

2022

**Syllabus**  
**for Study**  
**in Special Course from Asia, Africa and the Pacific Rim**

Shikoku Education Consortium

**KOCHI UNIVERSITY**

(高知大学)

\* If time schedule or other items are not specified, ask about them to the lecturer after consulting your advising professor.

(\* 開講時期その他の事項が明示されていない場合は、指導教員に相談したうえで授業担当教員に確認すること。)



**Course Subject Title** (授業題目)

Advanced Agriculture, Forestry, Bioresource and Environmental Sciences I-I

Advanced Agriculture, Forestry, Bioresource and Environmental Sciences I-II

**Course Subject Code** (申請コード)

1 B H01

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Lecture

**Year of commencement** (履修開始年次)

1st year

**Semester** (履修期間)

Fall term

**Day/Period** (時間割)

Not decided

**Professor (Lecturer or Instructor)** (担当教員名)

SUZUKI Yasushi

**Professor (Affiliation/Research field)** (担当教員所属)

Kochi University/ Forest engineering

**Professor (Telephone)** (担当教員電話)

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**Professor (E-Mail)** (担当教員)

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**Keyword for the subject** (キーワード)

Bioproduction, Agriculture, Forestry, Bioresource, Environment

**Content and Objective** (授業テーマと目的)

Understanding the biological production in the ecosystem based on the agricultural, forest and environmental sciences

**Teaching Materials** (教科書・参考書)

Not decided

**Evaluation of Results** (成績評価の方法)

Assignment of report on related subjects

**Course Subject Title** (授業題目)

Advanced Agriculture, Forestry, Bioresource and Environmental Sciences II- I  
Advanced Agriculture, Forestry, Bioresource and Environmental Sciences II- II

**Course Subject Code** (申請コード)

1B H02

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Lecture

**Year of commencement** (履修開始年次)

1st year

**Semester** (履修期間)

Spring term

**Day/Period** (時間割)

Not decided

**Professor (Lecturer or Instructor)** (担当教員名)

SUZUKI Yasushi

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**Keyword for the subject** (キーワード)

Bioproduction, Agriculture, Forestry, Bioresource, Environment

**Content and Objective** (授業テーマと目的)

Understanding the biological production through the applications of agricultural, forest and environmental methods

**Teaching Materials** (教科書・参考書)

Not decided

**Evaluation of Results** (成績評価の方法)

Assignment of report on related subjects

**Course Subject Title** (授業題目)

Advanced Tropical and Warm Temperate-zone Fruit Science I

Advanced Tropical and Warm Temperate-zone Fruit Science II

**Course Subject Code** (申請コード)

1B H03

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Lecture

**Year of commencement** (履修開始年次)

1st year

**Semester** (履修期間)

Spring term

**Day/Period** (時間割)

Not decided

**Professor (Lecturer or Instructor)** (担当教員名)

NAKANO Michiharu

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**Professor (E-Mail)** (担当教員)

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**Keyword for the subject** (キーワード)

Tropical/sub-tropical fruit, Citriculture, Warm-temperate climate

**Content and Objective** (授業テーマと目的)

Understanding the fruit-production-systems under the tropical, sub-tropical and warm temperate climates

**Teaching Materials** (教科書・参考書)

Not decided

**Evaluation of Results** (成績評価の方法)

Assignment of report on related subjects

**Course Subject Title** (授業題目)

Advanced Vegetable Crop Science I

Advanced Vegetable Crop Science II

**Course Subject Code** (申請コード)

1 B H05

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Lecture

**Year of commencement** (履修開始年次)

1st year

**Semester** (履修期間)

Spring term

**Day/Period** (時間割)

Not decided

**Professor (Lecturer or Instructor)** (担当教員名)

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**Professor (E-Mail)** (担当教員)

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**Keyword for the subject** (キーワード)

Vegetable crop, cultivation environment, plant physiology

**Content and Objective** (授業テーマと目的)

Growth characteristics and environmental involved in the production of vegetable crop.

Control of cultivation environment in greenhouse.

**Teaching Materials** (教科書・参考書)

Computer projector/Printed synopsis

**Evaluation of Results** (成績評価の方法)

Submitting paper (report) after the course

**Course Subject Title** (授業題目)

Advanced Local Resources Utilization I

Advanced Local Resources Utilization II

**Course Subject Code** (申請コード)

1 B H06

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Seminar

**Year of commencement** (履修開始年次)

1st year

**Semester** (履修期間)

Fall term

**Day/Period** (時間割)

Not decided

**Professor (Lecturer or Instructor)** (担当教員名)

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**Professor (E-Mail)** (担当教員)

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**Keyword for the subject** (キーワード)

Political Ecology of Natural resource usage, Socio-cultural sphere of Agriculture, Local knowledge,  
Conjunction between locality, state, and globalism

**Content and Objective** (授業テーマと目的)

Transformation of Local Agriculture and Forestry in Environmentalism

**Teaching Materials** (教科書・参考書)

- 1) Dove, Michael R. 1985, "The Agroecological Mythology of the Javanese and the Political Economy in Indonesia", *Indonesia* (39): 1-36.
- 2) ----- . 1997, "The Epistemology of Southeast Asia's Anthropogenic Grasslands: Issues of Myth, Science and Development", *Southeast Asian Studies* 35 (2): 223-239

**Evaluation of Results** (成績評価の方法)

Submitting paper (report) after the course

**Course Subject Title** (授業題目)

Advanced Animal Science I

Advanced Animal Science II

**Course Subject Code** (申請コード)

1 B H07

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Lecture

**Year of commencement** (履修開始年次)

2nd year

**Semester** (履修期間)

Spring term

**Day/Period** (時間割)

Not decided

**Professor (Lecturer or Instructor)** (担当教員名)

MATSUKAWA Kazutsugu

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**Professor (E-Mail)** (担当教員)

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**Keyword for the subject** (キーワード)

Animal science, Reproduction, Breeding, Nutrition

**Content and Objective** (授業テーマと目的)

Learn academic fields related to livestock production

**Teaching Materials** (教科書・参考書)

Not decided

**Evaluation of Results** (成績評価の方法)

Attendance and reports



**Course Subject Title** (授業題目)

Advanced Crop Science I

Advanced Crop Science II

**Course Subject Code** (申請コード)

1 B H09

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Lecture

**Year of commencement** (履修開始年次)

1st year

**Semester** (履修期間)

Fall term

**Day/Period** (時間割)

Thursday/3<sup>rd</sup>

**Professor (Lecturer or Instructor)** (担当教員名)

MIYAZAKI Akira

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**Professor (E-Mail)** (担当教員)

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**Keyword for the subject** (キーワード)

Food crop, Rice, Yield component, Crop production, Photosynthesis

**Content and Objective** (授業テーマと目的)

Physiology and function related with yield production in field crop

**Teaching Materials** (教科書・参考書)

Printed synopsis

**Evaluation of Results** (成績評価の方法)

Submitting report after the class

**Course Subject Title** (授業題目)

Advanced Behavioural Ecology I

Advanced Behavioural Ecology II

**Course Subject Code** (申請コード)

1 B H13

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Lecture

**Year of commencement** (履修開始年次)

1st year

**Semester** (履修期間)

Fall term

**Day/Period** (時間割)

Not decided

**Professor (Lecturer or Instructor)** (担当教員名)

ITO Katsura

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**Professor (E-Mail)** (担当教員)

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**Keyword for the subject** (キーワード)

pests, mites, life history, silk webs, predators, natural enemies, predator-prey interaction

**Content and Objective** (授業テーマと目的)

To introduce the behaviours and lifestyles of various spider mites that injure crops and other plants and their natural enemies, and learn predator-prey interaction in the agricultural ecosystem

**Teaching Materials** (教科書・参考書)

(No)

**Evaluation of Results** (成績評価の方法)

Attendance and reports

**Course Subject Title** (授業題目)

Advanced Biodiversity Management I  
Advanced Biodiversity Management II

**Course Subject Code** (申請コード)

1 B H14

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Lecture

**Year of commencement** (履修開始年次)

2nd year

**Semester** (履修期間)

Spring term

**Day/Period** (時間割)

Not decided

**Professor (Lecturer or Instructor)** (担当教員名)

SUZUKI Noriyuki

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**Professor (E-Mail)** (担当教員)

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**Keyword for the subject** (キーワード)

conservation, ecology, insect

**Content and Objective** (授業テーマと目的)

You will learn how biodiversity is maintained in ecological community and how the diversity can affect productivity and stability, which is important for conservation and biodiversity management.

**Teaching Materials** (教科書・参考書)

None

**Evaluation of Results** (成績評価の方法)

Short report

**Course Subject Title** (授業題目)

Advanced Ecological Biochemistry I  
Advanced Ecological Biochemistry II

**Course Subject Code** (申請コード)

1 B H1 5

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Lecture

**Year of commencement** (履修開始年次)

1st year

**Semester** (履修期間)

Spring term

**Day/Period** (時間割)

Not decided

**Professor (Lecturer or Instructor)** (担当教員名)

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**Keyword for the subject** (キーワード)

Chemical ecology, Ecology, Biochemistry,

**Content and Objective** (授業テーマと目的)

In the ecological biochemistry class, students learn about "semiochemicals". Nearly all organisms communicate through chemicals, and students will learn about the structural and functional diversity of these substances, as well as gain an understanding of how they control animal behavior and interact within ecosystems.

**Teaching Materials** (教科書・参考書)

None

**Evaluation of Results** (成績評価の方法)

Report

**Course Subject Title** (授業題目)

Advanced Agricultural Meteorology I  
Advanced Agricultural Meteorology II

**Course Subject Code** (申請コード)

1 B H1 6

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Lecture

**Year of commencement** (履修開始年次)

1st year

**Semester** (履修期間)

Fall term

**Day/Period** (時間割)

Not decided

**Professor (Lecturer or Instructor)** (担当教員名)

MORI Makito

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**Professor (E-Mail)** (担当教員)

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**Keyword for the subject** (キーワード)

Micro-meteorology, Local climate

**Content and Objective** (授業テーマと目的)

Understanding the microclimate in agro-ecosystems as an environmental factor

**Teaching Materials** (教科書・参考書)

Not decided

**Evaluation of Results** (成績評価の方法)

Assignment of report on related subjects

**Course Subject Title** (授業題目)

Advanced Plant Resources and Functional Science I  
Advanced Plant Resources and Functional Science II

**Course Subject Code** (申請コード)

1 B H1 7

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Lecture

**Year of commencement** (履修開始年次)

1st year

**Semester** (履修期間)

Spring term

**Day/Period** (時間割)

Not decided

**Professor (Lecturer or Instructor)** (担当教員名)

SAKATA Mitsukazu

**Professor (Affiliation/Research field)** (担当教員所属)

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**Professor (E-Mail)** (担当教員)

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**Keyword for the subject** (キーワード)

Genetic Resources, Plant Genetics, Plant Breeding

**Content and Objective** (授業テーマと目的)

Introduction to utilization and conservation of genetic resources / Introduction to plant genetics and breeding

**Teaching Materials** (教科書・参考書)

Printed synopsis

**Evaluation of Results** (成績評価の方法)

Submitting paper (report) after the course

**Course Subject Title** (授業題目)

Advanced lecture on forest products I

Advanced lecture on forest products II

**Course Subject Code** (申請コード)

1 B H1 8

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Lecture

**Year of commencement** (履修開始年次)

1st year

**Semester** (履修期間)

Fall term

**Day/Period** (時間割)

Not decided

**Professor (Lecturer or Instructor)** (担当教員名)

ICHIURA Hideaki

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**Keyword for the subject** (キーワード)

Cellulose, Pulp, Paper

**Content and Objective** (授業テーマと目的)

This lecture is that the science and industrial uses of cellulose produced from forest resources will be introduced.

**Teaching Materials** (教科書・参考書)

Computer projector,

**Evaluation of Results** (成績評価の方法)

Submitting paper (report) after the course

**Course Subject Title** (授業題目)

Advanced tropical forest tree ecophysiology I  
Advanced tropical forest tree ecophysiology II

**Course Subject Code** (申請コード)

1 B H19

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Lecture

**Year of commencement** (履修開始年次)

1st year

**Semester** (履修期間)

Spring term

**Day/Period** (時間割)

Intensive course in the fall term (Contact the lecturer to confirm the availability of the course.)

**Professor (Lecturer or Instructor)** (担当教員名)

ICHIE Tomoaki

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**Professor (E-Mail)** (担当教員)

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**Keyword for the subject** (キーワード)

Flowering, Photosynthesis, Environmental stress, Tree ecophysiology

**Content and Objective** (授業テーマと目的)

Physiological and morphological properties of tropical trees will be described from the viewpoint of environmental adaptation.

**Teaching Materials** (教科書・参考書)

Computer projector/Printed synopsis

**Evaluation of Results** (成績評価の方法)

Submitting report after the course



**Course Subject Title** (授業題目)

Advanced lecture on forest engineering I  
Advanced lecture on forest engineering II

**Course Subject Code** (申請コード)

1B H20

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Lecture

**Year of commencement** (履修開始年次)

1st year

**Semester** (履修期間)

Fall term

**Day/Period** (時間割)

Not decided

**Professor (Lecturer or Instructor)** (担当教員名)

SUZUKI Yasushi

**Professor (Affiliation/Research field)** (担当教員所属)

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**Professor (E-Mail)** (担当教員)

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**Keyword for the subject** (キーワード)

Forest engineering, forestry, statistical analysis, engineering mechanics, operational efficiency

**Content and Objective** (授業テーマと目的)

Basic statistical methods and advanced statistical methods, including design of experiments and analysis of variance (ANOVA), with practical application examples of these methods on data analysis of forestry, forest engineering, and especially forest operation systems. The lecture also focuses on basic engineering mechanics related to forest engineering.

**Teaching Materials** (教科書・参考書)

Printed synopsis/ Text: Zar, J.H. (1999) Biostatistical analysis, 4th ed. 663 pp, Prentice-Hall Inc., Upper Saddle River, NJ.

**Evaluation of Results** (成績評価の方法)

Submitting report after the course

**Course Subject Title** (授業題目)

Advanced Food Production Process Technology I  
Advanced Food Production Process Technology II

**Course Subject Code** (申請コード)

1B H23

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Lecture

**Year of commencement** (履修開始年次)

1st year

**Semester** (履修期間)

Spring term

**Day/Period** (時間割)

Friday/3rd (Contact the lecturer to confirm the availability of the course.)

**Professor (Lecturer or Instructor)** (担当教員名)

KAWANO Toshio

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**Professor (E-Mail)** (担当教員)

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**Keyword for the subject** (キーワード)

Food production process, Food analysis, Heat and mass transfer, Chemical engineering  
Unit operations

**Content and Objective** (授業テーマと目的)

Advanced study on the food production process, including physical and chemical reaction during the process

**Teaching Materials** (教科書・参考書)

F. P. Incropera, D. P. DE WITT: Fundamentals of Heat and Mass Transfer 3<sup>rd</sup> Ed., John Wiley & Sons Inc.

**Evaluation of Results** (成績評価の方法)

Submitting paper (report) after the course

**Course Subject Title** (授業題目)

Advanced Water Environmental Engineering I  
Advanced Water Environmental Engineering II

**Course Subject Code** (申請コード)

1B H24

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Lecture

**Year of commencement** (履修開始年次)

1st year

**Semester** (履修期間)

Fall term

**Day/Period** (時間割)

Intensive course in the fall term (Contact the lecturer to confirm the availability of the course.)

**Professor (Lecturer or Instructor)** (担当教員名)

IHARA Masaru

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**Professor (E-Mail)** (担当教員)

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**Keyword for the subject** (キーワード)

Sustainable Development Goals, Water environment, wastewater treatment technology

**Content and Objective** (授業テーマと目的)

Understanding sustainable development goals (SDGs) especially for water and sanitation issues

**Teaching Materials** (教科書・参考書)

Computer projector/Printed synopsis

**Evaluation of Results** (成績評価の方法)

Submitting paper (report) after the course

**Course Subject Title** (授業題目)

Advanced Environmental Water Management Engineering I

Advanced Environmental Water Management Engineering II

**Course Subject Code** (申請コード)

1B H27

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Lecture

**Year of commencement** (履修開始年次)

1st year

**Semester** (履修期間)

Spring Term

**Day/Period** (時間割)

Not decided (Contact the lecturer to confirm the availability of the course.)

**Professor (Lecturer or Instructor)** (担当教員名)

SATO Shushi

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**Professor (E-Mail)** (担当教員)

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**Keyword for the subject** (キーワード)

Water environment, Agricultural hydraulic structures, Performance verification method, Stock management

**Content and Objective** (授業テーマと目的)

Maintenance and Management of method for rural area; water quality management and facilities management for water supplying system

**Teaching Materials** (教科書・参考書)

Printed synopsis and Computer projector

**Evaluation of Results** (成績評価の方法)

Submitting paper (report) after the course

**Course Subject Title** (授業題目)

Advanced Geographic Information Science I

Advanced Geographic Information Science II

**Course Subject Code** (申請コード)

1B H29

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Lecture

**Year of commencement** (履修開始年次)

1st year

**Semester** (履修期間)

Spring term

**Day/Period** (時間割)

Not decided

**Professor (Lecturer or Instructor)** (担当教員名)

HASHIMOTO Naoyuki

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**Keyword for the subject** (キーワード)

Remote sensing

**Content and Objective** (授業テーマと目的)

The application of geographic information (remote sensing image, digital map, GNSS data, field survey etc.) for crop land is outlined in connection with the general features of each tool and data.

**Teaching Materials** (教科書・参考書)

Not decided

**Evaluation of Results** (成績評価の方法)

Reports

**Course Subject Title** (授業題目)

Advanced Plant Growth Environmental Science I  
Advanced Plant Growth Environmental Science II

**Course Subject Code** (申請コード)

1B L01

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Lecture

**Year of commencement** (履修開始年次)

1st year

**Semester** (履修期間)

Spring term

**Day/Period** (時間割)

Not decided

**Professor (Lecturer or Instructor)** (担当教員名)

MORITSUKA Naoki

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**Professor (E-Mail)** (担当教員)

moritsuka@kochi-u.ac.jp

**Keyword for the subject** (キーワード)

Sustainable plant production

**Content and Objective** (授業テーマと目的)

To discuss how we can achieve sustainable agriculture, this lecture introduces the history of fertilizers and their roles for improving soil fertility.

**Teaching Materials** (教科書・参考書)

Suitable papers will be provided.

**Evaluation of Results** (成績評価の方法)

Report (100%)

**Course Subject Title** (授業題目)

Advanced Plant Nutrition I

Advanced Plant Nutrition II

**Course Subject Code** (申請コード)

1B L02

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Lecture

**Year of commencement** (履修開始年次)

1st year

**Semester** (履修期間)

Spring term

**Day/Period** (時間割)

Not decided

**Professor (Lecturer or Instructor)** (担当教員名)

UENO Daisei

**Professor (Affiliation/Research field)** (担当教員所属)

Kochi University

**Professor (Telephone)** (担当教員電話)

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**Professor (E-Mail)** (担当教員)

daisei\_u@kochi-u.ac.jp

**Keyword for the subject** (キーワード)

Plant nutrition, mineral, microelement, uptake, transport, transporter

**Content and Objective** (授業テーマと目的)

This lecture introduces mechanisms of mineral nutrition in plants particularly focusing on microelement transport.

**Teaching Materials** (教科書・参考書)

Papers about mineral transport in plants will be appropriately provided.

**Evaluation of Results** (成績評価の方法)

Report (100%)

**Course Subject Title** (授業題目)

Advanced Soil Environmental Science I  
Advanced Soil Environmental Science II

**Course Subject Code** (申請コード)

1B L03

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Lecture

**Year of commencement** (履修開始年次)

1st year

**Semester** (履修期間)

Spring term

**Day/Period** (時間割)

Not decided

**Professor (Lecturer or Instructor)** (担当教員名)

KANG Yumei

**Professor (Affiliation/Research field)** (担当教員所属)

Kochi University / Soil environmental science

**Professor (Telephone)** (担当教員電話)

088-864-5182

**Professor (E-Mail)** (担当教員)

kang@kochi-u.ac.jp

**Keyword for the subject** (キーワード)

Soil, environment, pollution, heavy metals

**Content and Objective** (授業テーマと目的)

Soil properties and contamination affected by the tropical environment will be described in terms of physicochemical viewpoints.

**Teaching Materials** (教科書・参考書)

Soil in the environment, Elsevier

**Evaluation of Results** (成績評価の方法)

Class attitude and report quality



**Course Subject Title** (授業題目)

Advanced Soil Science and Ecology I

Advanced Soil Science and Ecology II

**Course Subject Code** (申請コード)

1B L04

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Lecture

**Year of commencement** (履修開始年次)

1st year

**Semester** (履修期間)

Spring term

**Day/Period** (時間割)

Not decided

**Professor (Lecturer or Instructor)** (担当教員名)

TANAKA Sota

**Professor (Affiliation/Research field)** (担当教員所属)

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088-864-5183

**Professor (E-Mail)** (担当教員)

sotatnk@kochi-u.ac.jp

**Keyword for the subject** (キーワード)

Soil science, Soil ecology, Tropical agriculture

**Content and Objective** (授業テーマと目的)

Fundamental soil science and ecology in terms of sustainable agriculture, especially the tropical region.

**Teaching Materials** (教科書・参考書)

Printed synopsis

**Evaluation of Results** (成績評価の方法)

Submitting report after the course

**Course Subject Title** (授業題目)

Advanced Plant-Microbe Interactions Study I

Advanced Plant-Microbe Interactions Study II

**Course Subject Code** (申請コード)

1B L05

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Lecture

**Year of commencement** (履修開始年次)

1st year

**Semester** (履修期間)

Fall term

**Day/Period** (時間割)

Not decided

**Professor (Lecturer or Instructor)** (担当教員名)

HIKICHI Yasufumi

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088-864-5218

**Professor (E-Mail)** (担当教員)

yhikichi@kochi-u.ac.jp

**Keyword for the subject** (キーワード)

Virulence, Immunity, Plant-microbe interactions

**Content and Objective** (授業テーマと目的)

Elucidation of plant-microbe interactions, especially virulence and immunity

**Teaching Materials** (教科書・参考書)

Computer projector

**Evaluation of Results** (成績評価の方法)

Submitting paper (report) after the course

**Course Subject Title** (授業題目)

Advanced Plant Pathology I

Advanced Plant Pathology II

**Course Subject Code** (申請コード)

1B L06

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Lecture

**Year of commencement** (履修開始年次)

1st year

**Semester** (履修期間)

Spring term

**Day/Period** (時間割)

Not decided

**Professor (Lecturer or Instructor)** (担当教員名)

KIBA Akinori

**Professor (Affiliation/Research field)** (担当教員所属)

Kochi University

**Professor (Telephone)** (担当教員電話)

088-864-5196

**Professor (E-Mail)** (担当教員)

akiba@kochi-u.ac.jp

**Keyword for the subject** (キーワード)

Plant, Pathogen, Interactions, Defense responses

**Content and Objective** (授業テーマと目的)

Introduction to plant-microbe interactions.

**Teaching Materials** (教科書・参考書)

Computer projector/OHP/Printed synopsis

**Evaluation of Results** (成績評価の方法)

Presentation and/or report

**Course Subject Title** (授業題目)

Advanced Animal Reproduction Technology I

Advanced Animal Reproduction Technology II

**Course Subject Code** (申請コード)

1B L07

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Lecture

**Year of commencement** (履修開始年次)

1st year

**Semester** (履修期間)

Fall term

**Day/Period** (時間割)

Intensive course in the fall term (Contact the lecturer to confirm the availability of the course.)

**Professor (Lecturer or Instructor)** (担当教員名)

EDASHIGE Keisuke

**Professor (Affiliation/Research field)** (担当教員所属)

Kochi University

**Professor (Telephone)** (担当教員電話)

088-864-5195

**Professor (E-Mail)** (担当教員)

keisuke@kochi-u.ac.jp

**Keyword for the subject** (キーワード)

cryopreservation, mouse, rat, sperm, oocyte, embryos

**Content and Objective** (授業テーマと目的)

Cryopreservation of sperm, oocytes, and embryos in laboratory animals

**Teaching Materials** (教科書・参考書)

Printed synopsis

**Evaluation of Results** (成績評価の方法)

Submitting paper (report) after the course

**Course Subject Title** (授業題目)

Advanced Biomaterials Chemistry I  
Advanced Biomaterials Chemistry II

**Course Subject Code** (申請コード)

1B L08

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Lecture

**Year of commencement** (履修開始年次)

1st year

**Semester** (履修期間)

Fall term

**Day/Period** (時間割)

Not decided (Contact the lecturer to confirm the availability of the course.)

**Professor (Lecturer or Instructor)** (担当教員名)

ASHIUCHI Makoto

**Professor (Affiliation/Research field)** (担当教員所属)

Kochi University/Tropical bioengineering

**Professor (Telephone)** (担当教員電話)

088-864-5144

**Professor (E-Mail)** (担当教員)

ashiuchi@kochi-u.ac.jp

**Keyword for the subject** (キーワード)

Biomaterials, Polymer chemistry, Bioengineering, Molecular microbiology, Industrial application

**Content and Objective** (授業テーマと目的)

The aim of this lesson is to enrich the knowledge of advanced biopolymer-materials that benefit to the development of smart (switchable) *meta*-plastics exhibiting biodegradability, catalysis, antimicrobial performance, and so on.

**Teaching Materials** (教科書・参考書)

PC projector/Printed synopsis

**Evaluation of Results** (成績評価の方法)

Submitting report after the course

**Course Subject Title** (授業題目)

Advanced Food Functional Chemistry I  
Advanced Food Functional Chemistry II

**Course Subject Code** (申請コード)

1B L11

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Lecture

**Year of commencement** (履修開始年次)

1st year

**Semester** (履修期間)

Spring term

**Day/Period** (時間割)

Intensive course in the spring term (Contact the lecturer to confirm the availability of the course.)

**Professor (Lecturer or Instructor)** (担当教員名)

KASHIWAGI Takehiro

**Professor (Affiliation/Research field)** (担当教員所属)

Kochi University/Food science

**Professor (Telephone)** (担当教員電話)

088-864-5184

**Professor (E-Mail)** (担当教員)

tkashi@kochi-u.ac.jp

**Keyword for the subject** (キーワード)

Organic chemical classification method, the biosynthetic pathway, and the chemical characteristics

**Content and Objective** (授業テーマと目的)

This course introduces the organic chemical classification method, the biosynthetic pathway, and the chemical characteristics of bioactive components in functional foods to students taking this course.

**Teaching Materials** (教科書・参考書)

Computer projector/ Printed synopsis

**Evaluation of Results** (成績評価の方法)

Your overall grade in the class will be decided based on the following:

- Class attendance and attitude in class: 30%
- Submitting report after the course 80%

**Course Subject Title** (授業題目)

Advanced Food Chemistry I

Advanced Food Chemistry II

**Course Subject Code** (申請コード)

1B L12

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Lecture

**Year of commencement** (履修開始年次)

1st year

**Semester** (履修期間)

Spring term

**Day/Period** (時間割)

Not decided

**Professor (Lecturer or Instructor)** (担当教員名)

SHIMAMURA Tomoko

**Professor (Affiliation/Research field)** (担当教員所属)

Kochi University/Food science

**Professor (Telephone)** (担当教員電話)

088-864-5193 (SHIMAMURA Tomoko)

**Professor (E-Mail)** (担当教員)

tomokos@kochi-u.ac.jp (SHIMAMURA Tomoko)

**Keyword for the subject** (キーワード)

Food, Heating, Maillard reaction, Reactive oxygen species

**Content and Objective** (授業テーマと目的)

The interaction between components in foods is discussed in relation with food processing and advanced food processing technology

**Teaching Materials** (教科書・参考書)

Computer projector /Printed synopsis

**Evaluation of Results** (成績評価の方法)

Submitting report after the course

**Course Subject Title** (授業題目)

Advanced Microbial Molecular Genetics I  
Advanced Microbial Molecular Genetics II

**Course Subject Code** (申請コード)

1B L15

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Lecture

**Year of commencement** (履修開始年次)

1st year

**Semester** (履修期間)

Spring term

**Day/Period** (時間割)

Not decided

**Professor (Lecturer or Instructor)** (担当教員名)

OHNISHI Kouhei

**Professor (Affiliation/Research field)** (担当教員所属)

Kochi University/Molecular genetics

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088-864-5213

**Professor (E-Mail)** (担当教員)

kouheio@kochi-u.ac.jp

**Keyword for the subject** (キーワード)

Molecular genetics, Microbiology, Cloning

**Content and Objective** (授業テーマと目的)

To learn how the microbial molecular genetics have been studied by reading several scientific papers.

**Teaching Materials** (教科書・参考書)

Not specified. Providing lecture materials

**Evaluation of Results** (成績評価の方法)

Evaluating the submitted reports (80%) and the attitude at the lecture (20%)



**Course Subject Title** (授業題目)

Plant Growth Environmental Science Laboratory I  
Plant Growth Environmental Science Laboratory II

**Course Subject Code** (申請コード)

1B N01

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Experiment

**Year of commencement** (履修開始年次)

1st year

**Semester** (履修期間)

Fall term

**Day/Period** (時間割)

Not decided

**Professor (Lecturer or Instructor)** (担当教員名)

MORITSUKA Naoki

**Professor (Affiliation/Research field)** (担当教員所属)

Kochi University

**Professor (Telephone)** (担当教員電話)

088-864-5180

**Professor (E-Mail)** (担当教員)

moritsuka@kochi-u.ac.jp

**Keyword for the subject** (キーワード)

Soil science and plant nutrition

**Content and Objective** (授業テーマと目的)

This lecture tells you how to collect samples from fields, how to analyze them in the laboratory, and how to summarize and/or interpret obtained data.

**Teaching Materials** (教科書・参考書)

Suitable protocols will be provided.

**Evaluation of Results** (成績評価の方法)

Reports (100%)

**Course Subject Title** (授業題目)

Plant Growth Environmental Science Laboratory III

Plant Growth Environmental Science Laboratory IV

**Course Subject Code** (申請コード)

1B N02

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Experiment

**Year of commencement** (履修開始年次)

1st year

**Semester** (履修期間)

Spring term

**Day/Period** (時間割)

Not decided

**Professor (Lecturer or Instructor)** (担当教員名)

MORITSUKA Naoki

**Professor (Affiliation/Research field)** (担当教員所属)

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**Professor (Telephone)** (担当教員電話)

088-864-5180

**Professor (E-Mail)** (担当教員)

moritsuka@kochi-u.ac.jp

**Keyword for the subject** (キーワード)

Soil science and plant nutrition

**Content and Objective** (授業テーマと目的)

This lecture tells you how to collect samples from fields, how to analyze them in the laboratory, and how to summarize and/or interpret obtained data.

**Teaching Materials** (教科書・参考書)

Suitable protocols will be provided.

**Evaluation of Results** (成績評価の方法)

Reports (100%)

**Course Subject Title** (授業題目)

Plant Growth Environmental Science Laboratory V

Plant Growth Environmental Science Laboratory VI

**Course Subject Code** (申請コード)

1B N03

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Experiment

**Year of commencement** (履修開始年次)

2nd year

**Semester** (履修期間)

Fall term

**Day/Period** (時間割)

Not decided

**Professor (Lecturer or Instructor)** (担当教員名)

MORITSUKA Naoki

**Professor (Affiliation/Research field)** (担当教員所属)

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**Professor (Telephone)** (担当教員電話)

088-864-5180

**Professor (E-Mail)** (担当教員)

moritsuka@kochi-u.ac.jp

**Keyword for the subject** (キーワード)

Soil science and plant nutrition

**Content and Objective** (授業テーマと目的)

This lecture tells you how to collect samples from fields, how to analyze them in the laboratory, and how to summarize and/or interpret obtained data.

**Teaching Materials** (教科書・参考書)

Suitable protocols will be provided.

**Evaluation of Results** (成績評価の方法)

Reports (100%)

**Course Subject Title** (授業題目)

Plant Growth Environmental Science Laboratory VII

Plant Growth Environmental Science Laboratory VIII

**Course Subject Code** (申請コード)

1B N04

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Experiment

**Year of commencement** (履修開始年次)

2nd year

**Semester** (履修期間)

Spring term

**Day/Period** (時間割)

Not decided

**Professor (Lecturer or Instructor)** (担当教員名)

MORITSUKA Naoki

**Professor (Affiliation/Research field)** (担当教員所属)

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**Professor (Telephone)** (担当教員電話)

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**Professor (E-Mail)** (担当教員)

moritsuka@kochi-u.ac.jp

**Keyword for the subject** (キーワード)

Soil science and plant nutrition

**Content and Objective** (授業テーマと目的)

This lecture tells you how to collect samples from fields, how to analyze them in the laboratory, and how to summarize and/or interpret obtained data.

**Teaching Materials** (教科書・参考書)

Suitable protocols will be provided.

**Evaluation of Results** (成績評価の方法)

Reports (100%)

**Course Subject Title** (授業題目)

Plant Nutrition Laboratory I

Plant Nutrition Laboratory II

**Course Subject Code** (申請コード)

1B N05

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Experiment

**Year of commencement** (履修開始年次)

1st year

**Semester** (履修期間)

Fall term

**Day/Period** (時間割)

Not decided

**Professor (Lecturer or Instructor)** (担当教員名)

UENO Daisei

**Professor (Affiliation/Research field)** (担当教員所属)

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**Professor (Telephone)** (担当教員電話)

088-864-5179

**Professor (E-Mail)** (担当教員)

daisei\_u@kochi-u.ac.jp

**Keyword for the subject** (キーワード)

Plant culture, hydroponics, mineral deficiency or excess treatment, harvest index

**Content and Objective** (授業テーマと目的)

Learning how to

- culture plants in nutrient solution and soil.
- treat plants to mineral deficiency or excess.
- calculate harvest index.

**Teaching Materials** (教科書・参考書)

Manuals will be appropriately provided.

**Evaluation of Results** (成績評価の方法)

Report (100%)

**Course Subject Title** (授業題目)

Plant Nutrition Laboratory III

Plant Nutrition Laboratory IV

**Course Subject Code** (申請コード)

1B N06

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Experiment

**Year of commencement** (履修開始年次)

1st year

**Semester** (履修期間)

Spring term

**Day/Period** (時間割)

Not decided

**Professor (Lecturer or Instructor)** (担当教員名)

UENO Daisei

**Professor (Affiliation/Research field)** (担当教員所属)

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088-864-5179

**Professor (E-Mail)** (担当教員)

daisei\_u@kochi-u.ac.jp

**Keyword for the subject** (キーワード)

DNA, mRNA, extraction, sequencing, real time RT-PCR

**Content and Objective** (授業テーマと目的)

Learning how to

- extract genomic DNA and total RNA from plant tissue.
- amplify DNA or cDNA fragments using PCR.
- sequence PCR products using DNA sequencer.
- quantify mRNA level of some gene using real time RT-PCR.

**Teaching Materials** (教科書・参考書)

Manuals will be appropriately provided.

**Evaluation of Results** (成績評価の方法)

Report (100%)

**Course Subject Title** (授業題目)

Plant Nutrition Laboratory V

Plant Nutrition Laboratory VI

**Course Subject Code** (申請コード)

1B N07

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Experiment

**Year of commencement** (履修開始年次)

2nd year

**Semester** (履修期間)

Fall term

**Day/Period** (時間割)

Not decided

**Professor (Lecturer or Instructor)** (担当教員名)

UENO Daisei

**Professor (Affiliation/Research field)** (担当教員所属)

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**Professor (E-Mail)** (担当教員)

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**Keyword for the subject** (キーワード)

Chlorophyll, photosynthesis, atomic absorption spectrometry (AAS), inductively coupled plasma atomic emission spectroscopy (ICP-AES)

**Content and Objective** (授業テーマと目的)

Learning how to determine

- chlorophyll concentration in leaves
- photosynthetic rate
- mineral concentration in plant tissue using AAS or ICP-AES

**Teaching Materials** (教科書・参考書)

Manuals will be appropriately provided.

**Evaluation of Results** (成績評価の方法)

Report (100%)

**Course Subject Title** (授業題目)

Plant Nutrition Laboratory VII

Plant Nutrition Laboratory VIII

**Course Subject Code** (申請コード)

1B N08

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Experiment

**Year of commencement** (履修開始年次)

2nd year

**Semester** (履修期間)

Spring term

**Day/Period** (時間割)

Not decided

**Professor (Lecturer or Instructor)** (担当教員名)

UENO Daisei

**Professor (Affiliation/Research field)** (担当教員所属)

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**Professor (Telephone)** (担当教員電話)

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**Professor (E-Mail)** (担当教員)

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**Keyword for the subject** (キーワード)

plasmid construction, transformation, heterologous expression

**Content and Objective** (授業テーマと目的)

Learning how to

- construct plasmid for various experiment.
- introduce plasmid into bacteria and plants
- study gene function using heterologous expression system.

**Teaching Materials** (教科書・参考書)

Manuals will be appropriately provided.

**Evaluation of Results** (成績評価の方法)

Report (100%)



**Course Subject Title** (授業題目)

Soil Environmental Science Laboratory I

Soil Environmental Science Laboratory II

**Course Subject Code** (申請コード)

1B N09

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Experiment

**Year of commencement** (履修開始年次)

1st year

**Semester** (履修期間)

Fall term

**Day/Period** (時間割)

Not decided

**Professor (Lecturer or Instructor)** (担当教員名)

KANG Yumei

**Professor (Affiliation/Research field)** (担当教員所属)

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**Professor (Telephone)** (担当教員電話)

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**Professor (E-Mail)** (担当教員)

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**Keyword for the subject** (キーワード)

Soil, moisture, clay, silt sand, aggregate

**Content and Objective** (授業テーマと目的)

Learn analyzing methods of physical parameters and understand soil physical properties

**Teaching Materials** (教科書・参考書)

Methods of Soil Analysis: Part 1 Physical and Mineralogical Methods, 5.1 ; SSSA Book Series

**Evaluation of Results** (成績評価の方法)

Experiment attitude and report quality

**Course Subject Title** (授業題目)

Soil Environmental Science Laboratory III

Soil Environmental Science Laboratory IV

**Course Subject Code** (申請コード)

1B N10

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Experiment

**Year of commencement** (履修開始年次)

1st year

**Semester** (履修期間)

Spring term

**Day/Period** (時間割)

Not decided

**Professor (Lecturer or Instructor)** (担当教員名)

KANG Yumei

**Professor (Affiliation/Research field)** (担当教員所属)

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**Professor (Telephone)** (担当教員電話)

088-864-5182

**Professor (E-Mail)** (担当教員)

kang@kochi-u.ac.jp

**Keyword for the subject** (キーワード)

Soil, organic matter, CEC, cation, anion

**Content and Objective** (授業テーマと目的)

Learn analyzing methods of chemical parameters and understand soil chemical properties

**Teaching Materials** (教科書・参考書)

Methods of Soil Analysis: Part 3 Chemical Methods, 5.3; SSSA Book Series

**Evaluation of Results** (成績評価の方法)

Experiment attitude and report quality

**Course Subject Title** (授業題目)

Soil Environmental Science Laboratory V  
Soil Environmental Science Laboratory VI

**Course Subject Code** (申請コード)

1B N11

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Experiment

**Year of commencement** (履修開始年次)

2nd year

**Semester** (履修期間)

Fall term

**Day/Period** (時間割)

Not decided

**Professor (Lecturer or Instructor)** (担当教員名)

KANG Yumei

**Professor (Affiliation/Research field)** (担当教員所属)

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**Professor (E-Mail)** (担当教員)

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**Keyword for the subject** (キーワード)

Soil, water, contamination, heavy metals

**Content and Objective** (授業テーマと目的)

Learn analyzing methods of heavy metals and understand heavy metal's dynamic in soil

**Teaching Materials** (教科書・参考書)

Heavy Metals in Soils: Trace Metals and Metalloids in Soils and their Bioavailability. Springer

**Evaluation of Results** (成績評価の方法)

Experiment attitude and report quality

**Course Subject Title** (授業題目)

Soil Environmental Science Laboratory VII  
Soil Environmental Science Laboratory VIII

**Course Subject Code** (申請コード)

1B N12

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Experiment

**Year of commencement** (履修開始年次)

2nd year

**Semester** (履修期間)

Spring term

**Day/Period** (時間割)

Not decided

**Professor (Lecturer or Instructor)** (担当教員名)

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**Keyword for the subject** (キーワード)

Soil, water, plant, ecosystem, remediation

**Content and Objective** (授業テーマと目的)

Learn analyzing methods of environmental materials and understand remediation techniques for environment and ecosystem

**Teaching Materials** (教科書・参考書)

Phytoremediation of Soil and Water Contaminants, Amer Chemical Society

**Evaluation of Results** (成績評価の方法)

Experiment attitude and report quality

**Course Subject Title** (授業題目)

Soil Science Laboratory I

Soil Science Laboratory II

**Course Subject Code** (申請コード)

1B N13

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Experiment

**Year of commencement** (履修開始年次)

1st year

**Semester** (履修期間)

Fall term

**Day/Period** (時間割)

Not decided

**Professor (Lecturer or Instructor)** (担当教員名)

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**Keyword for the subject** (キーワード)

Soil science, Soil chemical analysis, Soil physical analysis

**Content and Objective** (授業テーマと目的)

Soil physicochemical analyses required for soil characterization and fertility assessment

**Teaching Materials** (教科書・参考書)

Printed synopsis

**Evaluation of Results** (成績評価の方法)

Submitting report after the course

**Course Subject Title** (授業題目)

Soil Science Laboratory III

Soil Science Laboratory IV

**Course Subject Code** (申請コード)

1B N14

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Experiment

**Year of commencement** (履修開始年次)

1st year

**Semester** (履修期間)

Spring term

**Day/Period** (時間割)

Not decided

**Professor (Lecturer or Instructor)** (担当教員名)

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**Keyword for the subject** (キーワード)

Soil science, Soil chemical analysis, Soil physical analysis

**Content and Objective** (授業テーマと目的)

Soil physicochemical analyses required for soil characterization and fertility assessment

**Teaching Materials** (教科書・参考書)

Printed synopsis

**Evaluation of Results** (成績評価の方法)

Submitting report after the course

**Course Subject Title** (授業題目)

Soil Science Laboratory V

Soil Science Laboratory VI

**Course Subject Code** (申請コード)

1B N15

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Experiment

**Year of commencement** (履修開始年次)

2nd year

**Semester** (履修期間)

Fall term

**Day/Period** (時間割)

Not decided

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**Keyword for the subject** (キーワード)

Soil science, Soil chemical analysis, Soil physical analysis

**Content and Objective** (授業テーマと目的)

Soil physicochemical analyses required for soil characterization and fertility assessment

**Teaching Materials** (教科書・参考書)

Printed synopsis

**Evaluation of Results** (成績評価の方法)

Submitting report after the course

**Course Subject Title** (授業題目)

Soil Science Laboratory VII

Soil Science Laboratory VIII

**Course Subject Code** (申請コード)

1B N16

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Experiment

**Year of commencement** (履修開始年次)

2nd year

**Semester** (履修期間)

Spring term

**Day/Period** (時間割)

Not decided

**Professor (Lecturer or Instructor)** (担当教員名)

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**Keyword for the subject** (キーワード)

Soil science, Soil chemical analysis, Soil physical analysis

**Content and Objective** (授業テーマと目的)

Soil physicochemical analyses required for soil characterization and fertility assessment

**Teaching Materials** (教科書・参考書)

Printed synopsis

**Evaluation of Results** (成績評価の方法)

Submitting report after the course



**Course Subject Title** (授業題目)

Plant-Microbe Interactions Study seminar Laboratory I

Plant-Microbe Interactions Study seminar Laboratory II

**Course Subject Code** (申請コード)

1B N17

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Experiment

**Year of commencement** (履修開始年次)

1st year

**Semester** (履修期間)

Fall term

**Day/Period** (時間割)

Not decided

**Professor (Lecturer or Instructor)** (担当教員名)

HIKICHI Yasufumi

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**Professor (E-Mail)** (担当教員)

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**Keyword for the subject** (キーワード)

Virulence, Immunity, Plant-microbe interactions

**Content and Objective** (授業テーマと目的)

Understanding of pathogen infectious routes into host plants

**Teaching Materials** (教科書・参考書)

Computer projector

**Evaluation of Results** (成績評価の方法)

Submitting paper (report) after the course

**Course Subject Title** (授業題目)

Plant-Microbe Interactions Study seminar Laboratory III

Plant-Microbe Interactions Study seminar Laboratory IV

**Course Subject Code** (申請コード)

1B N18

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Experiment

**Year of commencement** (履修開始年次)

1st year

**Semester** (履修期間)

Spring term

**Day/Period** (時間割)

Not decided

**Professor (Lecturer or Instructor)** (担当教員名)

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**Keyword for the subject** (キーワード)

Virulence, Immunity, Plant-microbe interactions

**Content and Objective** (授業テーマと目的)

Understanding host responses infected with pathogens and their mechanisms

**Teaching Materials** (教科書・参考書)

Computer projector

**Evaluation of Results** (成績評価の方法)

Submitting paper (report) after the course

**Course Subject Title** (授業題目)

Plant-Microbe Interactions Study seminar Laboratory V

Plant-Microbe Interactions Study seminar Laboratory VI

**Course Subject Code** (申請コード)

1B N19

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Experiment

**Year of commencement** (履修開始年次)

2nd year

**Semester** (履修期間)

Fall term

**Day/Period** (時間割)

Not decided

**Professor (Lecturer or Instructor)** (担当教員名)

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**Keyword for the subject** (キーワード)

Virulence, Immunity, Plant-microbe interactions

**Content and Objective** (授業テーマと目的)

Understanding virulence mechanisms of pathogens

**Teaching Materials** (教科書・参考書)

Computer projector

**Evaluation of Results** (成績評価の方法)

Submitting paper (report) after the course

**Course Subject Title** (授業題目)

Plant-Microbe Interactions Study seminar Laboratory VII

Plant-Microbe Interactions Study seminar Laboratory VIII

**Course Subject Code** (申請コード)

1B N20

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Experiment

**Year of commencement** (履修開始年次)

2nd year

**Semester** (履修期間)

Spring term

**Day/Period** (時間割)

Not decided

**Professor (Lecturer or Instructor)** (担当教員名)

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**Professor (E-Mail)** (担当教員)

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**Keyword for the subject** (キーワード)

Virulence, Immunity, Plant-microbe interactions

**Content and Objective** (授業テーマと目的)

Understanding mechanisms of Plant-microbe interactions

**Teaching Materials** (教科書・参考書)

Computer projector

**Evaluation of Results** (成績評価の方法)

Submitting paper (report) after the course

**Course Subject Title** (授業題目)

Plant Pathology Laboratory I

Plant Pathology Laboratory II

**Course Subject Code** (申請コード)

1B N21

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Experiment

**Year of commencement** (履修開始年次)

1st year

**Semester** (履修期間)

Fall term

**Day/Period** (時間割)

Not decided

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**Keyword for the subject** (キーワード)

Plant, Pathogen, Interactions, Defense responses

**Content and Objective** (授業テーマと目的)

Plant-microbe interactions.

**Teaching Materials** (教科書・参考書)

Computer projector/Printed synopsis

**Evaluation of Results** (成績評価の方法)

Presentation and/or report

**Course Subject Title** (授業題目)

Plant Pathology Laboratory III

Plant Pathology Laboratory IV

**Course Subject Code** (申請コード)

1B N22

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Experiment

**Year of commencement** (履修開始年次)

1st year

**Semester** (履修期間)

Spring term

**Day/Period** (時間割)

Not decided

**Professor (Lecturer or Instructor)** (担当教員名)

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**Keyword for the subject** (キーワード)

Plant, Pathogen, Interactions, Defense responses

**Content and Objective** (授業テーマと目的)

Plant-microbe interactions.

**Teaching Materials** (教科書・参考書)

Computer projector/Printed synopsis

**Evaluation of Results** (成績評価の方法)

Presentation and/or report

**Course Subject Title** (授業題目)

Plant Pathology Laboratory V

Plant Pathology Laboratory VI

**Course Subject Code** (申請コード)

1B N23

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Experiment

**Year of commencement** (履修開始年次)

2nd year

**Semester** (履修期間)

Fall term

**Day/Period** (時間割)

Not decided

**Professor (Lecturer or Instructor)** (担当教員名)

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**Keyword for the subject** (キーワード)

Plant, Pathogen, Interactions, Defense responses

**Content and Objective** (授業テーマと目的)

Plant-microbe interactions.

**Teaching Materials** (教科書・参考書)

Computer projector/Printed synopsis

**Evaluation of Results** (成績評価の方法)

Presentation and/or report

**Course Subject Title** (授業題目)

Plant Pathology Laboratory VII

Plant Pathology Laboratory VIII

**Course Subject Code** (申請コード)

1B N24

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Experiment

**Year of commencement** (履修開始年次)

2nd year

**Semester** (履修期間)

Spring term

**Day/Period** (時間割)

Not decided

**Professor (Lecturer or Instructor)** (担当教員名)

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**Keyword for the subject** (キーワード)

Plant, Pathogen, Interactions, Defense responses

**Content and Objective** (授業テーマと目的)

Plant-microbe interactions.

**Teaching Materials** (教科書・参考書)

Computer projector/Printed synopsis

**Evaluation of Results** (成績評価の方法)

Presentation and/or report



**Course Subject Title** (授業題目)

Animal Reproduction Technology Laboratory I

Animal Reproduction Technology Laboratory II

**Course Subject Code** (申請コード)

1B N25

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Experiment

**Year of commencement** (履修開始年次)

1st year

**Semester** (履修期間)

Fall term

**Day/Period** (時間割)

Intensive course in the fall term (Contact the lecturer to confirm the availability of the course.)

**Professor (Lecturer or Instructor)** (担当教員名)

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**Professor (E-Mail)** (担当教員)

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**Keyword for the subject** (キーワード)

cryopreservation, mouse, rat, oocyte, embryos

**Content and Objective** (授業テーマと目的)

Cryopreservation of oocytes and embryos in laboratory animals

**Teaching Materials** (教科書・参考書)

Printed synopsis

**Evaluation of Results** (成績評価の方法)

Submitting paper (report) after the course

**Course Subject Title** (授業題目)

Animal Reproduction Technology Laboratory III

Animal Reproduction Technology Laboratory IV

**Course Subject Code** (申請コード)

1B N26

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Experiment

**Year of commencement** (履修開始年次)

1st year

**Semester** (履修期間)

Spring term

**Day/Period** (時間割)

Intensive course in the fall term (Contact the lecturer to confirm the availability of the course.)

**Professor (Lecturer or Instructor)** (担当教員名)

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**Professor (E-Mail)** (担当教員)

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**Keyword for the subject** (キーワード)

cryopreservation, cattle, pig, oocyte, embryos

**Content and Objective** (授業テーマと目的)

Cryopreservation of oocytes and embryos in farm animals.

**Teaching Materials** (教科書・参考書)

Printed synopsis

**Evaluation of Results** (成績評価の方法)

Submitting paper (report) after the course

**Course Subject Title** (授業題目)

Animal Reproduction Technology Laboratory V  
Animal Reproduction Technology Laboratory VI

**Course Subject Code** (申請コード)

1B N27

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Experiment

**Year of commencement** (履修開始年次)

2nd year

**Semester** (履修期間)

Fall term

**Day/Period** (時間割)

Intensive course in the fall term (Contact the lecturer to confirm the availability of the course.)

**Professor (Lecturer or Instructor)** (担当教員名)

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**Professor (E-Mail)** (担当教員)

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**Keyword for the subject** (キーワード)

permeability of the plasma membrane, mouse, rat, sperm, oocyte, embryos

**Content and Objective** (授業テーマと目的)

Cryobiological properties of oocytes and embryos in laboratory animals

**Teaching Materials** (教科書・参考書)

Printed synopsis

**Evaluation of Results** (成績評価の方法)

Submitting paper (report) after the course

**Course Subject Title** (授業題目)

Animal Reproduction Technology Laboratory VII

Animal Reproduction Technology Laboratory VIII

**Course Subject Code** (申請コード)

1B N28

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Experiment

**Year of commencement** (履修開始年次)

2nd year

**Semester** (履修期間)

Spring term

**Day/Period** (時間割)

Intensive course in the fall term (Contact the lecturer to confirm the availability of the course.)

**Professor (Lecturer or Instructor)** (担当教員名)

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**Keyword for the subject** (キーワード)

permeability of the plasma membrane, cattle, pig, sperm, oocyte, embryos

**Content and Objective** (授業テーマと目的)

Cryobiological properties of oocytes and embryos in farm animals

**Teaching Materials** (教科書・参考書)

Printed synopsis

**Evaluation of Results** (成績評価の方法)

Submitting paper (report) after the course

**Course Subject Title** (授業題目)

Biomaterials Chemistry Laboratory I

Biomaterials Chemistry Laboratory II

**Course Subject Code** (申請コード)

1B N29

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Experiment

**Year of commencement** (履修開始年次)

1st year

**Semester** (履修期間)

Fall term

**Day/Period** (時間割)

Not decided (Contact the lecturer to confirm the availability of the course.)

**Professor (Lecturer or Instructor)** (担当教員名)

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**Keyword for the subject** (キーワード)

Biomaterials, Polymer chemistry, Bioengineering, Molecular microbiology, Industrial application

**Content and Objective** (授業テーマと目的)

Guidance of technical skills in advanced biopolymer-materials that benefit to the development of smart (switchable) *meta*-plastics exhibiting biodegradability, catalysis, antimicrobial performance, and so on.

**Teaching Materials** (教科書・参考書)

PC projector/Printed synopsis

**Evaluation of Results** (成績評価の方法)

Submitting report after the course

**Course Subject Title** (授業題目)

Biomaterials Chemistry Laboratory III

Biomaterials Chemistry Laboratory IV

**Course Subject Code** (申請コード)

1B N30

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Experiment

**Year of commencement** (履修開始年次)

1st year

**Semester** (履修期間)

Spring term

**Day/Period** (時間割)

Not decided (Contact the lecturer to confirm the availability of the course.)

**Professor (Lecturer or Instructor)** (担当教員名)

ASHIUCHI Makoto

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**Keyword for the subject** (キーワード)

Biomaterials, Polymer chemistry, Bioengineering, Molecular microbiology, Industrial application

**Content and Objective** (授業テーマと目的)

Guidance of technical skills in advanced biopolymer-materials that benefit to the development of smart (switchable) *meta*-plastics exhibiting biodegradability, catalysis, antimicrobial performance, and so on.

**Teaching Materials** (教科書・参考書)

PC projector/Printed synopsis

**Evaluation of Results** (成績評価の方法)

Submitting report after the course

**Course Subject Title** (授業題目)

Biomaterials Chemistry Laboratory V

Biomaterials Chemistry Laboratory VI

**Course Subject Code** (申請コード)

1B N31

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Experiment

**Year of commencement** (履修開始年次)

2nd year

**Semester** (履修期間)

Fall term

**Day/Period** (時間割)

Not decided (Contact the lecturer to confirm the availability of the course.)

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**Professor (E-Mail)** (担当教員)

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**Keyword for the subject** (キーワード)

Biomaterials, Polymer chemistry, Bioengineering, Molecular microbiology, Industrial application

**Content and Objective** (授業テーマと目的)

Guidance of technical skills in advanced biopolymer-materials that benefit to the development of smart (switchable) *meta*-plastics exhibiting biodegradability, catalysis, antimicrobial performance, and so on.

**Teaching Materials** (教科書・参考書)

PC projector/Printed synopsis

**Evaluation of Results** (成績評価の方法)

Submitting report after the course

**Course Subject Title** (授業題目)

Biomaterials Chemistry Laboratory VII

Biomaterials Chemistry Laboratory VIII

**Course Subject Code** (申請コード)

1B N32

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Experiment

**Year of commencement** (履修開始年次)

2nd year

**Semester** (履修期間)

Spring term

**Day/Period** (時間割)

Not decided (Contact the lecturer to confirm the availability of the course.)

**Professor (Lecturer or Instructor)** (担当教員名)

ASHIUCHI Makoto

**Professor (Affiliation/Research field)** (担当教員所属)

Kochi University/Tropical bioengineering

**Professor (Telephone)** (担当教員電話)

088-864-5215

**Professor (E-Mail)** (担当教員)

ashiuchi@kochi-u.ac.jp

**Keyword for the subject** (キーワード)

Biomaterials, Polymer chemistry, Bioengineering, Molecular microbiology, Industrial application

**Content and Objective** (授業テーマと目的)

Guidance of technical skills in advanced biopolymer-materials that benefit to the development of smart (switchable) *meta*-plastics exhibiting biodegradability, catalysis, antimicrobial performance, and so on.

**Teaching Materials** (教科書・参考書)

PC projector/Printed synopsis

**Evaluation of Results** (成績評価の方法)

Submitting report after the course



**Course Subject Title** (授業題目)

Food Functional Chemistry Laboratory I  
Food Functional Chemistry Laboratory II

**Course Subject Code** (申請コード)

1B N41

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Experiment

**Year of commencement** (履修開始年次)

1st year

**Semester** (履修期間)

Fall term

**Day/Period** (時間割)

Intensive course in the fall term (Contact the lecturer to confirm the availability of the course.)

**Professor (Lecturer or Instructor)** (担当教員名)

KASHIWAGI Takehiro

**Professor (Affiliation/Research field)** (担当教員所属)

Kochi University/Food science

**Professor (Telephone)** (担当教員電話)

088-864-5184

**Professor (E-Mail)** (担当教員)

tkashi@kochi-u.ac.jp

**Keyword for the subject** (キーワード)

Extraction, normal/reversed phase column chromatography, and bioassay

**Content and Objective** (授業テーマと目的)

This course introduces theory related to the basic technology necessary for exploring the functionality of food to students taking this course.

For example

- Method of extracting the target ingredient from food
- Various chromatographic theories for isolating the active ingredient from the extract
- Various enzyme test cell test and other bioassay
- Actual application examples

**Evaluation of Results** (成績評価の方法)

Your overall grade in the class will be decided based on the following:

- Class attendance and attitude in class: 30%
- Presentation 80%

**Course Subject Title** (授業題目)

Food Functional Chemistry Laboratory III

Food Functional Chemistry Laboratory IV

**Course Subject Code** (申請コード)

1B N42

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Experiment

**Year of commencement** (履修開始年次)

1st year

**Semester** (履修期間)

Spring term

**Day/Period** (時間割)

Intensive course in the spring term (Contact the lecturer to confirm the availability of the course.)

**Professor (Lecturer or Instructor)** (担当教員名)

KASHIWAGI Takehiro

**Professor (Affiliation/Research field)** (担当教員所属)

Kochi University/Food science

**Professor (Telephone)** (担当教員電話)

088-864-5184

**Professor (E-Mail)** (担当教員)

tkashi@kochi-u.ac.jp

**Keyword for the subject** (キーワード)

Molecular structure analysis of low molecular weight compounds

**Content and Objective** (授業テーマと目的)

This course introduces instrumental analysis methods for identifying ingredients involved in food functionality to students taking this course.

Ultraviolet-visible absorption spectrum

Infrared absorption spectrum

Gas chromatography-mass spectrometry

<sup>1</sup>H- / <sup>13</sup>C Nuclear Magnetic Resonance Spectrum

**Teaching Materials** (教科書・参考書)

Computer projector/ Printed synopsis

**Evaluation of Results** (成績評価の方法)

Your overall grade in the class will be decided based on the following:

- Class attendance and attitude in class: 20%

- Practice problem: 80%

**Course Subject Title** (授業題目)

Food Functional Chemistry Laboratory V

Food Functional Chemistry Laboratory VI

**Course Subject Code** (申請コード)

1B N43

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Experiment

**Year of commencement** (履修開始年次)

2nd year

**Semester** (履修期間)

Fall term

**Day/Period** (時間割)

Intensive course in the fall term (Contact the lecturer to confirm the availability of the course.)

**Professor (Lecturer or Instructor)** (担当教員名)

KASHIWAGI Takehiro

**Professor (Affiliation/Research field)** (担当教員所属)

Kochi University/Food science

**Professor (Telephone)** (担当教員電話)

088-864-5184

**Professor (E-Mail)** (担当教員)

tkashi@kochi-u.ac.jp

**Keyword for the subject** (キーワード)

Extraction, normal/reversed phase column chromatography, and bioassay

**Content and Objective** (授業テーマと目的)

This course introduces theory related to the basic technology necessary for exploring the functionality of food to students taking this course.

For example

- Method of extracting the target ingredient from food
- Various chromatographic theories for isolating the active ingredient from the extract
- Various enzyme test cell test and other bioassay
- Actual application examples

**Teaching Materials** (教科書・参考書)

Computer projector/ Printed synopsis

**Evaluation of Results** (成績評価の方法)

Your overall grade in the class will be decided based on the following:

- Class attendance and attitude in class: 30%
- Presentation 80%

**Course Subject Title** (授業題目)

Food Functional Chemistry Laboratory VII

Food Functional Chemistry Laboratory VIII

**Course Subject Code** (申請コード)

1B N44

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Experiment

**Year of commencement** (履修開始年次)

2nd year

**Semester** (履修期間)

Spring term

**Day/Period** (時間割)

Intensive course in the spring term (Contact the lecturer to confirm the availability of the course.)

**Professor (Lecturer or Instructor)** (担当教員名)

KASHIWAGI Takehiro

**Professor (Affiliation/Research field)** (担当教員所属)

Kochi University/Food science

**Professor (Telephone)** (担当教員電話)

088-864-5184

**Professor (E-Mail)** (担当教員)

tkashi@kochi-u.ac.jp

**Keyword for the subject** (キーワード)

Molecular structure analysis of low molecular weight compounds

**Content and Objective** (授業テーマと目的)

This course introduces instrumental analysis methods for identifying ingredients involved in food functionality to students taking this course.

Ultraviolet-visible absorption spectrum

Infrared absorption spectrum

Gas chromatography-mass spectrometry

<sup>1</sup>H- / <sup>13</sup>C Nuclear Magnetic Resonance Spectrum (including 2D NMR)

**Teaching Materials** (教科書・参考書)

Computer projector/ Printed synopsis

**Evaluation of Results** (成績評価の方法)

Your overall grade in the class will be decided based on the following:

- Class attendance and attitude in class: 20% -

-Presentation 80%

**Course Subject Title** (授業題目)

Food Chemistry Laboratory I

Food Chemistry Laboratory II

**Course Subject Code** (申請コード)

1B N45

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Experiment

**Year of commencement** (履修開始年次)

1st year

**Semester** (履修期間)

Fall term

**Day/Period** (時間割)

Not decided

**Professor (Lecturer or Instructor)** (担当教員名)

SHIMAMURA Tomoko

**Professor (Affiliation/Research field)** (担当教員所属)

Kochi University/Food science

**Professor (Telephone)** (担当教員電話)

088-864-5193 (SHIMAMURA Tomoko)

**Professor (E-Mail)** (担当教員)

tomokos@kochi-u.ac.jp (SHIMAMURA Tomoko)

**Keyword for the subject** (キーワード)

Food analysis, Food science, Food chemistry, Functional food

**Content and Objective** (授業テーマと目的)

Instruction of recent chemical and instrumental analyses of natural products

**Teaching Materials** (教科書・参考書)

Computer projector/Printed synopsis

**Evaluation of Results** (成績評価の方法)

Submitting report after the course

**Course Subject Title** (授業題目)

Food Chemistry Laboratory III

Food Chemistry Laboratory IV

**Course Subject Code** (申請コード)

1B N46

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Experiment

**Year of commencement** (履修開始年次)

1st year

**Semester** (履修期間)

Spring term

**Day/Period** (時間割)

Not decided

**Professor (Lecturer or Instructor)** (担当教員名)

SHIMAMURA Tomoko

**Professor (Affiliation/Research field)** (担当教員所属)

Kochi University/Food science

**Professor (Telephone)** (担当教員電話)

088-864-5193 (SHIMAMURA Tomoko)

**Professor (E-Mail)** (担当教員)

tomokos@kochi-u.ac.jp (SHIMAMURA Tomoko)

**Keyword for the subject** (キーワード)

Food analysis, Food science, Food chemistry, Functional food

**Content and Objective** (授業テーマと目的)

Instruction of recent chemical and instrumental analyses of natural products

**Teaching Materials** (教科書・参考書)

Computer projector/Printed synopsis

**Evaluation of Results** (成績評価の方法)

Submitting report after the course

**Course Subject Title** (授業題目)

Food Chemistry Laboratory V

Food Chemistry Laboratory VI

**Course Subject Code** (申請コード)

1B N47

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Experiment

**Year of commencement** (履修開始年次)

2nd year

**Semester** (履修期間)

Fall term

**Day/Period** (時間割)

Not decided

**Professor (Lecturer or Instructor)** (担当教員名)

SHIMAMURA Tomoko

**Professor (Affiliation/Research field)** (担当教員所属)

Kochi University/Food science

**Professor (Telephone)** (担当教員電話)

088-864-5193 (SHIMAMURA Tomoko)

**Professor (E-Mail)** (担当教員)

tomokos@kochi-u.ac.jp (SHIMAMURA Tomoko)

**Keyword for the subject** (キーワード)

Food analysis, Food science, Food chemistry, Functional food

**Content and Objective** (授業テーマと目的)

Instruction of recent chemical and instrumental analyses of natural products

**Teaching Materials** (教科書・参考書)

Computer projector/Printed synopsis

**Evaluation of Results** (成績評価の方法)

Submitting report after the course

**Course Subject Title** (授業題目)

Food Chemistry Laboratory VII

Food Chemistry Laboratory VIII

**Course Subject Code** (申請コード)

1B N48

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Experiment

**Year of commencement** (履修開始年次)

2nd year

**Semester** (履修期間)

Spring term

**Day/Period** (時間割)

Not decided

**Professor (Lecturer or Instructor)** (担当教員名)

SHIMAMURA Tomoko

**Professor (Affiliation/Research field)** (担当教員所属)

Kochi University/Food science

**Professor (Telephone)** (担当教員電話)

088-864-5193 (SHIMAMURA Tomoko)

**Professor (E-Mail)** (担当教員)

tomokos@kochi-u.ac.jp (SHIMAMURA Tomoko)

**Keyword for the subject** (キーワード)

Food analysis, Food science, Food chemistry, Functional food

**Content and Objective** (授業テーマと目的)

Instruction of recent chemical and instrumental analyses of natural products

**Teaching Materials** (教科書・参考書)

Computer projector/Printed synopsis

**Evaluation of Results** (成績評価の方法)

Submitting report after the course



**Course Subject Title** (授業題目)

Microbial Molecular Genetics Laboratory I  
Microbial Molecular Genetics Laboratory II

**Course Subject Code** (申請コード)

1B N57

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Experiment

**Year of commencement** (履修開始年次)

1st year

**Semester** (履修期間)

Fall term

**Day/Period** (時間割)

Not decided

**Professor (Lecturer or Instructor)** (担当教員名)

OHNISHI Kouhei

**Professor (Affiliation/Research field)** (担当教員所属)

Kochi University/Molecular genetics

**Professor (Telephone)** (担当教員電話)

088-864-5213

**Professor (E-Mail)** (担当教員)

kouheio@kochi-u.ac.jp

**Keyword for the subject** (キーワード)

Molecular genetics, Microbiology, Cloning

**Content and Objective** (授業テーマと目的)

To learn the cloning strategy

**Teaching Materials** (教科書・参考書)

Molecular Cloning: A Laboratory Manual, Fourth Edition CSL Press (2014). Providing lecture materials

**Evaluation of Results** (成績評価の方法)

Evaluating the submitted reports (80%) and the attitude at the lecture (20%)

**Course Subject Title** (授業題目)

Microbial Molecular Genetics Laboratory III

Microbial Molecular Genetics Laboratory IV

**Course Subject Code** (申請コード)

1B N58

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Experiment

**Year of commencement** (履修開始年次)

1st year

**Semester** (履修期間)

Spring term

**Day/Period** (時間割)

Not decided

**Professor (Lecturer or Instructor)** (担当教員名)

OHNISHI Kouhei

**Professor (Affiliation/Research field)** (担当教員所属)

Kochi University/Molecular genetics

**Professor (Telephone)** (担当教員電話)

088-864-5213

**Professor (E-Mail)** (担当教員)

kouheio@kochi-u.ac.jp

**Keyword for the subject** (キーワード)

Molecular genetics, Microbiology, Cloning

**Content and Objective** (授業テーマと目的)

To learn the experiments related to protein work

**Teaching Materials** (教科書・参考書)

Molecular Cloning: A Laboratory Manual, Fourth Edition CSL Press (2014). Providing lecture materials

**Evaluation of Results** (成績評価の方法)

Evaluating the submitted reports (80%) and the attitude at the lecture (20%)

**Course Subject Title** (授業題目)

Microbial Molecular Genetics Laboratory V

Microbial Molecular Genetics Laboratory VI

**Course Subject Code** (申請コード)

1B N59

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Experiment

**Year of commencement** (履修開始年次)

2nd year

**Semester** (履修期間)

Fall term

**Day/Period** (時間割)

Not decided

**Professor (Lecturer or Instructor)** (担当教員名)

OHNISHI Kouhei

**Professor (Affiliation/Research field)** (担当教員所属)

Kochi University/Molecular genetics

**Professor (Telephone)** (担当教員電話)

088-864-5213

**Professor (E-Mail)** (担当教員)

kouheio@kochi-u.ac.jp

**Keyword for the subject** (キーワード)

Molecular genetics, Microbiology, Cloning

**Content and Objective** (授業テーマと目的)

To learn the construction of mutant strains and evaluating the phenotypes

**Teaching Materials** (教科書・参考書)

Molecular Cloning: A Laboratory Manual, Fourth Edition CSL Press (2014). Providing lecture materials

**Evaluation of Results** (成績評価の方法)

Evaluating the submitted reports (80%) and the attitude at the lecture (20%)

**Course Subject Title**(授業題目)

Microbial Molecular Genetics Laboratory VII

Microbial Molecular Genetics Laboratory VIII

**Course Subject Code**(申請コード)

1B N60

**Credits (Units)**(単位数)

1×2

**Class Work Type**(授業種別)

Experiment

**Year of commencement**(履修開始年次)

2nd year

**Semester**(履修期間)

Spring term

**Day/Period**(時間割)

Not decided

**Professor (Lecturer or Instructor)**(担当教員名)

OHNISHI Kouhei

**Professor (Affiliation/Research field)**(担当教員所属)

Kochi University/Molecular genetics

**Professor (Telephone)**(担当教員電話)

088-864-5213

**Professor (E-Mail)**(担当教員)

kouheio@kochi-u.ac.jp

**Keyword for the subject**(キーワード)

Molecular genetics, Microbiology, Cloning

**Content and Objective**(授業テーマと目的)

To learn the bioinformatics

**Teaching Materials**(教科書・参考書)

Molecular Cloning: A Laboratory Manual, Fourth Edition CSL Press (2014). Providing lecture materials

**Evaluation of Results**(成績評価の方法)

Evaluating the submitted reports (80%) and the attitude at the lecture (20%)

**Course Subject Title** (授業題目)

Advanced Aquatic Environmental Science I

Advanced Aquatic Environmental Science II

**Course Subject Code** (申請コード)

1B P04

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Lecture

**Year of commencement** (履修開始年次)

1st year

**Semester** (履修期間)

Spring term

**Day/Period** (時間割)

Not decided

**Professor (Lecturer or Instructor)** (担当教員名)

ADACHI Masao

**Professor (Affiliation/Research field)** (担当教員所属)

Kochi University/Aquatic environmental science

**Professor (Telephone)** (担当教員電話)

088-864-5216

**Professor (E-Mail)** (担当教員)

madachi@kochi-u.ac.jp

**Keyword for the subject** (キーワード)

Harmful algal blooms, red tides, shellfish poisoning, Plankton

**Content and Objective** (授業テーマと目的)

In this lecture, physiology, ecology and molecular biology of phytoplankton HAB (harmful algal bloom) species are introduced.

**Teaching Materials** (教科書・参考書)

Computer projector

**Evaluation of Results** (成績評価の方法)

Submitting paper (report) after the course

**Course Subject Title** (授業題目)

Advanced Coastal Ecology and Conservation I  
Advanced Coastal Ecology and Conservation II

**Course Subject Code** (申請コード)

1B P05

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Lecture

**Year of commencement** (履修開始年次)

1st year

**Semester** (履修期間)

Spring term

**Day/Period** (時間割)

Not decided

**Professor (Lecturer or Instructor)** (担当教員名)

IKEJIMA Kou

**Professor (Affiliation/Research field)** (担当教員所属)

Kochi University/Coastal Ecology and Management

**Professor (Telephone)** (担当教員電話)

088-864-5175

**Professor (E-Mail)** (担当教員)

ikejima@kochi-u.ac.jp

**Keyword for the subject** (キーワード)

Coastal ecosystems, ecology, aquatic resources, reading scientific articles

**Content and Objective** (授業テーマと目的)

Understanding basics of ecological processes in coastal ecosystems, and issues for conservation and sustainable use of coastal environment and aquatic resources. Further, developing a better understanding of these issues based on reading of scientific papers and discussion.

**Teaching Materials** (教科書・参考書)

Printed synopsis, scientific papers and articles.

**Evaluation of Results** (成績評価の方法)

Short presentations, report and participation in discussion.

**Course Subject Title** (授業題目)

Advanced Fish Genetics and Breeding Science I

Advanced Fish Genetics and Breeding Science II

**Course Subject Code** (申請コード)

1B P07

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Lecture

**Year of commencement** (履修開始年次)

1st year

**Semester** (履修期間)

Spring term

**Day/Period** (時間割)

Intensive course in the fall term (Contact the lecturer to confirm the availability of the course.)

**Professor (Lecturer or Instructor)** (担当教員名)

SEKI Shingo

**Professor (Affiliation/Research field)** (担当教員所属)

Kochi University/Fish genetics

**Professor (Telephone)** (担当教員電話)

088-864-5153

**Professor (E-Mail)** (担当教員)

seki@kochi-u.ac.jp

**Keyword for the subject** (キーワード)

Genetics, Breeding science, Chromosome manipulation, Molecular markers,  
Conservation genetics

**Content and Objective** (授業テーマと目的)

Introduction to fish genetics and breeding science with a focus on chromosome manipulation of fish.

**Teaching Materials** (教科書・参考書)

Computer projector

**Evaluation of Results** (成績評価の方法)

Submitting paper (report) after the course

**Course Subject Title** (授業題目)

Advanced Fish Nutrition I

Advanced Fish Nutrition II

**Course Subject Code** (申請コード)

1B P08

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Lecture

**Year of commencement** (履修開始年次)

2nd year

**Semester** (履修期間)

Spring term

**Day/Period** (時間割)

Not decided

**Professor (Lecturer or Instructor)** (担当教員名)

MASUMOTO Toshiro

**Professor (Affiliation/Research field)** (担当教員所属)

Kochi University

**Professor (Telephone)** (担当教員電話)

088-864-5159

**Professor (E-Mail)** (担当教員)

tosh@kochi-u.ac.jp

**Keyword for the subject** (キーワード)

Fish. Nutrition, Protein, Lipids, Amino acids, Carbohydrate, Feed, Feeding, Aquaculture

**Content and Objective** (授業テーマと目的)

Recent research topics of nutritional physiology and feeding of fish

**Teaching Materials** (教科書・参考書)

Handout, Nutrient requirements and feeding of finfish for aquaculture (Library at Kochi U. 663.1/Nu), Fish nutrition in aquaculture (Library at Kochi U. 663.13/Fi)

**Evaluation of Results** (成績評価の方法)

Give an assignment after the class and mark it based on the quality (understanding of the lecture, accuracy of the content, and amount of the information).



**Course Subject Title**(授業題目)

Advanced Marine Biotechnology I

Advanced Marine Biotechnology II

**Course Subject Code**(申請コード)

1B P 10

**Credits (Units)**(単位数)

1×2

**Class Work Type**(授業種別)

Lecture

**Year of commencement**(履修開始年次)

1st year

**Semester**(履修期間)

Fall term

**Day/Period**(時間割)

Not decided

**Professor (Lecturer or Instructor)**(担当教員名)

ADACHI Kohsuke

**Professor (Affiliation/Research field)**(担当教員所属)

Kochi University/Marine Biochemistry and Biotechnology

**Professor (Telephone)**(担当教員電話)

088-864-5155

**Professor (E-Mail)**(担当教員)

kohsukeadachi@kochi-u.ac.jp

**Keyword for the subject**(キーワード)

Biochemistry, biotechnology, marine products

**Content and Objective**(授業テーマと目的)

Efficient utilization for fisheries products

**Teaching Materials**(教科書・参考書)

Not decided

**Evaluation of Results**(成績評価の方法)

Attendance and report

**Course Subject Title** (授業題目)

Advanced Fish Ecology I

Advanced Fish Ecology II

**Course Subject Code** (申請コード)

1B P11

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Lecture

**Year of commencement** (履修開始年次)

1st year

**Semester** (履修期間)

Spring term

**Day/Period** (時間割)

Not decided

**Professor (Lecturer or Instructor)** (担当教員名)

NAKAMURA Yohei

**Professor (Affiliation/Research field)** (担当教員所属)

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088-864-5236

**Professor (E-Mail)** (担当教員)

ynakamura@kochi-u.ac.jp

**Keyword for the subject** (キーワード)

Species identification, gut content analysis, otolith analysis

**Content and Objective** (授業テーマと目的)

Students will learn methods of fish species identification and analysis of fish diet and growth, and gain essential knowledge and skills in fish conservation and management.

**Teaching Materials** (教科書・参考書)

Nakamura et al. (2003) Food habits of fishes in a seagrass bed on a fringing coral reef at Iriomote Island, southern Japan. *Ichthyological Research*, 50, 15-22.

Nakamura et al. (2010) Interspecific variations in age and size at settlement of 8 emperor fishes (Lethrinidae) at the southern Ryukyu Islands, Japan. *Fisheries Science*, 76(3), 503 – 510

**Evaluation of Results** (成績評価の方法)

Students will be evaluated on their attitude in class (40%) and their answers to questions about the subject (60%).

**Course Subject Title** (授業題目)

Advanced Fish Nutrient Physiology I  
Advanced Fish Nutrient Physiology II

**Course Subject Code** (申請コード)

1B P12

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Lecture

**Year of commencement** (履修開始年次)

1st year

**Semester** (履修期間)

Fall term

**Day/Period** (時間割)

Not decided

**Professor (Lecturer or Instructor)** (担当教員名)

FUKADA Haruhisa

**Professor (Affiliation/Research field)** (担当教員所属)

Kochi University/Fish nutrition

**Professor (Telephone)** (担当教員電話)

088-864-5156

**Professor (E-Mail)** (担当教員)

fukaharu@kochi-u.ac.jp

**Keyword for the subject** (キーワード)

Fish, nutrition, Metabolism, Hormone, Growth

**Content and Objective** (授業テーマと目的)

Introduction to nutritional physiology of fish

**Teaching Materials** (教科書・参考書)

Computer projector, digital slides

**Evaluation of Results** (成績評価の方法)

Submitting paper (report) after the course

**Course Subject Title** (授業題目)

Advanced Aquatic Microbial Ecology I  
Advanced Aquatic Microbial Ecology II

**Course Subject Code** (申請コード)

1B P13

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Lecture

**Year of commencement** (履修開始年次)

1st year

**Semester** (履修期間)

Fall term

**Day/Period** (時間割)

Not decided

**Professor (Lecturer or Instructor)** (担当教員名)

YAMAGUCHI Haruo

**Professor (Affiliation/Research field)** (担当教員所属)

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088-864-5161

**Professor (E-Mail)** (担当教員)

yharuo@kochi-u.ac.jp

**Keyword for the subject** (キーワード)

Microorganisms, Phytoplankton, Bacteria, Dissolved organic matters, carbon cycle

**Content and Objective** (授業テーマと目的)

To understand sustainable development of aquatic biological production, we learn the ecological processes of aquatic microorganisms.

**Teaching Materials** (教科書・参考書)

Marine Ecological Processes (Valiela Ed) Springer, 1995

**Evaluation of Results** (成績評価の方法)

Report (100%)

**Course Subject Title** (授業題目)

Advanced Food Science and Nutrition I  
Advanced Food Science and Nutrition II

**Course Subject Code** (申請コード)

1B P28

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Lecture

**Year of commencement** (履修開始年次)

1st year

**Semester** (履修期間)

Fall term

**Day/Period** (時間割)

Not decided

**Professor (Lecturer or Instructor)** (担当教員名)

KUBOTA Satoshi

**Professor (Affiliation/Research field)** (担当教員所属)

Kochi University

**Professor (Telephone)** (担当教員電話)

088-880-2283

**Professor (E-Mail)** (担当教員)

kubota@kochi-u.ac.jp

**Keyword for the subject** (キーワード)

Food, Nutrition

**Content and Objective** (授業テーマと目的)

The purpose of this class is to mainly learn:

1. Analytical methods of food ingredients
2. Human nutrition (digestion, absorption, metabolism and excretion)
3. Food production and human health related social systems

**Teaching Materials** (教科書・参考書)

Related documents are provided.

**Evaluation of Results** (成績評価の方法)

On-line Examination

**Course Subject Title** (授業題目)

Advanced Marine Virology I

Advanced Marine Virology II

**Course Subject Code** (申請コード)

1B P29

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Lecture

**Year of commencement** (履修開始年次)

1st year

**Semester** (履修期間)

Spring term

**Day/Period** (時間割)

Not decided

**Professor (Lecturer or Instructor)** (担当教員名)

NAGASAKI Keizo

**Professor (Affiliation/Research field)** (担当教員所属)

Kochi University

**Professor (Telephone)** (担当教員電話)

088-864-6753

**Professor (E-Mail)** (担当教員)

nagasaki@kochi-u.ac.jp

**Keyword for the subject** (キーワード)

Marine viruses, Ecology, Algal bloom, DNA, RNA

**Content and Objective** (授業テーマと目的)

To deeply understand the ecology of marine viruses, especially focusing on demise of algal blooms.

**Teaching Materials** (教科書・参考書)

No text. Materials will be distributed.

**Evaluation of Results** (成績評価の方法)

Report

**Course Subject Title** (授業題目)

Advanced Microbiology I

Advanced Microbiology II

**Course Subject Code** (申請コード)

1B P32

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Lecture

**Year of commencement** (履修開始年次)

1st year

**Semester** (履修期間)

Spring term (First semester, intensive)

**Day/Period** (時間割)

Not decided

**Professor (Lecturer or Instructor)** (担当教員名)

TERAMOTO Maki

**Professor (Affiliation/Research field)** (担当教員所属)

Kochi University

**Professor (Telephone)** (担当教員電話)

088-880-2177

**Professor (E-Mail)** (担当教員)

maki.teramoto@kochi-u.ac.jp

**Keyword for the subject** (キーワード)

Microbiology, Molecular Biology

**Content and Objective** (授業テーマと目的)

Students learn microbiology and principles behind molecular biology techniques, which is necessary for microbiology research.

**Teaching Materials** (教科書・参考書)

Not particularly.

**Evaluation of Results** (成績評価の方法)

Students are expected to give presentations for the topics, and are evaluated by the presentation and understanding the topics.

**Course Subject Title** (授業題目)

Advanced Molecular Pharmacology I  
Advanced Molecular Pharmacology II

**Course Subject Code** (申請コード)

1B P33

**Credits (Units)** (単位数)

1×2

**Class Work Type** (授業種別)

Lecture

**Year of commencement** (履修開始年次)

1st year

**Semester** (履修期間)

Spring term

**Day/Period** (時間割)

Not decided

**Professor (Lecturer or Instructor)** (担当教員名)

NAMBA Takushi

**Professor (Affiliation/Research field)** (担当教員所属)

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088-880-2184

**Professor (E-Mail)** (担当教員)

t-namba@kochi-u.ac.jp

**Keyword for the subject** (キーワード)

Molecular Pharmacology, cell biology

**Content and Objective** (授業テーマと目的)

Learn the basics of pharmacology. Understanding the molecular mechanism of effect of drugs.

**Teaching Materials** (教科書・参考書)

The Cell

**Evaluation of Results** (成績評価の方法)

Report