

Frontier in Civil Engineering (2.0credits) (土木工学のフロンティア)

Course Type	Basic Courses	
Division at course	Master's Course	
Class Format	Lecture	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	1 Spring Semester	1 Spring Semester
Lecturer	Associated Faculty	

Course Purpose

The aim of the lecture is to comprehensively examine the framework of civil engineering through the introductions of various research topics, projects and so on which the staff of civil engineering have investigated in recent years.

After completing this course, students will be able to:

- 1.explain various recent issues in civil engineering fields, and
- 2.establish a comprehensive perspective in civil engineering.

Prerequisite Subjects

None

Course Topics

1. Guidance
2. Frontier of Structural Engineering
3. Frontier of Material Engineering
4. Frontier of Coastal Engineering
5. Frontier of River Engineering
6. Frontier of Geotechnical Engineering
7. Frontier of Urban and Transportation Planning

A report must be submitted in each class.

Textbook

Textbooks will be recommended at the right time.

Additional Reading

Reference books will be recommended at the right time.

Grade Assessment

Based on the evaluation of all reports.

Notes

None

Contacting Faculty

Students are encouraged to ask questions in the class.

Project in Civil Engineering A (2.0credits) (土木工学総合プロジェクトA)

Course Type	Basic Courses
Division at course	Master's Course
Class Format	Lecture
Course Name	Civil and Environmental Engineering
Starts 1	1 Spring Semester
Lecturer	Associated Faculty

Course Purpose

The aim of the lecture is to comprehensively examine the framework of civil engineering through the introductions of various projects and so on which the engineers working in the frontier of civil engineering fields.

After completing this course, students will be able to:

- 1.explain planning, design, construction and maintenance of infrastructure in Japan, as well as overseas, and
- 2.explain various issues in civil engineering fields.

Prerequisite Subjects

None

Course Topics

1. Guidance
2. Lectures by seven outside lecturers
3. Q&A session organized by students in each lecture

A report must be submitted in each class.

Textbook

Textbooks will be recommended at the right time.

Additional Reading

Reference books will be recommended at the right time.

Grade Assessment

Based on the evaluation of all reports and discussion.

Notes

None

Contacting Faculty

Students are encouraged to ask questions in the class.

Project in Civil Engineering B (2.0credits) (土木工学総合プロジェクトB)

Course Type	Basic Courses
Division at course	Master's Course
Class Format	Lecture
Course Name	Civil and Environmental Engineering
Starts 1	1 Autumn Semester
Lecturer	Associated Faculty

Course Purpose

The aim of the lecture is to comprehensively examine the framework of civil engineering through investigating certain problems and proposing countermeasures in civil engineering fields.

After completing this course, students will be able to:

1. explain various issues in civil engineering fields in Japan, as well as overseas, and
2. acquire a comprehensive methodology for executing projects in infrastructure development.

Prerequisite Subjects

Frontier in Civil Engineering
Project in Civil Engineering A

Course Topics

Students are divided into several working groups. Each group will select a certain problem related to civil infrastructure, investigate the problem, and propose countermeasures.

1. Guidance
2. Presentation from all students
3. Discussion in each working group
4. Presentation from each working group, discussion
5. Evaluation of proposals from each working group, discussion
6. Final presentation from each working group, discussion

An answer to homework must be submitted in each class.

Textbook

Textbooks will be recommended at the right time.

Additional Reading

Reference books will be recommended at the right time.

Grade Assessment

Based on the evaluation of all reports, presentation and discussion.

Notes

None

Contacting Faculty

Students are encouraged to ask questions in the class.

Course Type	Basic Courses	
Division at course	Master's Course	
Class Format	Lecture	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	Autumn Semester ,every other year	2 Autumn Semester
Lecturer	Kiichiro HAYASHI Professor	Miho IRYO(ASANO) Associate Professor

Course Purpose

The objective of this lecture is to learn the basic academic knowledge and the ability to solve the issues related to civil and environmental engineering for social infrastructure development in developing countries.

The goal of this lecture is that the students will understand the basics and applied skills of analysis methods of the issues related to sustainable development, environmental management and international cooperation in developing countries and then learn the comprehensive way of thinking to tackle of the issues

Prerequisite Subjects

Civil Engineering and Policies for Developing Countries II

Course Topics

- 1.Development
- 2.Development and agriculture
- 3.Development and industrialization
- 4.Sustainable development
- 5.MDGs and SDGs
- 6.Environment and resource issues in developing countries
- 7.International environmental management(international treaty, international organization)
- 8.International cooperation

To review the contents of the lecture to understand specialized topics.

Textbook

Documents will be provided at the lecture if needed. And some references will be provided if needed.

Additional Reading

It will be assigned in the class if necessary.

Grade Assessment

Evaluation is based on essay exam (20%) and final examination (80%).

The C grade is the minimum requirement for passing this lecture.

The success criteria is to understand the basics and applied skills of analysis methods of the issues related to sustainable development, environmental management and international cooperation in developing countries.

It employs the course registration withdrawal system.

Notes

There is no condition for taking this class.

Contacting Faculty

In the class and/or by e-mail.

Course Type	Basic Courses	
Division at course	Master's Course	
Class Format	Lecture	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	Autumn Semester ,every other year	1 Autumn Semester
Lecturer	Associated Faculty	

Course Purpose

The objectives of this course are (1) to study the fundamental knowledge on planning, design, construction and maintenance of infrastructure in Japan, as well as developing countries; (2) to survey various issues in civil engineering, including the environmental problems and recent development of regional disaster mitigation activities.

After completing this course, students will be able to:

- 1.explain planning, design, construction and maintenance of infrastructure in Japan, as well as developing countries, and
- 2.explain various issues in civil engineering fields.

Prerequisite Subjects

None

Course Topics

1. Introduction to disaster risk assessment
2. Water resources and river basin management
3. Coastal zone management
4. Infrastructure development under aid programs
5. Infrastructure projects in developing countries

A report must be submitted after each class.

Textbook

Textbooks will be recommended at the right time.

Additional Reading

Reference books will be recommended at the right time.

Grade Assessment

Based on the evaluation of all reports.

Notes

None

Contacting Faculty

Students are encouraged to ask questions in the class.

Course Type	Basic Courses	
Division at course	Master's Course	
Class Format	Lecture	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	1 Spring Semester	1 Spring Semester
Lecturer	Miho IRYO(ASANO) Associate Professor	CHUN Sohyun Lecturer

Course Purpose

International communication skills are indispensable to propose policies that address environmental issues in the international communities. This lecture aims to improve international communication skills through analysis, policy proposals and discussions on environmental issues.

The objective of this lecture is to acquire the following knowledge and skills.

1. Understand and apply effective presentation and discussion techniques in English.
2. Understand the environmental issues in various countries and the differences in how environmental issues are perceived by different standpoints.
3. Based on opinions from other perspectives, they can explain their points logically and persuade others.

Prerequisite Subjects

Not specified because the class intends to learn how to discuss with people with a diverse background.

Course Topics

1. Presentation and discussion method

Students learn how to structure presentations, create slides, and discuss in order to effectively convey their opinions to others.

2. Group discussion and presentation on environmental issues in home country

Explain environmental issues in their home countries, summarize common issues and areas of interest in each country, and give presentations.

3. Group discussion and role play on environmental issues and consensus building

To resolve environmental issues, it is necessary to build consensus among various stakeholders. In this part students will make a role-play to understand opinions from different positions and consensus building processes.

4. Group debate

Make a debate on a given topic related to environmental issues.

5. Discussion and presentation on environmental issues of interest for each group

Discuss environmental issues which students got interest through above classes and propose countermeasures.

All classes will be conducted in English. At the end of each class, an outline of the next class will be given. Based on the outline, students are required to collect necessary materials and prepare for discussion before the class.

Textbook

Handouts will be distributed at each class.

Additional Reading

Reference literature will be introduced as needed.

Grade Assessment

Evaluation is based on contribution to group discussions (40%), presentation skills at group presentation, role play and debate (40%), and report related to the contents of the discussion (20%). The evaluation will be made with the rubric distributed in the first class.

Students will pass if they will be able to explain their arguments logically and clearly, and to discuss environmental issues from multiple perspectives.

English Communication in Environmental Issues (2.0credits) (環境コミュニケーション)

Attendance of more than 80% lectures is necessary to have credits.

Notes

No course conditions are imposed.

Contacting Faculty

If you have any questions, please ask the instructor by e-mail (iryo@nagoya-u.ac.jp) or make an appointment by e-mail before coming to the room.

Course Type	Basic Courses		
Division at course	Master's Course		
Class Format	Lecture		
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate	
Starts 1	1 Autumn Semester	1 Autumn Semester	
Lecturer	Hiroki tanikawa Professor	Miho IRYO(ASANO) Associate Professor	AnatolyZINCENKO Associate Professor

Course Purpose

The objective of the course is to provide students with several definitions, views, interpretations, and analyses on the notion of sustainability.

Prerequisite Subjects

Low Carbon Society, Water and Waste Management Policies, etc.

Course Topics

The lectures are to be given by several lecturers that may include external guest speakers. Sustainability covers broad areas. It is therefore inevitable that the course consists of various topics. The course tries to clarify the topics from three viewpoints, namely: 1) Society and/or social sciences, 2) Observation and data by natural sciences, and 3) Urban and spatial perspective. One common element that should be noted here is "safety".

Contents

1. Orientation
2. What is "Sustainability" and "Sustainable Development"?
3. Sustainable Transport Systems
4. Global Change Monitoring by Remote Sensing
5. Safe Production and Consumption of Chemical Products
6. Creating Urban Green Infrastructure
7. Present Status of Scientific Understanding of Global Warming
8. Natural Disasters and the Society: A Case of the 2004 Tsunami and its Effects to Aceh, Indonesia
9. Kosa and Desertification
10. Sustainable Material Use and Low-carbonization Society
11. Open Discussion
12. Open Discussion
13. Open Discussion
14. Report Submission and Wrap-Up Discussion

There are additional overtime studies regarding each lecture.

Textbook

To be announced in class

Additional Reading

To be introduced in each lecture

Grade Assessment

Evaluation is carried out by reports (100%). Students have to attend all lectures as the schedule for the next class will be announced in the previous class. Those with less than 80% attendance in the class will not be evaluated.

Notes

There is no condition of taking this Lecture.

Contacting Faculty

E-mail address of the instructor: iryu@nagoya-u.jp

Seminar on Structural Engineering 1A (2.0credits) (構造工学セミナー1A)

Course Type	Specialized Courses	
Division at course	Master's Course	
Class Format	Seminar	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	1 Spring Semester	1 Autumn Semester
Lecturer	Junji KATO Professor	Hiroya HOSHIBA Assistant Professor

Course Purpose

To understand basic theory of finite element method and continuum mechanics.

Performance targets:

- 1) To understand finite element analysis and to be able to make the source code by yourself
- 2) To understand nonlinear finite element analysis and to be able to make the source code by yourself

Prerequisite Subjects

Computational Mechanics, Structural Mechanics, Applied Structural Mechanics, Strengths of Structures in Ultimate States, etc.

Course Topics

1. Finite Element Method

- Basic concept of principle of virtual work
- Discretization method
- Newton-Raphson method
- Nonlinear structural analysis and its solution method

Several reports will be given in the class.

Textbook

Finite Element Procedures (K.J. Bathe) and handout will be given.

Additional Reading

Reference books are introduced at the first lecture.

Grade Assessment

Required to understand the basic knowledge of continuum mechanics and finite element method.

The goal attainment level is evaluated by both results of attendance and attitude of learning in this class.

60 points or more are accepted for 100 full marks.

Notes

Contacting Faculty

Questions are welcome during the seminar.

Seminar on Structural Engineering 1B (2.0credits) (構造工学セミナー1B)

Course Type	Specialized Courses	
Division at course	Master's Course	
Class Format	Seminar	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	1 Autumn Semester	1 Spring Semester
Lecturer	Junji KATO Professor	Hiroya HOSHIBA Assistant Professor

Course Purpose

To understand basic theory of finite element method and continuum mechanics.

Performance targets:

- 1) To understand finite element analysis and to be able to make the source code by yourself
- 2) To understand nonlinear finite element analysis and to be able to make the source code by yourself

Prerequisite Subjects

Computational Mechanics, Structural Mechanics, Applied Structural Mechanics, Strengths of Structures in Ultimate States, etc.

Course Topics

1. Finite Element Method

- Basic concept of principle of virtual work
- Discretization method
- Newton-Raphson method
- Nonlinear structural analysis and its solution method

Several reports will be given in the class.

Textbook

Finite Element Procedures (K.J. Bathe) and handout will be given.

Additional Reading

Reference books are introduced at the first lecture.

Grade Assessment

Required to understand the basic knowledge of continuum mechanics and finite element method.

The goal attainment level is evaluated by both results of attendance and attitude of learning in this class.

60 points or more are accepted for 100 full marks

Notes

Contacting Faculty

Questions are welcome during the the seminar.

Seminar on Structural Engineering 1C (2.0credits) (構造工学セミナー1C)

Course Type	Specialized Courses	
Division at course	Master's Course	
Class Format	Seminar	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	2 Spring Semester	2 Autumn Semester
Lecturer	Junji KATO Professor	Hiroya HOSHIBA Assistant Professor

Course Purpose

To understand basic theory of finite element method and continuum mechanics.

Performance targets:

- 1) To understand finite element analysis and to be able to make the source code by yourself
- 2) To understand nonlinear finite element analysis and to be able to make the source code by yourself

Prerequisite Subjects

Computational Mechanics, Structural Mechanics, Applied Structural Mechanics, Strengths of Structures in Ultimate States, etc.

Course Topics

1. Finite Element Method

- Basic concept of principle of virtual work
- Discretization method
- Newton-Raphson method
- Nonlinear structural analysis and its solution method

Several reports will be given in the class.

Textbook

Finite Element Procedures (K.J. Bathe) and handout will be given.

Additional Reading

Reference books are introduced at the first lecture.

Grade Assessment

Required to understand the basic knowledge of continuum mechanics and finite element method.

The goal attainment level is evaluated by both results of attendance and attitude of learning in this class.

60 points or more are accepted for 100 full marks

Notes

Contacting Faculty

Questions are welcome during the seminar.

Seminar on Structural Engineering 1D (2.0credits) (構造工学セミナー1D)

Course Type	Specialized Courses	
Division at course	Master's Course	
Class Format	Seminar	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	2 Autumn Semester	2 Spring Semester
Lecturer	Junji KATO Professor	Hiroya HOSHIBA Assistant Professor

Course Purpose

To understand basic theory of finite element method and continuum mechanics.

Performance targets:

- 1) To understand finite element analysis and to be able to make the source code by yourself
- 2) To understand nonlinear finite element analysis and to be able to make the source code by yourself

Prerequisite Subjects

Computational Mechanics, Structural Mechanics, Applied Structural Mechanics, Strengths of Structures in Ultimate States, etc.

Course Topics

1. Finite Element Method

- Basic concept of principle of virtual work
- Discretization method
- Newton-Raphson method
- Nonlinear structural analysis and its solution method

Several reports will be given in the class.

Textbook

Finite Element Procedures (K.J. Bathe) and handout will be given.

Additional Reading

Reference books are introduced at the first lecture.

Grade Assessment

Required to understand the basic knowledge of continuum mechanics and finite element method.

The goal attainment level is evaluated by both results of attendance and attitude of learning in this class.

60 points or more are accepted for 100 full marks

Notes

Contacting Faculty

Questions are welcome during the seminar.

Course Type	Specialized Courses		
Division at course	Master's Course		
Class Format	Seminar		
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate	
Starts 1	1 Spring Semester	1 Autumn Semester	
Lecturer	Hikaru NAKAMURA Professor	Yoshihito Yamamoto Associate Professor	Taito Miura Assistant Professor

Course Purpose

The purpose of these practices is to acquire basic and applied knowledge for understanding the properties of cement, cement paste and concrete and the mechanisms of cement hydration using text book written in English. Furthermore, the participants would be able to get into the total power such as gathering information, relevant technique investigation and presentation skills as going through the presentation.

After completing this class, students will be able to:

1. Explain basic knowledge of cement chemistry
2. Literature survey of cement chemistry

Prerequisite Subjects

Advanced Concrete Structure, Advanced Course in Lifecycle Design of Civil Structures, Exercise in Inspection of Civil Structures

Course Topics

1. Property of Cement
Type of cement
Crystal structure of cement
2. Property of Cement paste
Hydration process of each cement type
Micro-structure of cement hydrates

Before class, please prepare next class and literature survey to related part. After class, please confirm related literature.

Textbook

Cement Chemistry 2nd edition H.F.W. Taylor, Thomas Telford

Additional Reading

Reference books will be recommended at the right time

Grade Assessment

Considering result of Presentation and Oral examination, the acceptance score must be more than 60 points. In this regards, the participant who is absent without notification is more than a half of class he/she isn't evaluation objective.

Notes

None

Contacting Faculty

Welcome to come to room directly anytime and question by e-mail hikaru@cc.nagoya-u.ac.jp

Course Type	Specialized Courses		
Division at course	Master's Course		
Class Format	Seminar		
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate	
Starts 1	1 Autumn Semester	1 Spring Semester	
Lecturer	Hikaru NAKAMURA Professor	Yoshihito Yamamoto Associate Professor	Taito Miura Assistant Professor

Course Purpose

The purpose of these practices is to acquire basic and applied knowledge for understanding the properties of cement, cement paste and concrete and the mechanisms of cement hydration using text book written in English. Furthermore, the participants would be able to get into the total power such as gathering information, relevant technique investigation and presentation skills as going through the presentation.

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Additional Reading

Reference books will be recommended at the right time

Grade Assessment

Considering result of Presentation and Oral examination, the acceptance score must be more than 60 points. In this regards, the participant who is absent without notification is more than a half of class he/she isn't evaluation objective.

Notes

None

Contacting Faculty

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Course Type	Specialized Courses		
Division at course	Master's Course		
Class Format	Seminar		
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate	
Starts 1	2 Spring Semester	2 Autumn Semester	
Lecturer	Hikaru NAKAMURA Professor	Yoshihito Yamamoto Associate Professor	Taito Miura Assistant Professor

Course Purpose

The purpose of these practices is to acquire basic and applied knowledge for understanding the properties of cement, cement paste and concrete and the mechanisms of cement hydration using text book written in English. Furthermore, the participants would be able to get into the total power such as gathering information, relevant technique investigation and presentation skills as going through the presentation.

After completing this class, students will be able to:

1. Explain basic knowledge of cement chemistry
2. Literature survey of cement chemistry

Prerequisite Subjects

Advanced Concrete Structure, Advanced Course in Lifecycle Design of Civil Structures, Exercise in Inspection of Civil Structures

Course Topics

1. Property of Cement
Type of cement
Crystal structure of cement
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Hydration process of each cement type
Micro-structure of cement hydrates

Before class, please prepare next class and literature survey to related part. After class, please confirm related literature.

Textbook

Cement Chemistry 2nd edition H.F.W. Taylor, Thomas Telford

Additional Reading

Reference books will be recommended at the right time

Grade Assessment

Considering result of Presentation and Oral examination, the acceptance score must be more than 60 points. In this regards, the participant who is absent without notification is more than a half of class he/she isn't evaluation objective.

Notes

None

Contacting Faculty

Welcome to come to room directly anytime and question by e-mail hikaru@cc.nagoya-u.ac.jp

Course Type	Specialized Courses		
Division at course	Master's Course		
Class Format	Seminar		
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate	
Starts 1	2 Autumn Semester	2 Spring Semester	
Lecturer	Hikaru NAKAMURA Professor	Yoshihito Yamamoto Associate Professor	Taito Miura Assistant Professor

Course Purpose

The purpose of these practices is to acquire basic and applied knowledge for understanding the properties of cement, cement paste and concrete and the mechanisms of cement hydration using text book written in English. Furthermore, the participants would be able to get into the total power such as gathering information, relevant technique investigation and presentation skills as going through the presentation.

After completing this class, students will be able to:

1. Explain basic knowledge of cement chemistry
2. Literature survey of cement chemistry

Prerequisite Subjects

Advanced Concrete Structure, Advanced Course in Lifecycle Design of Civil Structures, Exercise in Inspection of Civil Structures

Course Topics

1. Property of Cement
Type of cement
Crystal structure of cement
2. Property of Cement paste
Hydration process of each cement type
Micro-structure of cement hydrates

Before class, please prepare next class and literature survey to related part. After class, please confirm related literature.

Textbook

Cement Chemistry 2nd edition H.F.W. Taylor, Thomas Telford

Additional Reading

Reference books will be recommended at the right time

Grade Assessment

Considering result of Presentation and Oral examination, the acceptance score must be more than 60 points. In this regards, the participant who is absent without notification is more than a half of class he/she isn't evaluation objective.

Notes

None

Contacting Faculty

Welcome to come to room directly anytime and question by e-mail hikaru@cc.nagoya-u.ac.jp

Seminar on Conservation Engineering of River Basins 1A (2.0credits) (流域保全学セミナー1A)

Course Type	Specialized Courses		
Division at course	Master's Course		
Class Format	Seminar		
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate	
Starts 1	1 Spring Semester	1 Autumn Semester	
Lecturer	Yuji Toda Professor	Ryota TSUBAKI Associate Professor	OBANAMakiko Assistant Professor

Course Purpose

Basic and advanced research on fluvial hydraulics and hydrology and its relation to the ecosystem will be reviewed and discussed. Research methods will also be reviewed and discussed.

The objective of this course is to acquire the skills to understand the trends in research on conservation engineering of river basins and the methods to conduct hydraulics, hydrological and ecosystem researches.

Prerequisite Subjects

Hydrology and River Engineering, Open-channel hydraulics, Fundamental of Hydrodynamics with Exercises, Human activities and environment

Course Topics

1. Paper reviewing method
2. Fluvial hydraulics and hydrology and its relation to the ecosystem
3. Measurement and modeling of river morphology and hydraulics
4. Measurements for ecosystem

Documents and experiment preparation is required prior to the seminar. Data analysis and report submission are asked following the seminar.

Textbook

Directed as needed

Additional Reading

Directed as needed

Grade Assessment

Presentation and report will be used for grading. To acquire basic skills of research review or fundamental methods for research is the criteria to pass. Advanced skills for reviewing and research will be accounted for the grade.

Notes

Not specified

Contacting Faculty

Discuss during the seminar or asking by e-mail.

Seminar on Conservation Engineering of River Basins 1B (2.0credits) (流域保全学セミナー1B)

Course Type	Specialized Courses		
Division at course	Master's Course		
Class Format	Seminar		
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate	
Starts 1	1 Autumn Semester	1 Spring Semester	
Lecturer	Yuji Toda Professor	Ryota TSUBAKI Associate Professor	OBANAMakiko Assistant Professor

Course Purpose

Basic and advanced research on fluvial hydraulics and hydrology and its relation to the ecosystem will be reviewed and discussed. Research methods will also be reviewed and discussed.

The objective of this course is to acquire the skills to understand the trends in research on conservation engineering of river basins and the methods to conduct hydraulics, hydrological and ecosystem researches.

Prerequisite Subjects

Hydrology and River Engineering, Open-channel hydraulics, Fundamental of Hydrodynamics with Exercises, Human activities and environment

Course Topics

1. Paper reviewing method
2. Fluvial hydraulics and hydrology and its relation to the ecosystem
3. Measurement and modeling of river morphology and hydraulics
4. Measurements for ecosystem

Documents and experiment preparation is required prior to the seminar. Data analysis and report submission are asked following the seminar.

Textbook

Directed as needed

Additional Reading

Directed as needed

Grade Assessment

Presentation and report will be used for grading. To acquire basic skills of research review or fundamental methods for research is the criteria to pass. Advanced skills for reviewing and research will be accounted for the grade.

Notes

Contacting Faculty

Discuss during the seminar or asking by e-mail.

Seminar on Conservation Engineering of River Basins 1C (2.0credits) (流域保全学セミナー1C)

Course Type	Specialized Courses		
Division at course	Master's Course		
Class Format	Seminar		
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate	
Starts 1	2 Spring Semester	2 Autumn Semester	
Lecturer	Yuji Toda Professor	Ryota TSUBAKI Associate Professor	OBANAMakiko Assistant Professor

Course Purpose

Basic and advanced research on fluvial hydraulics and hydrology and its relation to the ecosystem will be reviewed and discussed. Research methods will also be reviewed and discussed.

The objective of this course is to acquire the skills to understand the trends in research on conservation engineering of river basins and the methods to conduct hydraulics, hydrological and ecosystem researches.

Prerequisite Subjects

Hydrology and River Engineering, Open-channel hydraulics, Fundamental of Hydrodynamics with Exercises, Human activities and environment

Course Topics

1. Paper reviewing method
2. Fluvial hydraulics and hydrology and its relation to the ecosystem
3. Measurement and modeling of river morphology and hydraulics
4. Measurements for ecosystem

Documents and experiment preparation is required prior to the seminar. Data analysis and report submission are asked following the seminar.

Textbook

Directed as needed

Additional Reading

Directed as needed

Grade Assessment

Presentation and report will be used for grading. To acquire basic skills of research review or fundamental methods for research is the criteria to pass. Advanced skills for reviewing and research will be accounted for the grade.

Notes

Contacting Faculty

Discuss during the seminar or asking by e-mail.

Seminar on Conservation Engineering of River Basins 1D (2.0credits) (流域保全学セミナー1D)

Course Type	Specialized Courses		
Division at course	Master's Course		
Class Format	Seminar		
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate	
Starts 1	2 Autumn Semester	2 Spring Semester	
Lecturer	Yuji Toda Professor	Ryota TSUBAKI Associate Professor	OBANAMakiko Assistant Professor

Course Purpose

Basic and advanced research on fluvial hydraulics and hydrology and its relation to the ecosystem will be reviewed and discussed. Research methods will also be reviewed and discussed.

The objective of this course is to acquire the skills to understand the trends in research on conservation engineering of river basins and the methods to conduct hydraulics, hydrological and ecosystem researches.

Prerequisite Subjects

Hydrology and River Engineering, Open-channel hydraulics, Fundamental of Hydrodynamics with Exercises, Human activities and environment

Course Topics

1. Paper reviewing method
2. Fluvial hydraulics and hydrology and its relation to the ecosystem
3. Measurement and modeling of river morphology and hydraulics
4. Measurements for ecosystem

Documents and experiment preparation is required prior to the seminar. Data analysis and report submission are asked following the seminar.

Textbook

Directed as needed

Additional Reading

Directed as needed

Grade Assessment

Presentation and report will be used for grading. To acquire basic skills of research review or fundamental methods for research is the criteria to pass. Advanced skills for reviewing and research will be accounted for the grade.

Notes

Not specified

Contacting Faculty

Discuss during the seminar or asking by e-mail.

Seminar on Coastal and Maritime Engineering 1A (2.0credits) (海岸・海洋工学セミナー1A)

Course Type	Specialized Courses		
Division at course	Master's Course		
Class Format	Seminar		
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate	
Starts 1	1 Spring Semester	1 Autumn Semester	
Lecturer	norimi mizutani Professor	Tomoaki NAKAMURA Associate Professor	YonghwanCHO Assistant Professor

Course Purpose

The aim of this course is to review and discuss refereed journal papers in order to understand physical processes on coastal and ocean engineering.

Course objectives:

Students will be able to

1. explain what theoretical, experimental, and numerical methods used in coastal and ocean engineering are
2. understand state-of-the-art research in coastal and ocean engineering

Prerequisite Subjects

Advanced Fluvial and Coastal Hydrodynamics, Advanced Coastal and Offshore Engineering, Advanced Work in Coastal and Offshore Engineering

Course Topics

Presentation and discussion on a refereed journal paper on coastal and ocean engineering

Textbook

Students will select refereed journal papers closely related to their research topic

Additional Reading

Directed as needed

Grade Assessment

Presentation and discussion

Notes

No prerequisite

Contacting Faculty

Prof. Mizutani (ext. 4630, mizutani@civil.nagoya-u.ac.jp), Assoc. Prof. Nakamura (ext. 4632, tnakamura@nagoya-u.jp), Assist. Prof. Cho (ext. 4634, yhcho@civil.nagoya-u.ac.jp)

Seminar on Coastal and Maritime Engineering 1B (2.0credits) (海岸・海洋工学セミナー1B)

Course Type	Specialized Courses		
Division at course	Master's Course		
Class Format	Seminar		
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate	
Starts 1	1 Autumn Semester	1 Spring Semester	
Lecturer	norimi mizutani Professor	Tomoaki NAKAMURA Associate Professor	YonghwanCHO Assistant Professor

Course Purpose

The aim of this course is to review and discuss refereed journal papers in order to understand physical processes on coastal and ocean engineering.

Course objectives:

Students will be able to

1. explain what theoretical, experimental, and numerical methods used in coastal and ocean engineering are
2. understand state-of-the-art research in coastal and ocean engineering

Prerequisite Subjects

Advanced Fluvial and Coastal Hydrodynamics, Advanced Coastal and Offshore Engineering, Advanced Work in Coastal and Offshore Engineering

Course Topics

Presentation and discussion on a refereed journal paper on coastal and ocean engineering

Textbook

Students will select refereed journal papers closely related to their research topic

Additional Reading

Directed as needed

Grade Assessment

Presentation and discussion

Notes

No prerequisite

Contacting Faculty

Prof. Mizutani (ext. 4630, mizutani@civil.nagoya-u.ac.jp), Assoc. Prof. Nakamura (ext. 4632, tnakamura@nagoya-u.jp), Assist. Prof. Cho (ext. 4634, yhcho@civil.nagoya-u.ac.jp)

Seminar on Coastal and Maritime Engineering 1C (2.0credits) (海岸・海洋工学セミナー1C)

Course Type	Specialized Courses		
Division at course	Master's Course		
Class Format	Seminar		
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate	
Starts 1	2 Spring Semester	2 Autumn Semester	
Lecturer	norimi mizutani Professor	Tomoaki NAKAMURA Associate Professor	YonghwanCHO Assistant Professor

Course Purpose

The aim of this course is to review and discuss refereed journal papers in order to understand physical processes on coastal and ocean engineering.

Course objectives:

Students will be able to

1. explain what theoretical, experimental, and numerical methods used in coastal and ocean engineering are
2. understand state-of-the-art research in coastal and ocean engineering

Prerequisite Subjects

Advanced Fluvial and Coastal Hydrodynamics, Advanced Coastal and Offshore Engineering, Advanced Work in Coastal and Offshore Engineering

Course Topics

Presentation and discussion on a refereed journal paper on coastal and ocean engineering

Textbook

Students will select refereed journal papers closely related to their research topic

Additional Reading

Directed as needed

Grade Assessment

Presentation and discussion

Notes

No prerequisite

Contacting Faculty

Prof. Mizutani (ext. 4630, mizutani@civil.nagoya-u.ac.jp), Assoc. Prof. Nakamura (ext. 4632, tnakamura@nagoya-u.jp), Assist. Prof. Cho (ext. 4634, yhcho@civil.nagoya-u.ac.jp)

Seminar on Coastal and Maritime Engineering 1D (2.0credits) (海岸・海洋工学セミナー1D)

Course Type	Specialized Courses		
Division at course	Master's Course		
Class Format	Seminar		
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate	
Starts 1	2 Autumn Semester	2 Spring Semester	
Lecturer	norimi mizutani Professor	Tomoaki NAKAMURA Associate Professor	YonghwanCHO Assistant Professor

Course Purpose

The aim of this course is to review and discuss refereed journal papers in order to understand physical processes on coastal and ocean engineering.

Course objectives:

Students will be able to

1. explain what theoretical, experimental, and numerical methods used in coastal and ocean engineering are
2. understand state-of-the-art research in coastal and ocean engineering

Prerequisite Subjects

Advanced Fluvial and Coastal Hydrodynamics, Advanced Coastal and Offshore Engineering, Advanced Work in Coastal and Offshore Engineering

Course Topics

Presentation and discussion on a refereed journal paper on coastal and ocean engineering

Textbook

Students will select refereed journal papers closely related to their research topic

Additional Reading

Directed as needed

Grade Assessment

Presentation and discussion

Notes

No prerequisite

Contacting Faculty

Prof. Mizutani (ext. 4630, mizutani@civil.nagoya-u.ac.jp), Assoc. Prof. Nakamura (ext. 4632, tnakamura@nagoya-u.jp), Assist. Prof. Cho (ext. 4634, yhcho@civil.nagoya-u.ac.jp)

Seminar on Geomaterial Engineering1A (2.0credits) (地盤材料工学セミナー1A)

Course Type	Specialized Courses	
Division at course	Master's Course	
Class Format	Seminar	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	1 Spring Semester	1 Autumn Semester
Lecturer	Masaki NAKANO Professor	SAKAITakayuki Assistant Professor

Course Purpose

This course introduces the latest knowledge of geotechnical engineering and geotechnical material engineering in order to acquire knowledge of advanced specialized fields based on engineering basics and related boundary areas with the aim of training comprehensive and applied skills, problem excavation and solution skills. The aim of this course is to understand research trends, related research areas, and social trends, to discuss measures for extracting and solving issues, and to understand the relationship with basic science as well as to acquire the reading comprehension skills and presentation skills necessary for conducting and developing research. The aim of this course is to understand research trends, related research areas, and social trends, to discuss measures for extracting and solving issues, and to understand the relationship with basic science as well as to acquire the reading comprehension skills and presentation skills necessary for conducting and developing research. The goals of this course are to(1) Understand and explain theoretical, experimental, and numerical research methods in geotechnical engineering and geotechnical material engineering.(2) Understand domestic and overseas research trends in related fields.

Prerequisite Subjects

Advanced Geotechnical Engineering, Advanced Mechanics of Geomaterials, Advanced Soil Dynamics, Advanced Continuum Mechanics, Advanced Numerical Analysis, Advanced Work in Soil Mechanics and Geotechnical Engineering

Course Topics

1. Mechanical behavior of basic materials used in soil mechanics and geotechnical engineering Learning mainly about the mechanical behavior of typical sand, clay, and intermediate soils, and the description using elastoplastic constitutive models
2. Mechanical behavior of special soil and problematic soil Understanding and modeling the mechanical behavior of soil materials having weathering, expansive, and friable properties.
3. Effective use of generated soil and disaster waste Measurement to make effective usage of construction waste soil and recovered soil from disaster waste as soil material
4. Features of overseas earth materials Understanding the characteristics of soil generated during construction overseas and soil materials causing geological disasters.
5. Ground material improvement technology Understanding techniques for strengthening and stabilizing difficult-to-handle ground materials with solidified materials and short discrete fibers.
You must prepare and review materials/handouts used in seminar. In addition, you will be required to submit several report assignments, so submit them.

Textbook

The related papers will be selected and distributed as appropriate as the seminar progresses.

Additional Reading

References will be introduced as necessary.

Grade Assessment

The degree of achievement of goals is comprehensively evaluated by making presentations at seminar, answering questions, contributing to discussions, and reporting on issues. The contributions are those that answer the questions and those that summarize the contents of the literature. Acceptance criteria are to be able to logically consider and discuss based on the knowledge obtained through the class, such as the extraction and resolution of various problems in geomaterials engineering.

Notes

No course requirements are required

Contacting Faculty

Welcome questions during and after this seminar. Each member also accepts questions at the room and by e-mail at any time. Masaki NAKANO: Ex.4622, nakano@civil.nagoya-u.ac.jp Takayuki Sakai: Ex.2734t-sakai@civil.nagoya-u.ac.jp

Seminar on Geomaterial Engineering1B (2.0credits) (地盤材料工学セミナー1B)

Course Type	Specialized Courses	
Division at course	Master's Course	
Class Format	Seminar	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	1 Autumn Semester	1 Spring Semester
Lecturer	Masaki NAKANO Professor	SAKAITakayuki Assistant Professor

Course Purpose

This course introduces the latest knowledge of geotechnical engineering and geotechnical material engineering in order to acquire knowledge of advanced specialized fields based on engineering basics and related boundary areas with the aim of training comprehensive and applied skills, problem excavation and solution skills. The aim of this course is to understand research trends, related research areas, and social trends, to discuss measures for extracting and solving issues, and to understand the relationship with basic science as well as to acquire the reading comprehension skills and presentation skills necessary for conducting and developing research. The aim of this course is to understand research trends, related research areas, and social trends, to discuss measures for extracting and solving issues, and to understand the relationship with basic science as well as to acquire the reading comprehension skills and presentation skills necessary for conducting and developing research. The goals of this course are to (1) Understand and explain theoretical, experimental, and numerical research methods in geotechnical engineering and geotechnical material engineering. (2) Understand domestic and overseas research trends in related fields.

Prerequisite Subjects

Advanced Geotechnical Engineering, Advanced Mechanics of Geomaterials, Advanced Soil Dynamics, Advanced Continuum Mechanics, Advanced Numerical Analysis, Advanced Work in Soil Mechanics and Geotechnical Engineering

Course Topics

1. Mechanical behavior of basic materials used in soil mechanics and geotechnical engineering Learning mainly about the mechanical behavior of typical sand, clay, and intermediate soils, and the description using elastoplastic constitutive models
2. Mechanical behavior of special soil and problematic soil Understanding and modeling the mechanical behavior of soil materials having weathering, expansive, and friable properties.
3. Effective use of generated soil and disaster waste Measurement to make effective usage of construction waste soil and recovered soil from disaster waste as soil material
4. Features of overseas earth materials Understanding the characteristics of soil generated during construction overseas and soil materials causing geological disasters.
5. Ground material improvement technology Understanding techniques for strengthening and stabilizing difficult-to-handle ground materials with solidified materials and short discrete fibers. You must prepare and review materials/handouts used in seminar. In addition, you will be required to submit several report assignments, so submit them.

Textbook

The related papers will be selected and distributed as appropriate as the seminar progresses.

Additional Reading

References will be introduced as necessary.

Grade Assessment

The degree of achievement of goals is comprehensively evaluated by making presentations at seminar, answering questions, contributing to discussions, and reporting on issues. The contributions are those that answer the questions and those that summarize the contents of the literature. Acceptance criteria are to be able to logically consider and discuss based on the knowledge obtained through the class, such as the extraction and resolution of various problems in geomaterials engineering.

Notes

No course requirements are required

Contacting Faculty

Welcome questions during and after this seminar. Each member also accepts questions at the room and by e-mail at any time. Masaki NAKANO: Ex.4622, nakano@civil.nagoya-u.ac.jp Takayuki Sakai: Ex.2734t-sakai@civil.nagoya-u.ac.jp

Seminar on Geomaterial Engineering1C (2.0credits) (地盤材料工学セミナー1C)

Course Type	Specialized Courses	
Division at course	Master's Course	
Class Format	Seminar	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	2 Spring Semester	2 Autumn Semester
Lecturer	Masaki NAKANO Professor	SAKAITakayuki Assistant Professor

Course Purpose

This course introduces the latest knowledge of geotechnical engineering and geotechnical material engineering in order to acquire knowledge of advanced specialized fields based on engineering basics and related boundary areas with the aim of training comprehensive and applied skills, problem excavation and solution skills. The aim of this course is to understand research trends, related research areas, and social trends, to discuss measures for extracting and solving issues, and to understand the relationship with basic science as well as to acquire the reading comprehension skills and presentation skills necessary for conducting and developing research. The aim of this course is to understand research trends, related research areas, and social trends, to discuss measures for extracting and solving issues, and to understand the relationship with basic science as well as to acquire the reading comprehension skills and presentation skills necessary for conducting and developing research. The goals of this course are to (1) Understand and explain theoretical, experimental, and numerical research methods in geotechnical engineering and geotechnical material engineering. (2) Understand domestic and overseas research trends in related fields.

Prerequisite Subjects

Advanced Geotechnical Engineering, Advanced Mechanics of Geomaterials, Advanced Soil Dynamics, Advanced Continuum Mechanics, Advanced Numerical Analysis, Advanced Work in Soil Mechanics and Geotechnical Engineering

Course Topics

1. Mechanical behavior of basic materials used in soil mechanics and geotechnical engineering Learning mainly about the mechanical behavior of typical sand, clay, and intermediate soils, and the description using elastoplastic constitutive models
2. Mechanical behavior of special soil and problematic soil Understanding and modeling the mechanical behavior of soil materials having weathering, expansive, and friable properties.
3. Effective use of generated soil and disaster waste Measurement to make effective usage of construction waste soil and recovered soil from disaster waste as soil material
4. Features of overseas earth materials Understanding the characteristics of soil generated during construction overseas and soil materials causing geological disasters.
5. Ground material improvement technology Understanding techniques for strengthening and stabilizing difficult-to-handle ground materials with solidified materials and short discrete fibers. You must prepare and review materials/handouts used in seminar. In addition, you will be required to submit several report assignments, so submit them.

Textbook

The related papers will be selected and distributed as appropriate as the seminar progresses.

Additional Reading

References will be introduced as necessary.

Grade Assessment

The degree of achievement of goals is comprehensively evaluated by making presentations at seminar, answering questions, contributing to discussions, and reporting on issues. The contributions are those that answer the questions and those that summarize the contents of the literature. Acceptance criteria are to be able to logically consider and discuss based on the knowledge obtained through the class, such as the extraction and resolution of various problems in geomaterials engineering.

Notes

No course requirements are required

Contacting Faculty

Welcome questions during and after this seminar. Each member also accepts questions at the room and by e-mail at any time. Masaki NAKANO: Ex.4622, nakano@civil.nagoya-u.ac.jp Takayuki Sakai: Ex.2734t-sakai@civil.nagoya-u.ac.jp

Seminar on Geomaterial Engineering1D (2.0credits) (地盤材料工学セミナー1D)

Course Type	Specialized Courses	
Division at course	Master's Course	
Class Format	Seminar	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	2 Autumn Semester	2 Spring Semester
Lecturer	Masaki NAKANO Professor	SAKAITakayuki Assistant Professor

Course Purpose

This course introduces the latest knowledge of geotechnical engineering and geotechnical material engineering in order to acquire knowledge of advanced specialized fields based on engineering basics and related boundary areas with the aim of training comprehensive and applied skills, problem excavation and solution skills. The aim of this course is to understand research trends, related research areas, and social trends, to discuss measures for extracting and solving issues, and to understand the relationship with basic science as well as to acquire the reading comprehension skills and presentation skills necessary for conducting and developing research. The aim of this course is to understand research trends, related research areas, and social trends, to discuss measures for extracting and solving issues, and to understand the relationship with basic science as well as to acquire the reading comprehension skills and presentation skills necessary for conducting and developing research. The goals of this course are to (1) Understand and explain theoretical, experimental, and numerical research methods in geotechnical engineering and geotechnical material engineering. (2) Understand domestic and overseas research trends in related fields.

Prerequisite Subjects

Advanced Geotechnical Engineering, Advanced Mechanics of Geomaterials, Advanced Soil Dynamics, Advanced Continuum Mechanics, Advanced Numerical Analysis, Advanced Work in Soil Mechanics and Geotechnical Engineering

Course Topics

1. Mechanical behavior of basic materials used in soil mechanics and geotechnical engineering Learning mainly about the mechanical behavior of typical sand, clay, and intermediate soils, and the description using elastoplastic constitutive models
2. Mechanical behavior of special soil and problematic soil Understanding and modeling the mechanical behavior of soil materials having weathering, expansive, and friable properties.
3. Effective use of generated soil and disaster waste Measurement to make effective usage of construction waste soil and recovered soil from disaster waste as soil material
4. Features of overseas earth materials Understanding the characteristics of soil generated during construction overseas and soil materials causing geological disasters.
5. Ground material improvement technology Understanding techniques for strengthening and stabilizing difficult-to-handle ground materials with solidified materials and short discrete fibers. You must prepare and review materials/handouts used in seminar. In addition, you will be required to submit several report assignments, so submit them.

Textbook

The related papers will be selected and distributed as appropriate as the seminar progresses.

Additional Reading

References will be introduced as necessary.

Grade Assessment

The degree of achievement of goals is comprehensively evaluated by making presentations at seminar, answering questions, contributing to discussions, and reporting on issues. The contributions are those that answer the questions and those that summarize the contents of the literature. Acceptance criteria are to be able to logically consider and discuss based on the knowledge obtained through the class, such as the extraction and resolution of various problems in geomaterials engineering.

Notes

No course requirements are required

Contacting Faculty

Welcome questions during and after this seminar. Each member also accepts questions at the room and by e-mail at any time. Masaki NAKANO: Ex.4622, nakano@civil.nagoya-u.ac.jp Takayuki Sakai: Ex.2734t-sakai@civil.nagoya-u.ac.jp

Course Type	Specialized Courses		
Division at course	Master's Course		
Class Format	Seminar		
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate	
Starts 1	1 Spring Semester	1 Autumn Semester	
Lecturer	Toshihiro NODA Professor	Kentaro NAKAI Associate Professor	YOSHIKAWA Takahiro Assistant Professor

Course Purpose

The purpose of this seminar is to acquire the basics of geotechnical engineering, seismic engineering, and geo-disaster prevention engineering related to the safety of ground and soil structures, and to understand effective design principles and ground countermeasures. It also aims to acquire reading comprehension skills and presentation skills necessary for conducting and developing research.

By learning this lecture, the goal is to be able to:

1. Understand and explain theoretical, experimental, and numerical research methods in geotechnical engineering, seismic engineering, and geo-disaster prevention engineering.
2. Understand and explain domestic and overseas research trends in related fields.

Prerequisite Subjects

Advanced Geotechnical Engineering, Advanced Mechanics of Geomaterials, Advanced Soil Dynamics, Advanced Continuum Mechanics, Advanced Numerical Analysis, Advanced Work in Soil Mechanics and Geotechnical Engineering

Course Topics

1. Fundamentals of soft ground mechanics
2. Deformation and stability of ground structure
3. Design method of ground and structure in soft ground
4. Design of ground reinforcement and improvement method
5. Basics of seismic engineering
6. How to create input ground motion for design
7. Seismic response analysis and seismic safety evaluation

Materials used in lectures must be prepared and reviewed. In addition, students will be required to submit several report assignments.

Textbook

Printed documents will be distributed.

Additional Reading

References will be introduced as necessary.

Grade Assessment

Comprehensively evaluate the achievement of goals by making presentations at seminars, answering questions, contributing to discussions, and issue reports. Contributions include statements that answer questions and summarize the contents of the literature. Acceptance criteria are to be able to logically consider and argue based on the knowledge obtained through lectures, such as extracting and solving various problems in geotechnical engineering, seismic engineering, and geological disaster prevention engineering.

Notes

No course requirements are required.

Contacting Faculty

Questions during and after the lecture are welcome. E-mail questions are also accepted at any time.

Seminar on Disaster Prevention and Safety Engineering of Land 1A (2.0credits) (国土防災安全工学セミナー1A)

Toshihiro NODA, Ext: 3833, E-mail: noda@nagoya-u.jp, Bldg. 9 Rm. 317

Kentaro NAKAI, Ext: 5203, E-mail: nakai@civil.nagoya-u.ac.jp, Bldg. 9 Rm. 313

Takahiro YOSHIKAWA, Ext: 3835, E-mail: yoshikawa@civil.nagoya-u.ac.jp, Bldg. 9 Rm. 313

Course Type	Specialized Courses	
Division at course	Master's Course	
Class Format	Seminar	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	1 Autumn Semester	1 Spring Semester
Lecturer	Toshihiro NODA Professor	Kentaro NAKAI Associate Professor YOSHIKAWA Takahiro Assistant Professor

Course Purpose

The purpose of this seminar is to acquire the basics of geotechnical engineering, seismic engineering, and geo-disaster prevention engineering related to the safety of ground and soil structures, and to understand effective design principles and ground countermeasures. It also aims to acquire reading comprehension skills and presentation skills necessary for conducting and developing research.

By learning this lecture, the goal is to be able to:

1. Understand and explain theoretical, experimental, and numerical research methods in geotechnical engineering, seismic engineering, and geo-disaster prevention engineering.
2. Understand and explain domestic and overseas research trends in related fields.

Prerequisite Subjects

Advanced Geotechnical Engineering, Advanced Mechanics of Geomaterials, Advanced Soil Dynamics, Advanced Continuum Mechanics, Advanced Numerical Analysis, Advanced Work in Soil Mechanics and Geotechnical Engineering

Course Topics

1. Fundamentals of soft ground mechanics
2. Deformation and stability of ground structure
3. Design method of ground and structure in soft ground
4. Design of ground reinforcement and improvement method
5. Basics of seismic engineering
6. How to create input ground motion for design
7. Seismic response analysis and seismic safety evaluation

Materials used in lectures must be prepared and reviewed. In addition, students will be required to submit several report assignments.

Textbook

Printed documents will be distributed.

Additional Reading

References will be introduced as necessary.

Grade Assessment

Comprehensively evaluate the achievement of goals by making presentations at seminars, answering questions, contributing to discussions, and issue reports. Contributions include statements that answer questions and summarize the contents of the literature. Acceptance criteria are to be able to logically consider and argue based on the knowledge obtained through lectures, such as extracting and solving various problems in geotechnical engineering, seismic engineering, and geological disaster prevention engineering.

Notes

No course requirements are required.

Contacting Faculty

Questions during and after the lecture are welcome. E-mail questions are also accepted at any time.

Seminar on Disaster Prevention and Safety Engineering of Land 1B (2.0credits) (国土防災安全工学セミナー1B)

Toshihiro NODA, Ext: 3833, E-mail: noda@nagoya-u.jp, Bldg. 9 Rm. 317

Kentaro NAKAI, Ext: 5203, E-mail: nakai@civil.nagoya-u.ac.jp, Bldg. 9 Rm. 313

Takahiro YOSHIKAWA, Ext: 3835, E-mail: yoshikawa@civil.nagoya-u.ac.jp, Bldg. 9 Rm. 313

Course Type	Specialized Courses	
Division at course	Master's Course	
Class Format	Seminar	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	2 Spring Semester	2 Autumn Semester
Lecturer	Toshihiro NODA Professor	Kentaro NAKAI Associate Professor YOSHIKAWA Takahiro Assistant Professor

Course Purpose

The purpose of this seminar is to acquire the basics of geotechnical engineering, seismic engineering, and geo-disaster prevention engineering related to the safety of ground and soil structures, and to understand effective design principles and ground countermeasures. It also aims to acquire reading comprehension skills and presentation skills necessary for conducting and developing research.

By learning this lecture, the goal is to be able to:

1. Understand and explain theoretical, experimental, and numerical research methods in geotechnical engineering, seismic engineering, and geo-disaster prevention engineering.
2. Understand and explain domestic and overseas research trends in related fields.

Prerequisite Subjects

Advanced Geotechnical Engineering, Advanced Mechanics of Geomaterials, Advanced Soil Dynamics, Advanced Continuum Mechanics, Advanced Numerical Analysis, Advanced Work in Soil Mechanics and Geotechnical Engineering

Course Topics

1. Fundamentals of soft ground mechanics
2. Deformation and stability of ground structure
3. Design method of ground and structure in soft ground
4. Design of ground reinforcement and improvement method
5. Basics of seismic engineering
6. How to create input ground motion for design
7. Seismic response analysis and seismic safety evaluation

Materials used in lectures must be prepared and reviewed. In addition, students will be required to submit several report assignments.

Textbook

Printed documents will be distributed.

Additional Reading

References will be introduced as necessary.

Grade Assessment

Comprehensively evaluate the achievement of goals by making presentations at seminars, answering questions, contributing to discussions, and issue reports. Contributions include statements that answer questions and summarize the contents of the literature. Acceptance criteria are to be able to logically consider and argue based on the knowledge obtained through lectures, such as extracting and solving various problems in geotechnical engineering, seismic engineering, and geological disaster prevention engineering.

Notes

No course requirements are required.

Contacting Faculty

Questions during and after the lecture are welcome. E-mail questions are also accepted at any time.

Seminar on Disaster Prevention and Safety Engineering of Land 1C (2.0credits) (国土防災安全工学セミナー1C)

Toshihiro NODA, Ext: 3833, E-mail: noda@nagoya-u.jp, Bldg. 9 Rm. 317

Kentaro NAKAI, Ext: 5203, E-mail: nakai@civil.nagoya-u.ac.jp, Bldg. 9 Rm. 313

Takahiro YOSHIKAWA, Ext: 3835, E-mail: yoshikawa@civil.nagoya-u.ac.jp, Bldg. 9 Rm. 313

Course Type	Specialized Courses	
Division at course	Master's Course	
Class Format	Seminar	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	2 Autumn Semester	2 Spring Semester
Lecturer	Toshihiro NODA Professor	Kentaro NAKAI Associate Professor YOSHIKAWA Takahiro Assistant Professor

Course Purpose

The purpose of this seminar is to acquire the basics of geotechnical engineering, seismic engineering, and geo-disaster prevention engineering related to the safety of ground and soil structures, and to understand effective design principles and ground countermeasures. It also aims to acquire reading comprehension skills and presentation skills necessary for conducting and developing research.

By learning this lecture, the goal is to be able to:

1. Understand and explain theoretical, experimental, and numerical research methods in geotechnical engineering, seismic engineering, and geo-disaster prevention engineering.
2. Understand and explain domestic and overseas research trends in related fields.

Prerequisite Subjects

Advanced Geotechnical Engineering, Advanced Mechanics of Geomaterials, Advanced Soil Dynamics, Advanced Continuum Mechanics, Advanced Numerical Analysis, Advanced Work in Soil Mechanics and Geotechnical Engineering

Course Topics

1. Fundamentals of soft ground mechanics
2. Deformation and stability of ground structure
3. Design method of ground and structure in soft ground
4. Design of ground reinforcement and improvement method
5. Basics of seismic engineering
6. How to create input ground motion for design
7. Seismic response analysis and seismic safety evaluation

Materials used in lectures must be prepared and reviewed. In addition, students will be required to submit several report assignments.

Textbook

Printed documents will be distributed.

Additional Reading

References will be introduced as necessary.

Grade Assessment

Comprehensively evaluate the achievement of goals by making presentations at seminars, answering questions, contributing to discussions, and issue reports. Contributions include statements that answer questions and summarize the contents of the literature. Acceptance criteria are to be able to logically consider and argue based on the knowledge obtained through lectures, such as extracting and solving various problems in geotechnical engineering, seismic engineering, and geological disaster prevention engineering.

Notes

No course requirements are required.

Contacting Faculty

Questions during and after the lecture are welcome. E-mail questions are also accepted at any time.

Seminar on Disaster Prevention and Safety Engineering of Land 1D (2.0credits) (国土防災安全工学セミナー1D)

Toshihiro NODA, Ext: 3833, E-mail: noda@nagoya-u.jp, Bldg. 9 Rm. 317

Kentaro NAKAI, Ext: 5203, E-mail: nakai@civil.nagoya-u.ac.jp, Bldg. 9 Rm. 313

Takahiro YOSHIKAWA, Ext: 3835, E-mail: yoshikawa@civil.nagoya-u.ac.jp, Bldg. 9 Rm. 313

Seminar on Maintenance of Civil Structures 1A (2.0credits) (社会基盤維持管理学セミナー1A)

Course Type	Specialized Courses		
Division at course	Master's Course		
Class Format	Seminar		
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate	
Starts 1	1 Spring Semester	1 Autumn Semester	
Lecturer	KazuoTATEISHI Professor	Takeshi HANJI Associate Professor	Masaru Shimizu Assistant Professor

Course Purpose

Seminar on design concept, maintenance and long-term management method for infrastructures.

After completing this course, students will be able to:

- 1.understand design concepts of civil structures, and
- 2.improve skills on reading comprehension and presentation.

Prerequisite Subjects

Advanced Course in Lifecycle Design of Civil Structures

Advanced Steel Structures

Advanced Concrete Structures

Exercise in Inspection of Civil Structures

Course Topics

Reading and discussing some literature on history, design and maintenance of infrastructures.

Textbook

Textbooks will be determined by the supervisors.

Additional Reading

Reference books will be determined by the supervisors.

Grade Assessment

Evaluation will be comprehensively based on presentation and discussion among students, etc.

Notes

None

Contacting Faculty

Students are encouraged to ask questions anytime.

Seminar on Maintenance of Civil Structures 1B (2.0credits) (社会基盤維持管理学セミナー1B)

Course Type	Specialized Courses		
Division at course	Master's Course		
Class Format	Seminar		
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate	
Starts 1	1 Autumn Semester	1 Spring Semester	
Lecturer	KazuoTATEISHI Professor	Takeshi HANJI Associate Professor	Masaru Shimizu Assistant Professor

Course Purpose

Seminar on design concept, maintenance and long-term management method for infrastructures.

After completing this course, students will be able to:

- 1.understand design concepts of civil structures, and
- 2.improve skills on reading comprehension and presentation.

Prerequisite Subjects

Advanced Course in Lifecycle Design of Civil Structures

Advanced Steel Structures

Advanced Concrete Structures

Exercise in Inspection of Civil Structures

Course Topics

Reading and discussing some literature on history, design and maintenance of infrastructures.

Textbook

Textbooks will be determined by the supervisors.

Additional Reading

Reference books will be determined by the supervisors.

Grade Assessment

Evaluation will be comprehensively based on presentation and discussion among students, etc.

Notes

None

Contacting Faculty

Students are encouraged to ask questions anytime.

Seminar on Maintenance of Civil Structures 1C (2.0credits) (社会基盤維持管理学セミナー1C)

Course Type	Specialized Courses		
Division at course	Master's Course		
Class Format	Seminar		
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate	
Starts 1	2 Spring Semester	2 Autumn Semester	
Lecturer	KazuoTATEISHI Professor	Takeshi HANJI Associate Professor	Masaru Shimizu Assistant Professor

Course Purpose

Seminar on design concept, maintenance and long-term management method for infrastructures.

After completing this course, students will be able to:

- 1.understand design concepts of civil structures, and
- 2.improve skills on reading comprehension and presentation.

Prerequisite Subjects

Advanced Course in Lifecycle Design of Civil Structures

Advanced Steel Structures

Advanced Concrete Structures

Exercise in Inspection of Civil Structures

Course Topics

Reading and discussing some literature on history, design and maintenance of infrastructures.

Textbook

Textbooks will be determined by the supervisors.

Additional Reading

Reference books will be determined by the supervisors.

Grade Assessment

Evaluation will be comprehensively based on presentation and discussion among students, etc.

Notes

None

Contacting Faculty

Students are encouraged to ask questions anytime.

Seminar on Maintenance of Civil Structures 1D (2.0credits) (社会基盤維持管理学セミナー1D)

Course Type	Specialized Courses		
Division at course	Master's Course		
Class Format	Seminar		
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate	
Starts 1	2 Autumn Semester	2 Spring Semester	
Lecturer	KazuoTATEISHI Professor	Takeshi HANJI Associate Professor	Masaru Shimizu Assistant Professor

Course Purpose

Seminar on design concept, maintenance and long-term management method for infrastructures.

After completing this course, students will be able to:

- 1.understand design concepts of civil structures, and
- 2.improve skills on reading comprehension and presentation.

Prerequisite Subjects

Advanced Course in Lifecycle Design of Civil Structures

Advanced Steel Structures

Advanced Concrete Structures

Exercise in Inspection of Civil Structures

Course Topics

Reading and discussing some literature on history, design and maintenance of infrastructures.

Textbook

Textbooks will be determined by the supervisors.

Additional Reading

Reference books will be determined by the supervisors.

Grade Assessment

Evaluation will be comprehensively based on presentation and discussion among students, etc.

Notes

None

Contacting Faculty

Students are encouraged to ask questions anytime.

Land Design Seminar 1A (2.0credits) (国土デザイン学セミナー1A)

Course Type	Specialized Courses	
Division at course	Master's Course	
Class Format	Seminar	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	1 Spring Semester	1 Autumn Semester
Lecturer	NAKAMURASHinichiro Associate Professor	

Course Purpose

Students cultivate a capacity for understanding and expressiveness related to methodologies to create cultural, safe and secure regional and infrastructure design under the climate change and the aging society, in which technologies, institutions and policy measures are discussed within the scope of regional design, economy and public policy analysis.

Prerequisite Subjects

Urban and Regional Planning

Course Topics

Students review and collect the relevant advanced and recent literatures related to methodologies to create cultural, safe and secure region and infrastructure. The results are presented and discussed together with students and the supervisor.

Textbook

None.

Additional Reading

Intergovernmental Panel on Climate Change(IPCC): Fifth Assessment Report (AR5), 2014,
<http://www.ipcc.ch/index.html>.Maggie Black, Jannet KingThe: Atlas of Water: Mapping the World's Most Critical Resource, University of California Press(2009)

Grade Assessment

The capacity and positive attitude for discussions and presentations are evaluated.The ability of adequate understanding and accurate summary of the literature is evaluated.Attendance for all seminars is required.

Notes

None

Contacting Faculty

Sending e-mail or visiting the supervisor's office.E-mail: shinichiro@civil.nagoya-u.ac.jpOffice: Room 305, Engineering Building No.9

Land Design Seminar 1B (2.0credits) (国土デザイン学セミナー1B)

Course Type	Specialized Courses	
Division at course	Master's Course	
Class Format	Seminar	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	1 Autumn Semester	1 Spring Semester
Lecturer	NAKAMURASHinichiro Associate Professor	

Course Purpose

Students cultivate a capacity for understanding and expressiveness related to methodologies to create cultural, safe and secure regional and infrastructure design under the climate change and the aging society, in which technologies, institutions and policy measures are discussed within the scope of regional design, economy and public policy analysis.

Prerequisite Subjects

Urban and Regional Planning

Course Topics

Students review and collect the relevant advanced and recent literatures related to methodologies to create cultural, safe and secure region and infrastructure. The results are presented and discussed together with students and the supervisor.

Textbook

None.

Additional Reading

Intergovernmental Panel on Climate Change(IPCC): Fifth Assessment Report (AR5), 2014,
<http://www.ipcc.ch/index.html>.

Maggie Black, Jannet KingThe: Atlas of Water: Mapping the World's Most Critical Resource, University of California Press(2009)

Grade Assessment

The capacity and positive attitude for discussions and presentations are evaluated.

The ability of adequate understanding and accurate summary of the literature is evaluated.

Attendance for all seminars is required.

Notes

None

Contacting Faculty

Sending e-mail or visiting the supervisor's office.

E-mail: shinichiro@civil.nagoya-u.ac.jp

Office: Room 305, Engineering Building No.9

Land Design Seminar 1C (2.0credits) (国土デザイン学セミナー1C)

Course Type	Specialized Courses	
Division at course	Master's Course	
Class Format	Seminar	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	2 Spring Semester	2 Autumn Semester
Lecturer	NAKAMURASHinichiro Associate Professor	

Course Purpose

Students cultivate a capacity for understanding and expressiveness related to methodologies to create cultural, safe and secure regional and infrastructure design under the climate change and the aging society, in which technologies, institutions and policy measures are discussed within the scope of regional design, economy and public policy analysis.

Prerequisite Subjects

Urban and Regional Planning

Course Topics

Students review and collect the relevant advanced and recent literatures related to methodologies to create cultural, safe and secure region and infrastructure. The results are presented and discussed together with students and the supervisor.

Textbook

None.

Additional Reading

Intergovernmental Panel on Climate Change(IPCC): Fifth Assessment Report (AR5), 2014,
<http://www.ipcc.ch/index.html>.Maggie Black, Jannet King: The Atlas of Water: Mapping the World's Most Critical Resource, University of California Press(2009)

Grade Assessment

The capacity and positive attitude for discussions and presentations are evaluated.The ability of adequate understanding and accurate summary of the literature is evaluated.Attendance for all seminars is required.

Notes

None

Contacting Faculty

Sending e-mail or visiting the supervisor's office.E-mail: shinichiro@civil.nagoya-u.ac.jpOffice: Room 305, Engineering Building No.9

Land Design Seminar 1D (2.0credits) (国土デザイン学セミナー1D)

Course Type	Specialized Courses	
Division at course	Master's Course	
Class Format	Seminar	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	2 Autumn Semester	2 Spring Semester
Lecturer	NAKAMURASHinichiro Associate Professor	

Course Purpose

Students cultivate a capacity for understanding and expressiveness related to methodologies to create cultural, safe and secure regional and infrastructure design under the climate change and the aging society, in which technologies, institutions and policy measures are discussed within the scope of regional design, economy and public policy analysis.

Prerequisite Subjects

Urban and Regional Planning

Course Topics

Students review and collect the relevant advanced and recent literatures related to methodologies to create cultural, safe and secure region and infrastructure. The results are presented and discussed together with students and the supervisor.

Textbook

None.

Additional Reading

Intergovernmental Panel on Climate Change(IPCC): Fifth Assessment Report (AR5), 2014,
<http://www.ipcc.ch/index.html>.

Maggie Black, Jannet King: The Atlas of Water: Mapping the World's Most Critical Resource, University of California Press(2009)

Grade Assessment

The capacity and positive attitude for discussions and presentations are evaluated.

The ability of adequate understanding and accurate summary of the literature is evaluated.

Attendance for all seminars is required.

Notes

None

Contacting Faculty

Sending e-mail or visiting the supervisor's office.

E-mail: shinichiro@civil.nagoya-u.ac.jp

Office: Room 305, Engineering Building No.9

Course Type	Specialized Courses	
Division at course	Master's Course	
Class Format	Seminar	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	1 Spring Semester	1 Autumn Semester
Lecturer	ArataKATAYAMA Professor	KASAI Takuya Assistant Professor

Course Purpose

In this class, the students learn how the soil and groundwater pollution occurs and how the pollutants migrate in soil and groundwater, the modelling, the bioremediation technologies and microbial behavior, external electron transfer of microorganisms, waste treatment and management.

Students should be able to explain at least one of the following issues with comprehensive understanding:

- 1.Mechanism of soil and groundwater pollution: 2.Fate of pollutants in soil and groundwater:
- 3.Bioremediation technologies and microorganisms: 4.External electron transfer and its microbial system:
- 5.Other physical and chemical remediation/recycle technologies and their assessment.

Prerequisite Subjects

Human activities and the environment, Environmental geotechnology, Sanitary engineering, Social environmental conservation, Soil Science, Hydrology, Microbiology, Chemistry, Mathematics and etc.

Course Topics

Seminar on the fundamental phenomena in relation to the pollution of soil and ground water: mechanism and modelling of pollutant behavior, bioremediation technologies and microbial behavior, external electron transfer and its microbial system, waste management and environmental risk assessment and etc.

Individual students are requested to read at least five papers related to the topic selected, to understand the multiple approaches by different research groups, and to present the summary of the papers.

The students are also requested to present their own study with comprehensive understanding of the significance and future prospects. The students are requested to finish the preparation of the documents showing the contents of presentation prior to the class and to distribute them to the participants in the class. For the presentation from other students during the class, the active participation in discussion is expected.

Textbook

One of the following issues is presented by students with comprehensive understanding by reading more than five recently-published papers:1. Mechanism of soil and groundwater pollution:2. Fate of pollutants in soil and groundwater:3. Bioremediation technologies and microorganisms, 4. External electron transfer and its microbial system, 5. hazardous waste treatment, 6. others. The students are also requested to prepare the documents that summarize their own study.

Additional Reading

The presenter provide the documents in relation with the issue introduced.

Grade Assessment

Understanding level, presentation ability, participation to the discussion: Higher than 60 points in 100 as full mark is passed.The grade evaluation is carried out based on the comprehensiveness of understanding on the issue selected for the presentation, on the ability to explain the issue, and on the contribution to the discussion in every issues.

Notes

The students are required to attend the seminar for the discussion unless they have special reasons.

Contacting Faculty

The class is carried out by the student presentation and the questions. Therefore, the time for questions are provided and the discussion is carried out extensively.

Course Type	Specialized Courses	
Division at course	Master's Course	
Class Format	Seminar	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	1 Autumn Semester	1 Spring Semester
Lecturer	ArataKATAYAMA Professor	KASAI Takuya Assistant Professor

Course Purpose

In this class, the students learn how the soil and groundwater pollution occurs and how the pollutants migrate in soil and groundwater, the modelling, the bioremediation technologies and microbial behavior, external electron transfer of microorganisms, waste treatment and management.

Students should be able to explain at least one of the following issues with comprehensive understanding:

- 1.Mechanism of soil and groundwater pollution: 2.Fate of pollutants in soil and groundwater:
- 3.Bioremediation technologies and microorganisms: 4.External electron transfer and its microbial system:
- 5.Other physical and chemical remediation/recycle technologies and their assessment.

Prerequisite Subjects

Human activities and the environment, Environmental geotechnology, Sanitary engineering, Social environmental conservation, Soil Science, Hydrology, Microbiology, Chemistry, Mathematics, Seminar on Conservation of Geoenvironment 1A and etc.

Course Topics

Seminar on the fundamental phenomena in relation to the pollution of soil and ground water: mechanism and modelling of pollutant behavior, bioremediation technologies and microbial behavior, external electron transfer and its microbial system, waste management and environmental risk assessment and etc.

Individual students are requested to read at least five papers related to the topic selected, to understand the multiple approaches by different research groups, and to present the summary of the papers. The students are also requested to present their own study with comprehensive understanding of the significance and future prospects. The students are requested to finish the preparation of the documents showing the contents of presentation prior to the class and to distribute them to the participants in the class. For the presentation from other students during the class, the active participation in discussion is expected.

Textbook

One of the following issues is presented by students with comprehensive understanding by reading more than five recently-published papers:1. Mechanism of soil and groundwater pollution:2. Fate of pollutants in soil and groundwater:3. Bioremediation technologies and microorganisms, 4. External electron transfer and its microbial system, 5. hazardous waste treatment, 6. others. The students are also requested to prepare the documents that summarize their own study.

Additional Reading

The presenter provide the documents in relation with the issue introduced.

Grade Assessment

Understanding level, presentation ability, participation to the discussion: Higher than 60 points in 100 as full mark is passed.

The grade evaluation is carried out based on the comprehensiveness of understanding on the issue selected for the presentation, on the ability to explain the issue, and on the contribution to the discussion in every issues.

Notes

The students are required to attend the seminar for the discussion unless they have special reasons.

Contacting Faculty

Seminar on Conservation of Geoenvironment 1B (2.0credits) (地圏環境保全学セミナー1B)

The class is carried out by the student presentation and the questions. Therefore, the time for questions are provided and the discussion is carried out extensively.

Course Type	Specialized Courses	
Division at course	Master's Course	
Class Format	Seminar	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	2 Spring Semester	2 Autumn Semester
Lecturer	ArataKATAYAMA Professor	KASAI Takuya Assistant Professor

Course Purpose

In this class, the students learn how the soil and groundwater pollution occurs and how the pollutants migrate in soil and groundwater, the modelling, the bioremediation technologies and microbial behavior, external electron transfer of microorganisms, waste treatment and management.

Students should be able to explain at least one of the following issues with comprehensive understanding:

- 1.Mechanism of soil and groundwater pollution: 2.Fate of pollutants in soil and groundwater:
- 3.Bioremediation technologies and microorganisms: 4.External electron transfer and its microbial system:
- 5.Other physical and chemical remediation/recycle technologies and their assessment.

Prerequisite Subjects

Human activities and the environment, Environmental geotechnology, Sanitary engineering, Social environmental conservation, Soil Science, Hydrology, Microbiology, Chemistry, Mathematics, Seminar on Conservation of Geoenvironment 1A, 1B and etc.

Course Topics

Seminar on the fundamental phenomena in relation to the pollution of soil and ground water: mechanism and modelling of pollutant behavior, bioremediation technologies and microbial behavior, external electron transfer and its microbial system, waste management and environmental risk assessment and etc.

Individual students are requested to read at least five papers related to the topic selected, to understand the multiple approaches by different research groups, and to present the summary of the papers. The students are also requested to present their own study with comprehensive understanding of the significance and future prospects. The students are requested to finish the preparation of the documents showing the contents of presentation prior to the class and to distribute them to the participants in the class. For the presentation from other students during the class, the active participation in discussion is expected.

Textbook

One of the following issues is presented by students with comprehensive understanding by reading more than five recently-published papers:1. Mechanism of soil and groundwater pollution:2. Fate of pollutants in soil and groundwater:3. Bioremediation technologies and microorganisms, 4. External electron transfer and its microbial system, 5. hazardous waste treatment, 6. others. The students are also requested to prepare the documents that summarize their own study.

Additional Reading

The presenter provide the documents in relation with the issue introduced.

Grade Assessment

Understanding level, presentation ability, participation to the discussion: Higher than 60 points in 100 as full mark is passed.

The grade evaluation is carried out based on the comprehensiveness of understanding on the issue selected for the presentation, on the ability to explain the issue, and on the contribution to the discussion in every issues.

Notes

The students are requested to attend the seminar for the discussion unless they have special reasons.

Contacting Faculty

Seminar on Conservation of Geoenvironment 1C (2.0credits) (地圏環境保全学セミナー1C)

The class is carried out by the student presentation and the questions. Therefore, the time for questions are provided and the discussion is carried out extensively.

Course Type	Specialized Courses	
Division at course	Master's Course	
Class Format	Seminar	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	2 Autumn Semester	2 Spring Semester
Lecturer	ArataKATAYAMA Professor	KASAI Takuya Assistant Professor

Course Purpose

In this class, the students learn how the soil and groundwater pollution occurs and how the pollutants migrate in soil and groundwater, the modelling, the bioremediation technologies and microbial behavior, external electron transfer of microorganisms, waste treatment and management.

Students should be able to explain at least one of the following issues with comprehensive understanding:

- 1.Mechanism of soil and groundwater pollution: 2.Fate of pollutants in soil and groundwater:
- 3.Bioremediation technologies and microorganisms: 4.External electron transfer and its microbial system:
- 5.Other physical and chemical remediation/recycle technologies and their assessment.

Prerequisite Subjects

Human activities and the environment, Environmental geotechnology, Sanitary engineering, Social environmental conservation, Soil Science, Hydrology, Microbiology, Chemistry, Mathematics, Seminar on Conservation of Geoenvironment 1A, 1B, 1C and etc.

Course Topics

Seminar on the fundamental phenomena in relation to the pollution of soil and ground water: mechanism and modelling of pollutant behavior, bioremediation technologies and microbial behavior, external electron transfer and its microbial system, waste management and environmental risk assessment and etc.

Individual students are requested to read at least five papers related to the topic selected, to understand the multiple approaches by different research groups, and to present the summary of the papers. The students are also requested to present their own study with comprehensive understanding of the significance and future prospects. The students are requested to finish the preparation of the documents showing the contents of presentation prior to the class and to distribute them to the participants in the class. For the presentation from other students during the class, the active participation in discussion is expected.

Textbook

One of the following issues is presented by students with comprehensive understanding by reading more than five recently-published papers:1. Mechanism of soil and groundwater pollution:2. Fate of pollutants in soil and groundwater:3. Bioremediation technologies and microorganisms, 4. External electron transfer and its microbial system, 5. hazardous waste treatment, 6. others. The students are also requested to prepare the documents that summarize their own study.

Additional Reading

The presenter provide the documents in relation with the issue introduced.

Grade Assessment

Understanding level, presentation ability, participation to the discussion: Higher than 60 points in 100 as full mark is passed.

The grade evaluation is carried out based on the comprehensiveness of understanding on the issue selected for the presentation, on the ability to explain the issue, and on the contribution to the discussion in every issues.

Notes

The students are requested to attend the seminar for the discussion unless they have special reasons.

Contacting Faculty

Seminar on Conservation of Geoenvironment 1D (2.0credits) (地圏環境保全学セミナー1D)

The class is carried out by the student presentation and the questions. Therefore, the time for questions are provided and the discussion is carried out extensively.

Global Environmental Cooperation Seminar1A (2.0credits) (国際環境協力セミナー1A)

Course Type	Specialized Courses	
Division at course	Master's Course	
Class Format	Seminar	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	1 Spring Semester	1 Autumn Semester
Lecturer	Kiichiro HAYASHI Professor	

Course Purpose

The objective of the seminar is to study institutions, policies and assessment methods on sustainable development issues in global and local scales. The seminar will develop the basic and applied skills of students to collect and review relevant literatures and to present the results and findings from their own perspectives, in a comprehensive manner.

The goal of this lecture is that the students will study, analyze and present selected topics by themselves.

Prerequisite Subjects

Civil Engineering and Policies for Developing Countries I,II, Human activities and the environment, Urban Environmental Systems Engineering

Course Topics

Students are required to study institutions and policies and assessment methods on sustainable development issues from the perspective of environmental system engineering, environmental policy study and environmental economics. Students are required to collect articles and do study by themselves and present and discuss the results of findings with teachers. Also if there is a student who needs English communication, the seminar will be conducted in English.

The students will do self-study on selected topics outside of this seminar.

Textbook

Reference documents will be provided if needed.

Additional Reading

Reference documents will be provided if needed.

Grade Assessment

Grading will be made taking into consideration understanding level, presentation ability, participation to the discussion, etc.

The C grade is the minimum requirement for passing this lecture.

The success criteria is to study, analyze and present selected topics by themselves on institutions, policies and assessment methods on sustainable development issues in global and local scales

Notes

There is no condition for taking this seminar.

Contacting Faculty

After the seminar and/or by e-mail.

Global Environmental Cooperation Seminar1B (2.0credits) (国際環境協力セミナー1B)

Course Type	Specialized Courses	
Division at course	Master's Course	
Class Format	Seminar	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	1 Autumn Semester	1 Spring Semester
Lecturer	Kiichiro HAYASHI Professor	

Course Purpose

The objective of the seminar is to study institutions, policies and assessment methods on sustainable development issues in global and local scales. The seminar will develop the basic and applied skills of students to collect and review relevant literatures and to present the results and findings from their own perspectives, in a comprehensive manner.

The goal of this lecture is that the students will study, analyze and present a selected topic by themselves.

Prerequisite Subjects

Civil Engineering and Policies for Developing Countries I, II, Human activities and the environment, Urban Environmental Systems Engineering, Global Environmental Cooperation Seminar1A

Course Topics

Students are required to study institutions and policies and assessment methods on sustainable development issues from the perspective of environmental system engineering, environmental policy study and environmental economics. Students are required to collect articles and do study by themselves and present and discuss the results of findings with teachers. Also if there is a student who needs English communication, the seminar will be conducted in English.

The students will do self-study on selected topics outside of this seminar.

Textbook

Reference documents will be provided if needed.

Additional Reading

Reference documents will be provided if needed.

Grade Assessment

Grading will be made taking into consideration understanding level, presentation ability, and participation to the discussion, etc.

The C grade is the minimum requirement for passing this lecture.

The success criteria is to study, analyze and present selected topics by themselves on institutions, policies and assessment methods on sustainable development issues in global and local scales

Notes

There is no condition for taking this class.

Contacting Faculty

After the seminar and/or by e-mail.

Global Environmental Cooperation Seminar1C (2.0credits) (国際環境協力セミナー1C)

Course Type	Specialized Courses	
Division at course	Master's Course	
Class Format	Seminar	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	2 Spring Semester	2 Autumn Semester
Lecturer	Kiichiro HAYASHI Professor	

Course Purpose

The objective of the seminar is to study institutions, policies and assessment methods on sustainable development issues in global and local scales. The seminar will develop the basic and applied skills of students to collect and review relevant literatures and to present the results and findings from their own perspectives, in a comprehensive manner.

The goal of this lecture is that the students will study, analyze and present a selected topic by themselves.

Prerequisite Subjects

Civil Engineering and Policies for Developing Countries I, II, Human activities and the environment, Urban Environmental Systems Engineering, Global Environmental Cooperation Seminar1A,1B

Course Topics

Students are required to study institutions and policies and assessment methods on sustainable development issues from the perspective of environmental system engineering, environmental policy study and environmental economics. Students are required to collect articles and do study by themselves and present and discuss the results of findings with teachers. Also if there is a student who needs English communication, the seminar will be conducted in English.

The students will do self-study on selected topics outside this seminar.

Textbook

Reference documents will be provided if needed.

Additional Reading

Reference documents will be provided if needed.

Grade Assessment

Grading will be made taking into consideration understanding level, presentation ability, and participation to the discussion, etc.

The C grade is the minimum requirement for passing this lecture.

The success criteria is to study, analyze and present selected topics by themselves on institutions, policies and assessment methods on sustainable development issues in global and local scales

Notes

There is no condition for taking this class.

Contacting Faculty

After the seminar and/or by e-mail.

Global Environmental Cooperation Seminar1D (2.0credits) (国際環境協力セミナー1D)

Course Type	Specialized Courses	
Division at course	Master's Course	
Class Format	Seminar	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	2 Autumn Semester	2 Spring Semester
Lecturer	Kiichiro HAYASHI Professor	

Course Purpose

The objective of the seminar is to study institutions, policies and assessment methods on sustainable development issues in global and local scales. The seminar will develop the basic and applied skills of students to collect and review relevant literatures and to present the results and findings from their own perspectives, in a comprehensive manner.

The goal of this lecture is that the students will study, analyze and present a selected topic by themselves.

Prerequisite Subjects

Civil Engineering and Policies for Developing Countries I, II, Human activities and the environment, Urban Environmental Systems Engineering, Global Environmental Cooperation Seminar1A,1B,1C

Course Topics

Students are required to study institutions and policies and assessment methods on sustainable development issues from the perspective of environmental system engineering, environmental policy study and environmental economics. Students are required to collect articles and do study by themselves and present and discuss the results of findings with teachers. Also if there is a student who needs English communication, the seminar will be conducted in English.

The students will do self-study on selected topics outside this seminar.

Textbook

Reference documents will be provided if needed.

Additional Reading

Reference documents will be provided if needed.

Grade Assessment

Grading will be made taking into consideration understanding level, presentation ability, and participation to the discussion, etc.

The C grade is the minimum requirement for passing this lecture.

The success criteria is to study, analyze and present selected topics by themselves on institutions, policies and assessment methods on sustainable development issues in global and local scales

Notes

There is no condition for taking this class.

Contacting Faculty

After the seminar and/or by e-mail.

Seminar on Environmental Ecology System1A (2.0credits) (環境エコロジーシステムセミナー1A)

Course Type	Specialized Courses	
Division at course	Master's Course	
Class Format	Seminar	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	1 Spring Semester	1 Autumn Semester
Lecturer	Toshiyuki YAMAMOTO Professor	Tomio MIWA Associate Professor

Course Purpose

Learn travel behavior analysis, transportation planning, transport and environment dynamics, etc. in order to understand policies for environmental sustainability and related issues.

Prerequisite Subjects

History of City and Civilization, Probability and Statistics, Spatial Planning, Transportation Planning, Infrastructure Planning, Urban and National Land Planning

Course Topics

Discuss on methodological issues concerned with environmentally sustainable transport such as travel behavior analysis, transportation planning, transport environment dynamics, etc. with the aid of reading advanced English literature

Textbook

To be announced

Additional Reading

Introduced according to the process of the lecture.

Grade Assessment

Presentation and active participation to the class (including questions and comments to presentations of other groups)

Notes

Not applicable

Contacting Faculty

Students can ask questions to professors at any time during classes. Questions during off-class hours can be asked via e-mail: yamamoto@civil.nagoya-u.ac.jp and miwa@nagoya-u.jp

Seminar on Environmental Ecology System1B (2.0credits) (環境エコロジーシステムセミナー1B)

Course Type	Specialized Courses	
Division at course	Master's Course	
Class Format	Seminar	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	1 Autumn Semester	1 Spring Semester
Lecturer	Toshiyuki YAMAMOTO Professor	Tomio MIWA Associate Professor

Course Purpose

Learn travel behavior analysis, transportation planning, transport and environment dynamics, etc. in order to understand policies for environmental sustainability and related issues.

Prerequisite Subjects

History of City and Civilization, Probability and Statistics, Spatial Planning, Transportation Planning, Infrastructure Planning, Urban and National Land Planning

Course Topics

Discuss on methodological issues concerned with environmentally sustainable transport such as travel behavior analysis, transportation planning, transport environment dynamics, etc. with the aid of reading advanced English literature

Textbook

To be announced

Additional Reading

Introduced according to the process of the lecture.

Grade Assessment

Presentation and active participation to the class (including questions and comments to presentations of other groups)

Notes

Not applicable

Contacting Faculty

Students can ask questions to professors at any time during classes. Questions during off-class hours can be asked via e-mail: yamamoto@civil.nagoya-u.ac.jp and miwa@nagoya-u.jp

Seminar on Environmental Ecology System1C (2.0credits) (環境エコロジーシステムセミナー1C)

Course Type	Specialized Courses	
Division at course	Master's Course	
Class Format	Seminar	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	2 Spring Semester	2 Autumn Semester
Lecturer	Toshiyuki YAMAMOTO Professor	Tomio MIWA Associate Professor

Course Purpose

Learn travel behavior analysis, transportation planning, transport and environment dynamics, etc. in order to understand policies for environmental sustainability and related issues.

Prerequisite Subjects

History of City and Civilization, Probability and Statistics, Spatial Planning, Transportation Planning, Infrastructure Planning, Urban and National Land Planning

Course Topics

Discuss on methodological issues concerned with environmentally sustainable transport such as travel behavior analysis, transportation planning, transport environment dynamics, etc. with the aid of reading advanced English literature

Textbook

To be announced

Additional Reading

Introduced according to the process of the lecture.

Grade Assessment

Presentation and active participation to the class (including questions and comments to presentations of other groups)

Notes

Not applicable

Contacting Faculty

Students can ask questions to professors at any time during classes. Questions during off-class hours can be asked via e-mail: yamamoto@civil.nagoya-u.ac.jp and miwa@nagoya-u.jp

Seminar on Environmental Ecology System1D (2.0credits) (環境エコロジーシステムセミナー1D)

Course Type	Specialized Courses	
Division at course	Master's Course	
Class Format	Seminar	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	2 Autumn Semester	2 Spring Semester
Lecturer	Toshiyuki YAMAMOTO Professor	Tomio MIWA Associate Professor

Course Purpose

Learn travel behavior analysis, transportation planning, transport and environment dynamics, etc. in order to understand policies for environmental sustainability and related issues.

Prerequisite Subjects

History of City and Civilization, Probability and Statistics, Spatial Planning, Transportation Planning, Infrastructure Planning, Urban and National Land Planning

Course Topics

Discuss on methodological issues concerned with environmentally sustainable transport such as travel behavior analysis, transportation planning, transport environment dynamics, etc. with the aid of reading advanced English literature

Textbook

To be announced

Additional Reading

To be introduced

Grade Assessment

Presentation and active participation to the class (including questions and comments to presentations of other groups)

Notes

Not applicable

Contacting Faculty

Students can ask questions to professors at any time during classes. Questions during off-class hours can be asked via e-mail: yamamoto@civil.nagoya-u.ac.jp and miwa@nagoya-u.jp

Course Type	Specialized Courses		
Division at course	Master's Course		
Class Format	Seminar		
Course Name	Molecular and Macromolecular Chemistry	Materials Chemistry	Biomolecular Engineering
	Applied Physics	Materials Physics	Materials Design Innovation Engineering
	Materials Process Engineering	Chemical Systems Engineering	Electrical Engineering
	Electronics	Information and Communication Engineering	Mechanical Systems Engineering
	Micro-Nano Mechanical Science and Engineering	Aerospace Engineering	Department of Energy Engineering
	Department of Applied Energy	Civil and Environmental Engineering	
Starts 1	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
Lecturer	Associated Faculty		

Course Purpose

The aim of this course is to expand the student's ability as a researcher by studying in an abroad laboratory and learn different methods and ways of thinking, as well as communicate on a daily base with foreign researchers.

By completing the course, the students are expected to acquire various research methods and ways of thinking, gain the ability to tackle research problems from multiple angles, and acquire a broad international perspective.

Prerequisite Subjects

Basic and specialized subjects related to the research subject, English, Advanced Lectures on Scientific English

Course Topics

Students will stay in an abroad laboratory that will be chosen based on the participant's research field and interest. The course consists of the following contents.

1. Theme setting and literature review
2. Formulating a research plan
3. Analyzing the results and discussion
4. Presentation of the results

After the class, students should review the analyzing processes of the research results and investigate related literatures.

Textbook

Will be introduced at the host laboratory depending on the research subject

Additional Reading

Will be introduced at the host laboratory if necessary

Grade Assessment

Conducting research in an abroad laboratory for one semester and submitting a report is a prerequisite. Evaluation will be based on the student's report (50%) and oral presentation (50%). To pass, the students have to demonstrate that they have the capacity to adequately analyze the results and have acquired the basic knowledge to interpret the results.

Notes

Nothing particularly needed

Contacting Faculty

Questions will be answered by the supervisors at the host laboratory during the course.

Course Type	Specialized Courses		
Division at course	Master's Course		
Class Format	Seminar		
Course Name	Molecular and Macromolecular Chemistry	Materials Chemistry	Biomolecular Engineering
	Applied Physics	Materials Physics	Materials Design Innovation Engineering
	Materials Process Engineering	Chemical Systems Engineering	Electrical Engineering
	Electronics	Information and Communication Engineering	Mechanical Systems Engineering
	Micro-Nano Mechanical Science and Engineering	Aerospace Engineering	Department of Energy Engineering
	Department of Applied Energy	Civil and Environmental Engineering	
Starts 1	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
Lecturer	Associated Faculty		

Course Purpose

The aim of this course is to expand the student's ability as a researcher by studying in an abroad laboratory and learn different methods and ways of thinking, as well as communicate on a daily base with foreign researchers.

By completing the course, the students are expected to acquire various research methods and ways of thinking, gain the ability to tackle research problems from multiple angles, and acquire a broad international perspective.

Prerequisite Subjects

Basic and specialized subjects related to the research subject, English, Advanced Lectures on Scientific English

Course Topics

Students will stay in an abroad laboratory that will be chosen based on the participant's research field and interest. The course consists of the following contents.

1. Theme setting and literature review
2. Formulating a research plan
3. Analyzing the results and discussion
4. Presentation of the results

After the class, students should review the analyzing processes of the research results and investigate related literatures.

Textbook

Will be introduced at the host laboratory depending on the research subject

Additional Reading

Will be introduced at the host laboratory if necessary

Grade Assessment

Conducting research in an abroad laboratory for two semesters and submitting a report is a prerequisite. Evaluation will be based on the student's report (50%) and oral presentation (50%). To pass, the students have to demonstrate that they have the capacity to adequately analyze the results and have acquired the basic knowledge to interpret the results.

Notes

Nothing particularly needed

Contacting Faculty

Questions will be answered by the supervisors at the host laboratory during the course.

Advanced Course in Lifecycle Design of Civil Structures (2.0credits) (社会基盤施設のライフサイクル設計特論)

Course Type	Specialized Courses		
Division at course	Master's Course		
Class Format	Lecture		
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate	
Starts 1	1 Autumn Semester	1 Autumn Semester	
Lecturer	Hikaru NAKAMURA Professor	Junji KATO Professor	Takeshi HANJI Associate Professor

Course Purpose

It is the objective of this course to study design method and maintenance of bridge structures in the context of lifecycle management of civil structures. After completing this course, students will be able to:

List different types of structural design methods and explain their differences,

Explain typical design flow of bridge structures, and

Understand current conditions of existing bridges and describe maintenance systems of bridges in Japan.

Prerequisite Subjects

Advanced Structural Mechanics

Advanced Steel Structures

Advanced Concrete Structures

Exercise in Inspection of Civil Structures

Course Topics

(1) To study fundamental theory of reliability-based structural design and to understand structural reliability and different design methods such as the allowable stress method and the limit state design method.

(2) To understand a typical flow of structural design which includes structural planning, selection of structural systems, verification of required performances, lifecycle cost analysis, and maintenance plan, by studying design examples of steel and concrete structures.

(3) To understand current conditions of existing bridges in Japan and to study efficient maintenance systems of bridge structures.

Textbook

Handouts will be distributed in the class.

Additional Reading

Reference books will be recommended at the right time.

Grade Assessment

Based on homework assignments and final exam.

Notes

None

Contacting Faculty

Students are encouraged to ask questions in the class.

Course Type	Specialized Courses	
Division at course	Master's Course	
Class Format	Lecture	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	1 Spring Semester	1 Spring Semester
Lecturer	Tomoaki NAKAMURA Associate Professor	Ryota TSUBAKI Associate Professor

Course Purpose

The goal of this course is to understand the physical processes in rivers and oceans. This class will provide advanced theories and technologies applied in the management of rivers and coasts based on the relevant courses in undergraduate school.

The objectives of this lecture are

1. to derive/understand/explain the basic equations describing fluvial hydrodynamics
2. to derive/understand/explain the basic equations describing coastal hydrodynamics

Prerequisite Subjects

Fundamentals of Hydrodynamics with Exercises, Open Channel Hydraulics, Coastal and Maritime Hydrodynamics, Hydrology and River Engineering, Coastal and Ocean Engineering, River and Coastal Environmental Engineering

Course Topics

1. Outline of the course
2. Governing equations for incompressible viscous fluid flow
3. Shallow water equations
4. Flow resistances in open-channel flow
5. Long wave theory
6. Shallow water wave theory
7. Wave-averaged conservation equations

Reading the corresponding part of the distributed documents prior to the lecture is needed. Reports are asked to submit during the exercise.

Textbook

Printed documents as needed

Additional Reading

Directed as needed

Grade Assessment

Your final grade will be calculated according to reports (first part) and exam (latter part). To pass, students must understand the basics of theories in river and coastal engineering.

Notes

No prerequisite

Contacting Faculty

Visiting faculties' office or asking by e-mail.

Contact:

Ryota Tsubaki (Extension 4625, rsubaki@civil.nagoya-u.ac.jp)

Tomoaki Nakamura (Extension 4632, tnakamura@nagoya-u.jp)

Advanced Geotechnical Engineering (2.0credits) (地盤工学特論)

Course Type	Specialized Courses	
Division at course	Master's Course	
Class Format	Lecture	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	1 Autumn Semester	1 Autumn Semester
Lecturer	Toshihiro NODA Professor	Kentaro NAKAI Associate Professor

Course Purpose

Firstly, overview and theoretical background of geotechnical engineering is reviewed. Then, actual adopted examples to settlement (consolidation) and failure (bearing capacity) problems of the soft grounds are explained. Moreover, dealing method to various uncertainty of the ground is provided such as safety factor method and reliability design method.

Prerequisite Subjects

Soil Mechanics, Soil and Foundation Engineering, Geotechnical Engineering
Advanced Continuum Mechanics, Advanced Work in Soil Mechanics and Geotechnical Engineering

Course Topics

- 1 Introduction to geotechnical engineering
- 2 Multi-dimensional consolidation analysis
- 3 Observational method for predicting consolidation settlement (Asaoka method)
- 4 Mean effective stress and bearing capacity
- 5 Undrained bearing capacity ($u=0$ circular slip surface analysis)

There will be several report assignments to deepen student's understanding of the lecture.

Textbook

Printed documents will be distributed.

Additional Reading

References will be introduced as necessary.

Grade Assessment

Evaluate the level of achievement for the achievement target through report assignments and final exams. A score of 60 or more out of 100 is a passing score.

Notes

No course requirements are required.

Contacting Faculty

Questions during and after the lecture are welcome. E-mail questions are also accepted at any time.

Toshihiro NODA, Ext: 3833, E-mail: noda@nagoya-u.jp, Bldg. 9 Rm. 317

Kentaro NAKAI, Ext: 5203, E-mail: nakai@civil.nagoya-u.ac.jp, Bldg. 9 Rm. 313

Course Type	Specialized Courses	
Division at course	Master's Course	
Class Format	Lecture	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	1 Autumn Semester	1 Autumn Semester
Lecturer	Takayuki MORIKAWA Professor	Toshiyuki YAMAMOTO Professor

Course Purpose

Understand the roles of infrastructure by learning its economic characteristics, planning procedure, financing and evaluation methods.

Prerequisite Subjects

Infrastructure Planning

Course Topics

1. Public economics 1 (social welfare and Pareto optimum)
2. Public economics 2 (consumer's behavior and demand curve)
3. Public economics 3 (producer's behavior and market equilibrium)
4. Public economics 4 (market failure)
5. Public economics 5 (externality)
6. Public economics 6 (public goods 1)
7. Public economics 7 (public goods 2)
8. Introduction to decision making in infrastructure planning
9. Evaluation and decision making 1 (cost-benefit analysis and value of non-market goods)
10. Evaluation and decision making 2 (evaluation methods of non-market goods and utility function)
11. Evaluation and decision making 3 (value of travel time saving and project evaluation)
12. Evaluation and decision making 4 (social welfare function and analytic hierarchy process)
13. Decision making under uncertainty 1 (expected utility theory)
14. Decision making under uncertainty 2 (Bayesian decision making and value of information)
15. Decision making under uncertainty 3 (game theory and dilemma problem)

Textbook

Materials are provided at classes.

Additional Reading

Introduced according to the process of the lecture.

Grade Assessment

Examination and report

Notes

No requirement is given.

Contacting Faculty

Ask questions in the class. There are no fixed schedules for office hour. Make an appointment by e-mail or tel.

Morikawa: tel 3564, email morikawa@nagoya-u.jp

Yamamoto: tel 4636, email yamamoto@civil.nagoya-u.ac.jp

Low Carbon Cities Studies (2.0credits) (低炭素都市学)

Course Type	Specialized Courses	
Division at course	Master's Course	
Class Format	Lecture	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	1 Spring Semester	1 Spring Semester
Lecturer	Hiroki tanikawa Professor	Shandl Heinz Visiting Professor

Course Purpose

Students will learn policies and plans and technological and institutional measures to realize low carbon cities with a view to integrating climatic change mitigation in urban development.

Prerequisite Subjects

Environmental Systems Analysis and Planning

Course Topics

1. Global Climatic System
2. Mechanisms of Global Warming
3. Climatic Change and Human History
4. Economy, Energy and Environment and IPCC AR:
5. Industrial Ecology
6. Human Activities and Energy in Cities:
7. Urban Forms, Land Use and Energy:
8. Material and Energy metabolism in cities
9. Material and Energy metabolism of buildings and districts
10. Sound Material Cycle Society
11. Metal resource and sustainability
12. Stock-type Society and sustainability

There are additional overtime studies regarding each lecture.

Textbook

to be distributed in class

Additional Reading

to be distributed in class

Grade Assessment

Evaluation is carried out by reports (100%). Students have to attend all lectures as the schedule for the next class will be announced in the previous class. Those with less than 80% attendance in the class will not be evaluated.

Notes

There is no condition of taking this Lecture.

Contacting Faculty

Contact to Prof. Tanikawa

Email tanikawa@nagoya-u.jp

Advanced Numerical Analysis (2.0credits) (数值解析特論)

Course Type	Specialized Courses		
Division at course	Master's Course		
Class Format	Lecture		
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate	
Starts 1	1 Spring Semester	1 Spring Semester	
Lecturer	Tomio MIWA Associate Professor Tomoaki NAKAMURA Associate Professor	Kentaro NAKAI Associate Professor	Yoshihito Yamamoto Associate Professor

Course Purpose

This course provides basic theories of numerical analyzing techniques which are often used in the civil engineering field. The goal is to understand and apply numerical optimization method, finite element method, approximate analysis of ordinary differential equation and finite difference method for computational fluid dynamics simulation through the lecture and practical work.

Prerequisite Subjects

Course Topics

1. Finite element method
2. Optimization problem
3. Finite difference method
4. Approximate analysis of ordinary differential equation

Reports will be assigned by each lecturer.

Textbook

Lecture materials will be provided.

Additional Reading

Reference book is introduced as needed.

Grade Assessment

Knowledge and skill of basic theories of numerical analyzing techniques obtained through the course will be evaluated. Evaluation will be based on the report work and 60% of evaluation score is required for credit earning.

Notes

Not required.

Contacting Faculty

Visiting faculty's lab. or asking by e-mail.

Contact:

Tomio Miwa (ext. 5018, miwa@nagoya-u.jp),

Kentaro Nakai (ext. 5203, nakai@civil.nagoya-u.ac.jp),

Yoshihito Yamamoto (ext. 4633, y.yamamoto@civil.nagoya-u.ac.jp),

Tomoaki Nakamura (ext. 4632, tnakamura@nagoya-u.jp)

Advanced Steel Structures (2.0credits) (鋼構造工学特論)

Course Type	Specialized Courses	
Division at course	Master's Course	
Class Format	Lecture	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	1 Spring Semester	1 Spring Semester
Lecturer	KazuoTATEISHI Professor	

Course Purpose

Deterioration and its prediction method for steel structures are lectured. The goals of this course are to understand the following issues,.Importance of maintenance of infrastructures.deterioration in steel structures.calculation method for remaining life of steel members based on fracture mechanics.fatigue and corrosion in steel members.inspection method for steel structures

Prerequisite Subjects

Advanced Course in Lifecycle Design of Civil StructuresAdvanced Concrete StructuresExercise in Inspection of Civil Structures

Course Topics

.Importance of maintenance and difficulties.Experiences of damage in steel structures and repair/retrofitting methods.Fatigue and preventing method.Linear fracture mechanics and its application.Corrosion and preventing method.Inspection method for steel structuresStudents are requested to read the handouts before each class.

Textbook

Handouts will be delivered.

Additional Reading

Reference books will be determined by the lecturer.

Grade Assessment

Passing score is 60% or more. The score is evaluated by reports on each goals.

Notes

Nothing is required.

Contacting Faculty

Students are encouraged to ask questions anytime.

Advanced Concrete Structures (2.0credits) (コンクリート構造工学特論)

Course Type	Specialized Courses	
Division at course	Master's Course	
Class Format	Lecture	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	1 Spring Semester	1 Spring Semester
Lecturer	Hikaru NAKAMURA Professor	Yoshihito Yamamoto Associate Professor

Course Purpose

The objective is to learn advanced knowledge of the design, construction and maintenance of concrete structures, to acquire applied skills that make use of the knowledge in practice.

After completing this class, students will be able to:

1. Confirm basic knowledge of RC structures
2. Understand nonlinear analysis of concrete
3. Understand time dependent behavior of concrete
4. Understand construction for quality control

Prerequisite Subjects

Advanced Structural Mechanics, Advanced Course in Lifecycle Design of Civil Structures, Exercise in Inspection of Civil Structures, Advanced Numerical Analysis

Course Topics

1. Life of concrete structures
2. Outline of nonlinear structural analysis for concrete structures
3. Outline of diffusion analysis for concrete structures
4. Volume change and cracking of concrete
5. Quality control of concrete
6. Proposal of design and construction concepts for Quality control

Before class, please prepare next class to understand basic part. After class, the assignments must be completed and submitted by the deadline.

Textbook

Prints are distributed

Additional Reading

Reference books will be recommended at the right time

Grade Assessment

60% or more are accepted by the result of report (50%) and presentation for given topic (50%).

Notes

None

Contacting Faculty

Welcome to come to room directly anytime and question by e-mail hikaru@cc.nagoya-u.ac.jp

Advanced Theory of River Basin Management (2.0credits) (河川・流域圏管理学特論)

Course Type	Specialized Courses	
Division at course	Master's Course	
Class Format	Lecture	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	1 Spring Semester	1 Spring Semester
Lecturer	Yuji Toda Professor	

Course Purpose

To understand the theoretical background and the recent technologies for river and river basin management.

Prerequisite Subjects

Hydrology and river engineering, open channel hydraulics

Course Topics

1. Outline of river and river basin management2. Sediment Transport3. Fluvial Hydraulics4. Eco-Hydraulics

Textbook

Reference materials are distributed

Additional Reading

Reference materials are distributed

Grade Assessment

Report: 100%. The grade A ~ F are evaluated by the score of reports

Notes

not required

Contacting Faculty

Questions after the class or via e-mail are welcome

Advanced Mechanics of Geomaterials (2.0credits) (地盤材料力学特論)

Course Type	Specialized Courses	
Division at course	Master's Course	
Class Format	Lecture	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	1 Spring Semester	1 Spring Semester
Lecturer	Masaki NAKANO Professor	

Course Purpose

The aim of this course is to acquire the basics and applications of geomaterials mechanics for safely constructing and maintaining various geotechnical structures. Concretely, this course introduces the mechanical behavior of remolded clay and natural deposited clay, and the difference between the two. Then, the course also introduces the basics of plastic mechanics, an elasto-plastic constitutive model, and the mechanical behavior of remolded clay and naturally deposited clay based on the constitutive model. In addition, the object is expanded to sand, problematic soil, and improved soil, and their mechanical behavior is also explained based on elasto-plastic mechanics. In addition, in the design of the geotechnical structure, the advantages and disadvantages of each are compared by comparing the current design method and the approach using the elasto-plastic constitutive model. The goals of this course are to

1. Explain the water-soil coupled mechanical behavior of artificial clay and natural deposited clay.
2. Learn the basics of plastic mechanics and apply it to geotechnical materials.
3. Understand the derivation of the elasto-plastic constitutive model for the geotechnical material and its characteristics, and explain the mechanical behavior of the ground based on the constitutive model.
4. Understand the difference between the current design method and the approach using the elasto-plastic constitutive model in the design of the ground structure, and explain the advantages and disadvantages of each.

Prerequisite Subjects

Advanced Continuum Mechanics, Advanced Numerical Analysis

Course Topics

1. Stress and strain
Learning mainly stress tensors, strain tensors, and the meaning of elements in the expression matrix.
2. Elastic construction type
Learning mainly the characteristics of elastic bodies, and Hooke's law.
3. Introduction to elasto-plastic constitutive equation
Learning mainly the basic assumptions and the general form of the elastic constitutive equation, and its application to Mises materials.
5. Elasto-plastic constitutive equation of soil
Learning mainly the Cam-clay model, the Subloading yield surface Cam-clay model and the Super/Subloading yield surface Cam-clay model.
6. Design method of ground structure:
Current design method and elasto-plastic constitutive model approach
Learning mainly the outline of the current design method, bearing capacity analysis, and settlement / deformation analysis.
After the class, you should review the distributed prints. In addition, you will be required to submit a report task several times.

Textbook

The slides and prints prepared by the instructor will be distributed as materials.

Additional Reading

Atkinson, J. H. and Bransby, P.L. : The mechanics of soils- An Introduction to Critical State Soil Mechanics-, McGRAW-HILL Book, (1978)
NAKANO, M.: Geotechnical mechanics, CORONA PUBLISHING CO., LTD. References will be introduced as needed.

Grade Assessment

The degree of achievement of goals is comprehensively evaluated by a report (30%), a final exam (70%). And, a passing requirement is C grade or higher. Acceptance criteria are to be able to understand the basics of plastic mechanics and applied it to the geotechnical material, derived the elasto-plastic constitutive model for the geotechnical material and understood its characteristics, and understood the differences between the current design method and the interpretation approach using the elasto-plastic co

Notes

No course requirements are required

Contacting Faculty

Welcome questions during and after this seminar. Each member also accepts questions at the room and by e-mail at any time. Masaki NAKANO: Ex.4622, nakano@civil.nagoya-u.ac.jp

Advanced Traffic Engineering and Management (2.0credits) (交通工学特論)

Course Type	Specialized Courses	
Division at course	Master's Course	
Class Format	Lecture	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	1 Spring Semester	1 Spring Semester
Lecturer	Hideki NAKAMURA Professor	

Course Purpose

There is no doubt that a considerable portion of pollution emissions is resulted from transportation related activities and vehicular movements in particular. Managing traffic safely and efficiently is one of the most effective solutions to relieve environmental issues worldwide. Training specialists who have the knowledge and skills of traffic engineering is highly demanded especially in developing countries where travel demand is rapidly increasing despite insufficient transportation infrastructure. In this course, fundamentals and internationally forefront issues in traffic engineering are to be covered in theory and practice, so that students can effectively master the most important issues for practicing in highway planning and traffic operations.

Prerequisite Subjects

History of City and Civilization, Human Activities and the Environment, Probability and Statistics, Urban and National Land Planning

Course Topics

1.INTRODUCTION TO TRAFFIC ENGINEERING AND ITS SCOPE 2.TRAFFIC SURVEYS
3.MACROSCOPIC TRAFFIC CHARACTERISTICS 4.MICROSCOPIC TRAFFIC CHARACTERISTICS
5.CAPACITY ANALYSIS AND BREAKDOWN PHENOMENA 6.HIGHWAY PLANNING AND
LEVEL OF SERVICE 7.INTERSECTION DESIGN 8. TRAFFIC SIGNAL CONTROL 9.TRAFFIC
MANAGEMENT AND APPLICATION OF EMERGING TECHNOLOGIES. Reviewing contents of the
class after class hours and preparation of reports for assignments are requested.

Textbook

Suggested according to the progress of the class.

Additional Reading

- Elefteriadou, L.: "An Introduction to Traffic Flow Theory", Springer, 2014.
- Transportation Research Board, Special Report 209, "Highway Capacity Manual", National Research Council, Washington, D.C., 2016.

Grade Assessment

Evaluated through the result of a term-end exam.

Notes

No conditions requested.

Contacting Faculty

Questions are welcome in the class.

Advanced Urban Planning (2.0credits) (都市計画特論)

Course Type	Specialized Courses	
Division at course	Master's Course	
Class Format	Lecture	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	1 Spring Semester	1 Spring Semester
Lecturer	Hirokazu KATO Professor	

Course Purpose

In the state of the aging and declining population, global environmental issues and catastrophic natural disasters, you explore desired urban planning and required economic and financial systems to support it.

The goals by learning this lecture is as follows:

1. To learn and explain the necessity of urban planning and its basic items and requirements.
2. To understand and explain the contents, problems and reasons for Japanese spatial planning.
3. To understand and explain the direction of spatial planning in Japan and developing countries in the future.

Prerequisite Subjects

Infrastructure Planing, Transport Planning, Urban and National Land Planning

Course Topics

- 1 "The city will not survive without any action"
Various restrictions and the direction required for urban management under them
- 2 "What kind of problem is happening in the city?"
Economics / financial approach to the relationship between urban activities and various problems
- 3 "Is urban growth bad?"
Effects of motorization and lifestyle changes associated with urban growth
- 4 "Can we analyze various urban problems with existing tools?"
How to apply transport systems and urban analysis methods to environmental issues
- 5 "What is urban policy in 21st century? What should I do?"
Environmentally-friendly and sustainable urban and transport planning
- 6 Final presentation: Report on a survey about sustainable region and city

You should review the previous lecture before each class. In the lecture, you should write down not only the whiteboard but also the important points of the talk. You will be required to submit several report. The final presentation will be held in September. To attend is the duty.

Textbook

Textbooks are not specified, but lecture materials will be distributed as appropriate

Additional Reading

Reference materials are not specified, but they will be distributed as appropriate

Grade Assessment

Reports(30%) and Presentation(70%)

Passed applicants must understand and explain the ideal way of urban planning to form a sustainable city.

90-100: S

80-89: A

70-79: B

60-69: C

-59: F

Notes

None

Contacting Faculty

Please mail me.

<http://orient.genv.nagoya-u.ac.jp/kato/ekato.htm>

Conservation and Ecotoxicology of Soil and Water (2.0credits) (土水環境保全学特論)

Course Type	Specialized Courses	
Division at course	Master's Course	
Class Format	Lecture	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	1 Spring Semester	1 Spring Semester
Lecturer	ArataKATAYAMA Professor	

Course Purpose

The class aims to understand the basics on the remediation of contaminated soil and water through the lecture on the outbreak of pollution, environmental standards, exposure to the organisms, toxicity and environmental fates of pollutants, effect on the ecosystem, remediation technologies of soil and water, and waste treatment technologies. A lecture-style class.

Individual students are requested to be able to (1) understand and explain the behavior of chemicals in the soil and groundwater pollution (sorption, migration, metabolism and degradation) and (2) to understand the toxicity and fate of chemicals in the organisms and in the environment and to explain the effects of chemicals.

Prerequisite Subjects

Environmental geotechnology, microbiology, chemistry, sanitary engineering, toxicology, mathematics, soil science, hydrology

Course Topics

The lecture is carried out on the basics on environmental standards, properties and toxicity of chemicals causing pollution in soil and water, interaction (exposure, metabolism and degradation) of chemicals with organisms (mammals, plants, microorganisms), fate of chemicals in the environment, effect on the ecosystem, prediction of behavior of pollutants and remediation technologies of contaminated soil and water.

The students will be given assignments and requested to solve and submit them as reports. The students themselves are expected to find the appropriate references and to obtain the comprehensive understanding the issues.

Textbook

Handouts in relation to the topics will be distributed.

Additional Reading

Vaccari DA, Strom PF, Alleman JE, "Environmental Biology for Engineers and Scientists" John Wiley & Sons, Inc. Hoboken, New Jersey, USA (2006)

Moriarty F, "Ecotoxicology (2nd ed.)" Academic Press, London (1988)

Connell DW, Miller GJ "Chemistry and ecotoxicology of pollution" John Wiley & Sons, Inc. New York, USA (1984)

Alvarez PJJ, Illman WA "Bioremediation and Natural Attenuation" John Wiley & Sons, Inc. Hoboken, New Jersey, USA (2006)

Grade Assessment

Homework is given to the students every week. The evaluation is carried out based on the weekly reports submitted. Higher than 60 points in 100 as full mark is passed.

The grade evaluation is carried out based on the accuracy in the answers to the assignments by finding the appropriate references.

Notes

Because of multidisciplinary field, there is no textbook that covers all the issues in this class. The students are encouraged to reach the understanding of the relations among the issues lectured.

Contacting Faculty

After the class

or

individual appointment (appointed time/date by phone/email)

Environmental System Analysis and Planning (2.0credits) (環境社会システム工学)

Course Type	Specialized Courses		
Division at course	Master's Course		
Class Format	Lecture		
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate	
Starts 1	1 Spring Semester	1 Spring Semester	
Lecturer	Hiroki tanikawa Professor	Tsuyoshi FUJITA Visiting Professor	Norisuke Visiting Professor

Course Purpose

Students will understand "environmental systems" listed as below,

- 1.the interaction of human activities and nature
- 2.the scientific mechanisms of global environmental problems, such as climatic change.
- 3.the basic principles and methods of analyzing environmental systems, e.g., environmental economics, mathematical models, life-cycle assessment, etc.
4. the principles and methods of environmental management at local, national and global scales.

Prerequisite Subjects

Low Carbon City Studies

Course Topics

1. About Environmental System Analysis
- 2-3. Carrying Capacity, Water, Energy, Material Flow/Stock
- 4-6. Simple Global Warming modeling
- 7-9. Industrial Symbiosis modeling
- 10-12. The basis on Input and Output Analysis
- 13-14. Urban Climate Modeling

There are additional overtime studies regarding each lecture.

Textbook

to be distributed in class

Additional Reading

to be distributed in class

Grade Assessment

Evaluation is carried out by reports (100%). Students have to attend all lectures as the schedule for the next class will be announced in the previous class. Those with less than 80% attendance in the class will not be evaluated.

Notes

There is no condition of taking this Lecture.

Contacting Faculty

tanikawa@nagoya-u.jp

Advanced Continuum Mechanics (2.0credits) (連続体力学特論)

Course Type	Specialized Courses	
Division at course	Master's Course	
Class Format	Lecture	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	1 Spring Semester	1 Spring Semester
Lecturer	Masaki NAKANO Professor	Toshihiro NODA Professor

Course Purpose

The aims of this course are to review the concept of vector/tensor and to understand the basics of continuum mechanics such as kinematics (geometry of motion), equilibrium rules, and objectivity.

Through this course, students will be able to:

1. understand and explain the basis of Vector and Tensor Analysis.
2. explain material and spatial descriptions of the physical value of body, material/spatial time derivatives and expression of deformation of body using tensor,
3. understand and explain properties of Cauchy's stress tensor, and
4. understand and explain basic law of mechanics and Cauchy's first/second law of motion.

Prerequisite Subjects

Calculus, vector analysis, structural mechanics, hydraulics, soil mechanics

Course Topics

1. Definition of continuum mechanics
2. Basis of Vector and Tensor Analysis
3. Law of motion
4. Description of motion and deformation
5. Law of motion and stress tensor
6. Basic equations of continuum mechanics
7. Compatibility condition of displacement rate and strain rate
8. Constitutive equation and objectivity
9. Description of deformation of continuum at finite deformation theory

In addition, it is necessary to prepare for the next class and understand the meaning of technical terms.

Textbook

Handouts will be distributed as needed.

Additional Reading

Gurtin M.E.(1981)An introduction to continuum mechanics, Academic press

T. Tamura (2000): Introduction to continuum mechanics, Asakura press

JSCE(1989): Civil Engineering Handbook, Chapter 6, Solid Mechanics etc.

Hashiguchi, K.(1990): Latest elasto-plasticity, Asakura press

Other reference books deemed necessary will be given during the course.

Grade Assessment

The weight of evaluation for the achievement target is equivalent and appropriate understanding of basic concepts and terminology is a criterion for passing.

Evaluate the level of achievement with the final exam 70% and the assignment report 30%. A score of 60 or more out of 100 is a passing score.

Notes

No course requirements are required.

Contacting Faculty

Contact information:

Toshihiro NODA, Ex:3833, E-mail:noda@nagoya-u.jp

Masaki NAKANO, Ex:4622, E-mail:nakano@civil.nagoya-u.ac.jp

Advanced Structural Mechanics (2.0credits) (構造力学特論)

Course Type	Specialized Courses	
Division at course	Master's Course	
Class Format	Lecture	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	1 Autumn Semester	1 Autumn Semester
Lecturer	Junji KATO Professor	

Course Purpose

To learn the basic knowledge of nonlinear computational mechanics, homogenization theory and topology optimization for advanced and numerical structural design.

Performance targets:

- 1) To understand finite element method and nonlinear structural analysis
- 2) To understand the mechanics of heterogeneous material based on homogenization theory
- 3) To understand the concept of topology optimization

Prerequisite Subjects

Computational mechanics, Finite element method

Course Topics

1. Nonlinear computational mechanics based on finite element method
 - Newton-Raphson method
 - Geometric nonlinear structural analysis
 - Basis of numerical instability problem
2. Mechanics of heterogeneous material and homogenization theory
 - Homogenization theory
3. Topology optimization
 - Foundation of mathematics of optimization
 - Formulation of sensitivity analysis

Several reports will be given in the class.

Textbook

Handouts will be distributed during class hours.

Additional Reading

Reference books are introduced at the first lecture.

Grade Assessment

Required to understand the basic solution of nonlinear structural analysis. The goal attainment level is evaluated by both report (50%) and attendance (50%). 60 points or more are accepted for 100 full marks.

Notes

Contacting Faculty

Students are encouraged to ask questions in the class.

Advanced Coastal and Offshore Engineering (2.0credits) (海工学特論)

Course Type	Specialized Courses	
Division at course	Master's Course	
Class Format	Lecture	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	1 Autumn Semester	1 Autumn Semester
Lecturer	norimi mizutani Professor	Tomoaki NAKAMURA Associate Professor

Course Purpose

The aim of this course is to understand wave dynamics in a coastal zone and wave-structure interactions.

Course objectives:

Students will be able to

1. understand and explain hydraulic phenomena related to the radiation stress
2. understand and explain diffraction problems
3. understand and explain wave dynamics including evanescent waves
4. understand and explain the dynamic behavior of floating bodies

Prerequisite Subjects

Advanced Fluvial and Coastal Hydrodynamics

Course Topics

1. Radiation stress and wave dynamics in a shallow water
2. Diffraction wave theory (vertical cylinder, axisymmetric structure)
3. Dynamic behavior of floating bodies
4. Potential and the boundary element method
5. Green function and numerical methods

Textbook

Printed documents as needed

Additional Reading

Coastal Engineering - Wave, Beaches, Wave-Structure Interactions: T. Sawaragi, Elsevier

Grade Assessment

Final exam/reports

Notes

No prerequisite

Contacting Faculty

Prof. Mizutani (ext. 4630, mizutani@civil.nagoya-u.ac.jp)

Assoc. Prof. Nakamura (ext. 4632, tnakamura@nagoya-u.jp)

Advanced Soil Dynamics (2.0credits) (地盤動力学特論)

Course Type	Specialized Courses	
Division at course	Master's Course	
Class Format	Lecture	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	1 Autumn Semester	1 Autumn Semester
Lecturer	Toshihiro NODA Professor	Kentaro NAKAI Associate Professor

Course Purpose

In this lecture, students will know the seismic damage example such as liquefaction during the actual earthquake and will learn the basic matters and advanced contents related to the ground dynamics, such as the cyclic response of the ground during the earthquake.

By learning this lecture, the goal is to be able to:

1. Understand seismic damage caused by recent earthquakes.
2. Understand the concept of seismic design.
3. Understand the vibration mechanism of the mass / mass system.
4. Understand the double reflection theory.
5. Understand how to understand dynamic problems of water-soil two-phase system based on mixture theory.

Prerequisite Subjects

Advanced Continuum Mechanics, Advanced Work in Soil Mechanics and Geotechnical Engineering

Course Topics

1. Seismic damage at the time of earthquake
2. Vibration mechanism of single-mass / multi-mass system
3. Vibration mechanism of (one-phase one-dimensional) continuum (elastic)
4. Basics of Fourier analysis
5. Basics of continuum mechanics
6. Dynamic problems of soil-water coupled system (mixture theory, governing equations, etc.)

There will be several report assignments to deepen student's understanding of the lecture.

Textbook

Printed documents will be distributed.

Additional Reading

Introduction to continuum mechanics (by Tamura Takeshi, Asakura Shoten)

Geotechnical Handbook (Japan Geotechnical Society)

Grade Assessment

Evaluate the degree of achievement for the achievement target by the report assignment. A score of 60 or more out of 100 is a passing score.

Notes

No course requirements are required.

Contacting Faculty

Questions during and after the lecture are welcome. E-mail questions are also accepted at any time.

Toshihiro NODA, Ext: 3833, E-mail: noda@nagoya-u.jp, Bldg. 9 Rm. 317

Kentaro NAKAI, Ext: 5203, E-mail: nakai@civil.nagoya-u.ac.jp, Bldg. 9 Rm. 313

Tectonic geomorphology (2.0credits) (変動地形学特論)

Course Type	Specialized Courses
Division at course	Master's Course
Class Format	Lecture
Course Name	Civil and Environmental Engineering
Starts 1	1 Autumn Semester
Lecturer	yasuhiro suzuki Professor Part-time Faculty

Course Purpose

In this class, students learn the concept and survey method of tectonic geomorphology which is important for understanding the natural environment and disaster characteristics of the Japanese archipelago. The goal is to understand the low-frequency catastrophe which is a major issue today, and to acquire the ability to study disaster prevention theory from the viewpoint of tectonic geomorphology.

Prerequisite Subjects

Soil Mechanics with Exercises, Geotechnical Engineering

Course Topics

1. Problems of earthquake disaster prevention
 - 1.1 Problems raised by 2011 great Tohoku earthquake
 - 1.2 1995 great Kobe earthquake and its impact
 - 1.3 2016 Kumamoto earthquake
 - 1.4 Resilience and Hazard mapping
 - 1.5 Future big earthquake along Nankai trough, western Japan
2. Active faults and disaster prevention
 - 2.1 What is an active fault
 - 2.2 Aerial photograph interpretation of active faults
 - 2.3 Disaster caused by active faulting
 - 2.4 Long-term earthquake forecast related with active faults
3. Social problems related to active faults
 - 3.1 Disaster prevention related to active fault
 - 3.2 Nuclear power plants and active faults in Japan
 - 3.3 Safety regulation before 2011
 - 3.4 Safety regulation after 2012
4. Tectonic Geomorphology
 - 4.1 Climatically humid and tectonically active region
 - 4.2 Geomorphic evolution
 - 4.3 Topographic surface and its age determination

Students are requested to state their thoughts at the end of each lecture according to the content of the lesson. Finally, students summarize their opinions based on the content of the lesson. Read textbooks outside of class hours to organize your own thoughts.

Textbook

Suzuki, 2001, Prevention for Earthquakes by Active Faults, Chikuma shobo.
Suzuki, 2013, Nuclear power plant and active fault, Iwanami press.

Additional Reading

Reference books will be introduced as needed in the lecture.

Grade Assessment

Students are evaluated for their willingness to consider various issues in class (30%). The final report assesses their understanding of tectonic geomorphology and the ability to discuss seismic disaster issues (70%).

Notes

No course requirements are required.

Contacting Faculty

Welcome questions by e-mail at any time.

ysz@nagoya-u.ac.jp

Water and Waste Engineering (2.0credits) (水・廃棄物工学)

Course Type	Specialized Courses	
Division at course	Master's Course	
Class Format	Lecture	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	1 Spring Semester	1 Autumn Semester
Lecturer	NagahisaHIRAYAMA Associate Professor	

Course Purpose

Water pollution and solid waste are some of the major environmental problems facing our society today. In this class we will learn about various technologies and measures applied in drinking water supply, control of pollution of water bodies, and solid waste management. The objectives of this class are the followings:

1. To understand the outline of water supply engineering, wastewater engineering, waste management.
2. To grasp the cutting-edge research activities in the field of emergency environmental engineering.
3. To study a solution for sustainable society.

Prerequisite Subjects

Sanitary Engineering, Environmental Systems Analysis and Planning, Environmental Engineering

Course Topics

1. Introduction & Guidance
2. Risk management & drinking water quality risk management
3. Water supply system in Japan
4. Water safety plan
5. Water quality risk management in emergency
6. Disaster resilience and water system
7. Wastewater treatment system in Japan
8. Watershed water quality management & recovery of clean water
9. Natural disaster & water system
10. Solid waste management system in Japan
11. Solid waste treatment & recycling technology
12. Disaster debris management
13. Emergency environmental management
14. Presentation 1
15. Presentation 2

Students are required to review the paper which will be introduced in class and to develop the presentation material.

Textbook

Handouts

Additional Reading

Will be introduced in class.

Grade Assessment

Participation 45%, Presentation 25%, and Report 30%. We evaluate the appropriate understanding of water supply engineering, wastewater management engineering, and waste management.

Notes

No requirement

Contacting Faculty

E. hirayama.nagahisa@nagoya-u.jp

T. 052-747-6824

U. <https://hirayamalab.com/lecture/>

Climate Change and Infrastructure (2.0credits) (気候変動と社会基盤)

Course Type	Specialized Courses	
Division at course	Master's Course	
Class Format	Lecture	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	Autumn Semester ,every other year	1 Autumn Semester
Lecturer	Miho IRYO(ASANO) Associate Professor	

Course Purpose

This lecture aims to acquire the knowledge about the current status and risks of climate change and international initiatives, and to develop the capacity to consider mitigation and adaptation measures from the perspective of sustainable infrastructure development.

The objective of this lecture is to acquire the following knowledge and skills.

1. Understand and explain the meaning and scientific basis of climate change.
2. Understand the risks associated with climate change, mitigation and adaptation measures, and discuss proposals for specific measures and systems.
3. Understand the United Nations Framework Convention on Climate Change and the international system and explain current issues.

Prerequisite Subjects

Low Carbon Cities Studies

Students who have not taken it can also take this course.

Course Topics

1. Scientific basis of climate change and its impact on social systems

Learn about climate change and its impact on social systems based on IPCC reports.

2. Climate change mitigation and adaptation

Through group work, learn how to analyze the potential regional risks of climate change and propose mitigation and adaptation measures.

3. International efforts to mitigate and adapt to climate change

Learn the historical background of international climate change measures under the Framework Convention on Climate Change, and deepen your understanding of the international decision-making process through model international negotiations.

All classes will be conducted in English. In group work, collect materials and organize presentation materials for issues indicated in advance. In addition, you will be required to submit report assignments several times.

Textbook

Handouts will be distributed at each class.

Additional Reading

UNFCCC website: <http://unfccc.int/2860.php>

IPCC website: <http://www.ipcc.ch/>

IPCC (2014). IPCC Fifth Assessment Report: Climate Change 2014 (AR5),

<http://ipcc.ch/report/ar5/index.shtml>

Other references will be introduced as needed.

Grade Assessment

Evaluation is based on presentation (50%) and report assignment (50%). As conditions for passing, students must be able to understand the risks of climate change, propose mitigation and adaptation measures based on logical examination, and understand the issues of international negotiations.

Notes

No course conditions are imposed.

Contacting Faculty

If you have any questions, please ask the instructor by e-mail (iryo@nagoya-u.ac.jp) or make an appointment by e-mail before coming to the room.

Environmental Industry Systems (2.0credits) (環境産業システム論)

Course Type	Specialized Courses	
Division at course	Master's Course	
Class Format	Lecture	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	1 Autumn Semester	1 Autumn Semester
Lecturer	Hiroki tanikawa Professor	Miho IRYO(ASANO) Associate Professor

Course Purpose

The student will learn the purpose of this course is to acquire practical skills as a leader in developing infrastructure by learning examples of how to apply the expertise and engineering techniques related to environmental conservation activities and technologies to the real world.

The objective of this lecture is to acquire the following knowledge and skills.

1. Understand examples of environmental conservation activities and environmental technologies.
2. Be able to consider and explain in a large theoretical framework how the above examples relate to the content taken in related subjects.

Prerequisite Subjects

Low Carbon Cities Studies

Course Topics

In this class, lecturers are invited from companies mainly in the Chubu region, which has an advantage in environmental conservation activities and environmental technologies, for lectures on the latest environmental initiatives in business.

1. Lectures by companies and discussions

Listen to lectures on application examples of environmental conservation activities and environmental technologies from companies and discuss their contents.

- Association of Former International Civil Servants, Japan
- CTI Engineering Co. Ltd.
- Central Nippon Expressway (NEXCO CENTRAL)
- Brother Industries, Ltd.
- MITSUBISHI HEAVY INDUSTRIES
- TOYO CONSTRUCTION
- MAKITA
- TOSHIBA
- JICA
- SUNTORY
- TOYOTA

2. Group presentations

Based on the contents of the lectures and the contents learned in other subjects, a group discussion will be held on the connection between theory and practice, and the results will be presented.

All classes will be conducted in English. After each lecture, students will be asked to submit a reaction paper on the content of the lecture. For group presentations, collect materials and prepare presentation materials outside of class hours.

Textbook

Handouts will be distributed at each class.

Additional Reading

Reference literature will be introduced as needed.

Grade Assessment

Evaluation is based on contributions to group presentations and discussions. Requirements to pass are to be able to understand the examples of environmental conservation activities and environmental technologies, and to be able to logically explain the relationship between theory and practice.

Student will fail if the class attendance rate is less than 80%.

Notes

No course conditions are imposed.

It is preferable to take the designated courses of international programs (Forefront program and NUGELP) conducted by the Department of Civil and Environmental Engineering, such as Low Carbon Cities Studies, but students who have not taken these courses can also take the course.

Contacting Faculty

If you have any questions, please ask the instructor by e-mail (iryo@nagoya-u.ac.jp) or make an appointment by e-mail before coming to the room.

EcoCity Systems (2.0credits) (環境都市システム論)

Course Type	Specialized Courses
Division at course	Master's Course
Class Format	Lecture
Course Name	Civil and Environmental Engineering
Starts 1	1 Autumn Semester
Lecturer	Miho IRYO(ASANO) Associate Professor

Course Purpose

The aim is to deepen the understanding of the technical and institutional systems required to build an environmental city, mainly from the perspective of city planning and transportation planning.

The objective of this lecture is to acquire the following knowledge and skills.

1. Understand and explain the impact of city structure and transportation on the environment.
2. Be able to analyze the urban and transportation issues for specific cities and propose plans to build an eco-city.

Prerequisite Subjects

Low Carbon Cities Studies

Students who have not taken it can also take this course.

Course Topics

1. Components of urban environment and their issues
2. Historical review of city structures and location theory
3. Observation and assessment of environmental impact
4. Urban / transportation plan for environmental improvement
5. Consensus building and community development
6. Case studies of environmental improvement measures in various cities

All classes will be conducted in English. In case studies, collect materials and arrange presentation materials for issues indicated in advance. In addition, you will be required to submit report assignments several times.

Textbook

Handouts will be distributed at each class.

Additional Reading

References will be introduced as needed.

Grade Assessment

Evaluation is based on report assignments (60%), and presentation and discussions (40%). As conditions for passing, students must be able to understand the impact of city structure and transport on the environment, and to make proposals to build an eco-city.

Notes

No course conditions are imposed.

Contacting Faculty

If you have any questions, please ask the instructor by e-mail (iryo@nagoya-u.ac.jp) or make an appointment by e-mail before coming to the room.

Transportation Systems Analysis (2.0credits) (交通システム分析)

Course Type	Specialized Courses		
Division at course	Master's Course		
Class Format	Lecture		
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate	
Starts 1	1 Spring Semester	1 Spring Semester	
Lecturer	Takayuki MORIKAWA Professor	Toshiyuki YAMAMOTO Professor	Tomio MIWA Associate Professor

Course Purpose

To understand approaches and methods to analyze travel behavior and demands for various transportation systems

Prerequisite Subjects

Statistics, Transportation Planning

Course Topics

1. Transportation policies and transportation systems analysis
2. Travel demand and travel survey
3. Aggregate demand model 1 – Trip generation & production/attraction
4. Aggregate demand model 2 – Trip distribution
5. Aggregate demand model 3 – Modal split
6. Traffic assignment on network 1
7. Traffic assignment on network 2
8. Traffic assignment on network 3
9. Traffic simulation 1
10. Traffic simulation 2
11. Disaggregate demand model 1 – Binary choice
12. Disaggregate demand model 2 – Multinomial choice
13. Disaggregate demand model 3 – Estimation and statistical test
14. Disaggregate demand model 4 – Aggregation and forecast
15. Disaggregate demand model 5 – Multi-dimensional choice

Reports will be assigned by each instructor.

Textbook

Introduced according to the process of the lecture.

Additional Reading

"Modeling Travel Behavior" by Kitamura, Morikawa, Sasaki, Fujii, & Yamamoto (in Japanese)

"Discrete Choice Analysis" by Ben-Akiva and Lerman

"Discrete Choice Methods with Simulation" by Train

Grade Assessment

Exam & reports on understanding approaches and methods to analyze travel behavior and demands for various transportation systems.

Notes

Not required

Contacting Faculty

Students can ask questions to professors at any time during classes.

Questions during off-class hours can be asked via e-mail: morikawa@nagoya-u.jp, yamamoto@civil.nagoya-u.ac.jp and miwa@nagoya-u.jp

Exercise in Inspection of Civil Structures (1.0credits) (インフラ検査・点検演習)

Course Type	Specialized Courses		
Division at course	Master's Course		
Class Format	Exercise		
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate	
Starts 1	1 Spring Semester	1 Spring Semester	
Lecturer	KazuoTATEISHI Professor	Hikaru NAKAMURA Professor	Takeshi HANJI Associate Professor
	Yoshihito Yamamoto Associate Professor	Taito Miura Assistant Professor	Masaru Shimizu Assistant Professor

Course Purpose

The purpose of this course is to learn deterioration mechanisms of concrete and steel structures and basics of bridge maintenance. Based on the knowledge learned in the course, exercise using “N2U-BRIDGE” and on site inspection of existing bridge is conducted. Furthermore, exercises on preparation of inspection reports, evaluation of deterioration degree, estimation of deterioration mechanism are carried out.

Prerequisite Subjects

Material Engineering, Concrete Structures I, Concrete Structures II, Steel Structures, Experiments in Materials and Structures I, Experiments in Materials and Structures II

Course Topics

Orientation

Current situation of bridges in Japan

Historical review of Japanese standards

Defects of concrete and steel structures

Estimation of deterioration mechanism of concrete and steel structures

Guideline for inspection and assessment of infrastructures

Detailed investigation (Principle of nondestructive test)

How to write the investigation worksheet

Inspection training using "N2U-BRIDGE"

Inspection using existing bridges

Textbook

Prints are distributed

Additional Reading

Grade Assessment

Report (100%)

Notes

Contacting Faculty

Visiting faculty's lab. or asking by e-mail.

Advanced Work in Hydro-morphologic Processes (1.0credits) (流れ・地形解析学演習)

Course Type	Specialized Courses	
Division at course	Master's Course	
Class Format	Exercise	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	1 Spring Semester	1 Spring Semester
Lecturer	Ryota TSUBAKI Associate Professor	OBANAMakiko Assistant Professor

Course Purpose

The goal of this course is to develop applied skills for understanding and predicting hydro-morphological processes based on the fundamentals of the topics.

The objectives of this course are

1. Understand the model to estimate transport of water and other materials, and apply the model to practical problems,
2. Preview the result estimated by the model with reasonable boundary conditions, and
3. Understand the theory of aquatic biology and material transport, apply the theory to practical problems.

Prerequisite Subjects

Fundamentals of Hydrodynamics with Exercises, Open-channel hydraulics, Hydrology and River Engineering

Course Topics

1. Analysis of open channel flow and morphological change
2. Theory of mathematical modeling for aquatic organisms and material transport

Reading specified documents prior to the exercise is needed. Reports are asked to submit during the exercise.

Textbook

Printed document

Additional Reading

Directed as needed

Grade Assessment

Report will be used for grading. To acquire standard skills and knowledge in the topic is the criteria to pass. Further application of skills and knowledge will be accounted for the grade.

Notes

Not specified

Contacting Faculty

Discuss during the exercise or asking by e-mail.

Advanced Work in Planning Methods (1.0credits) (社会基盤計画学演習)

Course Type	Specialized Courses	
Division at course	Master's Course	
Class Format	Exercise	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	1 Spring Semester	1 Spring Semester
Lecturer	Tomio MIWA Associate Professor	

Course Purpose

Learn systems analysis on city, transportation, and regional planning.

Objectives are to understand regression models, principal component analysis, discriminant analysis, and discrete choice models, to select an appropriate method for given data, to calculate correct results, and to interpret the results appropriately.

Prerequisite Subjects

Desirable to have some knowledge on basic microeconomic theory, probability theory and statistics, and mathematical planning method.

Course Topics

1. Statistical methods for data analysis
 2. Regression analysis: basics
 3. Regression analysis: application (specification, error term, generalized least squares)
 4. Principal component analysis and Discriminant analysis
 5. Discrete choice model: basics
 6. Discrete choice model: application
- Reports will be assigned at the end of each topic.

Textbook

Lecture note will be provided.

Additional Reading

Maddala, G.S.: Introduction to Econometrics, Macmillan Publishing Company
Ben-Akiva, M. and Lerman, S.R.: Discrete Choice Analysis, MIT Press

Grade Assessment

Students will be evaluated by reports (100%) on understanding methods for city, transportation and regional planning. At least 60% of evaluation is required for credit earning.

Notes

Not required.

Contacting Faculty

Students can ask questions at any time during classes.

Questions during off-class hours can be asked via e-mail: miwa@nagoya-u.jp

Advanced Work in Structural Mechanics (1.0credits) (構造力学特論演習)

Course Type	Specialized Courses	
Division at course	Master's Course	
Class Format	Exercise	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	1 Autumn Semester	1 Autumn Semester
Lecturer	Junji KATO Professor	

Course Purpose

To learn the basic knowledge of nonlinear computational mechanics, homogenization theory and topology optimization for advanced and numerical structural design.

Performance targets:

- 1) To understand finite element method and nonlinear structural analysis
- 2) To understand the mechanics of heterogeneous material based on homogenization theory
- 3) To understand the concept of topology optimization

Prerequisite Subjects

Computational mechanics, Finite element method

Course Topics

1. Nonlinear computational mechanics based on finite element method
 - Newton-Raphson method
 - Geometric nonlinear structural analysis
 - Basis of numerical instability problem
2. Mechanics of heterogeneous material and homogenization theory
 - Homogenization theory
3. Topology optimization
 - Foundation of mathematics of optimization
 - Formulation of sensitivity analysis

Several reports will be given in the class.

Textbook

Handouts will be distributed during class hours.

Additional Reading

Reference books are introduced at the first lecture.

Grade Assessment

Required to understand the basic solution of nonlinear structural analysis. The goal attainment level is evaluated by both report (50%) and attendance (50%). 60 points or more are accepted for 100 full marks.

Notes

Contacting Faculty

Students are encouraged to ask questions in the class.

Advanced Work in Coastal and Offshore Engineering (1.0credits) (海工学演習)

Course Type	Specialized Courses		
Division at course	Master's Course		
Class Format	Exercise		
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate	
Starts 1	1 Autumn Semester	1 Autumn Semester	
Lecturer	norimi mizutani Professor	Tomoaki NAKAMURA Associate Professor	YonghwanCHO Assistant Professor

Course Purpose

In this course, each group composed of two to three students will select and address an issue in coastal and ocean engineering.

Through this course, students will be able to

1. find what issues are in coastal and ocean engineering
2. come up with how to address them
3. acquire enough skills to address them by themselves

Prerequisite Subjects

Advanced Fluvial and Coastal Hydrodynamics, Advanced Coastal and Offshore Engineering

Course Topics

Every group will make a presentation on progress every week, and instructors and students will discuss the content of the presentation.

Textbook

Directed as needed

Additional Reading

Directed as needed

Grade Assessment

Presentation

Notes

No prerequisite

Contacting Faculty

Prof. Mizutani (ext. 4630, mizutani@civil.nagoya-u.ac.jp)

Assoc. Prof. Nakamura (ext. 4632, tnakamura@nagoya-u.jp)

Assist. Prof. Cho (ext. 4634, yhcho@civil.nagoya-u.ac.jp)

Advanced Work in Soil Mechanics and Geotechnical Engineering (1.0credits) (地盤力学総合演習)

Course Type	Specialized Courses		
Division at course	Master's Course		
Class Format	Exercise		
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate	
Starts 1	1 Autumn Semester	1 Autumn Semester	
Lecturer	Masaki NAKANO Professor SAKAI Takayuki Assistant Professor	Toshihiro NODA Professor YOSHIKAWA Takahiro Assistant Professor	Kentaro NAKAI Associate Professor

Course Purpose

The purpose of this lecture is to review the contents learned in the Advanced Mechanics of Geomaterials and Advanced Soil Dynamics, and to work on related exercises and programming to gain a deep understanding of basic concepts. By learning this lecture, the goal is to be able to: 1. Understand and program the elasto-plastic constitutive equations of soil skeleton (elastic-plastic description of various soil materials). 2. Understand and program dynamic ground problems. 3. Understand the theory and analysis methods for deformation and failure of the ground.

Prerequisite Subjects

Advanced Mechanics of Geomaterials, Advanced Soil Dynamics, Advanced Continuum Mechanics, Advanced Numerical Analysis

Course Topics

1 Understanding of the elasto-plastic constitutive equation of soils (Mechanical behavior of various soils)
2 Understanding of the dynamic problems of the ground
3 Understanding of the theory and analysis method for the ground deformation and failure.
4. Application of finite element method to geotechnical engineering
There will be several report assignments to deepen student's understanding of the lecture.

Textbook

Printed documents will be distributed.

Additional Reading

References will be introduced as necessary.

Grade Assessment

Evaluate the degree of achievement for the achievement target by the report assignment. A score of 60 or more out of 100 is a passing score.

Notes

No course requirements are required.

Contacting Faculty

Questions during and after the lecture are welcome. E-mail questions are also accepted at any time.
Masaki NAKANO, Ext: 4622, E-mail: nakano@civil.nagoya-u.ac.jp, Bldg. 9 Rm. 327
Toshihiro NODA, Ext: 3833, E-mail: noda@nagoya-u.jp, Bldg. 9 Rm. 317
Kentaro NAKAI, Ext: 5203, E-mail: nakai@civil.nagoya-u.ac.jp, Bldg. 9 Rm. 313
Takayuki SAKAI, Ext: 2734, E-mail: t-sakai@civil.nagoya-u.ac.jp, Bldg. 9 Rm. 327
Takahiro YOSHIKAWA Ext: 3834, E-mail: yoshikawa@civil.nagoya-u.ac.jp, Bldg. 9 Rm. 315

Exercise on Conservation and Ecotoxicology of Soil and Water (1.0credits) (土水環境保全学演習)

Course Type	Specialized Courses	
Division at course	Master's Course	
Class Format	Exercise	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	1 Autumn Semester	1 Autumn Semester
Lecturer	ArataKATAYAMA Professor	KASAI Takuya Assistant Professor

Course Purpose

The class aims to understand the basic knowledge and techniques to carry out the research on the microbial remediation of polluted soil and groundwater, and microbial waste treatment by the exercise.

The students can learn the basic knowledge and techniques to carry out the research on the microbial remediation of polluted soil and groundwater, and microbial waste treatment by the exercise.

Prerequisite Subjects

Environmental geotechnology, chemistry, microbiology, hydrology, soil science, conservation and ecotoxicology of soil and water

Course Topics

The exercise is carried out on the selected topics of physico-chemical analysis of soil and water in pollution, microbial manipulation, environmental microbiology, analysis of pollutants, and analysis of mass transport in soil and groundwater.

The students are requested to read the related documents and provide the answers to the assignments prior to the class. In the class, the students are asked to present the answers and to discuss on them.

Textbook

The textbook is introduced depending on the selected topics to exercise in the class.

Additional Reading

Fitts CR, "Groundwater Science" Academic Press, London, UK (2002)

Fetter CW, "Contaminant Hydrology (2nd Ed.)" Waveland Press Inc. Long Grove, Illinois, USA (1999)

Madigan MT, Bender KS, Buckley DH, Sattley WM, Stahl DA, "Brock Biology of Microorganisms Global Edition", Pearson Education, Harlow, UK (2018)

Grade Assessment

Every week, students are required to solve the problems given. Higher than 60 points in 100 as full mark is passed. The evaluation is carried out based on the correctness in the understanding of the assignments and the accuracy in the answers.

Notes

The class is carried out by answering to the problems and the discussion, the students are requested to participate to the class unless there is the special reason.

Contacting Faculty

The class is carried out by the student presentation of the answers to the problems and the questions in relation to the problems. Therefore, questions can be raised anytime during the class and the discussion is carried out.

Practice in Environmental Systems Analysis and Planning (1.0credits) (環境社会システム工学演習)

Course Type	Specialized Courses		
Division at course	Master's Course		
Class Format	Exercise		
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate	
Starts 1	1 Autumn Semester	1 Autumn Semester	
Lecturer	Hiroki tanikawa Professor	Kiichiro HAYASHI Professor	Hiroaki SHIRAKAWA Associate Professor

Course Purpose

It is important for students to use "System Thinking" in the mathematic model for clarifying the relationship between the natural environment and human activity. The goal of this seminar is to understand "statistics", "spreadsheet simulation and system dynamics with using geographic information systems.

Prerequisite Subjects

- Low Carbon Studies - Environmental System Analysis and Planning

Course Topics

Choose and combine methods from the following and apply them to the analysis of topics that the student is interested in. 1. Geographical Information System(ArcGIS) 2. Statistical Analysis such as SPSS or R 3. Systems Dynamics Students need to exercise several problems in each theme overtime lecture.

Textbook

in the class

Additional Reading

Information of references will provided in the class.

Grade Assessment

Evaluation is carried out by reports (100%). Students have to attend all lectures as the schedule for the next class will be announced in the previous class. Those with less than 80% attendance in the class will not be evaluated.

Notes

need to take courses below, - Low Carbon Studies - Environmental System Analysis and Planning

Contacting Faculty

in the class

Global Research Internship 1 (2.0credits) (グローバル研究インターンシップ1)

Course Type	Specialized Courses	
Division at course	Master's Course	
Class Format	Exercise	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	1 Spring and Autumn Semester	
Lecturer	Associated Faculty	

Course Purpose

As part of the Forefront Studies Program and the Nagoya University Global Environmental Leaders Program (NUGELP), this course aims at providing students with research-based internship opportunities at universities, research institutions, companies, governmental and non-governmental organizations in Japan and overseas to acquire the ability to conduct practical and applied research.

After completing this course, students will be able to:

- 1.explain various issues in civil engineering fields in Japan, as well as overseas, and
- 2.acquire a comprehensive methodology for executing projects in infrastructure development.

Prerequisite Subjects

Students are expected to have taken some lectures offered by the Forefront Studies Program and the Nagoya University Global Environmental Leaders Program (NUGELP).

Course Topics

Internship should be conducted based on close communication with academic advisor(s). Students are expected to acquire practical research know-how through On-site Research Training (ORT). Details of the Internship such as period and terms of implementation should be decided through thorough consultation with academic advisor(s) and experts at host institutions.

Course Schedule:

- Step 1: Initial Proposal
- Step 2: Detailed Proposal
- Step 3: Internship
- Step 4: Final Report
- Step 5: Presentation

Textbook

Textbooks will be recommended at the right time.

Additional Reading

Reference books will be recommended at the right time.

Grade Assessment

Grading shall be based on student's report and presentation. The ability to discuss the knowledge and experience obtained through the internship is the criteria for acceptance.

Notes

None

Contacting Faculty

Nagoya University Civil and Environmental Engineering
International Programs Office
Room 223, Environmental Studies Hall
Email: ceeipo@urban.env.nagoya-u.ac.jp
Ex: 5507

Innovation Practice Course (4.0credits) (イノベーション体験プロジェクト)

Course Type	Comprehensive engineering courses		
Division at course	Master's Course		
Class Format	Experiment and Exercise		
Course Name	Molecular and Macromolecular Chemistry	Materials Chemistry	Biomolecular Engineering
	Applied Physics	Materials Physics	Materials Design Innovation Engineering
	Materials Process Engineering	Chemical Systems Engineering	Electrical Engineering
	Electronics	Information and Communication Engineering	Mechanical Systems Engineering
	Micro-Nano Mechanical Science and Engineering	Aerospace Engineering	Department of Energy Engineering
	Department of Applied Energy	Civil and Environmental Engineering	
Starts 1	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
Lecturer	Hiroshi IKUTA Professor		

Course Purpose

Under the instruction of the company engineer (DP, Directing Professor), I carry out the project for the problem solution by the team of several people consisting of different specialisms. In this way, it is intended to let you sense ability for problem discovery, the importance of the general intellectual power of compound eyes on the basis of real world bodily.

I know a point of view, the plan as the company and perform a discussion, exchange of opinions between the different specialty and aim for the breeding of the viewpoint general, to see engineering by examining it as the problem solution person concerned from different angles.

Prerequisite Subjects

It is strongly recommended to take the industry-university joint educational courses such as Focus on Venture Business and ,etc.

Course Topics

I organize different specialty, the team (several/team) consisting of the students of the department several sets, and DP is the instruction in each each team. Based on the project theme that DP determined, I set the problem that a student carries out concretely. For 75 hours (principle one day a week), I accomplish the project for the problem solution.

Prior lecture to affect a project theme by the DP

Setting (opinion, information exchange, allied investigation, examination, discussion) of the concrete problem by the student

Enforcement of the problem solution project

Summary, report of the result

I assume this a main component.

In addition, I may be given an investigation and the consideration in conjunction with the theme as a problem from DP. Report it in a date (the next time lectures) when it was appointed, and announce it; and a thing corresponding to the exchange of opinions in the team.

Textbook

documents that a lecturer (DP) introduces it and shows.

Additional Reading

documents that a lecturer (DP) introduces it and shows.

Grade Assessment

I evaluate it through accomplishment, the discussion of the project, result announcement. If a consideration power, the adjustability for the problem solution, the expansion of the field of vision are accepted, it is said that I pass.

Notes

There are no prerequisites

Contacting Faculty

A lecturer (DP) and this project staff of the university accept questions at any time.

Research Internship 1 U2 (2.0credits) (研究インターンシップ 1 U2)

Course Type	Comprehensive engineering courses		
Division at course	Master's Course		
Class Format	Practice		
Course Name	Molecular and Macromolecular Chemistry	Materials Chemistry	Biomolecular Engineering
	Applied Physics	Materials Physics	Materials Design Innovation Engineering
	Materials Process Engineering	Chemical Systems Engineering	Electrical Engineering
	Electronics	Information and Communication Engineering	Mechanical Systems Engineering
	Micro-Nano Mechanical Science and Engineering	Aerospace Engineering	Department of Energy Engineering
	Department of Applied Energy	Civil and Environmental Engineering	
Starts 1	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
Lecturer	Hiroshi IKUTA Professor		

Course Purpose

Through the training to affect technology development, the study of the company in the company is advanced, and experience the challenge to a practical problem. In this way, it is aimed for upbringing of human resources tying engineering to creation of the social value.

It is wider in a technique and a study, and a consciousness, ability to catch in a general viewpoint (utility, economy) and communication power is bred and aims for what is reflected by a study, the study at the university.

Prerequisite Subjects

It is strongly recommended to take the industry-university joint educational courses such as Focus on Venture Business and ,etc.

Course Topics

In the company accepting an intern, I make the training (study) about the study theme that a company shows.

Orientation to affect the overall company concerned and the training medium

Enforcement (including cooperation, the adjustment with the company staff) of the training theme

Summary, report of the training result

I assume a report (presentation) of the training result to the university a main component.

As the associated document, documents investigation may not support during the working hours that a company sets, I do the attendance of the lecture about "the handling, a point to keep in mind by basic knowledge and the study internship of intellectual property rights" to need what I study in the training overtime by oneself, and to perform on the university side prior to the company training again with

requisiteness.

Textbook

documents that the staff instructing the training in the company introduces it and shows

Additional Reading

documents that the staff instructing the training in the company introduces it and shows

Grade Assessment

I am given in the following on 20th in the total days that engaged in the training in the company.

I do that I announce the result to the university in a result briefing session to perform after the training if essential.

I evaluate it based on result announcement contents and an evaluation book of the training staff making. I recognize an experience-based effect in the training by oneself, and will to plan reflection to a study, the study at the university does it with a pass if admitted.

Notes

The student that I subscribed for the training theme of the company, and acceptance was accepted.

Contacting Faculty

The training staff of the company and the study internship staff of the university accept questions at any time.

Research Internship 1 U3 (3.0credits) (研究インターンシップ 1 U3)

Course Type	Comprehensive engineering courses		
Division at course	Master's Course		
Class Format	Practice		
Course Name	Molecular and Macromolecular Chemistry	Materials Chemistry	Biomolecular Engineering
	Applied Physics	Materials Physics	Materials Design Innovation Engineering
	Materials Process Engineering	Chemical Systems Engineering	Electrical Engineering
	Electronics	Information and Communication Engineering	Mechanical Systems Engineering
	Micro-Nano Mechanical Science and Engineering	Aerospace Engineering	Department of Energy Engineering
	Department of Applied Energy	Civil and Environmental Engineering	
Starts 1	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
Lecturer	Hiroshi IKUTA Professor		

Course Purpose

Through the training to affect technology development, the study of the company in the company is advanced, and experience the challenge to a practical problem. In this way, it is aimed for upbringing of human resources tying engineering to creation of the social value.

It is wider in a technique and a study, and a consciousness, ability to catch in a general viewpoint (utility, economy) and communication power is bred and aims for what is reflected by a study, the study at the university.

Prerequisite Subjects

It is strongly recommended to take the industry-university joint educational courses such as Focus on Venture Business and ,etc.

Course Topics

In the company accepting an intern, I make the training (study) about the study theme that a company shows.

Orientation to affect the overall company concerned and the training medium

Enforcement (including cooperation, the adjustment with the company staff) of the training theme

Summary, report of the training result

I assume a report (presentation) of the training result to the university a main component.

As the associated document, documents investigation may not support during the working hours that a company sets, I do the attendance of the lecture about "the handling, a point to keep in mind by basic knowledge and the study internship of intellectual property rights" to need what I study in the training overtime by oneself, and to perform on the university side prior to the company training again with

requisiteness.

Textbook

documents that the staff instructing the training in the company introduces it and shows

Additional Reading

documents that the staff instructing the training in the company introduces it and shows

Grade Assessment

The credits will be given to the students who have had the working days between 21 and 40 days in the internship company.

Notes

The student that I subscribed for the training theme of the company, and acceptance was accepted.

Contacting Faculty

The training staff of the company and the study internship staff of the university accept questions at any time.

Research Internship 1 U4 (4.0credits) (研究インターンシップ1 U4)

Course Type	Comprehensive engineering courses		
Division at course	Master's Course		
Class Format	Practice		
Course Name	Molecular and Macromolecular Chemistry	Materials Chemistry	Biomolecular Engineering
	Applied Physics	Materials Physics	Materials Design Innovation Engineering
	Materials Process Engineering	Chemical Systems Engineering	Electrical Engineering
	Electronics	Information and Communication Engineering	Mechanical Systems Engineering
	Micro-Nano Mechanical Science and Engineering	Aerospace Engineering	Department of Energy Engineering
	Department of Applied Energy	Civil and Environmental Engineering	
Starts 1	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
Lecturer	Hiroshi IKUTA Professor		

Course Purpose

Through the training to affect technology development, the study of the company in the company is advanced, and experience the challenge to a practical problem. In this way, it is aimed for upbringing of human resources tying engineering to creation of the social value.

It is wider in a technique and a study, and a consciousness, ability to catch in a general viewpoint (utility, economy) and communication power is bred and aims for what is reflected by a study, the study at the university.

Prerequisite Subjects

It is strongly recommended to take the industry-university joint educational courses such as Focus on Venture Business and ,etc.

Course Topics

In the company accepting an intern, I make the training (study) about the study theme that a company shows.

Orientation to affect the overall company concerned and the training medium

Enforcement (including cooperation, the adjustment with the company staff) of the training theme

Summary, report of the training result

I assume a report (presentation) of the training result to the university a main component.

As the associated document, documents investigation may not support during the working hours that a company sets, I do the attendance of the lecture about "the handling, a point to keep in mind by basic knowledge and the study internship of intellectual property rights" to need what I study in the training overtime by oneself, and to perform on the university side prior to the company training again with

requisiteness.

Textbook

documents that the staff instructing the training in the company introduces it and shows

Additional Reading

documents that the staff instructing the training in the company introduces it and shows

Grade Assessment

The credits will be given to the students who have had the working days between 41 and 60 days in the internship company.

Notes

The student that I subscribed for the training theme of the company, and acceptance was accepted.

Contacting Faculty

The training staff of the company and the study internship staff of the university accept questions at any time.

Research Internship 1 U6 (6.0credits) (研究インターンシップ 1 U6)

Course Type	Comprehensive engineering courses		
Division at course	Master's Course		
Class Format	Practice		
Course Name	Molecular and Macromolecular Chemistry	Materials Chemistry	Biomolecular Engineering
	Applied Physics	Materials Physics	Materials Design Innovation Engineering
	Materials Process Engineering	Chemical Systems Engineering	Electrical Engineering
	Electronics	Information and Communication Engineering	Mechanical Systems Engineering
	Micro-Nano Mechanical Science and Engineering	Aerospace Engineering	Department of Energy Engineering
	Department of Applied Energy	Civil and Environmental Engineering	
Starts 1	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
Lecturer	Hiroshi IKUTA Professor		

Course Purpose

Through the training to affect technology development, the study of the company in the company is advanced, and experience the challenge to a practical problem. In this way, it is aimed for upbringing of human resources tying engineering to creation of the social value.

It is wider in a technique and a study, and a consciousness, ability to catch in a general viewpoint (utility, economy) and communication power is bred and aims for what is reflected by a study, the study at the university.

Prerequisite Subjects

It is strongly recommended to take the industry-university joint educational courses such as Focus on Venture Business and ,etc.

Course Topics

In the company accepting an intern, I make the training (study) about the study theme that a company shows.

Orientation to affect the overall company concerned and the training medium

Enforcement (including cooperation, the adjustment with the company staff) of the training theme

Summary, report of the training result

I assume a report (presentation) of the training result to the university a main component.

As the associated document, documents investigation may not support during the working hours that a company sets, I do the attendance of the lecture about "the handling, a point to keep in mind by basic knowledge and the study internship of intellectual property rights" to need what I study in the training overtime by oneself, and to perform on the university side prior to the company training again with

requisiteness.

Textbook

documents that the staff instructing the training in the company introduces it and shows

Additional Reading

documents that the staff instructing the training in the company introduces it and shows

Grade Assessment

The credits will be given to the students who have had the working days between 61 and 80 days in the internship company.

Notes

The student that I subscribed for the training theme of the company, and acceptance was accepted.

Contacting Faculty

The training staff of the company and the study internship staff of the university accept questions at any time.

Research Internship 1 U8 (8.0credits) (研究インターンシップ 1 U8)

Course Type	Comprehensive engineering courses		
Division at course	Master's Course		
Class Format	Practice		
Course Name	Molecular and Macromolecular Chemistry	Materials Chemistry	Biomolecular Engineering
	Applied Physics	Materials Physics	Materials Design Innovation Engineering
	Materials Process Engineering	Chemical Systems Engineering	Electrical Engineering
	Electronics	Information and Communication Engineering	Mechanical Systems Engineering
	Micro-Nano Mechanical Science and Engineering	Aerospace Engineering	Department of Energy Engineering
	Department of Applied Energy	Civil and Environmental Engineering	
Starts 1	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
Lecturer	Hiroshi IKUTA Professor		

Course Purpose

Through the training to affect technology development, the study of the company in the company is advanced, and experience the challenge to a practical problem. In this way, it is aimed for upbringing of human resources tying engineering to creation of the social value.

It is wider in a technique and a study, and a consciousness, ability to catch in a general viewpoint (utility, economy) and communication power is bred and aims for what is reflected by a study, the study at the university.

Prerequisite Subjects

Students attending Research Internship are strongly recommended to take short-term Patent Laws and Focus on Venture Business I or II before the attendance.

Course Topics

In the company accepting an intern, I make the training (study) about the study theme that a company shows.

Orientation to affect the overall company concerned and the training medium

Enforcement (including cooperation, the adjustment with the company staff) of the training theme

Summary, report of the training result

I assume a report (presentation) of the training result to the university a main component.

As the associated document, documents investigation may not support during the working hours that a company sets, I do the attendance of the lecture about "the handling, a point to keep in mind by basic knowledge and the study internship of intellectual property rights" to need what I study in the training overtime by oneself, and to perform on the university side prior to the company training again with

requisiteness.

Textbook

documents that the staff instructing the training in the company introduces it and shows

Additional Reading

documents that the staff instructing the training in the company introduces it and shows

Grade Assessment

The credits will be given to the students who have had the working days more than or equal to 81 days in the internship company.

Notes

The student that I subscribed for the training theme of the company, and acceptance was accepted.

Contacting Faculty

The training staff of the company and the study internship staff of the university accept questions at any time.

Course Type	Comprehensive engineering courses		
Division at course	Master's Course		
Class Format	Lecture		
Course Name	Molecular and Macromolecular Chemistry	Materials Chemistry	Biomolecular Engineering
	Applied Physics	Materials Physics	Materials Design Innovation Engineering
	Materials Process Engineering	Chemical Systems Engineering	Electrical Engineering
	Electronics	Information and Communication Engineering	Mechanical Systems Engineering
	Micro-Nano Mechanical Science and Engineering	Aerospace Engineering	Department of Energy Engineering
	Department of Applied Energy	Civil and Environmental Engineering	
Starts 1	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
Lecturer	Syusaku NAGANO Associate Professor		

Course Purpose

To research in advanced engineering, it is necessary to learn the latest research trends through practice. Through symposium-style academic discussions, students will be able to study cutting-edge science and engineering research and discuss the latest trends in the subject areas.

Prerequisite Subjects

Knowledge of the subject areas.

Course Topics

Participated in special lectures set every year from the fields of biochemistry, analysis, semiconductors, polymers, and startups related to cutting-edge science and engineering, and participated in a symposium where research presentations on cutting-edge engineering were presented. By participating, students will study cutting-edge science and engineering research and discuss the latest trends in the subject areas. After taking the course, study and study the relevant field in detail.

Textbook

Distribute as appropriate.

Additional Reading

Distribute as appropriate.

Grade Assessment

Report. A score of 60 or more out of 100 will be passed. Pass if you have a broad understanding of the subject area. Highly appreciate the point of contact with your own research, new business and research

proposals.

Notes

There are no special requirements. Students who are interested in startups are preferred.

Contacting Faculty

Arranging the schedules by e-mail and etc.

Advanced Experiments for Frontier Technologies and Sciences (1.0credits) (最先端理工学実験)

Course Type	Comprehensive engineering courses		
Division at course	Master's Course		
Class Format	Experiment		
Course Name	Molecular and Macromolecular Chemistry	Materials Chemistry	Biomolecular Engineering
	Applied Physics	Materials Physics	Materials Design Innovation Engineering
	Materials Process Engineering	Chemical Systems Engineering	Electrical Engineering
	Electronics	Information and Communication Engineering	Mechanical Systems Engineering
	Micro-Nano Mechanical Science and Engineering	Aerospace Engineering	Department of Energy Engineering
	Department of Applied Energy	Civil and Environmental Engineering	
Starts 1	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
Lecturer	Syusaku NAGANO Associate Professor		

Course Purpose

To research in advanced engineering, it is necessary to learn the latest research trends through practice. The purpose of this experiment is to find the research issues on one's own and conduct research experiments using the latest experimental equipment and molecular simulation technology.

Through this experiment, you will be able to understand the principles of the Raman spectrometer, ionization potential measurement, X-ray diffraction etc. and molecular simulation software and learn how to use them practically. The goal is to comprehensively acquire the knowledge, skills, and presentation techniques related to advanced experiments necessary for conducting the research that was the subject.

Prerequisite Subjects

it is advisable to acquire basic knowledge on the subject research.

Course Topics

When students choose the prepared subject, students perform the curriculum using one of a Raman spectrometer, an ionization potential measurement and an X-ray diffractometer and learn the principles and practical and advanced usage of these equipment. In the case of an experiment proposed by students (original experiment), students proposes a molecular simulation experiment or research using the above-described equipment, and conduct the experiment with the instructor to produce results. Ultimately, students discuss the results, present their results, and learn how to use the advanced equipment and simulation skills.

Textbook

Distribute as needed. Please check the required documents by yourself.

Additional Reading

Distribute as needed. Please check the required documents by yourself.

Grade Assessment

Exercise (50%) and presentation of research results (50%) will be evaluated. Understanding the measurement principle and usage is used as a criterion for acceptance, but the research achievements and new approaches to research are highly evaluated. A score of 60 or more out of 100 is a passing score.

Notes

No course requirements.

Contacting Faculty

Arranging the schedules by e-mail and etc.

Introduction to Academic Communication (1.0credits) (コミュニケーション学)

Course Type	Comprehensive engineering courses		
Division at course	Master's Course		
Class Format	Lecture		
Course Name	Molecular and Macromolecular Chemistry	Materials Chemistry	Biomolecular Engineering
	Applied Physics	Materials Physics	Materials Design Innovation Engineering
	Materials Process Engineering	Chemical Systems Engineering	Electrical Engineering
	Electronics	Information and Communication Engineering	Mechanical Systems Engineering
	Micro-Nano Mechanical Science and Engineering	Aerospace Engineering	Department of Energy Engineering
	Department of Applied Energy	Civil and Environmental Engineering	Graduate Chemistry
	Graduate Chemistry	Automotive Engineering	Automotive Engineering
	Civil and Environmental Engineering Graduate		
Starts 1	1 Autumn Semester	1 Autumn Semester	1 Autumn Semester
	1 Autumn Semester	1 Autumn Semester	1 Autumn Semester
	1 Autumn Semester	1 Autumn Semester	1 Autumn Semester
	1 Autumn Semester	1 Autumn Semester	1 Autumn Semester
	1 Autumn Semester	1 Autumn Semester	1 Autumn Semester
	1 Autumn Semester	1 Autumn Semester	1 Autumn Semester
	1 Autumn Semester	1 Autumn Semester	1 Autumn Semester
	1 Autumn Semester		
Lecturer	ReikoFURUYA Associate Professor		

Course Purpose

Students will learn presentation skills for academic purposes, which may include giving academic presentations.

Japanese students are expected to present in English and international students in Japanese in the seventh or eighth class meeting.

By taking this class, students are expected to be able to do the following:

- Give a solid presentation with confidence and without hesitation
- Grasp the characteristics of successful presentations
- Use techniques learned in class in their own presentation

Prerequisite Subjects

English language classes for Japanese students

Japanese language classes for international students

Course Topics

- (1) Ways to convey messages in presentation
- (2) The language of a presentation
- (3) Tips for making effective slides
- (4) Observation and analysis of video-taped presentation by a past student
- (5) Paper vs presentation
- (6) Preparation for individual presentation
- (7) Individual presentations I

(8) Individual presentations

This course requires students to work outside of the classes for individual presentation.

Textbook

Handouts will be distributed in class

Additional Reading

1The Japan Times

2:

Grade Assessment

Individual presentation: 50%

Active class participation: 50%

Grades: A+: 100%-95%, A: 94%-80%, B: 79%-70%, C: 69%-65%, C-: 64%-60%, F: 59%-0%

Grading will be decided based on the ability to give an effective academic presentation.

Notes

There are no requirements for taking this class.

Contacting Faculty

Questions will be answered before class, in class, after class or by e-mail.

Course Type	Comprehensive engineering courses		
Division at course	Master's Course		
Class Format	Lecture		
Course Name	Molecular and Macromolecular Chemistry	Materials Chemistry	Biomolecular Engineering
	Applied Physics	Materials Physics	Materials Design Innovation Engineering
	Materials Process Engineering	Chemical Systems Engineering	Electrical Engineering
	Electronics	Information and Communication Engineering	Mechanical Systems Engineering
	Micro-Nano Mechanical Science and Engineering	Aerospace Engineering	Department of Energy Engineering
	Department of Applied Energy	Civil and Environmental Engineering	Automotive Engineering
	Automotive Engineering		
Starts 1	1 Spring Semester	1 Spring Semester	1 Spring Semester
	1 Spring Semester	1 Spring Semester	1 Spring Semester
	1 Spring Semester	1 Spring Semester	1 Spring Semester
	1 Spring Semester	1 Spring Semester	1 Spring Semester
	1 Spring Semester	1 Spring Semester	1 Spring Semester
	1 Spring Semester	1 Spring Semester	1 Spring Semester
	1 Spring Semester		
Lecturer	Yukio ISHIDA Designated Professor		

Course Purpose

This course is intended to study the latest advanced technology of automobile engineering from top researchers of universities and industries. The topics of lectures are related to almost all fields of automotive industries, such as hibrid cars, electric cars, automated driving and crash safety. It is asle intended to develop the English hearing/speaking ability. The attainment targets are as follows:

1. Understand the latest technology of automotive engineering.
2. Underatand company's automotive production system.
3. Improve English ability in the field of socience and engineering.
4. Strengthen communication skills and presentation skills in English by studying with international students.

Prerequisite Subjects

lectures related to fundamental physics, mechanical, electrical and information engineering.

Course Topics

A. Lectures

1. The Car Industry, Market Trend, Circumstance and Its Future.
2. Overview of Automotive Development Process.
3. Observation and Evaluation of Drivers' Behavior Perspective.
4. Car Materials and Processing.
5. Movements and Control of a Car.
6. Safety Engineering for the Prevention of Accidents.
7. Crash Safety.
8. Automobile Embedded Computing System.
9. Wireless Technologies in ITS.

- 10.Applications of CAE to Vehicle Development.
- 11.Energy Saving Technology for Automobiles.
- 12.Automated Driving.
- 13.Traffic Flow Characteristics.
- 14.Cars and Roads in Urban Transportation Context.
- 15.Automobile in Aging Society.

B. Factory Visits

- 1.Toyota Motors Corp., 2. Mitsubishi Motors Corp., 3. Toyota Boshoku Corp., 4.Suzuki Museum,
- 5.Toyota Commemorative Museum, 6. Traffic Safety and Environmental Lab.

C. Group Research Project

Several students form one group and each group selects one topic. They investigate and discuss about this topic and make presentations.

After each lecture is finished, read the handout and write a report about each lecture with your comments.

Textbook

Handout delivered in each lecture

Additional Reading

Introduced in the lectures

Grade Assessment

Evaluation will be based on (a) Discussions in the lectures 20%, (b) report for each lecture 20%, (c) group presentation 30%. and (d) report on research subject 30%. It is necessary to attend factory visits. In each item, the understanding of the concepts is especially evaluated.

Summing up the all scores from (a) to (d) and the students with evaluation A, B, or C can pass this subject.

Notes

1. There are limits of enrollment capacity. Full course student limit is about 10. Auditor limit for each lecture is about 10.
2. English ability is checked before accepted as a student.

Contacting Faculty

Mainly accepted during each lecture. Other general questions are accepted by Professor Yukio Ishida.

<Contact> TEL: 052-747-6797, Email: ishida@nuem.nagoya-u.ac.jp

Advanced Lectures on Scientific English (1.0credits) (科学技術英語特論)

Course Type	Comprehensive engineering courses		
Division at course	Master's Course		
Class Format	Lecture		
Course Name	Molecular and Macromolecular Chemistry	Materials Chemistry	Biomolecular Engineering
	Applied Physics	Materials Physics	Materials Design Innovation Engineering
	Materials Process Engineering	Chemical Systems Engineering	Electrical Engineering
	Electronics	Information and Communication Engineering	Mechanical Systems Engineering
	Micro-Nano Mechanical Science and Engineering	Aerospace Engineering	Department of Energy Engineering
	Department of Applied Energy	Civil and Environmental Engineering	Automotive Engineering
	Automotive Engineering	Civil and Environmental Engineering Graduate	
Starts 1	1 Autumn Semester	1 Autumn Semester	1 Autumn Semester
	1 Autumn Semester	1 Autumn Semester	1 Autumn Semester
	1 Autumn Semester	1 Autumn Semester	1 Autumn Semester
	1 Autumn Semester	1 Autumn Semester	1 Autumn Semester
	1 Autumn Semester	1 Autumn Semester	1 Autumn Semester
	1 Autumn Semester	1 Autumn Semester	1 Autumn Semester
	1 Autumn Semester	1 Autumn Semester	1 Autumn Semester
Lecturer	Part-time Faculty		

Course Purpose

This is a course to acquire basic skills to summarize research as a paper in English. By the end of the course, students will be able to ...

- explain the basic structure of science and technology research paper
- list essential components of each section of research paper
- type short multiple-paragraph essays with appropriate punctuation
- orally express logically structured opinion

Prerequisite Subjects

Various subjects relating to English

Course Topics

1. Basics of academic writing in English (1)
2. Basic structure of science & technology research paper (1)
3. Writing (1), feedback and opinion exchange
4. Basics of academic writing in English (2)
5. Basic structure of science & technology research paper (2)
6. Writing (2), feedback and opinion exchange
7. Basic structure of science & technology research paper (3)
8. Writing (3), feedback and opinion exchange

Students are expected to spend a few hours each week reviewing key points of the lecture and working on the writing assignment.

Textbook

None. Students will receive handouts in each class session.

Additional Reading

Glasman-Deal, H. (2010). Science Research Writing For Non-Native Speakers of English. Imperial College Press.

Swales, J.M. & Feak, C.B. (2012). Academic Writing for Graduate Students. The University of Michigan Press.

Wallwork, A. (2013). English for Academic Research: Grammar, Usage and Style. Springer.

Wallwork, A. (2016). English for Writing Research Papers. Springer.

Grade Assessment

Submitting three short writing assignments that show understanding of research paper structure with appropriate punctuation is required for a passing grade. Speaking English contributing to discussion and opinion exchange, as well as raising questions in class, is strongly encouraged.

Notes

There are no prerequisites

Contacting Faculty

Email address to be announced in the first class

Focus on Venture Business I (2.0credits) (ベンチャービジネス特論)

Course Type	Comprehensive engineering courses		
Division at course	Master's Course		
Class Format	Lecture		
Course Name	Molecular and Macromolecular Chemistry	Materials Chemistry	Biomolecular Engineering
	Applied Physics	Materials Physics	Materials Design Innovation Engineering
	Materials Process Engineering	Chemical Systems Engineering	Electrical Engineering
	Electronics	Information and Communication Engineering	Mechanical Systems Engineering
	Micro-Nano Mechanical Science and Engineering	Aerospace Engineering	Department of Energy Engineering
	Department of Applied Energy	Civil and Environmental Engineering	
Starts 1	1 Spring Semester	1 Spring Semester	1 Spring Semester
	1 Spring Semester	1 Spring Semester	1 Spring Semester
	1 Spring Semester	1 Spring Semester	1 Spring Semester
	1 Spring Semester	1 Spring Semester	1 Spring Semester
	1 Spring Semester	1 Spring Semester	1 Spring Semester
	1 Spring Semester	1 Spring Semester	
Lecturer	Syusaku NAGANO Associate Professor		

Course Purpose

People often point out that the layer of startup companies should assume the leading edge is thin. Part of the cause depends on the system, but in many cases, it is due to the difference in perceptions of the entrepreneurship between East and Western researchers. In this course, you study the basic knowledge and goals required as engineers and researchers when commercializing/starting a “university research.” We will show examples of technology development and commercialization based on research results of universities, entrepreneurship in companies and venture startups, and consider venture business utilizing research. Through this lecture, entrepreneurs' mindsets will be formed as well as minimum knowledge of patents.

Prerequisite Subjects

Course Topics

Textbook

Distribute materials as appropriate.

Additional Reading

Grade Assessment

Evaluate based on self-made problem report Understanding the problems and solutions for startups that respond to the problems in the lecture is a criterion for success. The contents of the report are comprehensively evaluated, and a score of 60 or more is considered acceptable. New business proposals will be appreciated.

Notes

Do not have any special requirements. We hope students who are interested in startups.

Contacting Faculty

the break after the lecture.

Focus on Venture Business II (2.0credits) (ベンチャービジネス特論)

Course Type	Comprehensive engineering courses		
Division at course	Master's Course		
Class Format	Lecture		
Course Name	Molecular and Macromolecular Chemistry	Materials Chemistry	Biomolecular Engineering
	Applied Physics	Materials Physics	Materials Design Innovation Engineering
	Materials Process Engineering	Chemical Systems Engineering	Electrical Engineering
	Electronics	Information and Communication Engineering	Mechanical Systems Engineering
	Micro-Nano Mechanical Science and Engineering	Aerospace Engineering	Department of Energy Engineering
	Department of Applied Energy	Civil and Environmental Engineering	
Starts 1	1 Autumn Semester	1 Autumn Semester	1 Autumn Semester
	1 Autumn Semester	1 Autumn Semester	1 Autumn Semester
	1 Autumn Semester	1 Autumn Semester	1 Autumn Semester
	1 Autumn Semester	1 Autumn Semester	1 Autumn Semester
	1 Autumn Semester	1 Autumn Semester	1 Autumn Semester
	1 Autumn Semester	1 Autumn Semester	1 Autumn Semester
Lecturer	Syusaku NAGANO Associate Professor	Akitoshi EDAGAWA Visiting Professor	

Course Purpose

By referring to the examples of commercialization, in-company entrepreneurship and venture entrepreneurship given in the special lecture on venture business I, you study the specialized knowledge necessary for entrepreneurship and start-up from a public accountant, SME consultant, etc. Talks are held with specialists in Japan to acquire the knowledge needed for venture business management.

Prerequisite Subjects

Course Topics

Textbook

Additional Reading

Grade Assessment

Notes

Contacting Faculty

Internship A (1.0credits) (学外実習 A)

Course Type	Comprehensive engineering courses
Division at course	Master's Course
Class Format	Practice
Course Name	Civil and Environmental Engineering
Starts 1	1 Spring and Autumn Semester
Lecturer	Associated Faculty

Course Purpose

The aim of the lecture is to understand the requirements for civil engineers in actual fields through on-site and hands-on experiences.

After completing this course, students will be able to:

1. explain various issues in civil engineering fields, and
2. acquire a comprehensive methodology for executing projects in infrastructure development.

Prerequisite Subjects

None

Course Topics

On-site and hands-on experiences in the field of civil engineering.

Requirements for the lecture are as follows.

Students attend the experiences more than 10 days or 64 hours.

Students submit a report and make a presentation at the end of this lecture.

Textbook

Textbooks will be recommended at the right time.

Additional Reading

Reference books will be recommended at the right time.

Grade Assessment

Credits will be awarded to those students who score 'Pass'.

Requirements for pass the lecture are as follows.

- 1) Students attend the experiences more than 10 days or 64 hours.
- 2) Students pass the evaluation by the officers and engineers on site.
- 3) Report and presentation

Notes

None

Contacting Faculty

Questions are accepted anytime through email.

Overview of space exploration and research (2.0credits) (宇宙研究開発概論)

Course Type	Comprehensive engineering courses		
Division at course	Master's Course		
Class Format	Lecture		
Course Name	Molecular and Macromolecular Chemistry	Materials Chemistry	Biomolecular Engineering
	Applied Physics	Materials Physics	Materials Process Engineering
	Chemical Systems Engineering	Electrical Engineering	Electronics
	Information and Communication Engineering	Mechanical Systems Engineering	Micro-Nano Mechanical Science and Engineering
	Aerospace Engineering	Department of Energy Engineering	Department of Applied Energy
	Civil and Environmental Engineering		
Starts 1	1 Spring Semester	1 Spring Semester	1 Spring Semester
	1 Spring Semester	1 Spring Semester	1 Spring Semester
	1 Spring Semester	1 Spring Semester	1 Spring Semester
	1 Spring Semester	1 Spring Semester	1 Spring Semester
	1 Spring Semester	1 Spring Semester	1 Spring Semester
	1 Spring Semester		
Lecturer	Leading Graduate		

Course Purpose

This lecture course helps students to acquire a wide-ranging, panoramic knowledge of space research and development given by variety of lecturers from different academic fields.

Prerequisite Subjects

Basic mathematics, Basic physics

Course Topics

1. Space Exploration Projects
 - 1.1 Overview of Space Exploration and Research
 - 1.2 Space Projects
 - 1.3 International Satellite and Spacecraft (HTV) Development
 - 1.4 Project Management/Systems Engineering
 - 1.5 Intellectual Properties in Business

2. Space Explorations on Observations
 - 2.1 Space Propulsion Engineering
 - 2.2 Materials Development for Space Applications
 - 2.3 Space Observation Technologies
 - 2.4 Introduction to Radiation Detectors and Electronics

3. Space-related Science
 - 3.1 Foundations of Astrophysics
 - 3.2 Earth and Planetary Science
 - 3.3 Space Environment Science
 - 3.4 Simulation Experiments

Report subject will be given at every lecture. The report should be submitted by the given deadline.

Textbook

We do not specify the textbook. Lecture notes will be given as necessary.

Additional Reading

Recommended readings will be give during lectures as necessary.

Grade Assessment

Report must be submitted for each lecture. Proper understanding of each lecture's contents is evaluated.

Passing average point is 60 out of 100.

Notes

Students in "Leadership program for Space exploration and Research" are required to take this course before the qualifying examination. This course is open to any graduate students in Nagoya University.

Contacting Faculty

Inquire contact method from the lecturer after the lecture

Advanced Mobility Program Basic Course (4.0credits) (先進モビリティ学基礎)

Course Type	Comprehensive engineering courses		
Division at course	Master's Course		
Class Format	Lecture and Exercise		
Course Name	Molecular and Macromolecular Chemistry	Materials Chemistry	Biomolecular Engineering
	Applied Physics	Materials Physics	Materials Design Innovation Engineering
	Materials Process Engineering	Chemical Systems Engineering	Electrical Engineering
	Electronics	Information and Communication Engineering	Mechanical Systems Engineering
	Micro-Nano Mechanical Science and Engineering	Aerospace Engineering	Department of Energy Engineering
	Department of Applied Energy	Civil and Environmental Engineering	
Starts 1	1 Spring Semester	1 Spring Semester	1 Spring Semester
	1 Spring Semester	1 Spring Semester	1 Spring Semester
	1 Spring Semester	1 Spring Semester	1 Spring Semester
	1 Spring Semester	1 Spring Semester	1 Spring Semester
	1 Spring Semester	1 Spring Semester	1 Spring Semester
	1 Spring Semester	1 Spring Semester	
Lecturer	Faculty of Advanced Mobility Program		

Course Purpose

To train students who can be active in the mobility industry or research institute. This course is aiming to cultivate comprehensive knowledge not only on specialized technical elements but also service and social impact of the mobility. The class will be provided not only by professors but also by engineers in industry. The course is organized as follows:

1. Understand fundamentals of automobile
2. Understand the trend on electrification of automobile
3. Understand the trend on intelligence for automobile
4. Understand dependability, safety and human factor
5. Comprehensively study the mobility service
6. Comprehensively study the legal system for mobility

Prerequisite Subjects

Accepted basic engineering classes at Nagoya University Bachelor's degree, or equivalent knowledge.

Course Topics

1. Fundamentals of automobile
2. Electrification of automobile
3. Intelligence for automobile
4. Dependability, safety and human factor
5. Mobility service
6. Legal system for mobility
7. Discussion and presentation

Read carefully the textbook before attending each class. After each class, solving the exercises in the

textbook is highly recommended. Submission of the report after each class is mandatory.

Textbook

Original lecture note will be provided.

Additional Reading

It will be announced in the class if necessary.

Grade Assessment

Evaluation is based on total score of reports at each class and final presentation. You need more than mark of 60 out of 100 points. Special certificate will be provided for passed students.

Notes

No particular requirement.

Contacting Faculty

Office hour: Wed. 13:00-14:00 @ Green Vehicle Material Research Building 1F

Mail to: o_shimizu@nuem.nagoya-u.ac.jp

Course Type	Comprehensive engineering courses		
Division at course	Master's Course		
Class Format	Exercise and Practice		
Course Name	Molecular and Macromolecular Chemistry	Materials Chemistry	Biomolecular Engineering
	Applied Physics	Materials Physics	Materials Design Innovation Engineering
	Materials Process Engineering	Chemical Systems Engineering	Electrical Engineering
	Electronics	Information and Communication Engineering	Mechanical Systems Engineering
	Micro-Nano Mechanical Science and Engineering	Aerospace Engineering	Department of Energy Engineering
	Department of Applied Energy	Civil and Environmental Engineering	
Starts 1	1 Autumn Semester	1 Autumn Semester	1 Autumn Semester
	1 Autumn Semester	1 Autumn Semester	1 Autumn Semester
	1 Autumn Semester	1 Autumn Semester	1 Autumn Semester
	1 Autumn Semester	1 Autumn Semester	1 Autumn Semester
	1 Autumn Semester	1 Autumn Semester	1 Autumn Semester
	1 Autumn Semester	1 Autumn Semester	
Lecturer	Faculty of Advanced Mobility Program		

Course Purpose

To train students who can be active in the mobility industry or research institute. This course is aiming to realization of autonomous drive by using 1/10 model car. Students develop the software system for autonomous driving. The course is organized as follows:

1. Understand architecture of autonomous drive
2. Understand the image processing for lane detection, and its implementation
3. Understand the control technique for lane following and its implementation

Prerequisite Subjects

Accepted basic engineering classes at Nagoya University Bachelor's degree, or equivalent knowledge.

Course Topics

This course is aiming to realization of autonomous drive by using 1/10 model car. Students develop the software system for autonomous driving. The course is organized as follows:

1. Architecture of autonomous drive
2. Image processing for lane detection, and its implementation
3. Control technique for lane following and its implementation

Class is performed based on group activity.

Textbook

Original lecture note will be provided.

Additional Reading

It will be announced in the class if necessary.

Grade Assessment

Evaluate based on attendance at lecture, total score of tasks set at each time, final presentation. Special certificate will be provided for passed students.

Notes

No particular requirement

Contacting Faculty

Office hour:Wed.13:00-14:00 @Green Vehicle Material Research Building 1F

Mail to: o_shimizu@nuem.nagoya-u.ac.jp

Course Type	Comprehensive engineering courses		
Division at course	Master's Course		
Class Format	Exercise and Practice		
Course Name	Molecular and Macromolecular Chemistry	Materials Chemistry	Biomolecular Engineering
	Applied Physics	Materials Physics	Materials Design Innovation Engineering
	Materials Process Engineering	Chemical Systems Engineering	Electrical Engineering
	Electronics	Information and Communication Engineering	Mechanical Systems Engineering
	Micro-Nano Mechanical Science and Engineering	Aerospace Engineering	Department of Energy Engineering
	Department of Applied Energy	Civil and Environmental Engineering	
Starts 1	1 Autumn Semester	1 Autumn Semester	1 Autumn Semester
	1 Autumn Semester	1 Autumn Semester	1 Autumn Semester
	1 Autumn Semester	1 Autumn Semester	1 Autumn Semester
	1 Autumn Semester	1 Autumn Semester	1 Autumn Semester
	1 Autumn Semester	1 Autumn Semester	1 Autumn Semester
	1 Autumn Semester	1 Autumn Semester	
Lecturer	Faculty of Advanced Mobility Program		

Course Purpose

To train students who can be active in the mobility industry or research institute. This course is aiming to design and analysis of EV formula car. In addition, Test drive is carried out. The course is organized as follows:1. Understand the mechanism of electric vehicle2. Understand the characteristics of motor and battery3. Understand the way of analysis and design of vehicle

Prerequisite Subjects

Accepted basic engineering classes at Nagoya University Bachelor's degree, or equivalent knowledge.

Course Topics

This course is aiming to design and analysis of EV formula car. In addition, Test drive is carried out. The course is organized as follows:1. Mechanism of electric vehicle2. Characteristics of motor and battery3. Way of analysis and design of vehicle Class is performed based on group activity.

Textbook

Original lecture note will be provided.

Additional Reading

It will be announced in the class if necessary.

Grade Assessment

Evaluate based on attendance at lecture, total score of tasks set at each time, final presentation. You need more than mark of 60 out of 100 points. Special certificate will be provided for passed students.

Notes

No particular requirement

Contacting Faculty

Office hour:Wed.13:00-14:00 @Green Vehicle Material Research Building 1F
Mail to: o_shimizu@nuem.nagoya-u.ac.jp

International research project U2 (2.0credits) (国際プロジェクト研究 U2)

Course Type	Comprehensive engineering courses		
Division at course	Master's Course		
Class Format	Lecture		
Course Name	Molecular and Macromolecular Chemistry	Materials Chemistry	Biomolecular Engineering
	Applied Physics	Materials Physics	Materials Design Innovation Engineering
	Materials Process Engineering	Chemical Systems Engineering	Electrical Engineering
	Electronics	Information and Communication Engineering	Mechanical Systems Engineering
	Micro-Nano Mechanical Science and Engineering	Aerospace Engineering	Department of Energy Engineering
	Department of Applied Energy	Civil and Environmental Engineering	
Starts 1	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
Lecturer	Associated Faculty		

Course Purpose

- To design and conduct an original research project
- To develop experience with experimental/numerical/theoretical techniques
- To develop a working knowledge of relevant research literature
- To practice scientific writing and participate in the peer review process
- To be able to discuss the research and topic with other scientists and engineers

The objective of this project is to increase the capability to find and to solve research problems by learning the research approaches and ideas of different research fields.

Prerequisite Subjects

Basic engineering subjects, English, Technical English

Course Topics

- Students will develop (with guidance) a research project proposal at the beginning of the semester that will provide initiative, outline and experimental strategy.
- Each student will present oral reports of research progress, relevant readings, and/or challenges at scheduled lab meetings.
- Students will take primary responsibility for conducting research and do so with professional attitudes and time commitments. This is a lab course and you are expected to spend a minimum of 20 hours of productive lab work per week. It is more realistic to expect to spend an average of 25-30 hours per week working and thinking about your project.
- Students will produce a manuscript (with active feedback from the instructor and peers) that can be published in part or whole by a peer reviewed research journal. Publishable manuscripts require many drafts,

reviews, and revisions.

- Students are encouraged to present research results at appropriate scientific meetings.
- Students will be self-motivated and work independently, approaching the instructor for guidance regularly.

Textbook

Will be designated by each supervisor.

Additional Reading

Will be designated by each supervisor.

Grade Assessment

The grade will be calculated according to the following criteria.

Written report following the same format as scientific paper... 50%; Presentation at the Workshop... 50%.

The acceptance standard is to understand the introduced research approaches and ideas.

Evaluation is done by the supervisor(s) at home and visiting universities.

Notes

No conditions for taking the course

Contacting Faculty

Supervisor of visiting university basically takes care.

International research project U3 (3.0credits) (国際プロジェクト研究 U3)

Course Type	Comprehensive engineering courses		
Division at course	Master's Course		
Class Format	Lecture		
Course Name	Molecular and Macromolecular Chemistry	Materials Chemistry	Biomolecular Engineering
	Applied Physics	Materials Physics	Materials Design Innovation Engineering
	Materials Process Engineering	Chemical Systems Engineering	Electrical Engineering
	Electronics	Information and Communication Engineering	Mechanical Systems Engineering
	Micro-Nano Mechanical Science and Engineering	Aerospace Engineering	Department of Energy Engineering
	Department of Applied Energy	Civil and Environmental Engineering	
Starts 1	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
Lecturer	Associated Faculty		

Course Purpose

- To design and conduct an original research project
- To develop experience with experimental/numerical/theoretical techniques
- To develop a working knowledge of relevant research literature
- To practice scientific writing and participate in the peer review process
- To be able to discuss the research and topic with other scientists and engineers

The objective of this project is to increase the capability to find and to solve research problems by learning the research approaches and ideas of different research fields.

Prerequisite Subjects

Basic engineering subjects, English, Technical English

Course Topics

- Students will develop (with guidance) a research project proposal at the beginning of the semester that will provide initiative, outline and experimental strategy.
- Each student will present oral reports of research progress, relevant readings, and/or challenges at scheduled lab meetings.
- Students will take primary responsibility for conducting research and do so with professional attitudes and time commitments. This is a lab course and you are expected to spend a minimum of 20 hours of productive lab work per week. It is more realistic to expect to spend an average of 25-30 hours per week working and thinking about your project.
- Students will produce a manuscript (with active feedback from the instructor and peers) that can be published in part or whole by a peer reviewed research journal. Publishable manuscripts require many drafts,

reviews, and revisions.

- Students are encouraged to present research results at appropriate scientific meetings.
- Students will be self-motivated and work independently, approaching the instructor for guidance regularly.

Textbook

Will be designated by each supervisor.

Additional Reading

Will be designated by each supervisor.

Grade Assessment

The grade will be calculated according to the following criteria.

Written report following the same format as scientific paper... 50%; Presentation at the Workshop... 50%.

The acceptance standard is to understand the introduced research approaches and ideas.

Evaluation is done by the supervisor(s) at home and visiting universities.

Notes

No conditions for taking the course

Contacting Faculty

Supervisor of visiting university basically takes care.

International research project U4 (4.0credits) (国際プロジェクト研究 U4)

Course Type	Comprehensive engineering courses		
Division at course	Master's Course		
Class Format	Lecture		
Course Name	Molecular and Macromolecular Chemistry	Materials Chemistry	Biomolecular Engineering
	Applied Physics	Materials Physics	Materials Design Innovation Engineering
	Materials Process Engineering	Chemical Systems Engineering	Electrical Engineering
	Electronics	Information and Communication Engineering	Mechanical Systems Engineering
	Micro-Nano Mechanical Science and Engineering	Aerospace Engineering	Department of Energy Engineering
	Department of Applied Energy	Civil and Environmental Engineering	
Starts 1	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
Lecturer	Associated Faculty		

Course Purpose

- To design and conduct an original research project
- To develop experience with experimental/numerical/theoretical techniques
- To develop a working knowledge of relevant research literature
- To practice scientific writing and participate in the peer review process
- To be able to discuss the research and topic with other scientists and engineers

The objective of this project is to increase the capability to find and to solve research problems by learning the research approaches and ideas of different research fields.

Prerequisite Subjects

Basic engineering subjects, English, Technical English

Course Topics

- Students will develop (with guidance) a research project proposal at the beginning of the semester that will provide initiative, outline and experimental strategy.
- Each student will present oral reports of research progress, relevant readings, and/or challenges at scheduled lab meetings.
- Students will take primary responsibility for conducting research and do so with professional attitudes and time commitments. This is a lab course and you are expected to spend a minimum of 20 hours of productive lab work per week. It is more realistic to expect to spend an average of 25-30 hours per week working and thinking about your project.
- Students will produce a manuscript (with active feedback from the instructor and peers) that can be published in part or whole by a peer reviewed research journal. Publishable manuscripts require many drafts,

reviews, and revisions.

- Students are encouraged to present research results at appropriate scientific meetings.
- Students will be self-motivated and work independently, approaching the instructor for guidance regularly.

Textbook

Will be designated by each supervisor.

Additional Reading

Will be designated by each supervisor.

Grade Assessment

The grade will be calculated according to the following criteria.

Written report following the same format as scientific paper... 50%; Presentation at the Workshop... 50%.

The acceptance standard is to understand the introduced research approaches and ideas.

Evaluation is done by the supervisor(s) at home and visiting universities.

Notes

No conditions for taking the course

Contacting Faculty

Supervisor of visiting university basically takes care.

International special lecture (1.0credits) (国際協働教育特別講義)

Course Type	Comprehensive engineering courses		
Division at course	Master's Course		
Class Format	Lecture		
Course Name	Molecular and Macromolecular Chemistry	Materials Chemistry	Biomolecular Engineering
	Applied Physics	Materials Physics	Materials Process Engineering
	Chemical Systems Engineering	Electrical Engineering	Electronics
	Information and Communication Engineering	Mechanical Systems Engineering	Micro-Nano Mechanical Science and Engineering
	Aerospace Engineering	Department of Energy Engineering	Department of Applied Energy
	Civil and Environmental Engineering		
Starts 1	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester		
Lecturer	Associated Faculty		

Course Purpose

Gain basic knowledge of general engineering through English lectures on various hot research topics and leading technologies. The objective of this lecture is to develop research abilities and communication skills, which are essential to carry out international collaborative researches.

Prerequisite Subjects

Basic engineering subjects, English, Technical English

Course Topics

Depends on the lecturer. This course will be divided in 4 chapters as follows: 1. Setting theme and reviewing literature 2. Designing research plan 3. Analysis and discussion of results 4. Brief summary and future prospects Homework will be given after the class and the report is required to be submitted in next class.

Textbook

Will be designated by the lecturer.

Additional Reading

Will be designated by the lecturer.

Grade Assessment

Written report and evaluation by the professors.

Notes

No conditions for taking the course

Contacting Faculty

In the class and E-mail.

International language exercise (1.0credits) (国際協働教育外国語演習)

Course Type	Comprehensive engineering courses		
Division at course	Master's Course		
Class Format	Exercise		
Course Name	Molecular and Macromolecular Chemistry	Materials Chemistry	Biomolecular Engineering
	Applied Physics	Materials Physics	Materials Process Engineering
	Chemical Systems Engineering	Electrical Engineering	Electronics
	Information and Communication Engineering	Mechanical Systems Engineering	Micro-Nano Mechanical Science and Engineering
	Aerospace Engineering	Department of Energy Engineering	Department of Applied Energy
	Civil and Environmental Engineering		
Starts 1	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
Lecturer	Associated Faculty		

Course Purpose

The aim of this course is to provide Japanese students with the English classes or provide international students with Japanese classes to improve communication skills for both academic and daily life.

Prerequisite Subjects

English, Technical English, Japanese

Course Topics

Wide variety of exercises including speaking, listening, writing, reading, and presentation in Japanese/English. Homework will be given after the class and the report is required to be submitted in next class.

Textbook

Will be designated by the lecturer.

Additional Reading

Will be designated by the lecturer.

Grade Assessment

Report, presentation, participation in discussion Grading will be based on understanding Japanese and English, and communication performance.

Notes

No conditions for taking the course

Contacting Faculty

Acceptance and response in the class or through E-mail.

Seminar on Structural Engineering 2A (2.0credits) (構造工学セミナー2A)

Course Type	Specialized Courses	
Division at course	Doctor's Course	
Class Format	Seminar	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	1 Spring Semester	1 Autumn Semester
Lecturer	Junji KATO Professor	Hiroya HOSHIBA Assistant Professor

Course Purpose

To understand basic theory of finite element method and continuum mechanics.

Performance targets:

- 1) To understand finite element analysis and to be able to make the source code by yourself
- 2) To understand nonlinear finite element analysis and to be able to make the source code by yourself

Prerequisite Subjects

Computational Mechanics, Structural Mechanics, Applied Structural Mechanics, Strengths of Structures in Ultimate States, etc.

Course Topics

1. Finite Element Method

- Basic concept of principle of virtual work
- Discretization method
- Newton-Raphson method
- Nonlinear structural analysis and its solution method

Several reports will be given in the class.

Textbook

Finite Element Procedures (K.J. Bathe) and handout will be given.

Additional Reading

Reference books are introduced at the first lecture.

Grade Assessment

Required to understand the basic knowledge of continuum mechanics and finite element method.

The goal attainment level is evaluated by both results of attendance and attitude of learning in this class.

60 points or more are accepted for 100 full marks

Notes

Contacting Faculty

Questions are welcome during the seminar.

Seminar on Structural Engineering 2B (2.0credits) (構造工学セミナー2B)

Course Type	Specialized Courses	
Division at course	Doctor's Course	
Class Format	Seminar	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	1 Autumn Semester	1 Spring Semester
Lecturer	Junji KATO Professor	Hiroya HOSHIBA Assistant Professor

Course Purpose

To understand basic theory of finite element method and continuum mechanics.

Performance targets:

- 1) To understand finite element analysis and to be able to make the source code by yourself
- 2) To understand nonlinear finite element analysis and to be able to make the source code by yourself

Prerequisite Subjects

Computational Mechanics, Structural Mechanics, Applied Structural Mechanics, Strengths of Structures in Ultimate States, etc.

Course Topics

1. Finite Element Method

- Basic concept of principle of virtual work
- Discretization method
- Newton-Raphson method
- Nonlinear structural analysis and its solution method

Several reports will be given in the class.

Textbook

Finite Element Procedures (K.J. Bathe) and handout will be given.

Additional Reading

Reference books are introduced at the first lecture.

Grade Assessment

Required to understand the basic knowledge of continuum mechanics and finite element method.

The goal attainment level is evaluated by both results of attendance and attitude of learning in this class.

60 points or more are accepted for 100 full marks

Notes

Contacting Faculty

Questions are welcome during the seminar.

Seminar on Structural Engineering 2C (2.0credits) (構造工学セミナー2C)

Course Type	Specialized Courses	
Division at course	Doctor's Course	
Class Format	Seminar	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	2 Spring Semester	2 Autumn Semester
Lecturer	Junji KATO Professor	Hiroya HOSHIBA Assistant Professor

Course Purpose

To understand basic theory of finite element method and continuum mechanics.

Performance targets:

- 1) To understand finite element analysis and to be able to make the source code by yourself
- 2) To understand nonlinear finite element analysis and to be able to make the source code by yourself

Prerequisite Subjects

Computational Mechanics, Structural Mechanics, Applied Structural Mechanics, Strengths of Structures in Ultimate States, etc.

Course Topics

1. Finite Element Method

- Basic concept of principle of virtual work
- Discretization method
- Newton-Raphson method
- Nonlinear structural analysis and its solution method

Several reports will be given in the class.

Textbook

Finite Element Procedures (K.J. Bathe) and handout will be given.

Additional Reading

Reference books are introduced at the first lecture.

Grade Assessment

Required to understand the basic knowledge of continuum mechanics and finite element method.

The goal attainment level is evaluated by both results of attendance and attitude of learning in this class.

60 points or more are accepted for 100 full marks

Notes

Contacting Faculty

Questions are welcome during the seminar.

Seminar on Structural Engineering 2D (2.0credits) (構造工学セミナー2D)

Course Type	Specialized Courses	
Division at course	Doctor's Course	
Class Format	Seminar	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	2 Autumn Semester	2 Spring Semester
Lecturer	Junji KATO Professor	Hiroya HOSHIBA Assistant Professor

Course Purpose

To understand basic theory of finite element method and continuum mechanics.

Performance targets:

- 1) To understand finite element analysis and to be able to make the source code by yourself
- 2) To understand nonlinear finite element analysis and to be able to make the source code by yourself

Prerequisite Subjects

Computational Mechanics, Structural Mechanics, Applied Structural Mechanics, Strengths of Structures in Ultimate States, etc.

Course Topics

1. Finite Element Method

- Basic concept of principle of virtual work
- Discretization method
- Newton-Raphson method
- Nonlinear structural analysis and its solution method

Several reports will be given in the class.

Textbook

Finite Element Procedures (K.J. Bathe) and handout will be given.

Additional Reading

Reference books are introduced at the first lecture.

Grade Assessment

Required to understand the basic knowledge of continuum mechanics and finite element method.

The goal attainment level is evaluated by both results of attendance and attitude of learning in this class.

60 points or more are accepted for 100 full marks

Notes

Contacting Faculty

Questions are welcome during the seminar.

Seminar on Structural Engineering 2E (2.0credits) (構造工学セミナー2E)

Course Type	Specialized Courses	
Division at course	Doctor's Course	
Class Format	Seminar	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	3 Spring Semester	3 Autumn Semester
Lecturer	Junji KATO Professor	Hiroya HOSHIBA Assistant Professor

Course Purpose

To understand basic theory of finite element method and continuum mechanics.

Performance targets:

- 1) To understand finite element analysis and to be able to make the source code by yourself
- 2) To understand nonlinear finite element analysis and to be able to make the source code by yourself

Prerequisite Subjects

Computational Mechanics, Structural Mechanics, Applied Structural Mechanics, Strengths of Structures in Ultimate States, etc.

Course Topics

1. Finite Element Method

- Basic concept of principle of virtual work
- Discretization method
- Newton-Raphson method
- Nonlinear structural analysis and its solution method

Several reports will be given in the class.

Textbook

Finite Element Procedures (K.J. Bathe) and handout will be given.

Additional Reading

Reference books are introduced at the first lecture.

Grade Assessment

Required to understand the basic knowledge of continuum mechanics and finite element method.

The goal attainment level is evaluated by both results of attendance and attitude of learning in this class.

60 points or more are accepted for 100 full marks

Notes

Contacting Faculty

Questions are welcome during the seminar.

Course Type	Specialized Courses		
Division at course	Doctor's Course		
Class Format	Seminar		
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate	
Starts 1	1 Spring Semester	1 Autumn Semester	
Lecturer	Hikaru NAKAMURA Professor	Yoshihito Yamamoto Associate Professor	Taito Miura Assistant Professor

Course Purpose

The purpose of these practices is to acquire basic and applied knowledge for understanding the properties of cement, cement paste and concrete and the mechanisms of cement hydration using text book written in English. Furthermore, the participants would be able to get into the total power such as gathering information, relevant technique investigation and presentation skills as going through the presentation.

After completing this class, students will be able to:

1. Explain basic knowledge of cement chemistry
2. Literature survey of cement chemistry

Prerequisite Subjects

Advanced Concrete Structure, Advanced Course in Lifecycle Design of Civil Structures, Exercise in Inspection of Civil Structures

Course Topics

1. Property of Cement
Type of cement
Crystal structure of cement
2. Property of Cement paste
Hydration process of each cement type
Micro-structure of cement hydrates

Before class, please prepare next class and literature survey to related part. After class, please confirm related literature.

Textbook

Cement Chemistry 2nd edition H.F.W. Taylor, Thomas Telford

Additional Reading

Reference books will be recommended at the right time

Grade Assessment

Considering result of Presentation and Oral examination, the acceptance score must be more than 60 points. In this regards, the participant who is absent without notification is more than a half of class he/she isn't evaluation objective.

Notes

None

Contacting Faculty

Welcome to come to room directly anytime and question by e-mail hikaru@cc.nagoya-u.ac.jp

Course Type	Specialized Courses		
Division at course	Doctor's Course		
Class Format	Seminar		
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate	
Starts 1	1 Autumn Semester	1 Spring Semester	
Lecturer	Hikaru NAKAMURA Professor	Yoshihito Yamamoto Associate Professor	Taito Miura Assistant Professor

Course Purpose

The purpose of these practices is to acquire basic and applied knowledge for understanding the properties of cement, cement paste and concrete and the mechanisms of cement hydration using text book written in English. Furthermore, the participants would be able to get into the total power such as gathering information, relevant technique investigation and presentation skills as going through the presentation.

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Prerequisite Subjects

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Course Topics

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Grade Assessment

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Notes

None

Contacting Faculty

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Course Type	Specialized Courses		
Division at course	Doctor's Course		
Class Format	Seminar		
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate	
Starts 1	2 Spring Semester	2 Autumn Semester	
Lecturer	Hikaru NAKAMURA Professor	Yoshihito Yamamoto Associate Professor	Taito Miura Assistant Professor

Course Purpose

The purpose of these practices is to acquire basic and applied knowledge for understanding the properties of cement, cement paste and concrete and the mechanisms of cement hydration using text book written in English. Furthermore, the participants would be able to get into the total power such as gathering information, relevant technique investigation and presentation skills as going through the presentation.

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2. Literature survey of cement chemistry

Prerequisite Subjects

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Course Topics

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Additional Reading

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Grade Assessment

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Notes

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Contacting Faculty

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Course Type	Specialized Courses		
Division at course	Doctor's Course		
Class Format	Seminar		
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate	
Starts 1	2 Autumn Semester	2 Spring Semester	
Lecturer	Hikaru NAKAMURA Professor	Yoshihito Yamamoto Associate Professor	Taito Miura Assistant Professor

Course Purpose

The purpose of these practices is to acquire basic and applied knowledge for understanding the properties of cement, cement paste and concrete and the mechanisms of cement hydration using text book written in English. Furthermore, the participants would be able to get into the total power such as gathering information, relevant technique investigation and presentation skills as going through the presentation.

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1. Explain basic knowledge of cement chemistry
2. Literature survey of cement chemistry

Prerequisite Subjects

Advanced Concrete Structure, Advanced Course in Lifecycle Design of Civil Structures, Exercise in Inspection of Civil Structures

Course Topics

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Textbook

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Additional Reading

Reference books will be recommended at the right time

Grade Assessment

Considering result of Presentation and Oral examination, the acceptance score must be more than 60 points. In this regards, the participant who is absent without notification is more than a half of class he/she isn't evaluation objective.

Notes

None

Contacting Faculty

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Course Type	Specialized Courses		
Division at course	Doctor's Course		
Class Format	Seminar		
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate	
Starts 1	3 Spring Semester	3 Autumn Semester	
Lecturer	Hikaru NAKAMURA Professor	Yoshihito Yamamoto Associate Professor	Taito Miura Assistant Professor

Course Purpose

The purpose of these practices is to acquire basic and applied knowledge for understanding the properties of cement, cement paste and concrete and the mechanisms of cement hydration using text book written in English. Furthermore, the participants would be able to get into the total power such as gathering information, relevant technique investigation and presentation skills as going through the presentation.

After completing this class, students will be able to:

1. Explain basic knowledge of cement chemistry
2. Literature survey of cement chemistry

Prerequisite Subjects

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Course Topics

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Before class, please prepare next class and literature survey to related part. After class, please confirm related literature.

Textbook

Cement Chemistry 2nd edition H.F.W. Taylor, Thomas Telford

Additional Reading

Reference books will be recommended at the right time

Grade Assessment

Considering result of Presentation and Oral examination, the acceptance score must be more than 60 points. In this regards, the participant who is absent without notification is more than a half of class he/she isn't evaluation objective.

Notes

None

Contacting Faculty

Welcome to come to room directly anytime and question by e-mail hikaru@cc.nagoya-u.ac.jp

Seminar on Conservation Engineering of River Basins 2A (2.0credits) (流域保全学セミナー2A)

Course Type	Specialized Courses	
Division at course	Doctor's Course	
Class Format	Seminar	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	1 Spring Semester	1 Autumn Semester
Lecturer	Yuji Toda Professor	RyotaTSUBAKI Associate Professor OBANAMakiko Assistant Professor

Course Purpose

Basic and advanced research on fluvial hydraulics and hydrology and its relation to the ecosystem will be reviewed and discussed. Research methods will also be reviewed and discussed.

The objective of this course is to acquire the skills to understand the trends in research on conservation engineering of river basins and the methods to conduct hydraulics, hydrological and ecosystem researches.

Prerequisite Subjects

River engineering, Hydrology, Hydraulics, Open-channel hydraulics, Human activities and environment

Course Topics

1. Paper reviewing method
2. Fluvial hydraulics and hydrology and its relation to the ecosystem
3. Measurement and modeling of river morphology and hydraulics
4. Measurements for ecosystem

Documents and experiment preparation is required prior to the seminar. Data analysis and report submission are asked following the seminar.

Textbook

Directed as needed

Additional Reading

Directed as needed

Grade Assessment

Presentation and report will be used for grading. To acquire basic skills of research review or fundamental methods for research is the criteria to pass. Advanced skills for reviewing and research will be accounted for the grade.

Notes

Not specified

Contacting Faculty

Discuss during the seminar or asking by e-mail.

Seminar on Conservation Engineering of River Basins 2B (2.0credits) (流域保全学セミナー2B)

Course Type	Specialized Courses		
Division at course	Doctor's Course		
Class Format	Seminar		
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate	
Starts 1	1 Autumn Semester	1 Spring Semester	
Lecturer	Yuji Toda Professor	Ryota TSUBAKI Associate Professor	OBANAMakiko Assistant Professor

Course Purpose

Basic and advanced research on fluvial hydraulics and hydrology and its relation to the ecosystem will be reviewed and discussed. Research methods will also be reviewed and discussed.

The objective of this course is to acquire the skills to understand the trends in research on conservation engineering of river basins and the methods to conduct hydraulics, hydrological and ecosystem researches.

Prerequisite Subjects

Hydrology and River Engineering, Open-channel hydraulics, Fundamental of Hydrodynamics with Exercises, Human activities and environment

Course Topics

1. Paper reviewing method
2. Fluvial hydraulics and hydrology and its relation to the ecosystem
3. Measurement and modeling of river morphology and hydraulics
4. Measurements for ecosystem

Documents and experiment preparation is required prior to the seminar. Data analysis and report submission are asked following the seminar.

Textbook

Directed as needed

Additional Reading

Directed as needed

Grade Assessment

Presentation and report will be used for grading. To acquire basic skills of research review or fundamental methods for research is the criteria to pass. Advanced skills for reviewing and research will be accounted for the grade.

Notes

Not specified

Contacting Faculty

Discuss during the seminar or asking by e-mail.

Seminar on Conservation Engineering of River Basins 2C (2.0credits) (流域保全学セミナー2C)

Course Type	Specialized Courses		
Division at course	Doctor's Course		
Class Format	Seminar		
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate	
Starts 1	2 Spring Semester	2 Autumn Semester	
Lecturer	Yuji Toda Professor	Ryota TSUBAKI Associate Professor	OBANAMakiko Assistant Professor

Course Purpose

Basic and advanced research on fluvial hydraulics and hydrology and its relation to the ecosystem will be reviewed and discussed. Research methods will also be reviewed and discussed.

The objective of this course is to acquire the skills to understand the trends in research on conservation engineering of river basins and the methods to conduct hydraulics, hydrological and ecosystem researches.

Prerequisite Subjects

Hydrology and River Engineering, Open-channel hydraulics, Fundamental of Hydrodynamics with Exercises, Human activities and environment

Course Topics

1. Paper reviewing method
2. Fluvial hydraulics and hydrology and its relation to the ecosystem
3. Measurement and modeling of river morphology and hydraulics
4. Measurements for ecosystem

Documents and experiment preparation is required prior to the seminar. Data analysis and report submission are asked following the seminar.

Textbook

Directed as needed

Additional Reading

Directed as needed

Grade Assessment

Presentation and report will be used for grading. To acquire basic skills of research review or fundamental methods for research is the criteria to pass. Advanced skills for reviewing and research will be accounted for the grade.

Notes

Not specified

Contacting Faculty

Discuss during the seminar or asking by e-mail.

Seminar on Conservation Engineering of River Basins 2D (2.0credits) (流域保全学セミナー2D)

Course Type	Specialized Courses		
Division at course	Doctor's Course		
Class Format	Seminar		
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate	
Starts 1	2 Autumn Semester	2 Spring Semester	
Lecturer	Yuji Toda Professor	Ryota TSUBAKI Associate Professor	OBANAMakiko Assistant Professor

Course Purpose

Basic and advanced research on fluvial hydraulics and hydrology and its relation to the ecosystem will be reviewed and discussed. Research methods will also be reviewed and discussed.

The objective of this course is to acquire the skills to understand the trends in research on conservation engineering of river basins and the methods to conduct hydraulics, hydrological and ecosystem researches.

Prerequisite Subjects

Hydrology and River Engineering, Open-channel hydraulics, Fundamental of Hydrodynamics with Exercises, Human activities and environment

Course Topics

1. Paper reviewing method
2. Fluvial hydraulics and hydrology and its relation to the ecosystem
3. Measurement and modeling of river morphology and hydraulics
4. Measurements for ecosystem

Documents and experiment preparation is required prior to the seminar. Data analysis and report submission are asked following the seminar.

Textbook

Directed as needed

Additional Reading

Directed as needed

Grade Assessment

Presentation and report will be used for grading. To acquire basic skills of research review or fundamental methods for research is the criteria to pass. Advanced skills for reviewing and research will be accounted for the grade.

Notes

Not specified

Contacting Faculty

Discuss during the seminar or asking by e-mail.

Seminar on Conservation Engineering of River Basins 2E (2.0credits) (流域保全学セミナー2E)

Course Type	Specialized Courses		
Division at course	Doctor's Course		
Class Format	Seminar		
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate	
Starts 1	3 Spring Semester	3 Autumn Semester	
Lecturer	Yuji Toda Professor	Ryota TSUBAKI Associate Professor	OBANAMakiko Assistant Professor

Course Purpose

Basic and advanced research on fluvial hydraulics and hydrology and its relation to the ecosystem will be reviewed and discussed. Research methods will also be reviewed and discussed.

The objective of this course is to acquire the skills to understand the trends in research on conservation engineering of river basins and the methods to conduct hydraulics, hydrological and ecosystem researches.

Prerequisite Subjects

Hydrology and River Engineering, Open-channel hydraulics, Fundamental of Hydrodynamics with Exercises, Human activities and environment

Course Topics

1. Paper reviewing method
2. Fluvial hydraulics and hydrology and its relation to the ecosystem
3. Measurement and modeling of river morphology and hydraulics
4. Measurements for ecosystem

Documents and experiment preparation is required prior to the seminar. Data analysis and report submission are asked following the seminar.

Textbook

Directed as needed

Additional Reading

Directed as needed

Grade Assessment

Presentation and report will be used for grading. To acquire basic skills of research review or fundamental methods for research is the criteria to pass. Advanced skills for reviewing and research will be accounted for the grade.

Notes

Not specified

Contacting Faculty

Discuss during the seminar or asking by e-mail.

Seminar on Coastal and Maritime Engineering 2A (2.0credits) (海岸・海洋工学セミナー2A)

Course Type	Specialized Courses		
Division at course	Doctor's Course		
Class Format	Seminar		
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate	
Starts 1	1 Spring Semester	1 Autumn Semester	
Lecturer	norimi mizutani Professor	Tomoaki NAKAMURA Associate Professor	YonghwanCHO Assistant Professor

Course Purpose

The aim of this course is to review and discuss refereed journal papers in order to understand physical processes on coastal and ocean engineering.

Course objectives:

Students will be able to

1. explain what theoretical, experimental, and numerical methods used in coastal and ocean engineering are
2. understand state-of-the-art research in coastal and ocean engineering

Prerequisite Subjects

Advanced Fluvial and Coastal Hydrodynamics, Advanced Coastal and Offshore Engineering, Advanced Work in Coastal and Offshore Engineering

Course Topics

Presentation and discussion on a refereed journal paper on coastal and ocean engineering

Textbook

Students will select refereed journal papers closely related to their research topic

Additional Reading

Directed as needed

Grade Assessment

Presentation and discussion

Notes

No prerequisite

Contacting Faculty

Prof. Mizutani (ext. 4630, mizutani@civil.nagoya-u.ac.jp), Assoc. Prof. Nakamura (ext. 4632, tnakamura@nagoya-u.jp), Assist. Prof. Cho (ext. 4634, yhcho@civil.nagoya-u.ac.jp)

Seminar on Coastal and Maritime Engineering 2B (2.0credits) (海岸・海洋工学セミナー2B)

Course Type	Specialized Courses		
Division at course	Doctor's Course		
Class Format	Seminar		
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate	
Starts 1	1 Autumn Semester	1 Spring Semester	
Lecturer	norimi mizutani Professor	Tomoaki NAKAMURA Associate Professor	YonghwanCHO Assistant Professor

Course Purpose

The aim of this course is to review and discuss refereed journal papers in order to understand physical processes on coastal and ocean engineering.

Course objectives:

Students will be able to

1. explain what theoretical, experimental, and numerical methods used in coastal and ocean engineering are
2. understand state-of-the-art research in coastal and ocean engineering

Prerequisite Subjects

Advanced Fluvial and Coastal Hydrodynamics, Advanced Coastal and Offshore Engineering, Advanced Work in Coastal and Offshore Engineering

Course Topics

Presentation and discussion on a refereed journal paper on coastal and ocean engineering

Textbook

Students will select refereed journal papers closely related to their research topic

Additional Reading

Directed as needed

Grade Assessment

Presentation and discussion

Notes

No prerequisite

Contacting Faculty

Prof. Mizutani (ext. 4630, mizutani@civil.nagoya-u.ac.jp), Assoc. Prof. Nakamura (ext. 4632, tnakamura@nagoya-u.jp), Assist. Prof. Cho (ext. 4634, yhcho@civil.nagoya-u.ac.jp)

Seminar on Coastal and Maritime Engineering 2C (2.0credits) (海岸・海洋工学セミナー2C)

Course Type	Specialized Courses		
Division at course	Doctor's Course		
Class Format	Seminar		
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate	
Starts 1	2 Spring Semester	2 Autumn Semester	
Lecturer	norimi mizutani Professor	Tomoaki NAKAMURA Associate Professor	YonghwanCHO Assistant Professor

Course Purpose

The aim of this course is to review and discuss refereed journal papers in order to understand physical processes on coastal and ocean engineering.

Course objectives:

Students will be able to

1. explain what theoretical, experimental, and numerical methods used in coastal and ocean engineering are
2. understand state-of-the-art research in coastal and ocean engineering

Prerequisite Subjects

Advanced Fluvial and Coastal Hydrodynamics, Advanced Coastal and Offshore Engineering, Advanced Work in Coastal and Offshore Engineering

Course Topics

Presentation and discussion on a refereed journal paper on coastal and ocean engineering

Textbook

Students will select refereed journal papers closely related to their research topic

Additional Reading

Directed as needed

Grade Assessment

Presentation and discussion

Notes

No prerequisite

Contacting Faculty

Prof. Mizutani (ext. 4630, mizutani@civil.nagoya-u.ac.jp), Assoc. Prof. Nakamura (ext. 4632, tnakamura@nagoya-u.jp), Assist. Prof. Cho (ext. 4634, yhcho@civil.nagoya-u.ac.jp)

Seminar on Coastal and Maritime Engineering 2D (2.0credits) (海岸・海洋工学セミナー2D)

Course Type	Specialized Courses		
Division at course	Doctor's Course		
Class Format	Seminar		
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate	
Starts 1	2 Autumn Semester	2 Spring Semester	
Lecturer	norimi mizutani Professor	Tomoaki NAKAMURA Associate Professor	YonghwanCHO Assistant Professor

Course Purpose

The aim of this course is to review and discuss refereed journal papers in order to understand physical processes on coastal and ocean engineering.

Course objectives:

Students will be able to

1. explain what theoretical, experimental, and numerical methods used in coastal and ocean engineering are
2. understand state-of-the-art research in coastal and ocean engineering

Prerequisite Subjects

Advanced Fluvial and Coastal Hydrodynamics, Advanced Coastal and Offshore Engineering, Advanced Work in Coastal and Offshore Engineering

Course Topics

Presentation and discussion on a refereed journal paper on coastal and ocean engineering

Textbook

Students will select refereed journal papers closely related to their research topic

Additional Reading

Directed as needed

Grade Assessment

Presentation and discussion

Notes

No prerequisite

Contacting Faculty

Prof. Mizutani (ext. 4630, mizutani@civil.nagoya-u.ac.jp), Assoc. Prof. Nakamura (ext. 4632, tnakamura@nagoya-u.jp), Assist. Prof. Cho (ext. 4634, yhcho@civil.nagoya-u.ac.jp)

Seminar on Coastal and Maritime Engineering 2E (2.0credits) (海岸・海洋工学セミナー2E)

Course Type	Specialized Courses		
Division at course	Doctor's Course		
Class Format	Seminar		
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate	
Starts 1	3 Spring Semester	3 Autumn Semester	
Lecturer	norimi mizutani Professor	Tomoaki NAKAMURA Associate Professor	YonghwanCHO Assistant Professor

Course Purpose

The aim of this course is to review and discuss refereed journal papers in order to understand physical processes on coastal and ocean engineering.

Course objectives:

Students will be able to

1. explain what theoretical, experimental, and numerical methods used in coastal and ocean engineering are
2. understand state-of-the-art research in coastal and ocean engineering

Prerequisite Subjects

Advanced Fluvial and Coastal Hydrodynamics, Advanced Coastal and Offshore Engineering, Advanced Work in Coastal and Offshore Engineering

Course Topics

Presentation and discussion on a refereed journal paper on coastal and ocean engineering

Textbook

Students will select refereed journal papers closely related to their research topic

Additional Reading

Directed as needed

Grade Assessment

Presentation and discussion

Notes

No prerequisite

Contacting Faculty

Prof. Mizutani (ext. 4630, mizutani@civil.nagoya-u.ac.jp), Assoc. Prof. Nakamura (ext. 4632, tnakamura@nagoya-u.jp), Assist. Prof. Cho (ext. 4634, yhcho@civil.nagoya-u.ac.jp)

Seminar on Geomaterial Engineering2A (2.0credits) (地盤材料工学セミナー2A)

Course Type	Specialized Courses	
Division at course	Doctor's Course	
Class Format	Seminar	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	1 Spring Semester	1 Autumn Semester
Lecturer	Masaki NAKANO Professor	SAKAITakayuki Assistant Professor

Course Purpose

This course introduces the latest knowledge of geotechnical engineering and geotechnical material engineering in order to acquire the foresight in civil engineering and the ability to bring out new scholarship, advanced teaching skills, deep professional skills, and an international perspective. The goals of this course are to (1) Understand and explain theoretical, experimental, and numerical research methods in geotechnical engineering and geotechnical material engineering. (2) Understand and explain domestic and overseas research trends in related fields.

Prerequisite Subjects

Advanced Geotechnical Engineering, Advanced Mechanics of Geomaterials, Advanced Soil Dynamics, Advanced Continuum Mechanics, Advanced Numerical Analysis, Advanced Work in Soil Mechanics and Geotechnical Engineering, Seminar on Geomaterial Engineering1A/1B/1C/1D

Course Topics

1. Mechanical behavior of basic materials used in soil mechanics and geotechnical engineering Learning mainly about the mechanical behavior of typical sand, clay, and intermediate soils, and the description using elastoplastic constitutive models
2. Mechanical behavior of special soil and problematic soil Understanding and modeling the mechanical behavior of soil materials having weathering, expansive, and friable properties.
3. Effective use of generated soil and disaster waste Measurement to make effective usage of construction waste soil and recovered soil from disaster waste as soil material
4. Features of overseas earth materials Understanding the characteristics of soil generated during construction overseas and soil materials causing geological disasters.
5. Ground material improvement technology Understanding techniques for strengthening and stabilizing difficult-to-handle ground materials with solidified materials and short discrete fibers. You must prepare and review materials/handouts used in seminar. In addition, you will be required to submit several report assignments, so submit them.

Textbook

The related papers will be selected and distributed as appropriate as the seminar progresses.

Additional Reading

References will be introduced as necessary.

Grade Assessment

The degree of achievement of goals is comprehensively evaluated by making presentations at seminar, answering questions, contributing to discussions, and reporting on issues. The contributions are those that answer the questions and those that summarize the contents of the literature. Acceptance criteria are to be able to logically consider and discuss based on the knowledge obtained through the class, such as the extraction and resolution of various problems in geomaterials engineering.

Notes

No course requirements are required

Contacting Faculty

Welcome questions during and after this seminar. Each member also accepts questions at the room and by e-mail at any time. Masaki NAKANO: Ex.4622, nakano@civil.nagoya-u.ac.jp Takayuki Sakai: Ex.2734t-sakai@civil.nagoya-u.ac.jp

Seminar on Geomaterial Engineering2B (2.0credits) (地盤材料工学セミナー2B)

Course Type	Specialized Courses	
Division at course	Doctor's Course	
Class Format	Seminar	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	1 Autumn Semester	1 Spring Semester
Lecturer	Masaki NAKANO Professor	SAKAITakayuki Assistant Professor

Course Purpose

This course introduces the latest knowledge of geotechnical engineering and geotechnical material engineering in order to acquire the foresight in civil engineering and the ability to bring out new scholarship, advanced teaching skills, deep professional skills, and an international perspective.

The goals of this course are to

- (1) Understand and explain theoretical, experimental, and numerical research methods in geotechnical engineering and geotechnical material engineering.
- (2) Understand and explain domestic and overseas research trends in related fields.

Prerequisite Subjects

Advanced Geotechnical Engineering, Advanced Mechanics of Geomaterials, Advanced Soil Dynamics, Advanced Continuum Mechanics, Advanced Numerical Analysis, Advanced Work in Soil Mechanics and Geotechnical Engineering, Seminar on Geomaterial Engineering1A/1B/1C/1D

Course Topics

1. Mechanical behavior of basic materials used in soil mechanics and geotechnical engineering
Learning mainly about the mechanical behavior of typical sand, clay, and intermediate soils, and the description using elastoplastic constitutive models
2. Mechanical behavior of special soil and problematic soil
Understanding and modeling the mechanical behavior of soil materials having weathering, expansive, and friable properties.
3. Effective use of generated soil and disaster waste
Measurement to make effective usage of construction waste soil and recovered soil from disaster waste as soil material
4. Features of overseas earth materials
Understanding the characteristics of soil generated during construction overseas and soil materials causing geological disasters.
5. Ground material improvement technology
Understanding techniques for strengthening and stabilizing difficult-to-handle ground materials with solidified materials and short discrete fibers.

You must prepare and review materials/handouts used in seminar. In addition, you will be required to submit several report assignments, so submit them.

Textbook

The related papers will be selected and distributed as appropriate as the seminar progresses.

Additional Reading

References will be introduced as necessary.

Grade Assessment

The degree of achievement of goals is comprehensively evaluated by making presentations at seminar, answering questions, contributing to discussions, and reporting on issues. The contributions are those that answer the questions and those that summarize the contents of the literature. Acceptance criteria are to be able to logically consider and discuss based on the knowledge obtained through the class, such as the

extraction and resolution of various problems in geomaterials engineering.

Notes

No course requirements are required

Contacting Faculty

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Takayuki Sakai: Ex.2734t-sakai@civil.nagoya-u.ac.jp

Seminar on Geomaterial Engineering2C (2.0credits) (地盤材料工学セミナー2C)

Course Type	Specialized Courses	
Division at course	Doctor's Course	
Class Format	Seminar	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	2 Spring Semester	2 Autumn Semester
Lecturer	Masaki NAKANO Professor	SAKAITakayuki Assistant Professor

Course Purpose

This course introduces the latest knowledge of geotechnical engineering and geotechnical material engineering in order to acquire the foresight in civil engineering and the ability to bring out new scholarship, advanced teaching skills, deep professional skills, and an international perspective. The goals of this course are to (1) Understand and explain theoretical, experimental, and numerical research methods in geotechnical engineering and geotechnical material engineering. (2) Understand and explain domestic and overseas research trends in related fields.

Prerequisite Subjects

Advanced Geotechnical Engineering, Advanced Mechanics of Geomaterials, Advanced Soil Dynamics, Advanced Continuum Mechanics, Advanced Numerical Analysis, Advanced Work in Soil Mechanics and Geotechnical Engineering, Seminar on Geomaterial Engineering1A/1B/1C/1D

Course Topics

1. Mechanical behavior of basic materials used in soil mechanics and geotechnical engineering Learning mainly about the mechanical behavior of typical sand, clay, and intermediate soils, and the description using elastoplastic constitutive models
2. Mechanical behavior of special soil and problematic soil Understanding and modeling the mechanical behavior of soil materials having weathering, expansive, and friable properties.
3. Effective use of generated soil and disaster waste Measurement to make effective usage of construction waste soil and recovered soil from disaster waste as soil material
4. Features of overseas earth materials Understanding the characteristics of soil generated during construction overseas and soil materials causing geological disasters.
5. Ground material improvement technology Understanding techniques for strengthening and stabilizing difficult-to-handle ground materials with solidified materials and short discrete fibers. You must prepare and review materials/handouts used in seminar. In addition, you will be required to submit several report assignments, so submit them.

Textbook

The related papers will be selected and distributed as appropriate as the seminar progresses.

Additional Reading

References will be introduced as necessary.

Grade Assessment

The degree of achievement of goals is comprehensively evaluated by making presentations at seminar, answering questions, contributing to discussions, and reporting on issues. The contributions are those that answer the questions and those that summarize the contents of the literature. Acceptance criteria are to be able to logically consider and discuss based on the knowledge obtained through the class, such as the extraction and resolution of various problems in geomaterials engineering.

Notes

No course requirements are required

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Seminar on Geomaterial Engineering2D (2.0credits) (地盤材料工学セミナー2D)

Course Type	Specialized Courses	
Division at course	Doctor's Course	
Class Format	Seminar	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	2 Autumn Semester	2 Spring Semester
Lecturer	Masaki NAKANO Professor	SAKAITakayuki Assistant Professor

Course Purpose

This course introduces the latest knowledge of geotechnical engineering and geotechnical material engineering in order to acquire the foresight in civil engineering and the ability to bring out new scholarship, advanced teaching skills, deep professional skills, and an international perspective. The goals of this course are to (1) Understand and explain theoretical, experimental, and numerical research methods in geotechnical engineering and geotechnical material engineering. (2) Understand and explain domestic and overseas research trends in related fields.

Prerequisite Subjects

Advanced Geotechnical Engineering, Advanced Mechanics of Geomaterials, Advanced Soil Dynamics, Advanced Continuum Mechanics, Advanced Numerical Analysis, Advanced Work in Soil Mechanics and Geotechnical Engineering, Seminar on Geomaterial Engineering1A/1B/1C/1D

Course Topics

1. Mechanical behavior of basic materials used in soil mechanics and geotechnical engineering Learning mainly about the mechanical behavior of typical sand, clay, and intermediate soils, and the description using elastoplastic constitutive models
2. Mechanical behavior of special soil and problematic soil Understanding and modeling the mechanical behavior of soil materials having weathering, expansive, and friable properties.
3. Effective use of generated soil and disaster waste Measurement to make effective usage of construction waste soil and recovered soil from disaster waste as soil material
4. Features of overseas earth materials Understanding the characteristics of soil generated during construction overseas and soil materials causing geological disasters.
5. Ground material improvement technology Understanding techniques for strengthening and stabilizing difficult-to-handle ground materials with solidified materials and short discrete fibers. You must prepare and review materials/handouts used in seminar. In addition, you will be required to submit several report assignments, so submit them.

Textbook

The related papers will be selected and distributed as appropriate as the seminar progresses.

Additional Reading

References will be introduced as necessary.

Grade Assessment

The degree of achievement of goals is comprehensively evaluated by making presentations at seminar, answering questions, contributing to discussions, and reporting on issues. The contributions are those that answer the questions and those that summarize the contents of the literature. Acceptance criteria are to be able to logically consider and discuss based on the knowledge obtained through the class, such as the extraction and resolution of various problems in geomaterials engineering.

Notes

No course requirements are required

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Seminar on Geomaterial Engineering2E (2.0credits) (地盤材料工学セミナー2E)

Course Type	Specialized Courses	
Division at course	Doctor's Course	
Class Format	Seminar	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	3 Spring Semester	3 Autumn Semester
Lecturer	Masaki NAKANO Professor	SAKAITakayuki Assistant Professor

Course Purpose

This course introduces the latest knowledge of geotechnical engineering and geotechnical material engineering in order to acquire the foresight in civil engineering and the ability to bring out new scholarship, advanced teaching skills, deep professional skills, and an international perspective. The goals of this course are to (1) Understand and explain theoretical, experimental, and numerical research methods in geotechnical engineering and geotechnical material engineering. (2) Understand and explain domestic and overseas research trends in related fields.

Prerequisite Subjects

Advanced Geotechnical Engineering, Advanced Mechanics of Geomaterials, Advanced Soil Dynamics, Advanced Continuum Mechanics, Advanced Numerical Analysis, Advanced Work in Soil Mechanics and Geotechnical Engineering, Seminar on Geomaterial Engineering1A/1B/1C/1D

Course Topics

1. Mechanical behavior of basic materials used in soil mechanics and geotechnical engineering Learning mainly about the mechanical behavior of typical sand, clay, and intermediate soils, and the description using elastoplastic constitutive models
2. Mechanical behavior of special soil and problematic soil Understanding and modeling the mechanical behavior of soil materials having weathering, expansive, and friable properties.
3. Effective use of generated soil and disaster waste Measurement to make effective usage of construction waste soil and recovered soil from disaster waste as soil material
4. Features of overseas earth materials Understanding the characteristics of soil generated during construction overseas and soil materials causing geological disasters.
5. Ground material improvement technology Understanding techniques for strengthening and stabilizing difficult-to-handle ground materials with solidified materials and short discrete fibers. You must prepare and review materials/handouts used in seminar. In addition, you will be required to submit several report assignments, so submit them.

Textbook

The related papers will be selected and distributed as appropriate as the seminar progresses.

Additional Reading

References will be introduced as necessary.

Grade Assessment

The degree of achievement of goals is comprehensively evaluated by making presentations at seminar, answering questions, contributing to discussions, and reporting on issues. The contributions are those that answer the questions and those that summarize the contents of the literature. Acceptance criteria are to be able to logically consider and discuss based on the knowledge obtained through the class, such as the extraction and resolution of various problems in geomaterials engineering.

Notes

No course requirements are required

Contacting Faculty

Welcome questions during and after this seminar. Each member also accepts questions at the room and by e-mail at any time. Masaki NAKANO: Ex.4622, nakano@civil.nagoya-u.ac.jp Takayuki Sakai: Ex.2734t-sakai@civil.nagoya-u.ac.jp

Course Type	Specialized Courses	
Division at course	Doctor's Course	
Class Format	Seminar	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	1 Spring Semester	1 Autumn Semester
Lecturer	Toshihiro NODA Professor	Kentaro NAKAI Associate Professor YOSHIKAWA Takahiro Assistant Professor

Course Purpose

In order to acquire the foresight in civil engineering and the ability to bring out new academic creativity, advanced teaching skills, deep specialized skills, and an international perspective, the purpose of this seminar is to acquire the basics of geotechnical engineering, seismic engineering, and geo-disaster prevention engineering related to the safety of ground and soil structures, and to understand effective design principles and ground countermeasures. It also aims to acquire reading comprehension skills and presentation skills necessary for conducting and developing research.

By learning this lecture, the goal is to be able to:

1. Understand and explain theoretical, experimental, and numerical research methods in geotechnical engineering, seismic engineering, and geological disaster prevention engineering.
2. Understand and explain domestic and overseas research trends in related fields.

Prerequisite Subjects

Advanced Geotechnical Engineering, Advanced Mechanics of Geomaterials, Advanced Soil Dynamics, Advanced Continuum Mechanics, Advanced Numerical Analysis, Advanced Work in Soil Mechanics and Geotechnical Engineering

Course Topics

1. Fundamentals of soft ground mechanics
2. Deformation and stability of ground structure
3. Design method of ground and structure in soft ground
4. Design of ground reinforcement and improvement method
5. Basics of seismic engineering
6. How to create input ground motion for design
7. Seismic response analysis and seismic safety evaluation

Materials used in lectures must be prepared and reviewed. In addition, students will be required to submit several report assignments.

Textbook

Printed documents will be distributed.

Additional Reading

References will be introduced as necessary.

Grade Assessment

Comprehensively evaluate the achievement of goals by making presentations at seminars, answering questions, contributing to discussions, and issue reports. Contributions include statements that answer questions and summarize the contents of the literature. Acceptance criteria are to be able to logically consider and argue based on the knowledge obtained through lectures, such as extracting and solving various problems in geotechnical engineering, seismic engineering, and geological disaster prevention engineering.

Notes

No course requirements are required.

Contacting Faculty

Questions during and after the lecture are welcome. E-mail questions are also accepted at any time.

Toshihiro NODA, Ext: 3833, E-mail: noda@nagoya-u.jp, Bldg. 9 Rm. 317

Kentaro NAKAI, Ext: 5203, E-mail: nakai@civil.nagoya-u.ac.jp, Bldg. 9 Rm. 313

Takahiro YOSHIKAWA, Ext: 3835, E-mail: yoshikawa@civil.nagoya-u.ac.jp, Bldg. 9 Rm. 313

Course Type	Specialized Courses	
Division at course	Doctor's Course	
Class Format	Seminar	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	1 Autumn Semester	1 Spring Semester
Lecturer	Toshihiro NODA Professor	Kentaro NAKAI Associate Professor YOSHIKAWA Takahiro Assistant Professor

Course Purpose

In order to acquire the foresight in civil engineering and the ability to bring out new academic creativity, advanced teaching skills, deep specialized skills, and an international perspective, the purpose of this seminar is to acquire the basics of geotechnical engineering, seismic engineering, and geo-disaster prevention engineering related to the safety of ground and soil structures, and to understand effective design principles and ground countermeasures. It also aims to acquire reading comprehension skills and presentation skills necessary for conducting and developing research.

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2. Understand and explain domestic and overseas research trends in related fields.

Prerequisite Subjects

Advanced Geotechnical Engineering, Advanced Mechanics of Geomaterials, Advanced Soil Dynamics, Advanced Continuum Mechanics, Advanced Numerical Analysis, Advanced Work in Soil Mechanics and Geotechnical Engineering

Course Topics

1. Fundamentals of soft ground mechanics
2. Deformation and stability of ground structure
3. Design method of ground and structure in soft ground
4. Design of ground reinforcement and improvement method
5. Basics of seismic engineering
6. How to create input ground motion for design
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Textbook

Printed documents will be distributed.

Additional Reading

References will be introduced as necessary.

Grade Assessment

Comprehensively evaluate the achievement of goals by making presentations at seminars, answering questions, contributing to discussions, and issue reports. Contributions include statements that answer questions and summarize the contents of the literature. Acceptance criteria are to be able to logically consider and argue based on the knowledge obtained through lectures, such as extracting and solving various problems in geotechnical engineering, seismic engineering, and geological disaster prevention engineering.

Notes

No course requirements are required.

Contacting Faculty

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Takahiro YOSHIKAWA, Ext: 3835, E-mail: yoshikawa@civil.nagoya-u.ac.jp, Bldg. 9 Rm. 313

Course Type	Specialized Courses	
Division at course	Doctor's Course	
Class Format	Seminar	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	2 Spring Semester	2 Autumn Semester
Lecturer	Toshihiro NODA Professor	Kentaro NAKAI Associate Professor YOSHIKAWA Takahiro Assistant Professor

Course Purpose

In order to acquire the foresight in civil engineering and the ability to bring out new academic creativity, advanced teaching skills, deep specialized skills, and an international perspective, the purpose of this seminar is to acquire the basics of geotechnical engineering, seismic engineering, and geo-disaster prevention engineering related to the safety of ground and soil structures, and to understand effective design principles and ground countermeasures. It also aims to acquire reading comprehension skills and presentation skills necessary for conducting and developing research.

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2. Understand and explain domestic and overseas research trends in related fields.

Prerequisite Subjects

Advanced Geotechnical Engineering, Advanced Mechanics of Geomaterials, Advanced Soil Dynamics, Advanced Continuum Mechanics, Advanced Numerical Analysis, Advanced Work in Soil Mechanics and Geotechnical Engineering

Course Topics

1. Fundamentals of soft ground mechanics
2. Deformation and stability of ground structure
3. Design method of ground and structure in soft ground
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5. Basics of seismic engineering
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7. Seismic response analysis and seismic safety evaluation

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Textbook

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Additional Reading

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Grade Assessment

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Notes

No course requirements are required.

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Course Type	Specialized Courses	
Division at course	Doctor's Course	
Class Format	Seminar	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	2 Autumn Semester	2 Spring Semester
Lecturer	Toshihiro NODA Professor	Kentaro NAKAI Associate Professor YOSHIKAWA Takahiro Assistant Professor

Course Purpose

In order to acquire the foresight in civil engineering and the ability to bring out new academic creativity, advanced teaching skills, deep specialized skills, and an international perspective, the purpose of this seminar is to acquire the basics of geotechnical engineering, seismic engineering, and geo-disaster prevention engineering related to the safety of ground and soil structures, and to understand effective design principles and ground countermeasures. It also aims to acquire reading comprehension skills and presentation skills necessary for conducting and developing research.

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Prerequisite Subjects

Advanced Geotechnical Engineering, Advanced Mechanics of Geomaterials, Advanced Soil Dynamics, Advanced Continuum Mechanics, Advanced Numerical Analysis, Advanced Work in Soil Mechanics and Geotechnical Engineering

Course Topics

1. Fundamentals of soft ground mechanics
2. Deformation and stability of ground structure
3. Design method of ground and structure in soft ground
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7. Seismic response analysis and seismic safety evaluation

Materials used in lectures must be prepared and reviewed. In addition, students will be required to submit several report assignments.

Textbook

Printed documents will be distributed.

Additional Reading

References will be introduced as necessary.

Grade Assessment

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Notes

No course requirements are required.

Contacting Faculty

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Takahiro YOSHIKAWA, Ext: 3835, E-mail: yoshikawa@civil.nagoya-u.ac.jp, Bldg. 9 Rm. 313

Course Type	Specialized Courses	
Division at course	Doctor's Course	
Class Format	Seminar	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	3 Spring Semester	3 Autumn Semester
Lecturer	Toshihiro NODA Professor	Kentaro NAKAI Associate Professor YOSHIKAWA Takahiro Assistant Professor

Course Purpose

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2. Understand and explain domestic and overseas research trends in related fields.

Prerequisite Subjects

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Course Topics

1. Fundamentals of soft ground mechanics
2. Deformation and stability of ground structure
3. Design method of ground and structure in soft ground
4. Design of ground reinforcement and improvement method
5. Basics of seismic engineering
6. How to create input ground motion for design
7. Seismic response analysis and seismic safety evaluation

Materials used in lectures must be prepared and reviewed. In addition, students will be required to submit several report assignments.

Textbook

Printed documents will be distributed.

Additional Reading

References will be introduced as necessary.

Grade Assessment

Comprehensively evaluate the achievement of goals by making presentations at seminars, answering questions, contributing to discussions, and issue reports. Contributions include statements that answer questions and summarize the contents of the literature. Acceptance criteria are to be able to logically consider and argue based on the knowledge obtained through lectures, such as extracting and solving various problems in geotechnical engineering, seismic engineering, and geological disaster prevention engineering.

Notes

No course requirements are required.

Contacting Faculty

Questions during and after the lecture are welcome. E-mail questions are also accepted at any time.

Toshihiro NODA, Ext: 3833, E-mail: noda@nagoya-u.jp, Bldg. 9 Rm. 317

Kentaro NAKAI, Ext: 5203, E-mail: nakai@civil.nagoya-u.ac.jp, Bldg. 9 Rm. 313

Takahiro YOSHIKAWA, Ext: 3835, E-mail: yoshikawa@civil.nagoya-u.ac.jp, Bldg. 9 Rm. 313

Seminar on Maintenance of Civil Structures 2A (2.0credits) (社会基盤維持管理学セミナー2A)

Course Type	Specialized Courses		
Division at course	Doctor's Course		
Class Format	Seminar		
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate	
Starts 1	1 Spring Semester	1 Autumn Semester	
Lecturer	KazuoTATEISHI Professor	Takeshi HANJI Associate Professor	Masaru Shimizu Assistant Professor

Course Purpose

Seminar on design concept, maintenance and long-term management method for infrastructures.

After completing this course, students will be able to:

- 1.understand design concepts of civil structures, and
- 2.improve skills on reading comprehension and presentation.

Prerequisite Subjects

Advanced Course in Lifecycle Design of Civil Structures

Advanced Steel Structures

Advanced Concrete Structures

Exercise in Inspection of Civil Structures

Course Topics

Reading and discussing some literature on history, design and maintenance of infrastructures.

Textbook

Textbooks will be determined by the supervisors.

Additional Reading

Reference books will be determined by the supervisors.

Grade Assessment

Evaluation will be comprehensively based on presentation and discussion among students, etc.

Notes

None

Contacting Faculty

Students are encouraged to ask questions anytime.

Seminar on Maintenance of Civil Structures 2B (2.0credits) (社会基盤維持管理学セミナー2B)

Course Type	Specialized Courses		
Division at course	Doctor's Course		
Class Format	Seminar		
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate	
Starts 1	1 Autumn Semester	1 Spring Semester	
Lecturer	KazuoTATEISHI Professor	Takeshi HANJI Associate Professor	Masaru Shimizu Assistant Professor

Course Purpose

Seminar on design concept, maintenance and long-term management method for infrastructures.

After completing this course, students will be able to:

- 1.understand design concepts of civil structures, and
- 2.improve skills on reading comprehension and presentation.

Prerequisite Subjects

Advanced Course in Lifecycle Design of Civil Structures

Advanced Steel Structures

Advanced Concrete Structures

Exercise in Inspection of Civil Structures

Course Topics

Reading and discussing some literature on history, design and maintenance of infrastructures.

Textbook

Textbooks will be determined by the supervisors.

Additional Reading

Reference books will be determined by the supervisors.

Grade Assessment

Evaluation will be comprehensively based on presentation and discussion among students, etc.

Notes

None

Contacting Faculty

Students are encouraged to ask questions anytime.

Seminar on Maintenance of Civil Structures 2C (2.0credits) (社会基盤維持管理学セミナー2C)

Course Type	Specialized Courses		
Division at course	Doctor's Course		
Class Format	Seminar		
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate	
Starts 1	2 Spring Semester	2 Autumn Semester	
Lecturer	KazuoTATEISHI Professor	Takeshi HANJI Associate Professor	Masaru Shimizu Assistant Professor

Course Purpose

Seminar on design concept, maintenance and long-term management method for infrastructures.

After completing this course, students will be able to:

- 1.understand design concepts of civil structures, and
- 2.improve skills on reading comprehension and presentation.

Prerequisite Subjects

Advanced Course in Lifecycle Design of Civil Structures

Advanced Steel Structures

Advanced Concrete Structures

Exercise in Inspection of Civil Structures

Course Topics

Reading and discussing some literature on history, design and maintenance of infrastructures.

Textbook

Textbooks will be determined by the supervisors.

Additional Reading

Reference books will be determined by the supervisors.

Grade Assessment

Evaluation will be comprehensively based on presentation and discussion among students, etc.

Notes

None

Contacting Faculty

Students are encouraged to ask questions anytime.

Seminar on Maintenance of Civil Structures 2D (2.0credits) (社会基盤維持管理学セミナー2D)

Course Type	Specialized Courses		
Division at course	Doctor's Course		
Class Format	Seminar		
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate	
Starts 1	2 Autumn Semester	2 Spring Semester	
Lecturer	KazuoTATEISHI Professor	Takeshi HANJI Associate Professor	Masaru Shimizu Assistant Professor

Course Purpose

Seminar on design concept, maintenance and long-term management method for infrastructures.

After completing this course, students will be able to:

- 1.understand design concepts of civil structures, and
- 2.improve skills on reading comprehension and presentation.

Prerequisite Subjects

Advanced Course in Lifecycle Design of Civil Structures

Advanced Steel Structures

Advanced Concrete Structures

Exercise in Inspection of Civil Structures

Course Topics

Reading and discussing some literature on history, design and maintenance of infrastructures.

Textbook

Textbooks will be determined by the supervisors.

Additional Reading

Reference books will be determined by the supervisors.

Grade Assessment

Evaluation will be comprehensively based on presentation and discussion among students, etc.

Notes

None

Contacting Faculty

Students are encouraged to ask questions anytime.

Seminar on Maintenance of Civil Structures 2E (2.0credits) (社会基盤維持管理学セミナー2E)

Course Type	Specialized Courses		
Division at course	Doctor's Course		
Class Format	Seminar		
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate	
Starts 1	3 Spring Semester	3 Autumn Semester	
Lecturer	KazuoTATEISHI Professor	Takeshi HANJI Associate Professor	Masaru Shimizu Assistant Professor

Course Purpose

Seminar on design concept, maintenance and long-term management method for infrastructures.

After completing this course, students will be able to:

- 1.understand design concepts of civil structures, and
- 2.improve skills on reading comprehension and presentation.

Prerequisite Subjects

Advanced Course in Lifecycle Design of Civil Structures

Advanced Steel Structures

Advanced Concrete Structures

Exercise in Inspection of Civil Structures

Course Topics

Reading and discussing some literature on history, design and maintenance of infrastructures.

Textbook

Textbooks will be determined by the supervisors.

Additional Reading

Reference books will be determined by the supervisors.

Grade Assessment

Evaluation will be comprehensively based on presentation and discussion among students, etc.

Notes

None

Contacting Faculty

Students are encouraged to ask questions anytime.

Land Design Seminar 2A (2.0credits) (国土デザイン学セミナー2A)

Course Type	Specialized Courses	
Division at course	Doctor's Course	
Class Format	Seminar	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	1 Spring Semester	1 Autumn Semester
Lecturer	NAKAMURASHinichiro Associate Professor	

Course Purpose

Students cultivate a capacity for understanding and expressiveness related to methodologies to create cultural, safe and secure regional and infrastructure design under the climate change and the aging society, in which technologies, institutions and policy measures are discussed within the scope of regional design, economy and public policy analysis.

Prerequisite Subjects

Urban and Regional Planning

Course Topics

Students review and collect the relevant advanced and recent literatures related to methodologies to create cultural, safe and secure region and infrastructure. The results are presented and discussed together with students and the supervisor.

Textbook

None.

Additional Reading

Intergovernmental Panel on Climate Change(IPCC): Fifth Assessment Report (AR5), 2014,
<http://www.ipcc.ch/index.html>.

Maggie Black, Jannet King: The Atlas of Water: Mapping the World's Most Critical Resource, University of California Press(2009)

Grade Assessment

The capacity and positive attitude for discussions and presentations are evaluated.

The ability of adequate understanding and accurate summary of the literature is evaluated.

Attendance for all seminars is required.

Notes

None

Contacting Faculty

Sending e-mail or visiting the supervisor's office.

E-mail: shinichiro@civil.nagoya-u.ac.jp

Office: Room 305, Engineering Building No.9

Land Design Seminar 2B (2.0credits) (国土デザイン学セミナー2B)

Course Type	Specialized Courses	
Division at course	Doctor's Course	
Class Format	Seminar	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	1 Autumn Semester	1 Spring Semester
Lecturer	NAKAMURASHinichiro Associate Professor	

Course Purpose

Students cultivate a capacity for understanding and expressiveness related to methodologies to create cultural, safe and secure regional and infrastructure design under the climate change and the aging society, in which technologies, institutions and policy measures are discussed within the scope of regional design, economy and public policy analysis.

Prerequisite Subjects

Urban and Regional Planning

Course Topics

Students review and collect the relevant advanced and recent literatures related to methodologies to create cultural, safe and secure region and infrastructure. The results are presented and discussed together with students and the supervisor.

Textbook

None.

Additional Reading

Intergovernmental Panel on Climate Change(IPCC): Fifth Assessment Report (AR5), 2014,
<http://www.ipcc.ch/index.html>.

Maggie Black, Jannet King: The Atlas of Water: Mapping the World's Most Critical Resource, University of California Press(2009)

Grade Assessment

The capacity and positive attitude for discussions and presentations are evaluated.

The ability of adequate understanding and accurate summary of the literature is evaluated.

Attendance for all seminars is required.

Notes

None

Contacting Faculty

Sending e-mail or visiting the supervisor's office.

E-mail: shinichiro@civil.nagoya-u.ac.jp

Office: Room 305, Engineering Building No.9

Land Design Seminar 2C (2.0credits) (国土デザイン学セミナー2C)

Course Type	Specialized Courses	
Division at course	Doctor's Course	
Class Format	Seminar	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	2 Spring Semester	2 Autumn Semester
Lecturer	NAKAMURASHinichiro Associate Professor	

Course Purpose

Students cultivate a capacity for understanding and expressiveness related to methodologies to create cultural, safe and secure regional and infrastructure design under the climate change and the aging society, in which technologies, institutions and policy measures are discussed within the scope of regional design, economy and public policy analysis.

Prerequisite Subjects

Urban and Regional Planning

Course Topics

Students review and collect the relevant advanced and recent literatures related to methodologies to create cultural, safe and secure region and infrastructure. The results are presented and discussed together with students and the supervisor.

Textbook

None.

Additional Reading

Intergovernmental Panel on Climate Change(IPCC): Fifth Assessment Report (AR5), 2014,
<http://www.ipcc.ch/index.html>.

Maggie Black, Jannet King: The Atlas of Water: Mapping the World's Most Critical Resource, University of California Press(2009)

Grade Assessment

The capacity and positive attitude for discussions and presentations are evaluated.

The ability of adequate understanding and accurate summary of the literature is evaluated.

Attendance for all seminars is required.

Notes

None

Contacting Faculty

Sending e-mail or visiting the supervisor's office.

E-mail: shinichiro@civil.nagoya-u.ac.jp

Office: Room 305, Engineering Building No.9

Land Design Seminar 2D (2.0credits) (国土デザイン学セミナー2D)

Course Type	Specialized Courses	
Division at course	Doctor's Course	
Class Format	Seminar	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	2 Autumn Semester	2 Spring Semester
Lecturer	NAKAMURASHinichiro Associate Professor	

Course Purpose

Students cultivate a capacity for understanding and expressiveness related to methodologies to create cultural, safe and secure regional and infrastructure design under the climate change and the aging society, in which technologies, institutions and policy measures are discussed within the scope of regional design, economy and public policy analysis.

Prerequisite Subjects

Urban and Regional Planning

Course Topics

Students review and collect the relevant advanced and recent literatures related to methodologies to create cultural, safe and secure region and infrastructure. The results are presented and discussed together with students and the supervisor.

Textbook

None.

Additional Reading

Intergovernmental Panel on Climate Change(IPCC): Fifth Assessment Report (AR5), 2014,
<http://www.ipcc.ch/index.html>.

Maggie Black, Jannet King: The Atlas of Water: Mapping the World's Most Critical Resource, University of California Press(2009)

Grade Assessment

The capacity and positive attitude for discussions and presentations are evaluated.

The ability of adequate understanding and accurate summary of the literature is evaluated.

Attendance for all seminars is required.

Notes

None

Contacting Faculty

Sending e-mail or visiting the supervisor's office.

E-mail: shinichiro@civil.nagoya-u.ac.jp

Office: Room 305, Engineering Building No.9

Land Design Seminar 2E (2.0credits) (国土デザイン学セミナー2E)

Course Type	Specialized Courses	
Division at course	Doctor's Course	
Class Format	Seminar	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	3 Spring Semester	3 Autumn Semester
Lecturer	NAKAMURASHinichiro Associate Professor	

Course Purpose

Students cultivate a capacity for understanding and expressiveness related to methodologies to create cultural, safe and secure regional and infrastructure design under the climate change and the aging society, in which technologies, institutions and policy measures are discussed within the scope of regional design, economy and public policy analysis.

Prerequisite Subjects

Urban and Regional Planning

Course Topics

Students review and collect the relevant advanced and recent literatures related to methodologies to create cultural, safe and secure region and infrastructure. The results are presented and discussed together with students and the supervisor.

Textbook

None.

Additional Reading

Intergovernmental Panel on Climate Change(IPCC): Fifth Assessment Report (AR5), 2014,
<http://www.ipcc.ch/index.html>.

Maggie Black, Jannet King: The Atlas of Water: Mapping the World's Most Critical Resource, University of California Press(2009)

Grade Assessment

The capacity and positive attitude for discussions and presentations are evaluated.

The ability of adequate understanding and accurate summary of the literature is evaluated.

Attendance for all seminars is required.

Notes

None

Contacting Faculty

Sending e-mail or visiting the supervisor's office.

E-mail: shinichiro@civil.nagoya-u.ac.jp

Office: Room 305, Engineering Building No.9

Seminar on Conservation of Geoenvironment 2A (2.0credits) (地圏環境保全学セミナー2A)

Course Type	Specialized Courses	
Division at course	Doctor's Course	
Class Format	Seminar	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	1 Spring Semester	1 Autumn Semester
Lecturer	ArataKATAYAMA Professor	KASAI Takuya Assistant Professor

Course Purpose

The aim of this class is to understand the fundamental phenomena in relation to the pollution of soil and ground water, mechanism and modeling of pollutant behavior, microbial behavior in the environment, bioremediation and microbial synthesis technologies, external electron transfer and its microbial system, waste management and environmental risk assessment and etc.

Students are required to be able to explain critically the study by other researchers on one of the above issues, with comprehensive understanding after finding the important points by themselves and to be able to propose the own idea on the topic. Students are also requested to present their own study with the explanation of significance and problems, and to be able to propose the research plan.

Prerequisite Subjects

Human activities and the environment, Environmental geotechnology, sanitary engineering, Social environmental conservation, microbiology, chemistry, mathematics, Hydrology, Seminar on Conservation of Geoenvironment 1A,1B, 1C & 1D and etc.

Course Topics

Students in this class are required to present the topics in relation to the pollution of soil and ground water, mechanism and modeling of pollutant behavior, microbial behavior in the environment, bioremediation and microbial synthesis technologies, external electron transfer and its microbial system, waste management and environmental risk assessment and etc. After the presentation, the discussion is carried out.

Individual students are requested to read at least ten papers related to the topic selected, to understand the multiple approaches by different research groups, and to present the summary of the papers. The students are also requested to present their own study with comprehensive understanding of the significance and future prospects. Therefore, the preparation of the documents is requested to show the contents of presentation prior to the class and to distribute them to the participants in the class. For the presentation from other students during the class, the active participation in discussion is expected.

Textbook

Students are required to provide the documents of the presentation, which is carried out with comprehensive understanding by reading more than ten recently-published papers on a topic in relation with pollution of soil and ground water, mechanism and modeling of pollutant behavior, microbial behavior in the environment, bioremediation and microbial synthesis technologies, external electron transfer and its microbial system, waste management and environmental risk assessment and etc. Students are also required to provide the documents of their own study with background, aim, the present problems and etc.

Additional Reading

The presenters provide the documents in relation with the issues introduced.

Grade Assessment

Understanding level, presentation ability, participation to the discussion: Higher than 60 points in 100 as full mark is passed.

The grade evaluation is carried out based on the accuracy of understanding on the issue selected for the presentation, on the ability to explain the issue critically, on the contribution to the discussion in every issues, and on the ability to propose the own idea.

Notes

The students are requested to attend the seminar for the discussion unless they have special reasons.

Contacting Faculty

The class is carried out by the student presentation and the questions. Therefore, the time for questions are provided and the discussion is carried out extensively.

Seminar on Conservation of Geoenvironment 2B (2.0credits) (地圏環境保全学セミナー2B)

Course Type	Specialized Courses	
Division at course	Doctor's Course	
Class Format	Seminar	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	1 Autumn Semester	1 Spring Semester
Lecturer	ArataKATAYAMA Professor	KASAI Takuya Assistant Professor

Course Purpose

The aim of this class is to understand the fundamental phenomena in relation to the pollution of soil and ground water, mechanism and modeling of pollutant behavior, microbial behavior in the environment, bioremediation and microbial synthesis technologies, external electron transfer and its microbial system, waste management and environmental risk assessment and etc.

Students are required to be able to explain critically the study by other researchers on one of the above issues, with comprehensive understanding after finding the important points by themselves and to be able to propose the own idea on the topic. Students are also requested to present their own study with the explanation of significance and problems, and to be able to propose the research plan.

Prerequisite Subjects

Human activities and the environment, Environmental geotechnology, sanitary engineering, Social environmental conservation, microbiology, chemistry, mathematics, Hydrology, Seminar on Conservation of Geoenvironment 1A,1B, 1C & 1D and etc.

Course Topics

Students in this class are required to present the topics in relation to the pollution of soil and ground water, mechanism and modeling of pollutant behavior, microbial behavior in the environment, bioremediation and microbial synthesis technologies, external electron transfer and its microbial system, waste management and environmental risk assessment and etc. After the presentation, the discussion is carried out.

Individual students are requested to read at least ten papers related to the topic selected, to understand the multiple approaches by different research groups, and to present the summary of the papers. The students are also requested to present their own study with comprehensive understanding of the significance and future prospects. Therefore, the preparation of the documents is requested to show the contents of presentation prior to the class and to distribute them to the participants in the class. For the presentation from other students during the class, the active participation in discussion is expected.

Textbook

Students are required to provide the documents of the presentation, which is carried out with comprehensive understanding by reading more than ten recently-published papers on a topic in relation with pollution of soil and ground water, mechanism and modeling of pollutant behavior, microbial behavior in the environment, bioremediation and microbial synthesis technologies, external electron transfer and its microbial system, waste management and environmental risk assessment and etc. Students are also required to provide the documents of their own study with background, aim, the present problems and etc.

Additional Reading

The presenters provide the documents in relation with the issues introduced.

Grade Assessment

Understanding level, presentation ability, participation to the discussion: Higher than 60 points in 100 as full mark is passed.

The grade evaluation is carried out based on the accuracy of understanding on the issue selected for the presentation, on the ability to explain the issue critically, on the contribution to the discussion in every issues, and on the ability to propose the own idea.

Notes

The students are requested to attend the seminar for the discussion unless they have special reasons.

Contacting Faculty

The class is carried out by the student presentation and the questions. Therefore, the time for questions are provided and the discussion is carried out extensively.

Course Type	Specialized Courses	
Division at course	Doctor's Course	
Class Format	Seminar	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	2 Spring Semester	2 Autumn Semester
Lecturer	ArataKATAYAMA Professor	KASAI Takuya Assistant Professor

Course Purpose

The aim of this class is to understand the fundamental phenomena in relation to the pollution of soil and ground water, mechanism and modeling of pollutant behavior, microbial behavior in the environment, bioremediation and microbial synthesis technologies, external electron transfer and its microbial system, waste management and environmental risk assessment and etc.

Students are required to be able to explain critically the study by other researchers on one of the above issues, with comprehensive understanding after finding the important points by themselves and to be able to propose the own idea on the topic. Students are also requested to present their own study with the explanation of significance and problems, and to be able to propose the research plan.

Prerequisite Subjects

Human activities and the environment, Environmental geotechnology, sanitary engineering, Social environmental conservation, microbiology, chemistry, mathematics, Hydrology, Seminar on Conservation of Geoenvironment 1A,1B, 1C & 1D and etc.

Course Topics

Students in this class are required to present the topics in relation to the pollution of soil and ground water, mechanism and modeling of pollutant behavior, microbial behavior in the environment, bioremediation and microbial synthesis technologies, external electron transfer and its microbial system, waste management and environmental risk assessment and etc. After the presentation, the discussion is carried out.

Individual students are requested to read at least ten papers related to the topic selected, to understand the multiple approaches by different research groups, and to present the summary of the papers. The students are also requested to present their own study with comprehensive understanding of the significance and future prospects. Therefore, the preparation of the documents is requested to show the contents of presentation prior to the class and to distribute them to the participants in the class. For the presentation from other students during the class, the active participation in discussion is expected.

Textbook

Students are required to provide the documents of the presentation, which is carried out with comprehensive understanding by reading more than ten recently-published papers on a topic in relation with pollution of soil and ground water, mechanism and modeling of pollutant behavior, microbial behavior in the environment, bioremediation and microbial synthesis technologies, external electron transfer and its microbial system, waste management and environmental risk assessment and etc. Students are also required to provide the documents of their own study with background, aim, the present problems and etc.

Additional Reading

The presenters provide the documents in relation with the issues introduced.

Grade Assessment

Understanding level, presentation ability, participation to the discussion: Higher than 60 points in 100 as full mark is passed.

The grade evaluation is carried out based on the accuracy of understanding on the issue selected for the presentation, on the ability to explain the issue critically, on the contribution to the discussion in every issues, and on the ability to propose the own idea.

Notes

The students are requested to attend the seminar for the discussion unless they have special reasons.

Contacting Faculty

The class is carried out by the student presentation and the questions. Therefore, the time for questions are provided and the discussion is carried out extensively.

Seminar on Conservation of Geoenvironment 2D (2.0credits) (地圏環境保全学セミナー2D)

Course Type	Specialized Courses	
Division at course	Doctor's Course	
Class Format	Seminar	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	2 Autumn Semester	2 Spring Semester
Lecturer	ArataKATAYAMA Professor	KASAI Takuya Assistant Professor

Course Purpose

The aim of this class is to understand the fundamental phenomena in relation to the pollution of soil and ground water, mechanism and modeling of pollutant behavior, microbial behavior in the environment, bioremediation and microbial synthesis technologies, external electron transfer and its microbial system, waste management and environmental risk assessment and etc.

Students are required to be able to explain critically the study by other researchers on one of the above issues, with comprehensive understanding after finding the important points by themselves and to be able to propose the own idea on the topic. Students are also requested to present their own study with the explanation of significance and problems, and to be able to propose the research plan.

Prerequisite Subjects

Human activities and the environment, Environmental geotechnology, sanitary engineering, Social environmental conservation, microbiology, chemistry, mathematics, Hydrology, Seminar on Conservation of Geoenvironment 1A,1B, 1C & 1D and etc.

Course Topics

Students in this class are required to present the topics in relation to the pollution of soil and ground water, mechanism and modeling of pollutant behavior, microbial behavior in the environment, bioremediation and microbial synthesis technologies, external electron transfer and its microbial system, waste management and environmental risk assessment and etc. After the presentation, the discussion is carried out.

Individual students are requested to read at least ten papers related to the topic selected, to understand the multiple approaches by different research groups, and to present the summary of the papers. The students are also requested to present their own study with comprehensive understanding of the significance and future prospects. Therefore, the preparation of the documents is requested to show the contents of presentation prior to the class and to distribute them to the participants in the class. For the presentation from other students during the class, the active participation in discussion is expected.

Textbook

Students are required to provide the documents of the presentation, which is carried out with comprehensive understanding by reading more than ten recently-published papers on a topic in relation with pollution of soil and ground water, mechanism and modeling of pollutant behavior, microbial behavior in the environment, bioremediation and microbial synthesis technologies, external electron transfer and its microbial system, waste management and environmental risk assessment and etc. Students are also required to provide the documents of their own study with background, aim, the present problems and etc.

Additional Reading

The presenters provide the documents in relation with the issues introduced.

Grade Assessment

Understanding level, presentation ability, participation to the discussion: Higher than 60 points in 100 as full mark is passed.

The grade evaluation is carried out based on the accuracy of understanding on the issue selected for the presentation, on the ability to explain the issue critically, on the contribution to the discussion in every issues, and on the ability to propose the own idea.

Notes

The students are requested to attend the seminar for the discussion unless they have special reasons.

Contacting Faculty

The class is carried out by the student presentation and the questions. Therefore, the time for questions are provided and the discussion is carried out extensively.

Seminar on Conservation of Geoenvironment 2E (2.0credits) (地圏環境保全学セミナー2E)

Course Type	Specialized Courses	
Division at course	Doctor's Course	
Class Format	Seminar	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	3 Spring Semester	3 Autumn Semester
Lecturer	ArataKATAYAMA Professor	KASAI Takuya Assistant Professor

Course Purpose

The aim of this class is to understand the fundamental phenomena in relation to the pollution of soil and ground water, mechanism and modeling of pollutant behavior, microbial behavior in the environment, bioremediation and microbial synthesis technologies, external electron transfer and its microbial system, waste management and environmental risk assessment and etc.

Students are required to be able to explain critically the study by other researchers on one of the above issues, with comprehensive understanding after finding the important points by themselves and to be able to propose the own idea on the topic. Students are also requested to present their own study with the explanation of significance and problems, and to be able to propose the research plan.

Prerequisite Subjects

Human activities and the environment, Environmental geotechnology, sanitary engineering, Social environmental conservation, microbiology, chemistry, mathematics, Hydrology, Seminar on Conservation of Geoenvironment 1A,1B, 1C & 1D and etc.

Course Topics

Students in this class are required to present the topics in relation to the pollution of soil and ground water, mechanism and modeling of pollutant behavior, microbial behavior in the environment, bioremediation and microbial synthesis technologies, external electron transfer and its microbial system, waste management and environmental risk assessment and etc. After the presentation, the discussion is carried out.

Individual students are requested to read at least ten papers related to the topic selected, to understand the multiple approaches by different research groups, and to present the summary of the papers. The students are also requested to present their own study with comprehensive understanding of the significance and future prospects. Therefore, the preparation of the documents is requested to show the contents of presentation prior to the class and to distribute them to the participants in the class. For the presentation from other students during the class, the active participation in discussion is expected.

Textbook

Students are required to provide the documents of the presentation, which is carried out with comprehensive understanding by reading more than ten recently-published papers on a topic in relation with pollution of soil and ground water, mechanism and modeling of pollutant behavior, microbial behavior in the environment, bioremediation and microbial synthesis technologies, external electron transfer and its microbial system, waste management and environmental risk assessment and etc. Students are also required to provide the documents of their own study with background, aim, the present problems and etc.

Additional Reading

The presenters provide the documents in relation with the issues introduced.

Grade Assessment

Understanding level, presentation ability, participation to the discussion: Higher than 60 points in 100 as full mark is passed.

The grade evaluation is carried out based on the accuracy of understanding on the issue selected for the presentation, on the ability to explain the issue critically, on the contribution to the discussion in every issues, and on the ability to propose the own idea.

Notes

The students are requested to attend the seminar for the discussion unless they have special reasons.

Contacting Faculty

The class is carried out by the student presentation and the questions. Therefore, the time for questions are provided and the discussion is carried out extensively.

Global Environmental Cooperation Seminar2A (2.0credits) (国際環境協力セミナー2A)

Course Type	Specialized Courses	
Division at course	Doctor's Course	
Class Format	Seminar	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	1 Spring Semester	1 Autumn Semester
Lecturer	Kiichiro HAYASHI Professor	

Course Purpose

The objective of the seminar is to study institutions, policies and assessment methods on sustainable development issues in global and local scales. The seminar will develop the applied skills of students to collect and review relevant literatures and to do research work and present the results and findings from their own perspectives, in a comprehensive manner.

The goal of this lecture is that the students will study, analyze and present a selected topic by themselves.

Prerequisite Subjects

Civil Engineering and Policies for Developing Countries I, II, Human activities and the environment, Urban Environmental Systems Engineering, Global Environmental Cooperation Seminar1A,1B,1C,1D

Course Topics

Students are required to study institutions and policies and assessment methods on sustainable development issues from the perspective of environmental system engineering, environmental policy study and environmental economics. Students are required to collect articles and do study by themselves and present and discuss the results of findings with teachers. Also if there is a student who needs English communication, the seminar will be conducted in English.

The students will do self-study on selected topics outside this seminar.

Textbook

Reference documents will be provided if needed.

Additional Reading

Reference documents will be provided if needed.

Grade Assessment

Grading will be made taking into consideration understanding level, presentation ability, and participation to the discussion, etc.

The C grade is the minimum requirement for passing this lecture.

The success criteria is to study, analyze and present selected topics by themselves on institutions, policies and assessment methods on sustainable development issues in global and local scales

Notes

There is no condition for taking this class.

Contacting Faculty

After the seminar and/or by e-mail.

Global Environmental Cooperation Seminar2B (2.0credits) (国際環境協力セミナー2B)

Course Type	Specialized Courses	
Division at course	Doctor's Course	
Class Format	Seminar	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	1 Autumn Semester	1 Spring Semester
Lecturer	Kiichiro HAYASHI Professor	

Course Purpose

The objective of the seminar is to study institutions, policies and assessment methods on sustainable development issues in global and local scales. The seminar will develop the applied skills of students to collect and review relevant literatures and to do research work and present the results and findings from their own perspectives, in a comprehensive manner.

The goal of this lecture is that the students will study, analyze and present a selected topic by themselves.

Prerequisite Subjects

Civil Engineering and Policies for Developing Countries I, II, Human activities and the environment, Urban Environmental Systems Engineering, Global Environmental Cooperation Seminar1A,1B,1C,1D,2A

Course Topics

Students are required to study institutions and policies and assessment methods on sustainable development issues from the perspective of environmental system engineering, environmental policy study and environmental economics. Students are required to collect articles and do study by themselves and present and discuss the results of findings with teachers. Also if there is a student who needs English communication, the seminar will be conducted in English.

The students will do self-study on selected topics outside this seminar.

Textbook

Reference documents will be provided if needed.

Additional Reading

Reference documents will be provided if needed.

Grade Assessment

Grading will be made taking into consideration understanding level, presentation ability, and participation to the discussion, etc.

The C grade is the minimum requirement for passing this lecture.

The success criteria is to study, analyze and present selected topics by themselves on institutions, policies and assessment methods on sustainable development issues in global and local scales

Notes

There is no condition for taking this class.

Contacting Faculty

After the class and/or by e-mail.

Global Environmental Cooperation Seminar2C (2.0credits) (国際環境協力セミナー2C)

Course Type	Specialized Courses	
Division at course	Doctor's Course	
Class Format	Seminar	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	2 Spring Semester	2 Autumn Semester
Lecturer	Kiichiro HAYASHI Professor	

Course Purpose

The objective of the seminar is to study institutions, policies and assessment methods on sustainable development issues in global and local scales. The seminar will develop the applied skills of students to collect and review relevant literatures and to do research work and present the results and findings from their own perspectives, in a comprehensive manner.

The goal of this lecture is that the students will study, analyze and present a selected topic by themselves.

Prerequisite Subjects

Civil Engineering and Policies for Developing Countries I, II, Human activities and the environment, Urban Environmental Systems Engineering, Global Environmental Cooperation Seminar1A,1B,1C,1D,2A,2B

Course Topics

Students are required to study institutions and policies and assessment methods on sustainable development issues from the perspective of environmental system engineering, environmental policy study and environmental economics. Students are required to collect articles and do study by themselves and present and discuss the results of findings with teachers. Also if there is a student who needs English communication, the seminar will be conducted in English.

The students will do self-study on selected topics outside this seminar.

Textbook

Reference documents will be provided if needed.

Additional Reading

Reference documents will be provided if needed.

Grade Assessment

Grading will be made taking into consideration understanding level, presentation ability, and participation to the discussion, etc.

The C grade is the minimum requirement for passing this lecture.

The success criteria is to study, analyze and present selected topics by themselves on institutions, policies and assessment methods on sustainable development issues in global and local scales

Notes

There is no condition for taking this class.

Contacting Faculty

After the seminar and/or by e-mail.

Global Environmental Cooperation Seminar2D (2.0credits) (国際環境協力セミナー2D)

Course Type	Specialized Courses	
Division at course	Doctor's Course	
Class Format	Seminar	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	2 Autumn Semester	2 Spring Semester
Lecturer	Kiichiro HAYASHI Professor	

Course Purpose

The objective of the seminar is to study institutions, policies and assessment methods on sustainable development issues in global and local scales. The seminar will develop the applied skills of students to collect and review relevant literatures and to do research work and present the results and findings from their own perspectives, in a comprehensive manner.

The goal of this lecture is that the students will study, analyze and present a selected topic by themselves.

Prerequisite Subjects

Civil Engineering and Policies for Developing Countries I, II, Human activities and the environment, Urban Environmental Systems Engineering, Global Environmental Cooperation Seminar1A,1B,1C,1D,2A,2B,2C

Course Topics

Students are required to study institutions and policies and assessment methods on sustainable development issues from the perspective of environmental system engineering, environmental policy study and environmental economics. Students are required to collect articles and do study by themselves and present and discuss the results of findings with teachers. Also if there is a student who needs English communication, the seminar will be conducted in English.

The students will do self-study on selected topics outside this seminar.

Textbook

Reference documents will be provided if needed.

Additional Reading

Reference documents will be provided if needed.

Grade Assessment

Grading will be made taking into consideration understanding level, presentation ability, and participation to the discussion, etc.

The C grade is the minimum requirement for passing this lecture.

The success criteria is to study, analyze and present selected topics by themselves on institutions, policies and assessment methods on sustainable development issues in global and local scales

Notes

There is no condition for taking this class.

Contacting Faculty

After the seminar and/or by e-mail.

Global Environmental Cooperation Seminar2E (2.0credits) (国際環境協力セミナー2E)

Course Type	Specialized Courses	
Division at course	Doctor's Course	
Class Format	Seminar	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	3 Spring Semester	3 Autumn Semester
Lecturer	Kiichiro HAYASHI Professor	

Course Purpose

The objective of the seminar is to study institutions, policies and assessment methods on sustainable development issues in global and local scales. The seminar will develop the applied skills of students to collect and review relevant literatures and to do research work and present the results and findings from their own perspectives, in a comprehensive manner.

The goal of this lecture is that the students will study, analyze and present a selected topic by themselves.

Prerequisite Subjects

Civil Engineering and Policies for Developing Countries I, II, Human activities and the environment, Urban Environmental Systems Engineering, Global Environmental Cooperation Seminar1A,1B,1C,1D,2A,2B,2C,2D

Course Topics

Students are required to study institutions and policies and assessment methods on sustainable development issues from the perspective of environmental system engineering, environmental policy study and environmental economics. Students are required to collect articles and do study by themselves and present and discuss the results of findings with teachers. Also if there is a student who needs English communication, the seminar will be conducted in English.

The students will do self-study on selected topics outside this seminar.

Textbook

Reference documents will be provided if needed.

Additional Reading

Reference documents will be provided if needed.

Grade Assessment

Grading will be made taking into consideration understanding level, presentation ability, and participation to the discussion, etc.

The C grade is the minimum requirement for passing this lecture.

The success criteria is to study, analyze and present selected topics by themselves on institutions, policies and assessment methods on sustainable development issues in global and local scales

Notes

There is no condition for taking this class.

Contacting Faculty

After the seminar and/or by e-mail.

Seminar on Environmental Ecology System2A (2.0credits) (環境エコロジーシステムセミナー2A)

Course Type	Specialized Courses	
Division at course	Doctor's Course	
Class Format	Seminar	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	1 Spring Semester	1 Autumn Semester
Lecturer	Toshiyuki YAMAMOTO Professor	Tomio MIWA Associate Professor

Course Purpose

Learn travel behavior analysis, transportation planning, transport and environment dynamics, etc. in order to understand policies for environmental sustainability and related issues.

Prerequisite Subjects

History of City and Civilization, Probability and Statistics, Spatial Planning, Transportation Planning, Infrastructure Planning, Urban and National Land Planning

Course Topics

Discuss on methodological issues concerned with environmentally sustainable transport such as travel behavior analysis, transportation planning, transport environment dynamics, etc. with the aid of reading advanced English literature

Textbook

To be announced

Additional Reading

Introduced according to the process of the lecture.

Grade Assessment

Presentation and active participation to the class (including questions and comments to presentations of other groups)

Notes

Not applicable

Contacting Faculty

Students can ask questions to professors at any time during classes. Questions during off-class hours can be asked via e-mail: yamamoto@civil.nagoya-u.ac.jp and miwa@nagoya-u.jp

Seminar on Environmental Ecology System2B (2.0credits) (環境エコロジーシステムセミナー2B)

Course Type	Specialized Courses	
Division at course	Doctor's Course	
Class Format	Seminar	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	1 Autumn Semester	1 Spring Semester
Lecturer	Toshiyuki YAMAMOTO Professor	Tomio MIWA Associate Professor

Course Purpose

Learn travel behavior analysis, transportation planning, transport and environment dynamics, etc. in order to understand policies for environmental sustainability and related issues.

Prerequisite Subjects

History of City and Civilization, Probability and Statistics, Spatial Planning, Transportation Planning, Infrastructure Planning, Urban and National Land Planning

Course Topics

Discuss on methodological issues concerned with environmentally sustainable transport such as travel behavior analysis, transportation planning, transport environment dynamics, etc. with the aid of reading advanced English literature

Textbook

To be announced

Additional Reading

Introduced according to the process of the lecture.

Grade Assessment

Presentation and active participation to the class (including questions and comments to presentations of other groups)

Notes

Not applicable

Contacting Faculty

Students can ask questions to professors at any time during classes. Questions during off-class hours can be asked via e-mail: yamamoto@civil.nagoya-u.ac.jp and miwa@nagoya-u.jp

Seminar on Environmental Ecology System2C (2.0credits) (環境エコロジーシステムセミナー2C)

Course Type	Specialized Courses	
Division at course	Doctor's Course	
Class Format	Seminar	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	2 Spring Semester	2 Autumn Semester
Lecturer	Toshiyuki YAMAMOTO Professor	Tomio MIWA Associate Professor

Course Purpose

Learn travel behavior analysis, transportation planning, transport and environment dynamics, etc. in order to understand policies for environmental sustainability and related issues.

Prerequisite Subjects

History of City and Civilization, Probability and Statistics, Spatial Planning, Transportation Planning, Infrastructure Planning, Urban and National Land Planning

Course Topics

Discuss on methodological issues concerned with environmentally sustainable transport such as travel behavior analysis, transportation planning, transport environment dynamics, etc. with the aid of reading advanced English literature

Textbook

To be announced

Additional Reading

Introduced according to the process of the lecture.

Grade Assessment

Presentation and active participation to the class (including questions and comments to presentations of other groups)

Notes

Not applicable

Contacting Faculty

Students can ask questions to professors at any time during classes. Questions during off-class hours can be asked via e-mail: yamamoto@civil.nagoya-u.ac.jp and miwa@nagoya-u.jp

Seminar on Environmental Ecology Systems2D (2.0credits) (環境エコロジーシステムセミナー2D)

Course Type	Specialized Courses	
Division at course	Doctor's Course	
Class Format	Seminar	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	2 Autumn Semester	2 Spring Semester
Lecturer	Toshiyuki YAMAMOTO Professor	Tomio MIWA Associate Professor

Course Purpose

Learn travel behavior analysis, transportation planning, transport and environment dynamics, etc. in order to understand policies for environmental sustainability and related issues.

Prerequisite Subjects

History of City and Civilization, Probability and Statistics, Spatial Planning, Transportation Planning, Infrastructure Planning, Urban and National Land Planning

Course Topics

Discuss on methodological issues concerned with environmentally sustainable transport such as travel behavior analysis, transportation planning, transport environment dynamics, etc. with the aid of reading advanced English literature

Textbook

To be announced

Additional Reading

Introduced according to the process of the lecture.

Grade Assessment

Presentation and active participation to the class (including questions and comments to presentations of other groups)

Notes

Not applicable

Contacting Faculty

Students can ask questions to professors at any time during classes. Questions during off-class hours can be asked via e-mail: yamamoto@civil.nagoya-u.ac.jp and miwa@nagoya-u.jp

Seminar on Environmental Ecology System2E (2.0credits) (環境エコロジーシステムセミナー2E)

Course Type	Specialized Courses	
Division at course	Doctor's Course	
Class Format	Seminar	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	3 Spring Semester	3 Autumn Semester
Lecturer	Toshiyuki YAMAMOTO Professor	Tomio MIWA Associate Professor

Course Purpose

Learn travel behavior analysis, transportation planning, transport and environment dynamics, etc. in order to understand policies for environmental sustainability and related issues.

Prerequisite Subjects

History of City and Civilization, Probability and Statistics, Spatial Planning, Transportation Planning, Infrastructure Planning, Urban and National Land Planning

Course Topics

Discuss on methodological issues concerned with environmentally sustainable transport such as travel behavior analysis, transportation planning, transport environment dynamics, etc. with the aid of reading advanced English literature

Textbook

To be announced

Additional Reading

Introduced according to the process of the lecture.

Grade Assessment

Presentation and active participation to the class (including questions and comments to presentations of other groups)

Notes

Not applicable

Contacting Faculty

Students can ask questions to professors at any time during classes. Questions during off-class hours can be asked via e-mail: yamamoto@civil.nagoya-u.ac.jp and miwa@nagoya-u.jp

Course Type	Specialized Courses	
Division at course	Doctor's Course	
Class Format	Seminar	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	1 Spring Semester	2 Autumn Semester
Lecturer	Associated Faculty	

Course Purpose

As part of the Forefront Studies Program and the Nagoya University Global Environmental Leaders Program (NUGELP), this seminar aims at providing students with opportunities to acquire the ability to conduct and manage several activities in the international specialized programs for civil and environmental engineering.

After completing this course, students will be able to:

- 1.explain various issues in civil engineering fields in Japan, as well as overseas, and
- 2.acquire a comprehensive methodology for executing projects in infrastructure development.

Prerequisite Subjects

Students are expected to have taken some lectures offered by the Forefront Studies Program and the Nagoya University Global Environmental Leaders Program (NUGELP).

Course Topics

Every week, one or two students will be required to explain their own research activities; problem awareness, methodology and progress. After that, all participants will have a discussion. Through this process, the ability to describe their own research activities clearly and effectively, the ability to understand research topics of other students correctly, and the ability to think flexibly from different viewpoints will be enhanced.

Textbook

Textbooks will be recommended at the right time.

Additional Reading

Reference books will be recommended at the right time.

Grade Assessment

Based on the evaluation of all reports, presentation and discussion.

Notes

None

Contacting Faculty

Nagoya University Civil and Environmental Engineering
International Programs Office
Room 223, Environmental Studies Hall
Email: ceeipo@urban.env.nagoya-u.ac.jp
Ex: 5507

Course Type	Specialized Courses	
Division at course	Doctor's Course	
Class Format	Seminar	
Course Name	Civil and Environmental Engineering	Civil and Environmental Engineering Graduate
Starts 1	1 Autumn Semester	2 Spring Semester
Lecturer	Associated Faculty	

Course Purpose

As part of the Forefront Studies Program and the Nagoya University Global Environmental Leaders Program (NUGELP), this seminar aims at providing students with opportunities to acquire the ability to conduct and manage several activities in the international specialized programs for civil and environmental engineering.

After completing this course, students will be able to:

- 1.explain various issues in civil engineering fields in Japan, as well as overseas, and
- 2.acquire a comprehensive methodology for executing projects in infrastructure development.

Prerequisite Subjects

Students are expected to have taken some lectures offered by the Forefront Studies Program and the Nagoya University Global Environmental Leaders Program (NUGELP).

Course Topics

Every week, one or two students will be required to explain their own research activities; problem awareness, methodology and progress. After that, all participants will have a discussion. Through this process, the ability to describe their own research activities clearly and effectively, the ability to understand research topics of other students correctly, and the ability to think flexibly from different viewpoints will be enhanced.

Textbook

Textbooks will be recommended at the right time.

Additional Reading

Reference books will be recommended at the right time.

Grade Assessment

Based on the evaluation of all reports, presentation and discussion.

Notes

None

Contacting Faculty

Nagoya University Civil and Environmental Engineering
International Programs Office
Room 223, Environmental Studies Hall
Email: ceeipo@urban.env.nagoya-u.ac.jp
Ex: 5507

Course Type	Specialized Courses		
Division at course	Doctor's Course		
Class Format	Seminar		
Course Name	Molecular and Macromolecular Chemistry	Materials Chemistry	Biomolecular Engineering
	Applied Physics	Materials Physics	Materials Design Innovation Engineering
	Materials Process Engineering	Chemical Systems Engineering	Electrical Engineering
	Electronics	Information and Communication Engineering	Mechanical Systems Engineering
	Micro-Nano Mechanical Science and Engineering	Aerospace Engineering	Department of Energy Engineering
	Department of Applied Energy	Civil and Environmental Engineering	
Starts 1	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
Lecturer	Associated Faculty		

Course Purpose

The aim of this course is to expand the student's ability as a researcher by studying in an abroad laboratory and learn different methods and ways of thinking, as well as communicate on a daily base with foreign researchers.

By completing the course, the students are expected to acquire various research methods and ways of thinking, gain the ability to tackle research problems from multiple angles, and acquire a broad international perspective.

Prerequisite Subjects

Basic and specialized subjects related to the research subject, English, Advanced Lectures on Scientific English

Course Topics

Students will stay in an abroad laboratory that will be chosen based on the participant's research field and interest. The course consists of the following contents.

1. Theme setting and literature review
2. Formulating a research plan
3. Analyzing the results and discussion
4. Presentation of the results

After the class, students should review the analyzing processes of the research results and investigate related literatures.

Textbook

Will be introduced at the host laboratory depending on the research subject

Additional Reading

Will be introduced at the host laboratory if necessary

Grade Assessment

Conducting research in an abroad laboratory for one semester and submitting a report is a prerequisite. Evaluation will be based on the student's report (50%) and oral presentation (50%). To pass, the students have to demonstrate that they have the capacity to adequately analyze the results and have acquired the basic knowledge to interpret the results.

Notes

Nothing particularly needed

Contacting Faculty

Questions will be answered by the supervisors at the host laboratory during the course.

Course Type	Specialized Courses		
Division at course	Doctor's Course		
Class Format	Seminar		
Course Name	Molecular and Macromolecular Chemistry	Materials Chemistry	Biomolecular Engineering
	Applied Physics	Materials Physics	Materials Design Innovation Engineering
	Materials Process Engineering	Chemical Systems Engineering	Electrical Engineering
	Electronics	Information and Communication Engineering	Mechanical Systems Engineering
	Micro-Nano Mechanical Science and Engineering	Aerospace Engineering	Department of Energy Engineering
	Department of Applied Energy	Civil and Environmental Engineering	
Starts 1	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
Lecturer	Associated Faculty		

Course Purpose

The aim of this course is to expand the student's ability as a researcher by studying in an abroad laboratory and learn different methods and ways of thinking, as well as communicate on a daily base with foreign researchers.

By completing the course, the students are expected to acquire various research methods and ways of thinking, gain the ability to tackle research problems from multiple angles, and acquire a broad international perspective.

Prerequisite Subjects

Basic and specialized subjects related to the research subject, English, Advanced Lectures on Scientific English

Course Topics

Students will stay in an abroad laboratory that will be chosen based on the participant's research field and interest. The course consists of the following contents.

1. Theme setting and literature review
2. Formulating a research plan
3. Analyzing the results and discussion
4. Presentation of the results

After the class, students should review the analyzing processes of the research results and investigate related literatures.

Textbook

Will be introduced at the host laboratory depending on the research subject

Additional Reading

Will be introduced at the host laboratory if necessary

Grade Assessment

Conducting research in an abroad laboratory for two semesters and submitting a report is a prerequisite. Evaluation will be based on the student's report (50%) and oral presentation (50%). To pass, the students have to demonstrate that they have the capacity to adequately analyze the results and have acquired the basic knowledge to interpret the results.

Notes

Nothing particularly needed

Contacting Faculty

Questions will be answered by the supervisors at the host laboratory during the course.

Global Research Internship 2 (2.0credits) (グローバル研究インターンシップ2)

Course Type	Specialized Courses
Division at course	Doctor's Course
Class Format	Exercise
Course Name	Civil and Environmental Engineering Civil and Environmental Engineering Graduate
Starts 1	1 Spring and Autumn Semester
Lecturer	Associated Faculty

Course Purpose

As part of the Forefront Studies Program and the Nagoya University Global Environmental Leaders Program (NUGELP), this course aims at providing students with research-based internship opportunities at universities, research institutions, companies, governmental and non-governmental organizations in Japan and overseas to acquire the ability to conduct practical and applied research.

After completing this course, students will be able to:

- 1.explain various issues in civil engineering fields in Japan, as well as overseas, and
- 2.acquire a comprehensive methodology for executing projects in infrastructure development.

Prerequisite Subjects

Students are expected to have taken some lectures offered by the Forefront Studies Program and the Nagoya University Global Environmental Leaders Program (NUGELP).

Course Topics

Internship should be conducted based on close communication with academic advisor(s). Students are expected to acquire practical research know-how through On-site Research Training (ORT). Details of the Internship such as period and terms of implementation should be decided through thorough consultation with academic advisor(s) and experts at host institutions.

Course Schedule:

- Step 1: Initial Proposal
- Step 2: Detailed Proposal
- Step 3: Internship
- Step 4: Final Report
- Step 5: Presentation

Textbook

Textbooks will be recommended at the right time.

Additional Reading

Reference books will be recommended at the right time.

Grade Assessment

Grading shall be based on student's report and presentation. The ability to discuss the knowledge and experience obtained through the internship is the criteria for acceptance.

Notes

None

Contacting Faculty

Nagoya University Civil and Environmental Engineering
International Programs Office
Room 223, Environmental Studies Hall
Email: ceeipo@urban.env.nagoya-u.ac.jp
Ex: 5507

Teaching and Instruction Exercise 1 (1.0credits) (実験指導体験実習1)

Course Type	Comprehensive engineering courses		
Division at course	Doctor's Course		
Class Format	Practice		
Course Name	Molecular and Macromolecular Chemistry	Materials Chemistry	Biomolecular Engineering
	Applied Physics	Materials Physics	Materials Design Innovation Engineering
	Materials Process Engineering	Chemical Systems Engineering	Electrical Engineering
	Electronics	Information and Communication Engineering	Mechanical Systems Engineering
	Micro-Nano Mechanical Science and Engineering	Aerospace Engineering	Department of Energy Engineering
	Department of Applied Energy	Civil and Environmental Engineering	
Starts 1	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
Lecturer	Hiroshi IKUTA Professor		

Course Purpose

While attendance is raw, in "the innovation experience project," I stand with a company engineer (DP, Directing Professor) and carry an assistance, DP of the attendance straight instruction by the DP and the role of the interface of the attendance student. In this way, it is intended to let you do experience of the project management.

I aim for planning a researcher, improvement of the nature as the leader, the expansion of the field of vision by a simulated experience of instruction of the attendance life and the business management in the real world.

Prerequisite Subjects

"Innovation Practice Course" 75 hours(Principle one day a week)

Course Topics

In "the innovation experience project," I assist the project promotion by the DP.

Help of the understanding of a project theme and contents for the attendance life of various specialisms

I compile an opinion of the attendance life and let you make a purpose, the method of the project clear

Exchange of opinions between the attendance life, instruction, report of the discussion

Communication adjustment that DP and attendance are raw

I assume this a main component.

In addition, correspondence out of the lecture time is necessary when preparations, an investigation to affect project accomplishment are necessary.

Textbook

Teaching and Instruction Exercise 1 (1.0credits) (実験指導体験実習1)

documents that a lecturer (DP) introduces it and shows.

Additional Reading

documents that a lecturer (DP) introduces it and shows.

Grade Assessment

I evaluate it through accomplishment, the discussion of the project. If display of leadership, report ability and the leadership is accepted, it is said that I pass.

Notes

There are no prerequisites

Contacting Faculty

A lecturer (DP) and this project staff of the university accept questions at any time.

Teaching and Instruction Exercise 2 (1.0credits) (実験指導体験実習2)

Course Type	Comprehensive engineering courses		
Division at course	Doctor's Course		
Class Format	Practice		
Course Name	Molecular and Macromolecular Chemistry	Materials Chemistry	Biomolecular Engineering
	Applied Physics	Materials Physics	Materials Design Innovation Engineering
	Materials Process Engineering	Chemical Systems Engineering	Electrical Engineering
	Electronics	Information and Communication Engineering	Mechanical Systems Engineering
	Micro-Nano Mechanical Science and Engineering	Aerospace Engineering	Department of Energy Engineering
	Department of Applied Energy	Civil and Environmental Engineering	
Starts 1	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
Lecturer	Syusaku NAGANO Associate Professor		

Course Purpose

The purpose of this course is to provide guidance to semester students for advanced science and engineering experiments at the Venture Business Laboratory. Through this research guidance, students will be able to play a comprehensive role as a researcher / educator and instructor in the field in charge of Raman spectroscopy, ionization potential measurement, X-ray diffraction measurement, and molecular simulation, and will be able to provide research guidance. Useful for practical training as a research leader.

Prerequisite Subjects

Knowledge of the field in charge selected from the fields of Raman spectroscopy, ionization potential measurement, X-ray diffraction measurement, and molecular simulation.

Course Topics

In the student experiment, the instructor students provide guidance to attendant students on subject research and original research from the field of Raman spectroscopy, ionization potential measurement, X-ray diffraction measurement, and molecular simulation with the professional teacher. Together with the attendant students, they perform practical use these equipment and software and get the results. They experience the leadership of the research, providing research guidance, report preparation guidance, and presentation guidance.

Textbook

Required documents is distributed.

Additional Reading

Teaching and Instruction Exercise 2 (1.0credits) (実験指導体験実習2)

Required documents is distributed.

Grade Assessment

Evaluate by compiling experiments / exercises, teaching (70%), and interviewing (30%). Students who understand each device and software and give appropriate guidance are accepted, and their research results and new approaches are highly evaluated. A score of 60 or more out of 100 is a passing score.

Notes

To have a deep understanding in one field from Raman spectroscopy, ionization potential measurement, X-ray diffraction measurement, and molecular simulation.

Contacting Faculty

Arranging the schedules by e-mail and etc.

Research Internship2 U2 (2.0credits) (研究インターンシップ2 U2)

Course Type	Comprehensive engineering courses		
Division at course	Doctor's Course		
Class Format	Practice		
Course Name	Molecular and Macromolecular Chemistry	Materials Chemistry	Biomolecular Engineering
	Applied Physics	Materials Physics	Materials Design Innovation Engineering
	Materials Process Engineering	Chemical Systems Engineering	Electrical Engineering
	Electronics	Information and Communication Engineering	Mechanical Systems Engineering
	Micro-Nano Mechanical Science and Engineering	Aerospace Engineering	Department of Energy Engineering
	Department of Applied Energy	Civil and Environmental Engineering	
Starts 1	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
Lecturer	Hiroshi IKUTA Professor		

Course Purpose

Research internship is different from conventional internship for a working experience. Staffs in the faculty and instructors in a company cooperate with each other to set up research themes adequate to the doctoral course, and supervise a long-term internship for 1-6 months. This course aims at training of a person who has ability for an advanced research and development in not only a specialized field but also a multidisciplinary field, and a leader capable of making a proper judgment in a research project.

Prerequisite Subjects

Students attending Research Internship are strongly recommended to take short-term Patent Laws and Focus on Venture Business I or II before the attendance.

Course Topics

A student applies for a theme for research set up under the cooperation of a company and Nagoya University. Students should attend at the lecture at the university on the duty of confidentiality and the protection of intellectual property rights before starting the internship.

Textbook

not specified.

Additional Reading

not specified.

Grade Assessment

The credits will be given to the students who have had the working days less than or equal to 20 days in the internship company.

Notes

Contacting Faculty

The questions will be answered by the direct supervisors as needed at the internship.

Research Internship2 U3 (3.0credits) (研究インターンシップ2 U3)

Course Type	Comprehensive engineering courses		
Division at course	Doctor's Course		
Class Format	Practice		
Course Name	Molecular and Macromolecular Chemistry	Materials Chemistry	Biomolecular Engineering
	Applied Physics	Materials Physics	Materials Design Innovation Engineering
	Materials Process Engineering	Chemical Systems Engineering	Electrical Engineering
	Electronics	Information and Communication Engineering	Mechanical Systems Engineering
	Micro-Nano Mechanical Science and Engineering	Aerospace Engineering	Department of Energy Engineering
	Department of Applied Energy	Civil and Environmental Engineering	
Starts 1	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
Lecturer	Hiroshi IKUTA Professor		

Course Purpose

Research internship is different from conventional internship for a working experience. Staffs in the faculty and instructors in a company cooperate with each other to set up research themes adequate to the doctoral course, and supervise a long-term internship for 1-6 months. This course aims at training of a person who has ability for an advanced research and development in not only a specialized field but also a multidisciplinary field, and a leader capable of making a proper judgment in a research project.

Prerequisite Subjects

Students attending Research Internship are strongly recommended to take short-term Patent Laws and Focus on Venture Business I or II before the attendance.

Course Topics

A student applies for a theme for research set up under the cooperation of a company and Nagoya University. Students should attend at the lecture at the university on the duty of confidentiality and the protection of intellectual property rights before starting the internship.

Textbook

not specified.

Additional Reading

not specified.

Grade Assessment

The credits will be given to the students who have had the working days between 21 and 40 days in the internship company.

Notes

Contacting Faculty

The questions will be answered by the direct supervisors as needed at the internship.

Research Internship2 U4 (4.0credits) (研究インターンシップ2 U4)

Course Type	Comprehensive engineering courses		
Division at course	Doctor's Course		
Class Format	Practice		
Course Name	Molecular and Macromolecular Chemistry	Materials Chemistry	Biomolecular Engineering
	Applied Physics	Materials Physics	Materials Design Innovation Engineering
	Materials Process Engineering	Chemical Systems Engineering	Electrical Engineering
	Electronics	Information and Communication Engineering	Mechanical Systems Engineering
	Micro-Nano Mechanical Science and Engineering	Aerospace Engineering	Department of Energy Engineering
	Department of Applied Energy	Civil and Environmental Engineering	
Starts 1	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
Lecturer	Hiroshi IKUTA Professor		

Course Purpose

Research internship is different from conventional internship for a working experience. Staffs in the faculty and instructors in a company cooperate with each other to set up research themes adequate to the doctoral course, and supervise a long-term internship for 1-6 months. This course aims at training of a person who has ability for an advanced research and development in not only a specialized field but also a multidisciplinary field, and a leader capable of making a proper judgment in a research project.

Prerequisite Subjects

Students attending Research Internship are strongly recommended to take short-term Patent Laws and Focus on Venture Business I or II before the attendance.

Course Topics

A student applies for a theme for research set up under the cooperation of a company and Nagoya University. Students should attend at the lecture at the university on the duty of confidentiality and the protection of intellectual property rights before starting the internship.

Textbook

not specified.

Additional Reading

not specified.

Grade Assessment

The credits will be given to the students who have had the working days between 41 and 60 days in the internship company.

Notes

Contacting Faculty

The questions will be answered by the direct supervisors as needed at the internship.

Research Internship2 U6 (6.0credits) (研究インターンシップ2 U6)

Course Type	Comprehensive engineering courses		
Division at course	Doctor's Course		
Class Format	Practice		
Course Name	Molecular and Macromolecular Chemistry	Materials Chemistry	Biomolecular Engineering
	Applied Physics	Materials Physics	Materials Design Innovation Engineering
	Materials Process Engineering	Chemical Systems Engineering	Electrical Engineering
	Electronics	Information and Communication Engineering	Mechanical Systems Engineering
	Micro-Nano Mechanical Science and Engineering	Aerospace Engineering	Department of Energy Engineering
	Department of Applied Energy	Civil and Environmental Engineering	
Starts 1	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
Lecturer	Hiroshi IKUTA Professor		

Course Purpose

Research internship is different from conventional internship for a working experience. Staffs in the faculty and instructors in a company cooperate with each other to set up research themes adequate to the doctoral course, and supervise a long-term internship for 1-6 months. This course aims at training of a person who has ability for an advanced research and development in not only a specialized field but also a multidisciplinary field, and a leader capable of making a proper judgment in a research project.

Prerequisite Subjects

Students attending Research Internship are strongly recommended to take short-term Patent Laws and Focus on Venture Business I or II before the attendance.

Course Topics

A student applies for a theme for research set up under the cooperation of a company and Nagoya University. Students should attend at the lecture at the university on the duty of confidentiality and the protection of intellectual property rights before starting the internship.

Textbook

not specified.

Additional Reading

not specified.

Grade Assessment

The credits will be given to the students who have had the working days between 61 and 80 days in the internship company.

Notes

Contacting Faculty

The questions will be answered by the direct supervisors as needed at the internship.

Research Internship2 U8 (8.0credits) (研究インターンシップ2 U8)

Course Type	Comprehensive engineering courses		
Division at course	Doctor's Course		
Class Format	Practice		
Course Name	Molecular and Macromolecular Chemistry	Materials Chemistry	Biomolecular Engineering
	Applied Physics	Materials Physics	Materials Design Innovation Engineering
	Materials Process Engineering	Chemical Systems Engineering	Electrical Engineering
	Electronics	Information and Communication Engineering	Mechanical Systems Engineering
	Micro-Nano Mechanical Science and Engineering	Aerospace Engineering	Department of Energy Engineering
	Department of Applied Energy	Civil and Environmental Engineering	
Starts 1	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
Lecturer	Hiroshi IKUTA Professor		

Course Purpose

Research internship is different from conventional internship for a working experience. Staffs in the faculty and instructors in a company cooperate with each other to set up research themes adequate to the doctoral course, and supervise a long-term internship for 1-6 months. This course aims at training of a person who has ability for an advanced research and development in not only a specialized field but also a multidisciplinary field, and a leader capable of making a proper judgment in a research project.

Prerequisite Subjects

Students attending Research Internship are strongly recommended to take short-term Patent Laws and Focus on Venture Business I or II before the attendance.

Course Topics

A student applies for a theme for research set up under the cooperation of a company and Nagoya University. Students should attend at the lecture at the university on the duty of confidentiality and the protection of intellectual property rights before starting the internship.

Textbook

not specified.

Additional Reading

not specified.

Grade Assessment

The credits will be given to the students who have had the working days more than or equal to 81 days in the internship company.

Notes

Contacting Faculty

The questions will be answered by the direct supervisors as needed at the internship.