



Saga University

*Post-Graduate Program for Agribusiness Global Human-
resources Development (PPAGHD)*

Subject Guide

2026 Enrollment Students

**Master Course
Agriculture**

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ACADEMIC CALENDAR

SPRING SEMESTER

April 1, 2026	Spring Semester begins.
April 2, 2026	Entrance Ceremony (for Spring Enrollment Students)
April 6-8, 2026	Orientation (for Spring Enrollment Students)
April 10, 2026	Classes start.
July 31, 2026	Spring Semester Examination (until August 6)
August 8, 2026	Summer Vacation (until September 30)
September 30, 2026	End of the Spring Semester

AUTUMN SEMESTER

October 1, 2026	Autumn Semester begins.
October 1, 2026	Classes start.
October 2, 2026	Entrance Ceremony (for Autumn Enrollment Students)
December 25, 2026	Winter Vacation (until January 7)
February 8, 2027	Autumn Semester Examination (until February 15)
March 31, 2027	End of the Autumn Semester

Class hours

Period	I	II	III	IV	V
Time	8:50~10:20	10:30~12:00	13:00~14:30	14:40~16:10	16:20~17:50

First and second half of the 2026 Graduate School of Agriculture class schedule

Spring semester

	I First half (8times)	II Second half (8times)
Monday	4/13~6/1	6/8~8/3
Tuesday	4/14~6/9	6/16~8/4
Wednesday	4/15~6/10	6/17~8/5
Thursday	4/16~6/11	6/18~8/6
Friday	4/10~6/5	6/12~7/31

Autumn semester

	III First half (8times)	IV Second half (8times)
Monday	10/5~11/30	12/7~2/8
Tuesday	10/6~12/1	12/8~2/9
Wednesday	10/7~11/25	12/2~2/10
Thursday	10/1~11/26	12/3~2/15
Friday	10/2~11/20	11/27~2/12

※ Courses offered in the second half must be registered at the same time as the first half.

Master Course

Description of the Master Course and requirements for the degree

(1) Philosophy of foundation

This special educational program has been found to provide global human resources capable of building agribusiness and international networks that contribute to solving food and environmental problems in Asian countries through the master's program.

All lectures are given in English and thesis should be written in English and the curriculums are consisted from the four types of courses; Biological Science Course, Food Resource and Environmental Science Course, Applied Biochemistry and Food Science Course, Regional Development and Management Studies Course. Students will belong to one of the courses to understand the regional characteristics of Asian countries as their strengths and acquire the knowledge and skills necessary to create innovation and agribusiness to solve food and environmental problems, while Japanese and international students study together and improve their skills.

As a results, completed students will acquire 1) advanced specialized knowledge and skills, 2) the ability to continue learning new knowledge and skills, 3) the ability to identify and solve problems from a professional perspective, and 4) leadership skills gained through joint training with diverse stakeholders, and to be expected to play an active role as international advanced professionals in the fields of environment, agriculture, forestry, fisheries, processing, distribution, environment, and energy.

The Graduate school of Agriculture of Saga University will make every effort necessary to achieve the goal.

(2) Research supervisor

One main advisory professor/associate professor and two vice-advisory professor/associate professor are selected in consultation with the student. Students receive research guidance from the first year and the research theme is selected from related research field to which the student belongs.

(3) Requirements for the completion of the master's degree.

Requirements for completion of the master course are as follows.

- The period of course study should be equal to or more than two years.
- The number of credits earned should be equal to or more than 60 credits.
- To pass of final examinations and faculty evaluation of master's thesis.
- The type of degree is master's degree, agriculture.

(4) Subjects and credits

Master course students are required to complete a minimum of 60 credits according to the classifications.

	Natural science common subjects	Basic compulsory subjects	Special Study I~IV	Special Seminar I~IV	Major Subjects	TOTAL
Required credits	4	2	30	8	16	60

Biological Science	Food Resource and Environmental Science	Applied Biochemistry and Food Science	Regional Development and Management Studies
16			

- * Natural science common subjects: total 4 credits
 - PBL Exercises in Creative Science 2 credits
 - Internship L in Creative Science 2 credits
- * PPAGHD Subjects, Basic compulsory subjects
 - Survival Japanese • English 1
 - Advanced Entrepreneurship Education 1
- * Special Study: total 30 credits
 - Special Study I 5 credits
 - Special Study II 5 credits
 - Special Study III 10 credits
 - Special Study IV 10 credits
- * Special Seminar: total 8 credits
 - Special Seminar I 2 credits
 - Special Seminar II 2 credits
 - Special Seminar III 2 credits
 - Special Seminar IV 2 credits
- * PPAGHD Major Subjects
 - Earn at least 1 credit from each of the 4 courses, totaling 16 credits.

(5) Registration of classes

At starting of the new semester, students must follow these procedures. Course registration must be done online by using “Live Campus” during the course registration period. notices are available at Registrar Section for the Graduate School in Student Center. The registration period is one week after the opening of the semester, and the following week is the revision period. Students earn credits by attending classes, passing examinations and/or submitting reports.

農学研究科 アグリビジネス国際人材育成プログラムにおける履修方法及び修了要件について

1. プログラムの概要・目的について

本教育プログラムは、修士課程教育を通じてアジア諸国の食料及び環境問題の解決に貢献するアグリビジネスの構築と国際的ネットワーク構築を担うことが出来るグローバル人材の育成を目指して開設している。

講義はすべて英語で行われ、修士論文も英語での執筆となる。カリキュラムは、生物科学コース、食資源環境科学コース、生命機能科学コース、国際・地域マネジメントコースから構成されている。学生はいずれかのコースに所属し、アジア諸国の地域特性を強みとして理解し、食料及び環境問題を解決するためのイノベーションとアグリビジネス創出のために必要となる知識や技能を、日本人学生と外国人留学生が共に学び研鑽しながら身につける。

このカリキュラムの修了者は、1) 高度な専門知識と技能、2) 新たな知識や技能を学び続ける力、3) 専門的見地からの課題発見及び解決能力、4) 多様なステークホルダーとの共修によって得られるリーダーシップを身につけ、国際的な高度専門職業人として、環境、農林水産業、加工、流通、環境、エネルギー分野で活躍することが期待される。

農学研究科は、このグローバルに活躍できる人材の育成のために最善の努力をする。

2. 指導教員について

学生ごとに主指導教員1名及び副指導教員2名を選出する。研究指導は、当該コースにおける研究分野に関するテーマ等を選定して行い、学生は1年次から研究指導を受ける。

3. 修了要件について

当該課程に2年以上在学し、60単位以上を修得し、かつ、必要な研究指導を受けた上、当該課程の目的に応じ、修士論文の審査及び最終試験に合格することとする。

学位の種類は、修士（農学）となっている。

4. 授業科目及び単位について

アグリビジネス国際人材育成プログラムの学生は、農学研究科履修細則別表Ⅰに定める自然科学系研究科共通科目から創成科学PBL特論2単位及び創成科学インターンシップL2単位、専門科目から特別研究30単位、別表Ⅱに定めるアグリビジネス国際人材育成科目から基礎必修科目2単位、専門選択必修科目から16単位以上（4コースの各コースから1科目1単位以上を修得）及び特別演習Ⅰ～Ⅳ8単位を含む、計60単位以上修得しなければならない。

学生は、下記により60単位以上を修得しなければならない。

科目	自然科学系 共通科目	基礎必修科目	専門科目 特別研究	特別演習 I～IV	専門選択 必修科目
必要 単位数	4単位	2単位	30単位	8単位	16単位

*自然科学系共通科目について

- ・創成科学PBL特論 2単位
- ・創成科学インターンシップL 2単位

*アグリビジネス国際人材育成科目 基礎必修科目について

- ・Survival Japanese・English (サバイバル日本語・英語) 1単位
- ・Advanced Entrepreneurship Education (起業家教育特論) 1単位

*特別研究について

- ・特別研究I～IV 30単位

*特別演習について

- ・特別演習I～IV 8単位

*アグリビジネス国際人材育成科目 専門選択必修科目について

- ・4コースの各コースから1科目1単位以上、合計16単位を修得

5. 履修手続きについて

授業科目を履修し、単位を取得するためには、次の手続きを経なければならない。

履修登録は、履修手続期間内にWEBにより行うこと。手続きの日程等については掲示により確認すること。

講義に出席し、定期試験を受験し、あるいは、レポート等を提出して合格点に達すれば、所定の単位が与えられる。

Curriculum for the students of PPAGHD Subjects(アグリビジネス国際人材育成科目)

Basic Compulsory Subjects (基礎必修科目)

Subjects	Credits	Teachers	even-numbered year				odd-numbered years				Remarks
			Spring		Fall		Spring		Fall		
			I	II	III	IV	I	II	III	IV	
Survival Japanese・English (サバイバル日本語・英語)	1	Supervisor (指導教員)	○				○				※2 subjects, 2 credits required Offered every other year
Advanced Entrepreneurship Education (起業家教育特論)	1	Tanaka, M. (田中 宗浩)					○				

Major Subjects(専門選択必須科目)

Biological Science Course(生物科学コース)

Subjects	Credits	Teachers	even-numbered year				odd-numbered years				Remarks
			Spring		Fall		Spring		Fall		
			I	II	III	IV	I	II	III	IV	
Advanced Applied Plant Physiology (応用植物生理学特論)	1	Suzuki, A. (鈴木 章弘)				○					※At least one credit from each of the four courses, for a total of 16 credits
Advanced Organic and Sustainable Crop Production (循環型農業生産学特論)	1	Ueno, K. (上埜 喜八)								○	
Advanced Vegetable and Ornamental Horticulture (蔬菜花卉園芸学特論)	1	Isshiki, S. (一色 司郎)			○						
Advanced Floriculture and Ornamental Horticulture (花卉園芸学特論)	1	Tsujita, Y. (辻田 有紀)					○				
Advanced Horticultural Physiology (園芸生理学特論)	1	Kotoda, N. (古藤田 信博)	○								
Advanced Tropical Agricultural Production Science (熱帯農業資源学特論)	1	Tei, S. (鄭 紹輝)	○								
Advanced Tropical Crop Improvement (熱帯作物改良学特論)	1	Fujita, D. (藤田 大輔)								○	
Advanced Animal Reproductive Physiology (動物繁殖生理学特論)	1	Yamanaka, K. (山中 賢一)				○					
Advanced Plant Mycological Science (植物病原学特論)	1	Kusaba, M. (草場 基章)					○				
Advanced Nematology (線虫学特論)	1	Yoshiga, T. (吉賀 豊司)	○								
Advanced Systems Ecology (システム生態学特論)	1	Tokuda, M. (徳田 誠)								○	
Advanced Animal Behavior (家畜行動学特論)	1	Ebara, F. (江原 史雄)								○	
Advanced Plant Genome Engineering (植物ゲノム工学特論)	1	Watanabe, S. (渡邊 啓史)			○						
Advanced Cultivation Techniques of Fruit (果樹生産学特論)	1	Fukuda, S. (福田 伸二)						○			
Advanced Environmental Physiology in Agricultural Facilities (施設環境生理学特論)	1	Goto, F. (後藤 文之)								○	
Advanced Plant Nutrition and Molecular Biology (植物分子栄養学特論)	1	Nishida, S. (西田 翔)		○							
Advanced Plant Propagation (園芸植物繁殖学特論)	1	Matsumoto, Y. (松本 雄一)		○							
Contemporary Insect Molecular Biology (先端昆虫分子生物学特論)	1	Elsayed, A.K. (カミスイルサイド アイマン)				○					intensive

Food Resource and Environmental Science Course(食資源環境科学コース)

Subjects	Credits	Teachers	even-numbered year				odd-numbered years				Remarks
			Spring		Fall		Spring		Fall		
			I	II	III	IV	I	II	III	IV	
Contemporary Advanced Soil Water Science (先端地水学特論)	1	Tokumoto, I. (徳本 家康)		○							※At least one credit from each of the four courses, for a total of 16 credits
Advanced Shallow Sea Environment Engineering (浅海環境工学特論)	1	Koriyama, M. (郡山 益実)							○		
Advanced Applied Irrigation and Drainage (応用水利学特論)	1	Yuge, K. (弓削 こずえ)								○	
Advanced Environmental Geotechnics (環境地盤学特論)	1	Kondo, F. (近藤 文義)			○						
Advanced Geotechnical Engineering for Agriculture (生産地盤工学特論)	1	Miyamoto, H. (宮本 英揮)							○		
Advanced Environmental Analytical Chemistry (環境分析化学特論)	1	Ueno, D. (上野 大介)	○								
Advanced Water Resources Planning for Agriculture (水資源計画学特論)	1	Haraguchi, T. (原口 智和)				○					
Advanced Hydraulic Engineering (利水解析学特論)	1	Anan, M. (阿南 光政)								○	
Advanced Equipments for Agricultural Production (施設農業生産学特論)	1	Tanaka, M. (田中 宗浩)					○				
Advanced Care of Microbial Flora (細菌叢ケア学特論)	1	Kitagaki, H. (北垣 浩志)				○					
Advanced Agricultural Machinery (農用先端機械学特論)	1	Inaba, S. (稲葉 繁樹)								○	
Advanced Microalgae Bioresource Science (微細藻類バイオマス利用学特論)	1	Demura, M. (出村 幹英)					○				
Advanced Environmental Oceanography (海洋環境学特論)	1	Hayami, Y. (速水 祐一)							○		

Applied Biochemistry and Food Science Course(生命機能科学コース)

Subjects	Credits	Teachers	even-numbered year				odd-numbered years				Remarks
			Spring		Fall		Spring		Fall		
			I	II	III	IV	I	II	III	IV	
Advanced Biochemistry (生化学特論)	1	Tsujita, T. (辻田 忠志)				○					※At least one credit from each of the four courses, for a total of 16 credits
Advanced Biosensing (バイオセンシング特論)	1	Soh, N. (宗 伸明)							○		
Advanced Applied Microbiology (応用微生物学特論)	1	Kobayashi, G. (小林 元太)					○				
Advanced Lipid Biochemistry (脂質生化学特論)	1	Nagao, K. (永尾 晃治)				○					
Advanced Marine Resource Chemistry (海洋資源化学特論)	1	Hama, Y. (濱 洋一郎)							○		
Advanced Biological Membrane (バイオメンブレン機能特論)	1	Mitsutake, S. (光武 進)			○						
Advanced Practical Genomics (分子細胞生物学特論)	1	Nagano, Y. (永野 幸生)	○								
Advanced Food Distribution and Preservation (食糧流通貯蔵学特論)	1	Noma, S. (野間 誠司)								○	
Advanced Eukaryotic Microbiology (真核微生物学特論)	1	Goto, M. (後藤 正利)	○								
Advanced Organic Chemistry (有機化学特論)	1	Kawaguchi, S. (川口 真一)		○							
Advanced Chemical Biology (ケミカルバイオロジー特論)	1	Kawazoe, Y. (川添 嘉徳)								○	
Advanced Protein Science (タンパク質科学特論)	1	Horitani, M. (堀谷 正樹)		○							
Advanced Oleo Chemistry (油化学特論)	1	Inoue, N. (井上 奈穂)								○	
Advanced Seaweed Science (海藻学特論)	1	Kimura, K. (木村 圭)						○			
Advanced Benthology (ベントス学特論)	1	Orita, R. (折田 亮)					○				
Advanced Biogeochemistry (生物地球化学特論)	1	Yoshida, K. (吉田 和広)		○							

Regional Development and Management Studies Course(国際・地域マネジメントコース)

Subjects	Credits	Teachers	even-numbered year				odd-numbered years				Remarks
			Spring		Fall		Spring		Fall		
			I	II	III	IV	I	II	III	IV	
Advanced Rural Sociology (農村社会学特論)	1	Fujimura, M. (藤村 美穂)							○		※At least one credit from each of the four courses, for a total of 16 credits
Advanced Ecological Anthropology (生態人類学特論)	1	Nakai, S. (中井 信介)							○		
Advanced Farm-Business Management (農業ビジネスマネジメント特論)	1	Tsuji, K. (辻 一成)		○							

Subjects	Credits	Teachers	even-numbered year				odd-numbered years				Remarks
			Spring		Fall		Spring		Fall		
			I	II	III	IV	I	II	III	IV	
○Special Seminar I (特別演習Ⅰ)	2	Supervisor (指導教員)		○							8 credits required
○Special Seminar II (特別演習Ⅱ)	2	Supervisor (指導教員)				○					
○Special Seminar III (特別演習Ⅲ)	2	Supervisor (指導教員)					○				
○Special Seminar IV (特別演習Ⅳ)	2	Supervisor (指導教員)							○		

○For subjects marked with a circle, students enrolling in autumn will start from course I in the Fall semester.

Courses specified in Appendix I(別表Ⅰに定める授業科目)

Subjects	Credits	Teachers	even-numbered year				odd-numbered years				Remarks
			Spring		Fall		Spring		Fall		
			I	II	III	IV	I	II	III	IV	
PBL Exercises in Creative Science (創成科学PBL特論)	2				○				○	Intensive	
Internship L in Creative Science (創成科学インターンシップL)	2	Supervisor (指導教員)			○				○	Intensive	
○Special Study I (特別研究Ⅰ)	5	Supervisor (指導教員)		○						※6 subjects of 34 credits are required from the courses specified in Attached Table 1	
○Special Study II (特別研究Ⅱ)	5	Supervisor (指導教員)				○					
○Special Study III (特別研究Ⅲ)	10	Supervisor (指導教員)					○				
○Special Study IV (特別研究Ⅳ)	10	Supervisor (指導教員)							○		

○For subjects marked with a circle, students enrolling in autumn will start from course I in the Fall semester.

Outline of Basic Compulsory Subjects

(基礎必修科目)

<Survival Japanese • English > (サバイバル日本語・英語)

Supervisor

In this class, I will provide an opportunity to understand how to survive in University in Japan. We need to understand culture difference and respect each other. To do that, we need to know countries, religious and so on. I would like provide a chance to know each other and couple of point to survive in University.

<Advanced Entrepreneurship Education > (起業家教育特論)

Prof. Tanaka, M.

To develop agriculture and related industries in your own country, graduate students must understand the function of leadership in collaboration, create empathy among diverse stakeholders in your society, and have the ability to lead powerfully in discovering and solving social issues. In order to foster these competencies, this class will provide the entrepreneurial education required for agribusiness development.

Outline of Major Subjects

(専門選択必須科目)

Biological Science Course(生物科学コース)

<Advanced Applied Plant Physiology > (応用植物生理学特論)

Prof. Suzuki, A.

Human interest in plants as food lies in where they grow, under what conditions they flower and produce seeds, and in what kind of soil they can be grown to produce a higher yield. In this class, we will learn how plants react to adapt to such environmental conditions at the molecular level, focusing on the role of plant hormones and their applications.

<Advanced Organic and Sustainable Crop Production > (循環型農業生産学特論)

Assoc. Prof. Ueno, K.

Methods of weed control without herbicides in paddy fields will be explained. Specific methods for mechanical and cultural weed control will be presented, and the mechanisms and problems of these weed control will be explained. Literature in related fields will be discussed.

<Advanced Vegetable and Ornamental Horticulture> (蔬菜花卉園芸学特論)

Prof. Isshiki, S.

Students will explore horticultural research through examples focused on cruciferous and taro vegetables, as well as other vegetables and flowering plants. The goal is to equip students with the ability to apply their research findings to other plant species by understanding research content and methodologies.

<Advanced Floriculture and Ornamental Horticulture> (花卉園芸学特論)

Prof. Tsujita, Y.

In addition to acquiring specialized knowledge in horticulture, a major field in agricultural production, students will acquire the ability to read and analyze a wide variety of data and the presentation skills to communicate their ideas clearly and accurately through group work and presentations.

<Advanced Horticultural Physiology> (園芸生理学特論)

Prof. Kotoda, N.

Based on the basic knowledge gained from the undergraduate courses of "Plant Physiology" and "Horticulture," this course will provide an overview of plant physiological ecology, flower bud formation, and fruit formation, incorporating the latest physiological and genetic research findings.

<Advanced Tropical Agricultural Production Science> (熱帯農業資源学特論)

Prof. Tei, S.

Approximately 60% of the population is distributed in tropical and subtropical regions. Therefore, promoting food production in tropical and subtropical regions is an urgent issue. This lecture will introduce the food crop genetic, physiological, and ecological research information in order to understand how is the grain yield improved.

<Advanced Tropical Crop Improvement > (熱帯作物改良学特論)

Prof. Fujita, D.

In the tropics of Asia-Africa region, In the tropics, there is a wide variety of environments in which crops are grown and varieties of crops are being grown and bred to suit each environment. This lecture will introduce genetic improvement of yield and stress tolerance of major crops in the tropics.

< Advanced Animal Reproductive Physiology > (動物繁殖生理学特論)

Prof. Yamanaka, K.

Technologies developed from knowledge of animal reproduction are used in a wide range of applications, from livestock production to human fertility treatments. In this class, we will learn about current research in mammalian reproductive physiology and various reproductive technologies.

< Advanced Plant Mycological Science > (植物病原学特論)

Prof. Kusaba, M.

In this class, the classification of phytopathogenic filamentous fungi and the evolution of parasitic differentiation will be explained. In order to control phytopathogens, it is necessary to know the mechanism related to their pathogenic expression. Through the classification of filamentous fungi, students will understand the mechanism of pathogenicity of phytopathogenic fungi from an evolutionary perspective.

< Advanced Nematology > (線虫学特論)

Prof. Yoshiga, T.

This lecture focuses on nematodes, which are simple in body structure but diverse in lifestyle, from both basic and applied perspectives. The biology of free-living, plant-parasitic, vertebrate-parasitic, and invertebrate-parasitic nematodes will be presented. Management of plant-parasitic nematodes and the use of beneficial nematodes will also be covered.

< Advanced Systems Ecology > (システム生態学特論)

Prof. Tokuda, M.

This class focuses mainly on ecological interactions between plants and herbivores. In addition, this class also covers mechanisms for the maintenance and creation of biodiversity, ecological characteristics of organisms and systems analysis of biological communities.

< Advanced Animal Behavior > (家畜行動学特論)

Assoc. Prof. Ebara, F.

In order to properly manage livestock, it is necessary to fully understand the mental and physical states they emit before responding to them. In this lecture, we will learn about the various behavioral repertoires, normal or abnormal, expressed by livestock. In addition, knowledge and standards for animal welfare will be discussed in detail.

< Advanced Plant Genome Engineering > (植物ゲノム工学特論)

Prof. Watanabe, S.

In this course, students will acquire knowledge of molecular biology and bioinformatics tools rapidly developing and discuss methods of plant genome analysis, isolation of agronomically important trait genes of interest, and novel breeding techniques to develop new varieties using these techniques.

< Advanced Cultivation Techniques of Fruit > (果樹生産学特論)

Prof. Fukuda, S.

This course is designed to deepen students' understanding of the current status and prospects of fruit tree horticulture. The course consists of a lecture part, in which the lecturer provides an overview and discusses recent topics in fruit tree research, and a discussion part, in which students conduct research, present their findings, and discuss them.

< Advanced Environmental Physiology in Agricultural Facilities > (施設環境生理学特論)

Prof. Goto, F.

What is the optimal environment for crop production? What traits are required for effective use of horticultural facilities? We clarify these questions, and develop horticultural facility technology based on our findings.

< Advanced Plant Nutrition and Molecular Biology > (植物分子栄養学特論)

Assoc. Prof. Nishida, S.

This course is designated to provide students with the knowledge of plant nutrition and molecular biology. Topics include functions of mineral nutrients, mineral absorption and mineral metabolism in plants. It aims to obtain not only "textbook" knowledge but also ideas for approaches and technologies to achieve scientific breakthroughs.

< **Advanced Plant Propagation** > (園芸植物繁殖学特論)

Assoc. Prof. Matsumoto, Y

There are various types of horticultural crops. In this lecture, we will introduce various uses of horticultural crops using blackboards and slides. In addition, I will explain the processes of pollination and fertilization, propagation of seeds and seedlings, and breed improvement, which are necessary for cultivation and harvesting of fruits.

< **Contemporary Insect Molecular Biology** > (先端昆虫分子生物学特論)

Asst. Prof. Elsayed, A.K.

Insects constitute the most species-rich animal lineage on Earth and encompass taxa with significant beneficial and detrimental impacts on humans and agricultural systems. This course provides an overview of recent developments in insect molecular biology, with an emphasis on how molecular approaches advance our understanding of insect evolutionary processes and inform applications in applied entomology and agricultural science.

Outline of Major Subjects

(専門選択必須科目)

Food Resource and Environmental Science Course

(食資源環境科学コース)

<Contemporary Advanced Soil Water Science> (先端地水学特論)

Assoc. Prof. Tokumoto, I.

The study of water flow and solute transport in the vadose zone. Contemporary Advanced Soil Water Science uses principles developed from classical physics and engineering to measure and model rates of energy and mass transfer. The course includes a class project in which students plan and execute numerical simulation experiments related to water flow and solute transport in soil, referencing their research and academic publications.

<Advanced Shallow Sea Environment Engineering> (浅海環境工学特論)

Assoc. Prof. Koriyama, M.

Understanding the material cycle from tidal flats to shallow sea areas is crucial when considering the environment of shallow sea regions. In this lecture, we will explain the material cycle of bottom sediments from tidal flats to shallow sea areas, using the muddy tidal flats of Saga City as a field case.

<Advanced Applied Irrigation and Drainage> (応用水文学特論)

Prof. Yuge, K.

This subject aims to provide the knowledge about characteristics of water resources and hydrologic cycle, methodologies to estimate water requirement for paddy field and water consumption for upland crop field, and also how to design the irrigation and drainage systems.

<Advanced Environmental Geotechnics> (環境地盤学特論)

Prof. Kondo, F.

Agricultural land, which is the foundation of production, needs to have high land productivity, labor productivity, and sustainability. In this lecture, the professors will discuss comprehensive planning and design systems and construction methods for the development, maintenance, and conservation of agricultural lands, taking into account these special features from a viewpoint of environmental geotechnics.

<Advanced Geotechnical Engineering for Agriculture> (生産地盤工学特論)

Prof. Miyamoto, H.

This course gives students more detailed insight into flow, transport, and related processes above the water table in soil. The emphasis is on developing an intuition for understanding these complex processes, and the course provides an opportunity to introduce valuable tools, such as numerical analyses and soil sensing techniques, that can help to develop that intuition.

<Advanced Environmental Analytical Chemistry> (環境分析化学特論)

Assoc. Prof. Ueno, D.

Environmental chemistry is the study field to find the solution for the problems on agricultural environment by using the technique of "analytical chemistry". The participants need to make "short presentation" to offer new collaboration works with this research field and your field. This class aims to develop your research skill to make collaboration works with the field of analytical chemistry.

< **Advanced Water Resources Planning for Agriculture** > (水資源計画学特論)

Assoc. Prof. Haraguchi, T.

Water resources which we can use for agriculture will decrease due to global and regional change in various conditions. Irrigation systems and management practice of water utilization in agricultural field will be discussed. Students will be able to explain water movement in cropland watered with various irrigation systems.

< **Advanced Hydraulic Engineering** > (利水解析学特論)

Prof. Anan, M.

The purpose of this class is to understand governing equations of water flow and numerical simulation techniques using the governing equations for predicting and conservation of the water environment of rural area.

< **Advanced Equipments for Agricultural Production** > (施設農業生産学特論)

Prof. Tanaka, M.

The current status of food production will be outlined, comparing agricultural conditions overseas and in Japan, and the role of horticultural facilities in future food production will be outlined. Next, the relationship between plant growth and fertilizer components will be explained, and an overview of hydroponic techniques, environmental characteristics and control methods related to horticultural facilities will be discussed.

< **Advanced Care of Microbial Flora** > (細菌叢ケア学特論)

Prof. Kitagaki, H.

This lecture teaches advanced care of microbial flora to promote health. The objective of this lecture is to provide knowledge about medical microbial flora. By studying these subjects, students will be well-updated about the medical care of microbial flora. In principle, questions and discussions by students are encouraged.

< **Advanced Agricultural Machinery** > (農用先端機械学特論)

Assoc. Prof. Inaba, S.

Study the mechanization of agricultural work from its basic principles. The objective of this lecture is to impart knowledge of machinery and Information and Communication Technologies related to agriculture. In principle, lectures and discussions about agricultural equipment will be tailored to the students' preferences, should they have any requests regarding agricultural machinery.

< **Advanced Microalgae Bioresource Science** > (微細藻類バイオマス利用学特論)

Assoc. Prof. Demura, M.

Lecture on the biology of microalgae, microalgae cultivation systems, microalgae harvesting methods, various extraction methods of useful products, and the potential use of microalgae biomass. Additionally, literature reviews will be conducted to understand new ways to use microalgae biomass. The objective of this lecture is to comprehend a new bioresource, "microalgae".

< **Advanced Environmental Oceanography** > (海洋環境学特論)

Assoc. Prof. Hayami, Y.

This lecture provides knowledge about the influence of physical forcings on biological processes in the marine environment in a wide range of spatial and temporal scales, from the individual to the ocean scale based on physical oceanography. The participants need to make literature review and computer programming exercises in this research field.

Outline of Major Subjects

(専門選択必須科目)

Applied Biochemistry and Food Science Course

(生命機能科学コース)

<Advanced Biochemistry> (生化学特論)

Prof. Tsujita, T.

Living organisms ingest nutrients from food. These nutrients are catabolized to basic constituents and anabolized to stock. These metabolic pathways sometimes produce small amount of endogenous stressors. Those stress are recognized through the same sensing mechanism for exogenous environmental stress. Therefore, failing of those system causes various diseases. This lecture introduces the molecular mechanisms of environmental response system from the recent research progress.

<Advanced Biosensing > (バイオセンシング特論)

Prof. Soh, N.

Biosensing is an important technology for obtaining information about biomolecules in living organisms. In this lecture, the principles and applications of various biosensing technologies will be reviewed.

<Advanced Applied Microbiology> (応用微生物学特論)

Prof. Kobayashi, G.

This lecture provides fundamental knowledge regarding microbial technology and biochemical technology, especially fermentative kinetics, production and physiology using microorganisms. This lecture also provides opportunities to present and discuss related topics.

<Advanced Lipid Biochemistry> (脂質生化学特論)

Prof. Nagao, K.

The aim of this lecture is to provide students with a better understanding of the physiological role of lipids in vivo and the importance of metabolic changes. Participants will present and discuss recent original papers.

<Advanced Marine Resource Chemistry> (海洋資源化学特論)

Prof. Hama, Y.

In this lecture, marine organisms are considered as a food resource and a source of functional components, and the characteristics of these organisms will be discussed.

<Advanced Biological Membrane > (バイオメンブレン機能特論)

Prof. Mitsutake, S

The plasma membrane has been thought of as a simple compartment that separates the inside and outside of a cell. However, recently, it has been elucidated that the plasma membrane plays more active and important roles of the cells. In this lecture, we will study the latest papers regarding new functions of cell membranes, discuss it with each other, and ultimately gain a deep understanding.

<Advanced Practical Genomics> (分子細胞生物学特論)

Prof. Nagano, Y.

The intention of this class is to practically study genomics and transcriptomics using the computer. Therefore, the class will be conducted in a practical format using the students' computers.

< **Advanced Food Distribution and Preservation** > (食糧流通貯蔵学特論)

Prof. Noma, S.

In the production of processed foods, pasteurization is an important process that affects not only microbiological stability, but also quality. In this course, food pasteurization techniques will be reviewed. In addition, students will have the opportunity to present papers on these topics.

< **Advanced Eukaryotic Microbiology** > (真核微生物学特論)

Prof. Goto, M.

This lecture provides fundamental knowledge regarding the hyphal growth, differentiation, metabolisms, and physiology of the filamentous fungi. This lecture also provides opportunities to present and discuss related topics.

< **Advanced Organic Chemistry** > (有機化学特論)

Prof. Kawaguchi, S.

Various organic molecules such as plastics, cosmetics, pharmaceuticals, and food additives exist in our daily life. In order to acquire a deep understanding of their properties in terms of functional groups and structures, we will discuss topics related to these organic molecules in depth.

< **Advanced Chemical Biology** > (ケミカルバイオロジー特論)

Assoc. Prof. Kawazoe, Y.

Chemical biology is defined as chemistry-initiated biology. In other words, it is an interdisciplinary research field between chemistry and biology. In this lecture, students are required to formulate, present, and discuss a hypothetical research plan related to the presented topic.

< **Advanced Protein Science** > (タンパク質科学特論)

Prof. Horitani, M.

This class focuses on understanding advanced protein structural analysis techniques to elucidate the protein function. The class is a combination of the lectures and presentations/discussions. Following fundamental lectures, the students read the recent original papers on protein function, give presentations and discuss the research techniques, results and discussions with other students.

< **Advanced Oleo Chemistry** > (油化学特論)

Assoc. Prof. Inoue, N.

In this lecture, the focus is to learn about the properties of fats and oils. Additionally, for understanding the oleo chemistry, the student makes presentation and discussion of recent original papers.

< **Advanced Seaweed Science** > (海藻学特論)

Prof. Kimura, K.

Seaweed is used in a variety of food products and is an important food resource in many countries. It also serves as an industrial product in various forms, and its utilization is greater than often imagined. To effectively utilize seaweed, it is necessary to fully understand its species, biology, and characteristics. The aim of this lecture is to provide comprehensive knowledge of seaweeds, including their classification, basic biological information, and their various applications.

< **Advanced Benthology** > (ベントス学特論)

Assoc. Prof. Orita, R.

This lecture introduces the physiology, ecology and fisheries uses of "benthos", which are organisms that live on, or burrow into, the bottom or other substrate in aquatic systems. The lectures also include presentations and discussions by participants on the current studies related to "benthos".

< **Advanced Biogeochemistry** > (生物地球化学特論)

Asst. Prof. Yoshida, K.

Climate change modifies plant photosynthetic activities and consequently food and marine production. This lecture series focuses on organic carbon and nitrogen cycles in terrestrial and marine environments. The goal of the lectures is to provide an overview of your study on the global/decadal scales.

Outline of Major Subjects

(専門選択必須科目)

Regional Development and Management Studies Course

(国際・地域マネジメントコース)

<Advanced Rural Sociology> (農村社会学特論)

Prof. Fujimura, M.

In this class, the lecturer will first give a series of lectures on the basic theories of rural sociology. Then, students will discuss various issues facing rural communities in Japan and around the world from the perspective of rural sociology

<Advanced Ecological Anthropology> (生態人類学特論)

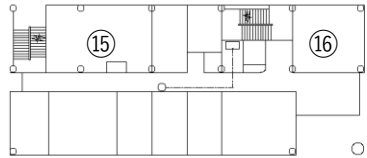
Assoc. Prof. Nakai, S.

In this class, we will learn about the livelihoods of various groups around the world as specific examples and deepen our understanding of the diversity of human life from the perspective of cultural adaptation of groups to their environment. The purpose of this class is to get a perspective to relatively understand “agriculture” practiced in modern Japan.

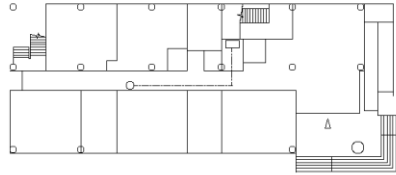
<Advanced Farm-Business Management> (農業ビジネスマネジメント特論)

Prof. Tsuji, K.

In this class, the professor will give a series of lectures on key theories related to sustainable farm-business management. And students will be required to theoretically and practically consider strategies of farmers who face critical issues to achieve both agricultural productivity improvement and environmental conservation at the same time.

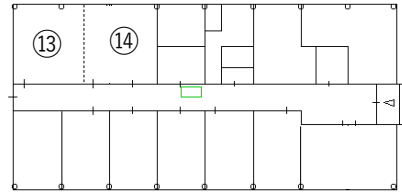


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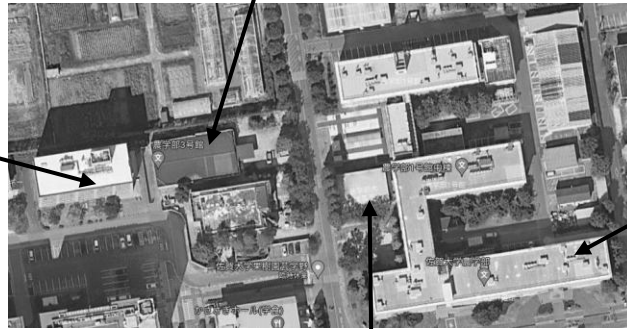


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4th Building



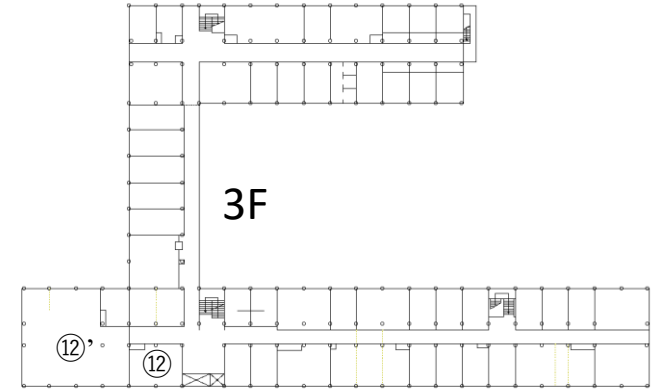
3rd Building



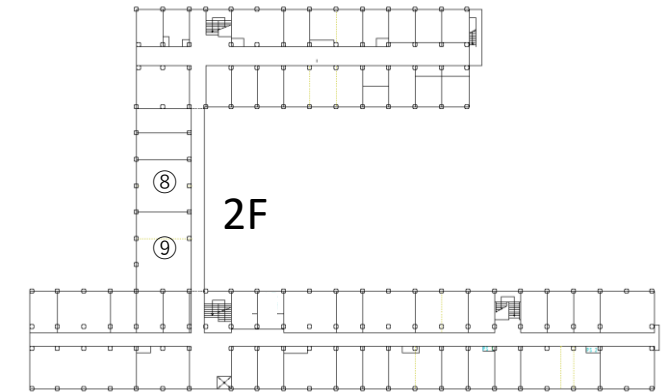
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- ①Lecture Room(6) 1S-101
- ②Seminar Room(1) 1S-102
- ③Seminar Room(2) 1S-104
- ④Multimedia Information Room 1S-111
- ⑤Lecture Room(1) 1S-126
- ⑥ Lecture Room(2) 1S-125
- ⑦ Lecture Room(3) 1S-124
- ⑧ Lecture Room(4) 1S-233
- ⑨ Lecture Room(5) 1S-232

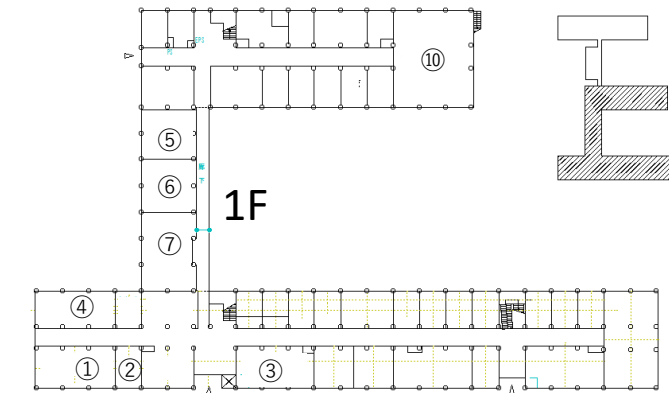
- ⑩Biology Lab.1P-107
- ⑪Large Lecture Hall
- ⑫Applied Biochemistry and Food Science Teaching Lab.
1S-302(+⑫' 1S-301)
- ⑬Seminar Room A 3-108
- ⑭Seminar Room B 3-109
- ⑮IT Exercise Room 4-207
- ⑯4th Building Lecture Room 4-216



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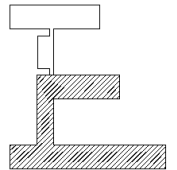


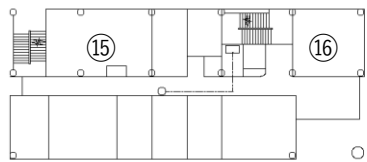
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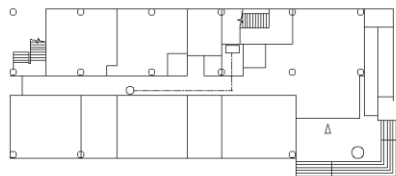
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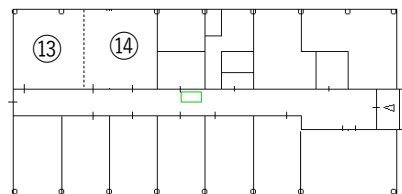


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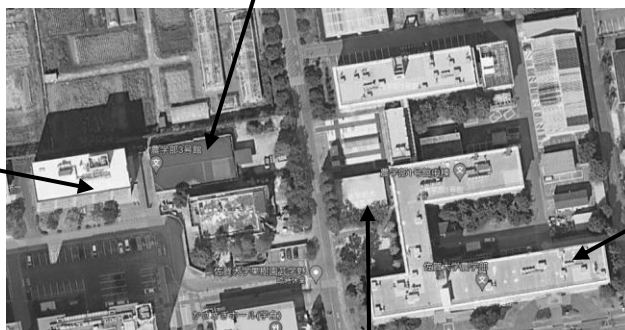


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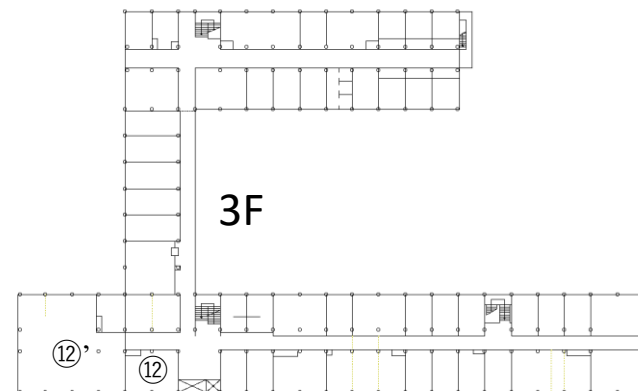
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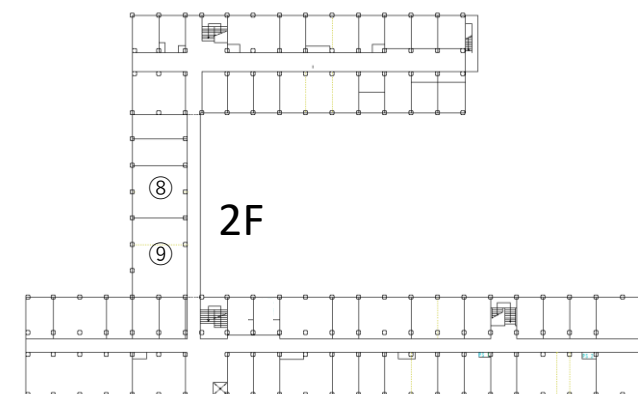
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- ①大学院多目的講義室 1S-101
- ②大学院演習室 1S-102
- ③大学院講義室 1S-104
- ④マルチメディア情報室 1S-111
- ⑤第1講義室 1S-126
- ⑥第2講義室 1S-125
- ⑦第3講義室 1S-124
- ⑧第4講義室 1S-233
- ⑨第5講義室 1S-232

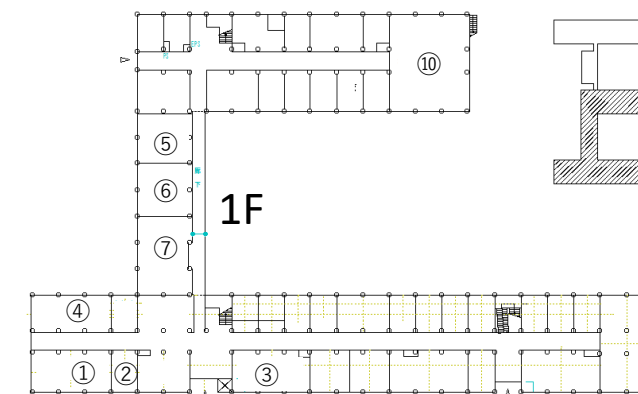
- ⑩生物学学生実験室 1P-107
- ⑪大講義室
- ⑫生命機能科学学生実験室 1S-302(+⑫'1S-301)
- ⑬演習室 A 3-108
- ⑭演習室 B 3-109
- ⑮情報演習室 4-207
- ⑯四号館講義室 4-216



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