be able to do the following tasks:</p> <ul style="list-style-type: none">• The investigation and the examination for the problem solving can be planned, and the obtained sample should be able to be analyzed,• The understanding level to the event is deepened through the discussion, and the self should be able to be expressed adequately,• The research process ability learned by this seminar can be demonstrated,• The content can be discussed logically. <p>Grading will be based on attendance (10%), reports (80%), and assessment (10%) of performance in the lab.</p> <div>• Notice for Students</div> <ol style="list-style-type: none">1. It is important to understand a lot of science articles via self-study.2. It is important to continue "Intellectual excitement" even after the amount of knowledge increases.3. Students in the laboratory of land resource sciences have to attend this seminar.			
Textbook	NA		
Reference book	NA		
Contact	12:00-13:00 of Thursday		

Seminar on Land Resource Sciences (1st year winter semester)			
Registration code	61538	Credits	2
Instructor	ISHIKAWA Masaya	Coordinator <small>in case of invited lectures</small>	NA
Academic year	1st year	Semester	Winter
Style of course	Seminar	Target research area	Bioenvironmental Science
How to use English	Full use		
<div>• Purpose and Learning Goals</div> <p>The aim of this seminar is to help students acquire an understanding of the fundamental principles of land resource sciences and the necessary skills and knowledge needed to achieve a better performance in their master's theses. By the end of the course, students should be able to do the following tasks:</p> <ul style="list-style-type: none">• Recognize and recall major terms and concepts in land resource sciences,• Describe and explain major methods and theories,• Compare and contrast alternative theories or approaches in terms of their underlying processes. <div>• Course Category (Relations to DP, CP and other courses)</div> <p>Students can contribute to the society as the skilled engineers and researchers by theoretically considering the natural environment from various aspects and acquiring wide social knowledge and problem-solving ability with a healthy spirit.</p> <div>• Contents</div> <p>Contents: Discussion about concrete method of advancing research and development of consideration Class method: 1. The speaker announces the progress report of the research, 2. We discuss it, 3. The class is advanced by not a one-sided class from the instructor but the students' questions and answers and discussion.</p> <div>• Evaluation</div> <p>By the end of the course, students should be able to do the following tasks:</p> <ul style="list-style-type: none">•The investigation and the examination for the problem solving can be planned, and the obtained sample should be able to be analyzed,•The understanding level to the event is deepened through the discussion, and the self should be able to be expressed adequately,•The research process ability learned by this seminar can be demonstrated,•The content can be discussed logically. <p>Grading will be based on attendance (10%), reports (80%), and assessment (10%) of performance in the lab.</p> <div>• Notice for Students</div> <ol style="list-style-type: none">1. It is important to understand a lot of science articles via self-study.2. It is important to continue "Intellectual excitement" even after the amount of knowledge increases.3. Students in the laboratory of land resource sciences have to attend this seminar.			
Textbook	NA		
Reference book	NA		
Contact	12:00-13:00 of Thursday		

Seminar on Land Resource Sciences (2nd year summer semester)			
Registration code	61654	Credits	2
Instructor	ISHIKAWA Masaya	Coordinator <small>in case of invited lectures</small>	NA
Academic year	2nd year	Semester	Summer
Style of course	Seminar	Target research area	Bioenvironmental Science
How to use English	Full use		
<div>• Purpose and Learning Goals</div> <p>The aim of this seminar is to help students acquire an understanding of the fundamental principles of land resource sciences and the necessary skills and knowledge needed to achieve a better performance in their master's theses. Upon successful completion of the seminar, students can understand the concepts of land resource sciences, as well as discuss daily data for their researches.</p> <div>• Course Category (Relations to DP, CP and other courses)</div> <p>Students can contribute to the society as the skilled engineers and researchers by theoretically considering the natural environment from various aspects and acquiring wide social knowledge and problem-solving ability with a healthy spirit.</p> <div>• Contents</div> <p>Contents:</p> <div>1. Data analysis and discussion;</div> <div>2. Development of consideration</div> <p>Class method:</p> <div>1. The speaker announces the progress report of the research,</div> <div>2. We discuss it,</div> <div>3. The class is advanced by not a one-sided class from the instructor but the students' questions and answers and discussion.</div> <div>• Evaluation</div> <p>By the end of the course, students should be able to do the following tasks:</p> <div>•The investigation and the examination for the problem solving can be planned, and the obtained sample should be able to be analyzed,</div> <div>•The understanding level to the event is deepened through the discussion, and the self should be able to be expressed adequately,</div> <div>•The research process ability learned by this seminar can be demonstrated,</div> <div>•The content can be discussed logically.</div> <p>Grading will be based on attendance (10%), reports (80%), and assessment (10%) of performance in the lab.</p> <div>• Notice for Students</div> <div>1. It is important to understand a lot of science articles via self-study.</div> <div>2. It is important to continue "Intellectual excitement" even after the amount of knowledge increases.</div> <div>3. Students in the laboratory of land resource sciences have to attend this seminar.</div>			
Textbook	NA		
Reference book	NA		
Contact	12:00-13:00 of Thursday		

Seminar on Land Resource Sciences (2nd year winter semester)			
Registration code	61655	Credits	2
Instructor	ISHIKAWA Masaya	Coordinator <small>in case of invited lectures</small>	NA
Academic year	2nd year	Semester	Winter
Style of course	Seminar	Target research area	Bioenvironmental Science
How to use English	Full use		
<div>• Purpose and Learning Goals</div> <p>The aim of this seminar is to help students acquire an understanding of the fundamental principles of land resource sciences and the necessary skills and knowledge needed to achieve a better performance in their master's theses. Upon successful completion of the seminar, students can finish writing their master's theses as a current result.</p> <div>• Course Category (Relations to DP, CP and other courses)</div> <p>Students can contribute to the society as the skilled engineers and researchers by theoretically considering the natural environment from various aspects and acquiring wide social knowledge and problem-solving ability with a healthy spirit.</p> <div>• Contents</div> <p>Contents: Discussion about concrete method of advancing research and development of consideration Class method: 1. The speaker announces the progress report of the research, 2. We discuss it, 3. The class is advanced by not a one-sided class from the instructor but the students' questions and answers and discussion.</p> <div>• Evaluation</div> <p>By the end of the course, students should be able to do the following tasks: •The investigation and the examination for the problem solving can be planned, and the obtained sample should be able to be analyzed, •The understanding level to the event is deepened through the discussion, and the self should be able to be expressed adequately, •The research process ability learned by this seminar can be demonstrated, •The content can be discussed logically. Grading will be based on attendance (10%), reports (80%), and assessment (10%) of performance in the lab.</p> <div>• Notice for Students</div> <p>1. It is important to understand a lot of science articles via self-study. 2. It is important to continue "Intellectual excitement" even after the amount of knowledge increases. 3. Students in the laboratory of land resource sciences have to attend this seminar.</p>			
Textbook	NA		
Reference book	NA		
Contact	12:00-13:00 of Thursday		

Advanced Course in Ground Disaster Prevention			
Registration code	61941	Credits	1
Instructor	ZHANG Haizhong	Coordinator <small>in case of invited lectures</small>	
Academic year	First	Semester	First
Style of course	Lecture	Target major	Agricultural Sciences
How to use English	Both English and Japanese		
<div>• Purpose and Learning Goals</div> <p>[Purpose] In a situation where seismic disasters happen frequently, it is important to understand and predict seismic hazards reasonably. This course aims to provide an understanding of the mechanisms of earthquake occurrence, ground vibration, and landslides, as well as to acquire theoretical knowledge and methods for analyzing them.</p> <p>[Learning Goals] One can explain the overview of ground vibration and landslides caused by earthquakes. [Knowledge/Understanding] One should acquire knowledge and techniques to predict ground vibration and landslide. [Knowledge/Understanding]</p> <div>• Course Category (Relations to DP, CP and other courses)</div> <p>This course aims to acquire knowledge and techniques in the area of ground disaster prevention, and it corresponds to the DP of the Agricultural Sciences, "Acquiring advanced knowledge and techniques in each individual field of specialization.</p> <div>• Contents</div> <p>[Teaching methods] The course will be conducted face-to-face. In each session, the instructor will give specialized lectures using ppt slides and handouts, followed by discussions with attendees on the content.</p> <p>[Schedule] 1st session: Mechanism of Earthquake Occurrence 2nd session: Overview of Earthquakes and Ground Disasters 3rd to 5th sessions: Ground Vibration Caused by Earthquakes 6th to 8th sessions: Landslides Caused by Earthquakes</p> <div>• Evaluation</div> <p>[Standard] The passing criteria for the course include understanding the objectives outlined in the Learning Goals and acquiring the associated skills.</p> <p>[Method] The overall evaluation will be based on attendance, participation in discussions, and submitted reports.</p> <div>• Notice for Students</div> <p>Taking the undergraduate courses 'Mechanics of Structures' and 'Soil Mechanics' will enhance the understanding of this course.</p>			
Textbook	The instructor will distribute materials such as ppt slides and handouts created by the instructor		
Reference book	NA		
Contact	It is available whenever I am in my office, but please contact me in advance via email or other means. Email:zhang@tds1.tr.yamagata-u.ac.jp		

Seminar on Ground Disaster Prevention (1st year summer semester)			
Registration code	61980	Credits	2
Instructor	ZHANG Haizhong	Coordinator <small>in case of invited lectures</small>	
Academic year	First	Semester	First
Style of course	Seminar	Target major	Agricultural Sciences
How to use English	Both English and Japanese		
<div>• Purpose and Learning Goals</div> <p>[Purpose] As preparation for the master's thesis, this course aims to study research papers related to ground disaster prevention, grasp the latest research trends, understand the positioning of one's own research, and become capable of presenting one's own research clearly in presentations.</p> <p>[Learning Goals] One can collect worldwide literature related to master's thesis research. [Skill] One can grasp the latest research trends in related fields and explain the positioning of one's own research. [Skill]</p> <div>• Course Category (Relations to DP, CP and other courses)</div> <p>This course aims to acquire specialized knowledge, critical thinking skills, and expressive abilities necessary for creating a master's thesis (corresponding to CP3 and DP3 of the agricultural science)</p> <div>• Contents</div> <p>[Teaching methods] The course will be conducted face-to-face. Each participant should investigate academic literature related to their research topic, give presentations, and engage in discussions based on them.</p> <p>[Schedule]</p> <p>1st session: Introduction</p> <p>2rd to 14th sessions: Each participant gives presentations related to literature and research about their respective research topics</p> <p>15th sessions: Conclusions</p> <div>• Evaluation</div> <p>[Standard] The passing criteria for the course include understanding the objectives outlined in the Learning Goals and acquiring the associated skills.</p> <p>[Method] The overall evaluation will be based on attendance, the content and completeness of presentations, and the attitude.</p> <div>• Notice for Students</div> <p>It is important for each individual to actively engage with their research topic, addressing issues as they arise and making progress.</p>			
Textbook	NA		
Reference book	NA		
Contact	It is available whenever I am in my office, but please contact me in advance via email or others. Email:zhang@tds1.tr.yamagata-u.ac.jp		

Seminar on Ground Disaster Prevention (1st year winter semester)			
Registration code	61981	Credits	2
Instructor	ZHANG Haizhong	Coordinator <small>in case of invited lectures</small>	
Academic year	First	Semester	Second
Style of course	Seminar	Target major	Agricultural Sciences
How to use English	Both English and Japanese		
<div>• Purpose and Learning Goals</div> <p>[Purpose] As preparation for the master's thesis, this course aims to study research papers related to ground disaster prevention, grasp the latest research trends, understand the positioning of one's own research, and become capable of presenting one's own research clearly in presentations.</p> <p>[Learning Goals]</p> <p>One can collect worldwide literature related to master's thesis research. [Skill]</p> <p>One can grasp the latest research trends in related fields and explain the positioning of one's own research. [Skill]</p> <div>• Course Category (Relations to DP, CP and other courses)</div> <p>This course aims to acquire specialized knowledge, critical thinking skills, and expressive abilities necessary for creating a master's thesis (corresponding to CP3 and DP3 of the agricultural science)</p> <div>• Contents</div> <p>[Teaching methods] The course will be conducted face-to-face. Each participant should investigate academic literature related to their research topic, give presentations, and engage in discussions based on them.</p> <p>[Schedule]</p> <p>1st session: Introduction</p> <p>2rd to 14th sessions: Each participant gives presentations related to literature and research about their respective research topics</p> <p>15th sessions: Conclusions</p> <div>• Evaluation</div> <p>[Standard] The passing criteria for the course include understanding the objectives outlined in the Learning Goals and acquiring the associated skills.</p> <p>[Method] The overall evaluation will be based on attendance, the content and completeness of presentations, and the attitude.</p> <div>• Notice for Students</div> <p>It is important for each individual to actively engage with their research topic, addressing issues as they arise and making progress.</p>			
Textbook	NA		
Reference book	NA		
Contact	It is available whenever I am in my office, but please contact me in advance via email or others. Email:zhang@tds1.tr.yamagata-u.ac.jp		

Seminar on Ground Disaster Prevention (2nd year summer semester)			
Registration code	61982	Credits	2
Instructor	ZHANG Haizhong	Coordinator <small>in case of invited lectures</small>	
Academic year	Second	Semester	First
Style of course	Seminar	Target major	Agricultural Sciences
How to use English	Both English and Japanese		
<div>• Purpose and Learning Goals</div> <p>[Purpose] As preparation for the master's thesis, this course aims to study research papers related to ground disaster prevention, grasp the latest research trends, understand the positioning of one's own research, and become capable of presenting one's own research clearly in presentations.</p> <p>[Learning Goals]</p> <p>One can collect worldwide literature related to master's thesis research. [Skill]</p> <p>One can grasp the latest research trends in related fields and explain the positioning of one's own research. [Skill]</p> <div>• Course Category (Relations to DP, CP and other courses)</div> <p>This course aims to acquire specialized knowledge, critical thinking skills, and expressive abilities necessary for creating a master's thesis (corresponding to CP3 and DP3 of the agricultural science)</p> <div>• Contents</div> <p>[Teaching methods] The course will be conducted face-to-face. Each participant should investigate academic literature related to their research topic, give presentations, and engage in discussions based on them.</p> <p>[Schedule]</p> <p>1st session: Introduction</p> <p>2rd to 14th sessions: Each participant gives presentations related to literature and research about their respective research topics</p> <p>15th sessions: Conclusions</p> <div>• Evaluation</div> <p>[Standard] The passing criteria for the course include understanding the objectives outlined in the Learning Goals and acquiring the associated skills.</p> <p>[Method] The overall evaluation will be based on attendance, the content and completeness of presentations, and the attitude.</p> <div>• Notice for Students</div> <p>It is important for each individual to actively engage with their research topic, addressing issues as they arise and making progress.</p>			
Textbook	NA		
Reference book	NA		
Contact	It is available whenever I am in my office, but please contact me in advance via email or others. Email:zhang@tds1.tr.yamagata-u.ac.jp		

Seminar on Ground Disaster Prevention (2nd year winter semester)			
Registration code	61983	Credits	2
Instructor	ZHANG Haizhong	Coordinator <small>in case of invited lectures</small>	
Academic year	Second	Semester	Second
Style of course	Seminar	Target major	Agricultural Sciences
How to use English	Both English and Japanese		
<div>• Purpose and Learning Goals</div> <p>[Purpose] As preparation for the master's thesis, this course aims to study research papers related to ground disaster prevention, grasp the latest research trends, understand the positioning of one's own research, and become capable of presenting one's own research clearly in presentations.</p> <p>[Learning Goals]</p> <p>One can collect worldwide literature related to master's thesis research. [Skill]</p> <p>One can grasp the latest research trends in related fields and explain the positioning of one's own research. [Skill]</p> <div>• Course Category (Relations to DP, CP and other courses)</div> <p>This course aims to acquire specialized knowledge, critical thinking skills, and expressive abilities necessary for creating a master's thesis (corresponding to CP3 and DP3 of the agricultural science)</p> <div>• Contents</div> <p>[Teaching methods] The course will be conducted face-to-face. Each participant should investigate academic literature related to their research topic, give presentations, and engage in discussions based on them.</p> <p>[Schedule]</p> <p>1st session: Introduction</p> <p>2rd to 14th sessions: Each participant gives presentations related to literature and research about their respective research topics</p> <p>15th sessions: Conclusions</p> <div>• Evaluation</div> <p>[Standard] The passing criteria for the course include understanding the objectives outlined in the Learning Goals and acquiring the associated skills.</p> <p>[Method] The overall evaluation will be based on attendance, the content and completeness of presentations, and the attitude.</p> <div>• Notice for Students</div> <p>It is important for each individual to actively engage with their research topic, addressing issues as they arise and making progress.</p>			
Textbook	NA		
Reference book	NA		
Contact	It is available whenever I am in my office, but please contact me in advance via email or others. Email:zhang@tds1.tr.yamagata-u.ac.jp		

Environmental Risk Analysis			
Registration code	61610	Credits	1
Instructor	WATANABE Toru	Coordinator <small>in case of invited lectures</small>	NA
Academic year	1st year	Semester	Summer
Style of course	Lecture	Target research area	Bioenvironmental Science
How to use English	Full use		
<div>• Purpose and Learning Goals</div> <p>This course introduces how to think about environmental issues based on probabilistic risk analysis. The goal of this course is to understand concept of and analytical method for environmental risk.</p> <div>• Course Category (Relations to DP, CP and other courses)</div> <p>This course contributes to a diploma policy of Department of Agricultural Sciences: Acquiring the advanced knowledge and skills in their academic fields.</p> <div>• Contents</div> <p>[Lectures #1 and 2: Concept of environmental risk] To learn the basic concept of environmental risk, including its history and political demand, and the important matters for your understanding.</p> <p>[Lectures #3 and #4: Methodology for environmental risk analysis] To learn how to analyze the environmental risk as well as its scientific theory.</p> <p>[Lectures #5 to #7: Application of environmental risk analysis] To learn the past studies applying environmental risk analysis for actual issues.</p> <p>[Lecture #8: Comprehensive discussion] To discuss about the environmental risk relevant to the topic of your research based on what you learn in the previous lectures.</p> <div>• Evaluation</div> <p>Grading will be decided based on class attendance and attitude in class (20%) and final report (80%).</p> <div>• Notice for Students</div> <p>Your active participation in discussion is expected.</p>			
Textbook	Handouts will be provided in the classes.		
Reference book	D.M. Kammen & D. M. Hassenzahl (eds.) Should we risk it? Exploring Environmental, Health, and Technological Problem Solving, Princeton University Press, 2001.		
Contact	The office of TW is on the 5th floor of the 1st building. You can contact him anytime via email (to-ru@tds1.tr.yamagata-u.ac.jp).		

Seminar on Environmental Risk Analysis (1st year summer semester)			
Registration code	61543	Credits	2
Instructor	WATANABE Toru	Coordinator <small>in case of invited lectures</small>	NA
Academic year	1st year	Semester	Summer
Style of course	Seminar	Target research area	Bioenvironmental Science
How to use English	Full use		
<div>• Purpose and Learning Goals</div> <p>The purpose of this course is to help students review the past publications related to their studies. The goal of this course is to be able to discuss about the outcome from the students' studies based on the research trend in the related fields.</p> <div>• Course Category (Relations to DP, CP and other courses)</div> <p>This course contributes to a diploma policy of Department of Agricultural Sciences: Acquiring the advanced knowledge and skills in their academic fields.</p> <div>• Contents</div> <p>Participants read research articles and review papers on risk analysis or data collection for the analysis. One or few students in each class make the presentations on the articles/papers for discussion with the other participants. The participants should attend all of 15 classess as speakers or audiences.</p> <div>• Evaluation</div> <p>Grading will be decided based on your presentation (60%) and attitude in discussion (40%).</p> <div>• Notice for Students</div> <p>Your active participation in discussion is expected.</p>			
Textbook	Handouts will be provided in the classes.		
Reference book	NA		
Contact	The office of TW is on the 5th floor of the 1st building. You can contact him anytime via email (to-ru@tds1.tr.yamagata-u.ac.jp).		

Seminar on Environmental Risk Analysis (1st year winter semester)			
Registration code	61544	Credits	2
Instructor	WATANABE Toru	Coordinator <small>in case of invited lectures</small>	NA
Academic year	1st year	Semester	Winter
Style of course	Seminar	Target research area	Bioenvironmental Science
How to use English	Full use		
<div>• Purpose and Learning Goals</div> <p>The purpose of this course is to help students review the past publications related to their studies. The goal of this course is to be able to discuss about the outcome from the students' studies based on the research trend in the related fields.</p> <div>• Course Category (Relations to DP, CP and other courses)</div> <p>This course contributes to a diploma policy of Department of Agricultural Sciences: Acquiring the advanced knowledge and skills in their academic fields.</p> <div>• Contents</div> <p>Participants read research articles and review papers on risk analysis or data collection for the analysis. One or few students in each class make the presentations on the articles/papers for discussion with the other participants. The participants should attend all of 15 classess as speakers or audiences.</p> <div>• Evaluation</div> <p>Students are expected to show their improved performances for presentation and discussion compared with those in the previous course: Seminar on Environmental Risk Analysis (1st year summer semester). Grading will be decided based on your presentation (60%) and attitude in discussion (40%).</p> <div>• Notice for Students</div> <p>Your active participation in discussion is expected.</p>			
Textbook	Handouts will be provided in the classes.		
Reference book	NA		
Contact	The office of TW is on the 5th floor of the 1st building. You can contact him anytime via email (to-ru@tds1.tr.yamagata-u.ac.jp).		

Seminar on Environmental Risk Analysis (2nd year summer semester)			
Registration code	61660	Credits	2
Instructor	WATANABE Toru	Coordinator <small>in case of invited lectures</small>	NA
Academic year	2nd year	Semester	Summer
Style of course	Seminar	Target research area	Bioenvironmental Science
How to use English	Full use		
<div>• Purpose and Learning Goals</div> <p>The purpose of this course is to help students review the past publications related to their studies. The goal of this course is to be able to discuss about the outcome from the students' studies based on the research trend in the related fields.</p> <div>• Course Category (Relations to DP, CP and other courses)</div> <p>This course contributes to a diploma policy of Department of Agricultural Sciences: Acquiring the advanced knowledge and skills in their academic fields.</p> <div>• Contents</div> <p>Participants read research articles and review papers on risk analysis or data collection for the analysis. One or few students in each class make the presentations on the articles/papers for discussion with the other participants. The participants should attend all of 15 classess as speakers or audiences.</p> <div>• Evaluation</div> <p>Students are expected to show their improved performances for presentation and discussion compared with those in the previous course: Seminar on Environmental Risk Analysis (1st year winter semester). Grading will be decided based on your presentation (60%) and attitude in discussion (40%).</p> <div>• Notice for Students</div> <p>Your active participation in discussion is expected.</p>			
Textbook	Handouts will be provided in the classes.		
Reference book	NA		
Contact	The office of TW is on the 5th floor of the 1st building. You can contact him anytime via email (to-ru@tds1.tr.yamagata-u.ac.jp).		

Seminar on Environmental Risk Analysis (2nd year winter semester)			
Registration code	61661	Credits	2
Instructor	WATANABE Toru	Coordinator <small>in case of invited lectures</small>	NA
Academic year	2nd year	Semester	Winter
Style of course	Seminar	Target research area	Bioenvironmental Science
How to use English	Full use		
<div>• Purpose and Learning Goals</div> <p>The purpose of this course is to help students review the past publications related to their studies. The goal of this course is to be able to discuss about the outcome from the students' studies based on the research trend in the related fields.</p> <div>• Course Category (Relations to DP, CP and other courses)</div> <p>This course contributes to a diploma policy of Department of Agricultural Sciences: Acquiring the advanced knowledge and skills in their academic fields.</p> <div>• Contents</div> <p>Participants read research articles and review papers on risk analysis or data collection for the analysis. One or few students in each class make the presentations on the articles/papers for discussion with the other participants. The participants should attend all of 15 classes as speakers or audiences.</p> <div>• Evaluation</div> <p>Students are expected to show their improved performances for presentation and discussion compared with those in the previous course: Seminar on Environmental Risk Analysis (2nd year summer semester). Grading will be decided based on your presentation (60%) and attitude in discussion (40%).</p> <div>• Notice for Students</div> <p>Your active participation in discussion is expected.</p>			
Textbook	Handouts will be provided in the classes.		
Reference book	NA		
Contact	The office of TW is on the 5th floor of the 1st building. You can contact him anytime via email (to-ru@tds1.tr.yamagata-u.ac.jp).		

Environmental Hydraulic Engineering			
Registration code	61604	Credits	1
Instructor	WATANABE Kazuya	Coordinator <small>in case of invited lectures</small>	NA
Academic year	1st year	Semester	Summer
Style of course	Lecture	Target research area	Bioenvironmental Science
How to use English	To interpret Japanese as main language		
<div>• Purpose and Learning Goals</div> <p>This course deals with the floods and disaster prevention facilities in Japan and the fundamental of applied ecology and civil engineering research to students taking this course.</p> <div>• Course Category (Relations to DP, CP and other courses)</div> <p>This course is to obtain "the capacity to perform planning of survey and experiment, implementation, data analysis and discussion for solution of problems" in the diploma policy of Deparment of Bioenvironmental Science.</p> <div>• Contents</div> <p>Basics on Stream Restoration (What is Restoration?) An Alternative solution Salmonid lifecycles and life histories Physical Components of Stream Microhabitat Hydraulic Engineering Discussion on Environmental Hydraulic Engineering</p> <div>• Evaluation</div> <p>Grading will be decided based on class attendance and attitude in class (40%) and final report (60%).</p> <div>• Notice for Students</div> <p>Your active participation in discussion is expected.</p>			
Textbook	Handouts will be provided in the classes.		
Reference book	Ann L. Riley, Restoring Streams in Cities, Island Press,1998. Christopher J. Hunter, Better Trout Habitat, Island Press, 1991.		
Contact	The office of KW is on the 2nd floor of the 2nd building. You can contact me anytime via email (kwatanabe@tds1.tr.yamagata-u.ac.jp).		

Seminar on Environmental Hydraulic Engineering (1st year summer semester)			
Registration code	61531	Credits	2
Instructor	WATANABE Kazuya	Coordinator <small>in case of invited lectures</small>	NA
Academic year	1st year	Semester	Summer
Style of course	Seminar	Target research area	Bioenvironmental Science
How to use English	To interpret Japanese as main language		
<div>• Purpose and Learning Goals</div> <p>The purpose of this course is to help students review the past publications related to their studies. The goal of this course is to be able to discuss about the outcome from the students' studies based on the research trends in the related fields.</p> <div>• Course Category (Relations to DP, CP and other courses)</div> <p>This course is to obtain "the capacity to perform planning of survey and experiment, implementation, data analysis and discussion for solution of problems" in the diploma policy of Deparment of Bioenvironmental Science.</p> <div>• Contents</div> <p>Participants read research articles and review papers on Environmental Hydraulic Engineering or data collection for the analysis. One or few students in each class make the presentations on the articles/papers for discussion with the other participants. The participants should attend all of 15 classess as speakers or audiences.</p> <div>• Evaluation</div> <p>Grading will be decided based on your presentation (60%) and attitude in discussion (40%).</p> <div>• Notice for Students</div> <p>Your active participation in discussion is expected.</p>			
Textbook	Handouts will be provided in the classes.		
Reference book	NA		
Contact	The office of KW is on the 2nd floor of the 2nd building. You can contact me anytime via email (kwatanabe@tds1.tr.yamagata-u.ac.jp).		

Seminar on Environmental Hydraulic Engineering (1st year winter semester)			
Registration code	61532	Credits	2
Instructor	WATANABE Kazuya	Coordinator <small>in case of invited lectures</small>	NA
Academic year	1st year	Semester	Winter
Style of course	Seminar	Target research area	Bioenvironmental Science
How to use English	To interpret Japanese as main language		
<div>• Purpose and Learning Goals</div> <p>The purpose of this course is to help students review the past publications related to their studies. The goal of this course is to be able to discuss about the outcome from the students' studies based on the research trends in the related fields.</p> <div>• Course Category (Relations to DP, CP and other courses)</div> <p>This course is to obtain "the capacity to perform planning of survey and experiment, implementation, data analysis and discussion for solution of problems" in the diploma policy of Department of Bioenvironmental Science.</p> <div>• Contents</div> <p>Participants read research articles and review papers on Environmental Hydraulic Engineering or data collection for the analysis. One or few students in each class make the presentations on the articles/papers for discussion with the other participants. The participants should attend all of 15 classess as speakers or audiences.</p> <div>• Evaluation</div> <p>Grading will be decided based on your presentation (60%) and attitude in discussion (40%).</p> <div>• Notice for Students</div> <p>Your active participation in discussion is expected.</p>			
Textbook	Handouts will be provided in the classes.		
Reference book	NA		
Contact	The office of KW is on the 2nd floor of the 2nd building. You can contact me anytime via email (kwatanabe@tds1.tr.yamagata-u.ac.jp).		

Seminar on Environmental Hydraulic Engineering (2nd year summer semester)			
Registration code	61648	Credits	2
Instructor	WATANABE Kazuya	Coordinator <small>in case of invited lectures</small>	NA
Academic year	2nd year	Semester	Summer
Style of course	Seminar	Target research area	Bioenvironmental Science
How to use English	To interpret Japanese as main language		
<div>• Purpose and Learning Goals</div> <p>The purpose of this course is to help students review the past publications related to their studies. The goal of this course is to be able to discuss about the outcome from the students' studies based on the research trends in the related fields.</p> <div>• Course Category (Relations to DP, CP and other courses)</div> <p>This course is to obtain "the capacity to perform planning of survey and experiment, implementation, data analysis and discussion for solution of problems" in the diploma policy of Department of Bioenvironmental Science.</p> <div>• Contents</div> <p>Participants read research articles and review papers on Environmental Hydraulic Engineering or data collection for the analysis. One or few students in each class make the presentations on the articles/papers for discussion with the other participants. The participants should attend all of 15 classess as speakers or audiences.</p> <div>• Evaluation</div> <p>Grading will be decided based on your presentation (60%) and attitude in discussion (40%).</p> <div>• Notice for Students</div> <p>Your active participation in discussion is expected.</p>			
Textbook	Handouts will be provided in the classes.		
Reference book	NA		
Contact	The office of KW is on the 2nd floor of the 2nd building. You can contact me anytime via email (kwatanabe@tds1.tr.yamagata-u.ac.jp).		

Seminar on Environmental Hydraulic Engineering (2nd year winter semester)			
Registration code	61649	Credits	2
Instructor	WATANABE Kazuya	Coordinator <small>in case of invited lectures</small>	NA
Academic year	2nd year	Semester	Winter
Style of course	Seminar	Target research area	Bioenvironmental Science
How to use English	To interpret Japanese as main language		
<div>• Purpose and Learning Goals</div> <p>The purpose of this course is to help students review the past publications related to their studies. The goal of this course is to be able to discuss about the outcome from the students' studies based on the research trends in the related fields.</p> <div>• Course Category (Relations to DP, CP and other courses)</div> <p>This course is to obtain "the capacity to perform planning of survey and experiment, implementation, data analysis and discussion for solution of problems" in the diploma policy of Department of Bioenvironmental Science.</p> <div>• Contents</div> <p>Participants read research articles and review papers on Environmental Hydraulic Engineering or data collection for the analysis. One or few students in each class make the presentations on the articles/papers for discussion with the other participants. The participants should attend all of 15 classess as speakers or audiences.</p> <div>• Evaluation</div> <p>Grading will be decided based on your presentation (60%) and attitude in discussion (40%).</p> <div>• Notice for Students</div> <p>Your active participation in discussion is expected.</p>			
Textbook	Handouts will be provided in the classes.		
Reference book	NA		
Contact	The office of KW is on the 2nd floor of the 2nd building. You can contact me anytime via email (kwatanabe@tds1.tr.yamagata-u.ac.jp).		

Seminar on forest and sociology (1st year summer semester)			
Registration code	61697	Credits	2
Instructor	HAYASHI Masahide	Coordinator <small>in case of invited lectures</small>	NA
Academic year	1st year	Semester	summer
Style of course	Seminar	Target research area	Bioenvironmental Science
How to use English	To interpret Japanese as main language		
<div>• Purpose and Learning Goals</div> <p>The objective of this course is to provide students the theoretical knowledge and empirical analysis methods necessary to study social phenomena in the forest sector, such as behaviour patterns of forestry managers and common forest management, from the perspective of the new institutional social science.</p> <div>• Course Category (Relations to DP, CP and other courses)</div> <p>This course is to obtain DP(1) in Department of Bioenvironmental Science</p> <div>• Contents</div> <p>Participants read research articles and review papers on the institutional analysis of forest governance or data collection for the analysis. One or few students in each class make the presentations on the articles/papers for discussion with the other participants. The participants should attend all of 15 classess on the following themes.</p> <div>1 Rational choice theory</div> <div>2 Comparative institutional analysis</div> <div>• Evaluation</div> <p>Grading will be decided based on your presentation (60%) and attitude in discussion (40%).</p> <div>• Notice for Students</div> <p>Your active participation in discussion is expected.</p>			
Textbook	NA		
Reference book	NA		
Contact	hayashima@tds1.tr.yamagata-u.ac.jp		

Seminar on forest and sociology (1st year winter semester)			
Registration code	61698	Credits	2
Instructor	HAYASHI Masahide	Coordinator <small>in case of invited lectures</small>	NA
Academic year	1st year	Semester	winter
Style of course	Seminar	Target research area	Bioenvironmental Science
How to use English	To interpret Japanese as main language		
<div>• Purpose and Learning Goals</div> <p>The objective of this course is to provide students the theoretical knowledge and empirical analysis methods necessary to study social phenomena in the forest sector, such as behaviour patterns of forestry managers and common forest management, from the perspective of the new institutional social science.</p> <div>• Course Category (Relations to DP, CP and other courses)</div> <p>This course is to obtain DP(1) in Department of Bioenvironmental Science</p> <div>• Contents</div> <p>Participants read research articles and review papers on the institutional analysis of forest governance or data collection for the analysis. One or few students in each class make the presentations on the articles/papers for discussion with the other participants. The participants should attend all of 15 classess on the following themes.</p> <p>1 Rational choice theory</p> <p>2 Comparative institutional analysis</p> <div>• Evaluation</div> <p>Grading will be decided based on your presentation (60%) and attitude in discussion (40%).</p> <div>• Notice for Students</div> <p>Your active participation in discussion is expected.</p>			
Textbook	NA		
Reference book	NA		
Contact	hayashima@tds1.tr.yamagata-u.ac.jp		

Seminar on forest and sociology (2nd year summer semester)			
Registration code	61699	Credits	2
Instructor	HAYASHI Masahide	Coordinator <small>in case of invited lectures</small>	NA
Academic year	2nd year	Semester	summer
Style of course	Seminar	Target research area	Bioenvironmental Science
How to use English	To interpret Japanese as main language		
<div>• Purpose and Learning Goals</div> <p>The objective of this course is to provide students the theoretical knowledge and empirical analysis methods necessary to study social phenomena in the forest sector, such as behaviour patterns of forestry managers and common forest management, from the perspective of the new institutional social science.</p> <div>• Course Category (Relations to DP, CP and other courses)</div> <p>This course is to obtain DP(1) in Department of Bioenvironmental Science</p> <div>• Contents</div> <p>Participants read research articles and review papers on the institutional analysis of forest governance or data collection for the analysis. One or few students in each class make the presentations on the articles/papers for discussion with the other participants. The participants should attend all of 15 classess on the following themes.</p> <div>1 Rational choice theory</div> <div>2 Comparative institutional analysis</div> <div>3 Organizational economics</div> <div>• Evaluation</div> <p>Grading will be decided based on your presentation (60%) and attitude in discussion (40%).</p> <div>• Notice for Students</div> <p>Your active participation in discussion is expected.</p>			
Textbook	NA		
Reference book	NA		
Contact	hayashima@tds1.tr.yamagata-u.ac.jp		

Seminar on forest and sociology (2nd year winter semester)			
Registration code	61700	Credits	2
Instructor	HAYASHI Masahide	Coordinator <small>in case of invited lectures</small>	NA
Academic year	2nd year	Semester	winter
Style of course	Seminar	Target research area	Bioenvironmental Science
How to use English	To interpret Japanese as main language		
<div>• Purpose and Learning Goals</div> <p>The objective of this course is to provide students the theoretical knowledge and empirical analysis methods necessary to study social phenomena in the forest sector, such as behaviour patterns of forestry managers and common forest management, from the perspective of the new institutional social science.</p> <div>• Course Category (Relations to DP, CP and other courses)</div> <p>This course is to obtain DP(1) in Department of Bioenvironmental Science</p> <div>• Contents</div> <p>Participants read research articles and review papers on the institutional analysis of forest governance or data collection for the analysis. One or few students in each class make the presentations on the articles/papers for discussion with the other participants. The participants should attend all of 15 classess on the following themes.</p> <div>1 Rational choice theory</div> <div>2 Comparative institutional analysis</div> <div>3 Organizational economics</div> <div>• Evaluation</div> <p>Grading will be decided based on your presentation (60%) and attitude in discussion (40%).</p> <div>• Notice for Students</div> <p>Your active participation in discussion is expected.</p>			
Textbook	NA		
Reference book	NA		
Contact	hayashima@tds1.tr.yamagata-u.ac.jp		