

Development of Structure and Technology (2.0credits) (構造物と技術の発展)

Course Type	Basic Specialized Courses		
Class Format	Lecture		
Course Name	Civil Engineering	Architecture	
Starts 1	1 Spring Semester	1 Spring Semester	
Elective/Compulsory	Compulsory	Compulsory	
Lecturer	norimi mizutani Professor	Hikaru NAKAMURA Professor	Masaki NAKANO Professor
	nobuo hukuwa Professor	Ippei MARUYAMA Professor	Keiichi ARAKI Professor

Course Purpose

The historical changes and the role of construction technology in civil engineering and architecture are based on the basic characteristics of materials such as soil, steel, and concrete, design and technical perspectives, and water, energy and transportation. This course outlines from the viewpoints of social infrastructure development and disaster prevention theory for various natural disasters, and introduces the historical development of typical technologies and structures.

The aim of this course is to nurture the comprehensive and creative capabilities to solve technical issues in civil engineering and architectural structures as well as to teach the historical aspects of civil engineering and architecture that lead from the past to the future and their significance.

At the end of the course, students should be able to understand the history of development and the overall picture of typical civil engineering and architectural structures, and to explain them from the viewpoint of material properties such as soil, steel, concrete, as well as design and technical perspectives, and from the viewpoints of social infrastructure development and disaster prevention theory.

Prerequisite Subjects

The background subject is not specified because this is a course in the first spring semester to introduce the outline of the subject.

Course Topics

1. Guidance
2. Ethics for engineers
3. Development of construction materials and structures
4. Maintenance of infrastructures
5. Geotechnical engineering for supporting national land
6. Geotechnical disaster prevention engineering and environmental geotechnical engineering
7. Beach erosion and its countermeasures
8. Mechanism of storm surges and tsunamis, and coastal disaster prevention
9. Beginning of concrete and reinforced concrete buildings
10. Construction technology for medium/ high rise reinforced concrete buildings
11. Lessons learned from past earthquake disasters
12. Countermeasures for Nankai Trough Earthquake
13. Architectural structure and mechanics
14. Failure mode of structure and dynamics
15. Summary

After the class, you should review the distributed prints. In addition, you will be required to submit a report task several times.

Textbook

Handouts will be distributed by each faculty member.

Additional Reading

Reference books will be introduced as appropriate according to the related content

Grade Assessment

Each instructor individually assigns a report task related to the lecture, scores the report contents, and comprehensively evaluates the total score. And, a passing requirement is C grade or higher. Acceptance criteria are to be able to understand the historical inheritance of technology for civil engineering and architecture and its significance, and explain the technical issues of civil engineering and architectural structures and their solutions based on your own ideas.

Notes

No course requirements are required.

Contacting Faculty

Welcome questions during the class. Each faculty member also accepts questions at the room and by e-mail at any time.

(Hikaru NAKAMURA ExE. 5690, hikaru@cc.nagoya-u.ac.jp)

History of City and Civilization (2.0credits) (都市と文明の歴史)

Course Type	Basic Specialized Courses	
Class Format	Lecture	
Course Name	Civil Engineering	Architecture
Starts 1	1 Spring Semester	1 Spring Semester
Elective/Compulsory	Compulsory	Compulsory
Lecturer	Takayuki MORIKAWA Professor	Kazuhisa TSUNEKAWA Associate Professor

Course Purpose

Outline the history of city and civilization from ancient times to the present day and master basic knowledge to think about the future of the city.

Lecture while relating to the growth and decline of urban areas based on natural conditions, economic development stage and social background, problems and overcoming environmental hygiene, trends of transportation technology and automobile civilization, and technology development and design of building.

Prerequisite Subjects

Course Topics

1The birth, growth and decline of modern cities,

Progress of automobile civilization and suburbanization VS New city civilization, history of traffic technology.

2History of Japanese cities : Ancient: Formation of the city, Heijokyo and Heiankyo, Early modern times: castle town, modern: from Edo to Tokyo, modern urban planning, contemporary: modern urban planning, Nagoya , Urban space in Japan: formation principle, composition technique, city and architecture

3History of Western cities: Ancient: Athens, Rome, etc., Middle Ages: Venetia · Siena etc., Renaissance · Baroque: Florence, 18th-19th century: London · Paris, Modern city theory: New York etc.

Textbook

Architectural Institute of Japan ed., Toshi-shi Zushu, Shokoku-sha

Additional Reading

Grade Assessment

Paper and exam

Notes

Contacting Faculty

morikawa@nagoya-u.jp

tsune@nagoya-u.jp

Course Type	Basic Specialized Courses	
Class Format	Lecture	
Course Name	Civil Engineering	Architecture
Starts 1	1 Spring Semester	1 Spring Semester
Elective/Compulsory	Compulsory	Compulsory
Lecturer	Toshiyuki YAMAMOTO Professor	

Course Purpose

Fundamentals of computers and network are discussed. Communication with e-mail, browsing internet resources and learning some applications are the main part of this course. Exercises using the computer system in the Center for Information Media Studies enhance the acquired ability.

We will obtain the skills below

1. make and organize documents with computers
2. use e-mail properly
3. understand the structure of webpages, and make simple webpages
4. Build simple codes, and calculate some problems

Prerequisite Subjects

Course Topics

1. Computer ethics
2. File operation
3. E-mail and Netnews
4. Access to the Internet and Homepages
5. Webpage development
6. Programming

Textbook

Kenichi Harada: Fortran 77 programing, Saiensu-sha

Additional Reading

Introduced according to the process of the lecture.

Grade Assessment

Active participation in class is required. Reports are evaluated.

Notes

Contacting Faculty

Ask questions in classes. No fixed schedules for office hour is set, so ask questions by email, or make an appointment by email for face-to-face inquiry.

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

Introduction to Structural Mechanics (2.0credits) (形と力)

Course Type	Basic Specialized Courses	
Class Format	Lecture	
Course Name	Civil Engineering	Architecture
Starts 1	1 Autumn Semester	1 Autumn Semester
Elective/Compulsory	Compulsory	Compulsory
Lecturer	Junji KATO Professor	Jun TOBITA Professor

Course Purpose

To learn the basic relationships between shape and forces in structures and inquire the methodology and skills applicable to solve the basic mechanical problem.

Performance targets:

- 1) To understand the basics of mechanics and be able to analyze reaction forces of statically determinate truss, beam and frame structures.
- 2) To understand the concept of sectional forces and to be able to draw the figures.
- 3) To understand the concept of the influence line and and to be able to analyze the sectional forces for statically determinate structures.

Prerequisite Subjects

Course Topics

1. Basic relationships between shape and forces
2. Equilibrium of forces
3. Analysis of internal forces members
4. Concepts of structural shapes

Several reports will be given after lectures.

Textbook

Structural Mechanics 1 Lecture Note (Ichiryusha)

Additional Reading

Reference books are introduced at the first lecture.

Grade Assessment

Examinations and Reports

The goal attainment level is evaluated by both results of the intermediate and the final examination as well as the reports. 60 points or more are accepted for 100 full marks.

Notes

Contacting Faculty

Any questions welcome anytime to the instructors and TAs.

Human Activities and Environment (2.0credits) (人間活動と環境)

Course Type	Basic Specialized Courses		
Class Format	Lecture		
Course Name	Civil Engineering	Architecture	
Starts 1	1 Autumn Semester	1 Autumn Semester	
Elective/Compulsory	Compulsory	Compulsory	
Lecturer	Hiroki tanikawa Professor	ArataKATAYAMA Professor	Teruyuki SAITO Associate Professor
	Satoru IIZUKA Associate Professor		

Course Purpose

Understanding the environmental influences on human life, production and infrastructure

Prerequisite Subjects

Not specified

Course Topics

1. National land conservation and sustainability 2. The natural progress of national land: rivers and valleys
3. Environmental assessment and follow up 4. Ecological system concerning rivers 5. Changes of valleys
6. Natural regeneration 7. Light, sunshine, global warming and human 8. Sound and human 9. Indoor air
and human 10. Heat and moisture 11. Engineering and Architectural Ethics

There are additional overtime studies regarding each lecture.

Textbook

to be distributed

Additional Reading

to be announced in class.

Grade Assessment

Reports to each professor

Notes

No course requirements

Contacting Faculty

Ask via email,

Prof.Tanikawa (tanikawa@nagoya-u.jp)

Prof.Katayamaa-katayama@esi.nagoya-u.ac.jp

A.Prof.Saitosaito@nuac.nagoya-u.ac.jp

A.Prof.Iizukas.iizuka@nagoya-u.jp

Mathematics I and Tutorial (4.0credits) (数学 1 及び演習)

Course Type	Basic Specialized Courses	
Class Format	Lecture and Exercise	
Course Name	Civil Engineering	Architecture
Starts 1	1 Autumn Semester	1 Autumn Semester
Elective/Compulsory	Compulsory	Compulsory
Lecturer	norimi mizutani Professor	Tomoaki NAKAMURA Associate Professor

Course Purpose

Learn how to solve the ordinal differential equations and vector analysis.

Prerequisite Subjects

Course Topics

Primitive method

Second-order linear differential equations

Higher-order linear differential equations

Fundamental characteristics of vector

Differentiation of vector

Curved line and curved surface

Integration theorems of vector field

Textbook

Additional Reading

Grade Assessment

Your final grade will be calculated according to the final examination (100%).

Notes

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)

Probability and Statistics (2.0credits) (確率と統計)

Course Type	Basic Specialized Courses	
Class Format	Lecture	
Course Name	Civil Engineering	Architecture
Starts 1	1 Autumn Semester	1 Autumn Semester
Elective/Compulsory	Elective	Elective
Lecturer	Yasuhiro MORI Professor	

Course Purpose

This course introduces the theories of probability and statistics for use in data analysis and decision making in civil engineering and architecture. At the end of this course, participants are expected to

1. Understand the basic theories of probability and statistics and be able to proof these theories,
2. Understand the characteristics of commonly used probability models and be able to calculate their statistics and the distribution functions,
3. Understand the method for estimating the statistics and the probability distributions on the basis of the data from investigations, experiments, and/or observations and be able to apply those methods,
4. Understand the role of the theories of probability and statistics for use in data analysis and decision making in civil engineering and architecture.

Prerequisite Subjects

N/A

Course Topics

1. Statistics and ethics
2. Permutations and combinations
3. Basic theories on probability
4. Random variables and probability distributions
5. Moment
6. Probabilistic model of random events #1: Uniform dist., Binomial dist, Geometric dist.
7. Probabilistic model of random events #2: Poisson dist., Exponential dist., Normal dist.
8. Probabilistic model of random events #3: Central limit theorem, Lognormal dist.
9. Mid-term exam.
10. Data analysis, Statistics of data
11. Correlation coefficient, Regression analysis
12. Statistical inference
13. Statistical tests: mean
14. Statistical tests: variance
15. Probabilistic model, Decision making

Textbook

N/A

Additional Reading

N/A

Grade Assessment

Mid-term exam (25%), Final exam (50%), and reports (25%)

Notes

Contacting Faculty

Office hour will be set up on appointment basis. Emailyasu@nuac.nagoya-u.ac.jp

Analytical Mechanics and Tutorial (3.0credits) (解析力学及び演習)

Course Type	Basic Specialized Courses	
Class Format	Lecture and Exercise	
Course Name	Civil Engineering	Architecture
Starts 1	2 Spring Semester	2 Spring Semester
Elective/Compulsory	Elective	Elective
Lecturer	Toshihiro NODA Professor	Kentaro NAKAI Associate Professor

Course Purpose

While reviewing and conscious of Newton's mechanics, students will learn the Lagrangian equation of motion and the Hamilton's principle, which are universal principles of dynamics. The purpose of this lecture is to cultivate a fundamental ability to perform a unified interpretation of various movements by analytical mechanics and deeper mechanical considerations. By learning this lecture, the goal is to be able to: 1. Deepen the understanding of Newtonian mechanics. 2. Understand the fundamentals necessary for analytical mechanics, such as the principle of virtual work, Lagrange's equation of motion, and the variational method, and perform necessary calculations. 3. Understand the relationship between Newtonian mechanics and analytical mechanics, and cultivate the basic power for deeper consideration of mechanical phenomena, and perform necessary calculations.

Prerequisite Subjects

Mathematics 1 with Exercises, Mechanics I and II, Calculus I and II, Algebras I and II

Course Topics

1. Review the basics of Newtonian mechanics (single mass system, multi-mass systems, equation of motion of rigid bodies, etc.) and the basics of mathematics necessary for analytical mechanics. 2. Lectures and exercises on the principles of virtual work. 3. Lectures on Lagrange's equation of motion including the principle of d'Alembert, generalized coordinates, including the case where motion is constrained. 4. Exercise small vibration problems, coupled motion and normal vibration. 5. Lectures and exercises on variational methods and Euler's differential equations. 6. Learn the variational principle of mechanics (Hamilton's principle) and its relevance to Newtonian mechanics. 7. Lectures and exercises on Hamilton's canonical equations (Legendre transform), phase space, canonical transformation, etc. After each lecture, students will work on related exercises. Assignments for home study are also given as appropriate. In addition, in order to confirm the degree of acquisition of the basics of dynamics, a test (initial test) on the dynamics of mass / mass system / rigid body will be conducted at the first time of this class.

Textbook

Analytical dynamics for engineering students, Kawabe, T. Shokabo Co., Ltd. (in Japanese) Printed documents will be distributed during the lecture.

Additional Reading

- Analytical dynamics, Tanabe, Y. and Shinoda, M., Shokabo Co., Ltd. (in Japanese)- Structural mechanics, Tamura, T., Asakura Co., Ltd. (in Japanese)

Grade Assessment

Evaluate the level of achievement for the achievement target through reports, initial exams, midterm exams and final exams. A score of 60 or more out of 100 is a passing score.

Notes

Private language during the lecture is strictly prohibited. Make sure that your mobile phone is not muted during the lecture. It is forbidden to take pictures with a portable camera or the like without permission of writing on the board.

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

Mathematics II and Tutorial (4.0credits) (数学 2 及び演習)

Course Type	Basic Specialized Courses	
Class Format	Lecture and Exercise	
Course Name	Civil Engineering	Architecture
Starts 1	2 Autumn Semester	2 Autumn Semester
Elective/Compulsory	Elective	Elective
Lecturer	kazuya takeda Professor	

Course Purpose

This course will offer Fourier analysis and partial differential equation as the continuation of Mathematics 1 with Exercises. The main purpose of the course is to connect the mathematical theories with actual physical problems in engineering. Through the course, students can master skills for applying Laplace transform for solving differential equations, applying Fourier transforms for various time-sequence analyses and formulating and solving spatio-temporal problems by applying partial differential equations.

Prerequisite Subjects

Fundamental Mathematics 1, 2, 3, 4, 5, Mathematics 1 with Exercises. Credits for these courses are preferable but not mandatory prerequisite of this course.

Course Topics

1. Differential equation 2. Partial differential equation 3. Laplace transform 4. Fourier transform and Fourier analysis

Textbook

Advanced Engineering Mathematics: Fourier analysis and Partial Differential Equations, E. Kreyszig, Baifukan.

Additional Reading

Advanced Engineering Mathematics: Ordinary Differential Equations, E. Kreyszig, Baifukan.

Grade Assessment

Comprehensive evaluation will be made based on the three exams (80%) and seven-nine quizzes (20%). Credit will be issued for the scores of 60% or higher.

Notes

Contacting Faculty

Course information and announcements are available through NUCT (<https://ct.nagoya-u.ac.jp/>) course management system. Access that page regularly. Students can send questions directly to the lecturer. Make an appointment in case when a face-to-face communication is needed.

Infrastructure Planning (2.0credits) (社会資本計画学)

Course Type	Basic Specialized Courses	
Class Format	Lecture	
Course Name	Civil Engineering	Architecture
Starts 1	2 Spring Semester	3 Spring Semester
Elective/Compulsory	Compulsory	Elective
Lecturer	Takayuki MORIKAWA Professor	Kiichiro HAYASHI Professor

Course Purpose

The objective of this lecture is to learn the basic academic knowledge and the ability to solve the issues related to planning engineering under civil engineering. This lecture provides basics and applied skills of analysis methods and measures to understand the roles of infrastructure by learning its economic characteristics, planning procedure, demand analysis, and evaluation methods.

The goal of this lecture is that the students will understand the basics of planning procedure, demand analysis and evaluation methods, explain measures and study the analytical method of the issues.

Prerequisite Subjects

History of Civilization, Human Activities and Environment, Probability and Statistics, Space Design, Urban and National Land Planning

Course Topics

1. Introduction of infrastructure planning
2. Linear programming 1
3. Linear programming 2
4. Linear programming 3
5. Linear programming 4
6. Linear programming 5
7. Non-linear programming 1
8. Non-linear programming 2
9. Introductory Economics 1
10. Introductory Economics 2
11. Introductory Economics 3
12. Cost-benefit analysis 1
13. Cost-benefit analysis 2
14. Environmental assessment
15. Life-cycle analysis

After the lecture, the students will study some example problems provided through the lecture as home-study.

Textbook

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

Additional Reading

Infrastructure Planning, Shogo Kawakami, Kajima Syuppankai

Grade Assessment

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

The success criteria is to understand the basics of planning procedure, demand analysis and evaluation methods.

The C level is the minimum requirement for passing this lecture

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.

Fundamentals of Structural Analysis with Exercises (4.0credits) (構造解析の基礎及び演習)

Course Type	Basic Specialized Courses	
Class Format	Lecture and Exercise	
Course Name	Civil Engineering	
Starts 1	2 Spring Semester	
Elective/Compulsory	Compulsory	
Lecturer	KazuoTATEISHI Professor	Masaru Shimizu Assistant Professor

Course Purpose

Fundamentals in mechanics, such as stress, strain, principal values, are lectured. Students are expected to learn the definitions of these terms and be able to analyse the stress and deformation of simple members under various actions.

Prerequisite Subjects

Course Topics

1. Stress and strain.2. Mechanics of axial member, beam, torsional member.3. Plane stress problems.4. Some advanced topics.

Textbook

Additional Reading

Grade Assessment

Notes

Contacting Faculty

Fundamentals of Hydrodynamics with Exercises (4.0credits) (流れの力学及び演習)

Course Type	Basic Specialized Courses		
Class Format	Lecture and Exercise		
Course Name	Civil Engineering	Architecture	
Starts 1	2 Spring Semester	4 Spring Semester	
Elective/Compulsory	Compulsory	Elective	
Lecturer	norimi mizutani Professor	Takashi TASHIRO Professor	OBANAMakiko Assistant Professor
	YonghwanCHO Assistant Professor		

Course Purpose

Learn about basics of hydrostatics and fundamental laws of fluid motions. Then analyze flow in pipe.

Prerequisite Subjects

Course Topics

Introduction
Characteristics of fluid
Hydrostatics
Stability of floating body
Basic description of flow of ideal fluid
Relative hydrostatics
Bernoulli's principle
Energy analysis in one dimensional problem
Unsteady Bernoulli's principle
Energy loss
Pipe flow
Analysis based on momentum (1)
Analysis based on momentum (2)

Textbook

Additional Reading

Grade Assessment

Report, mid-term exam and end-term exam. Score of 60 or higher is required.

Notes

Contacting Faculty

Questions after the class are welcome. Email to professors is also recommended.

Structural Mechanics and Tutorial (4.0credits) (構造力学及び演習)

Course Type	Basic Specialized Courses
Class Format	Lecture and Exercise
Course Name	Civil Engineering
Starts 1	2 Autumn Semester
Elective/Compulsory	Compulsory
Lecturer	Takeshi HANJI Associate Professor

Course Purpose

To understand the basis of the structural design, to acquire methods of computing stresses and displacements of structural members subjected to loading, and to learn the basic concept of the energy principle.

After completing this course, students will be able to:

1. understand differential equations in terms of displacement for each type of structural member, and derive the equations
2. understand methods for computing displacements (deflections), and compute the displacements
3. understand stresses yielded by loading, and calculate the stresses, and
4. understand the principle of conservation of energy and the principle of virtual work, and solve for problems using these principles.

Prerequisite Subjects

Introduction to Structural Mechanics

Fundamentals of Structural Analysis and Tutorial

Course Topics

Lecture and exercises in the following topics.

1. Stresses and displacements of axial members
2. Stresses and displacements of bending members
3. Stresses and displacements of torsional members
4. Principle of superposition
5. Energy principle

Textbook

Structural Mechanics II Lecture Note

Structural Analysis Lecture Note

Additional Reading

Reference books will be recommended at the right time.

Grade Assessment

C grade or more are accepted by the result of midterm exam (30%), final exam (50%) and reports (20%).

Notes

None

Contacting Faculty

Email: hanji@civil.nagoya-u.ac.jp

Extension: 4618

Soil Mechanics with Exercises (4.0credits) (土質力学及び演習)

Course Type	Basic Specialized Courses	
Class Format	Lecture and Exercise	
Course Name	Civil Engineering	Architecture
Starts 1	2 Autumn Semester	4 Autumn Semester
Elective/Compulsory	Compulsory	Elective
Lecturer	Toshihiro NODA Professor YOSHIKAWA Takahiro Assistant Professor	Kentaro NAKAI Associate Professor SAKAI Takayuki Assistant Professor

Course Purpose

In order to understand the mechanical properties of a saturated soil composed of soil particles and water, this lecture will explain how to capture a two-phase mixed material. In particular, while clarifying the difference between the movement (infiltration) of pore water without deformation of the soil skeleton composed of soil particles and the movement (consolidation) of pore water with deformation of the soil skeleton based on the effective stress concept, the purpose of this lecture is to develop basic knowledge of soil mechanics. By learning this lecture, the goal is to be able to: 1. Explain the basic physical quantities that describe the state of the soil, the classification of the soil, and the compaction characteristics. 2. Explain the meaning of Darcy's law, potential flow, hydraulic conductivity, and the method of laboratory test for obtaining it in relation to hydraulics in the ground. In addition, understand the continuous equation in the permeation problem, and calculate the permeation flow using a graphical solution method. 3. Explain the definition and meaning of the equilibrium conditions of force balance and stress, displacement and strain, and constitutive equations, taking a one-dimensional one-phase system problem as an example. 4. Understand the concept of effective stress and derive the consolidation equation in one-dimensional elastic consolidation theory and solve by the Fourier method. The consolidation phenomenon can be grasped and the amount of consolidation settlement can be calculated.

Prerequisite Subjects

Mechanics I, Mechanics II

Course Topics

1. Learn basic properties of soil, basic physical quantities and engineering classification of soil. 2. Learn about Darcy's law and the characteristics of general potential flow with respect to water flow in the ground. In addition, students will learn the meaning of permeability and the methods of two laboratory tests to measure it. Students will also learn about the continuous equation and the problems of two-dimensional steady infiltration. 3. Understand the properties of unsaturated soil and soil compaction. 4. Understand the concept of equilibrium of force and stress of one-phase materials in one-dimensional problems, and learn the concept of deformation matching conditions and strain. 5. Derive a one-dimensional consolidation equation in the consolidation problem. In that, each governing equation such as the principle of effective stress will be explained. In addition, the solution of the one-dimensional consolidation equation by the Fourier method is shown, and the consolidation phenomenon (dissipation process of excess pore water pressure) is deepened based on the solution. After each lecture, students will work on related exercises. Assignments for home study are also given as appropriate.

Textbook

Soil mechanics (Corona): by Masaki Nakano Printed documents will also distributed during the class.

Additional Reading

References will be introduced as necessary.

Grade Assessment

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

Notes

If the absence is more than 1/2, the final exam will not be accepted.

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 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

Experimental and Analytical Training in Civil Engineering (1.0credits) (環境土木工学実習)

Course Type	Basic Specialized Courses		
Class Format	Practice		
Course Name	Civil Engineering		
Starts 1	2 Autumn Semester		
Elective/Compulsory	Compulsory		
Lecturer	Yoshihito Yamamoto Associate Professor	Ryota TSUBAKI Associate Professor	Tomio MIWA Associate Professor
	NAKAMURASHinichiro Associate Professor	Taito Miura Assistant Professor	Masaru Shimizu Assistant Professor
	Hiroya HOSHIBA Assistant Professor	OBANAMakiko Assistant Professor	YonghwanCHO Assistant Professor
	SAKAITakayuki Assistant Professor	YOSHIKAWATakahiro Assistant Professor	Yuji KAKIMOTO Assistant Professor
	KASAI Takuya Assistant Professor		

Course Purpose

This course tries to extract and suggest the problems related to the Civil and Environmental Engineering. The main purpose of this course is to cultivate the basic knowledge of Civil and Environmental Engineering and quality of leadership through the group work and self-learning. The participants may take the initiative in solving problems. Following abilities will be developed through the course.

- Ability to submit the problem and consider the solution by oneself.
- Ability to explain one's opinion.
- Ability to act spontaneously keeping harmony with the circumference.

Prerequisite Subjects

History of City and Civilization, Development of Structure and Technology, Human Activities and Environment, National Planning and Construction Projects

Course Topics

The content of this lecture is to cultivate the basic knowledge of Environmental Civil Engineering and quality of leadership through the group work and self-learning as listed below.

1. extract the problems related to the Environmental Civil Engineering
2. deliberation of the solution
3. presentation
4. survey design for the problem resolution
5. survey, measurement, and experiment
6. consensus of the opinion
7. final presentation

After-class hour will be used for (1) literature review, (2) surveys, measurements, and experiments, and (3) compilation of results.

Textbook

Materials will be distributed.

Additional Reading

Materials to be introduced.

Grade Assessment

The grade will be determined based on the contribution to group activities and discussion, mid-term and final presentation, and poster presentation. Having fundamental skills listed in the objectives is a criterion to pass. Having advanced skills will be reflected in the grade. Absence without notice will disapprove of the credit.

Notes

Not specified

Contacting Faculty

Please e-mail each professor whenever you have a question.

Graphic Science (2.0credits) (図学)

Course Type	Basic Specialized Courses	
Class Format	Lecture	
Course Name	Civil Engineering	Architecture
Starts 1	1 Spring Semester	1 Spring Semester
Elective/Compulsory	Elective	Compulsory
Lecturer	Yasuhiko NISHIZAWA Professor	

Course Purpose

This course is intended for students of civil engineering and architecture to cultivate the ability of understanding, representing and telling spatial figure information. The course is divided into two parts. The first part is the representation of three-dimensional figures on two-dimensional surfaces by means of geometric projections. The second part is to draw three dimensional figures based on geometrical analyzing of two dimensional figures and understand information concerning the figures with basic talent of design. Goals: Students will get some abilities. One is representation of three-dimensional figures on two-dimensional surfaces by means of geometric projections. The second part is to draw three dimensional figures based on geometrical analyzing of two dimensional figures and understand information concerning the figures with basic talent of design.

Prerequisite Subjects

Geometry knowledge acquired in high school.

Course Topics

1. Multi-view projection (6 times) 2. Polyhedron and section (4 times) 3. Curves and curved surfaces (2 times) 4. Intersection of plural figures (1 time) 5. Perspective projection (2 times). Then, homework will be given for the review of the class contents, and the answer will be explained next week.

Textbook

KODAK Shiro, Gendai-zugaku (Japanese), Morikita-shuppan, ISBN978-4-627-08030-0

Additional Reading

Some supplementary materials are distributed in class in order to promote understanding of the contents of the lesson.

Grade Assessment

Examination(2 times) \ Evaluation: by examination(100%), 100-90:S, 89-80:A, 79-70:B, 69-60:C, less than 60:F. If you would not take both of two examinations, we mark "absent". If you would not take one of two examinations, we mark "F".

The test asks the following abilities: 1) Ability to project a figure in a three-dimensional space onto a two-dimensional plane. 2) Ability to geometrically analyze a three-dimensional figure from a figure on a two-dimensional plane to grasp and express figure information.

Notes

No registration requirements are imposed.

Bring a triangular ruler and compass as you will be doing drawing exercises in class.

Set the exercises shown in the textbook as review tasks, and explain the answers in the next week's class.

Contacting Faculty

If you had any questions, please tell to the follow address: nszw@nuac.nagoya-u.ac.jp

Statistics for Civil Engineering (2.0credits) (土木の統計学)

Course Type	Specialized Courses
Class Format	Lecture
Course Name	Civil Engineering
Starts 1	2 Spring Semester
Elective/Compulsory	Compulsory
Lecturer	Tomio MIWA Associate Professor

Course Purpose

For understanding the data characteristics, to examine the data obtained from experiment and survey is needed. Since the data includes observation errors and observation of all events is impossible, it is necessary to infer the characteristics of population from sample data. Statistics is the methodology for such cases. In this class, through the example of experiments in civil engineering field, fundamental knowledge about the meaning and the usage of statistics analysis will be deepen.

Prerequisite Subjects

Probability and Statistics

Course Topics

1. Orientation, statistical feature of experimental data in civil engineering field
2. The fundamentals of statistics analysis
3. Analysis of variance
4. Method of experimental design
5. Regression analysis
6. Discriminant analysis
7. Qualification theory
8. Principal component analysis
9. Cluster analysis
10. Summary and evaluation

Textbook

Lecture materials will be provided.

Additional Reading

Reference book is introduced as needed.

Grade Assessment

Fundamental knowledge and application skill obtained through this course will be evaluated by reports (30%) and exam (70%). 60% of evaluation is required for credit earning.

Notes

Not required.

Contacting Faculty

Email: miwa@nagoya-u.jp

Extension: 5018

Material Engineering (2.0credits) (材料工学)

Course Type	Specialized Courses
Class Format	Lecture
Course Name	Civil Engineering
Starts 1	2 Autumn Semester
Elective/Compulsory	Compulsory
Lecturer	Hikaru NAKAMURA Professor

Course Purpose

The objective is to promote understanding the relationship between various properties of concrete and the constituent materials (water, cement, aggregate, etc.), and the various deterioration mechanism of concrete and steel bar, in order to acquire knowledge on concrete, which is a major material in the civil engineering field.

After completing this course, students will be able to:

1. Explain the hydration and products of cement.
2. Explain the properties of concrete and constituent materials.
3. Explain the deterioration mechanism of concrete structures.

Prerequisite Subjects

Development of structure and technology
Fundamental of structural analysis with exercises

Course Topics

1. Engineering ethics, Introduction of material engineering
2. Maintenance of concrete structures
3. Cement, chemical and mineral admixtures
4. Properties of reinforcement
5. Properties of aggregate
6. Properties of fresh concrete (workability, segregation)
7. Properties of hardened concrete (strength, micro structure, creep, shrinkage, crack)
8. Durability of concrete structures (salt attack, carbonation, ASR, frost damage)

Before class, please read the designated part of the textbook. After class, please solve the problem exercises distributed during the class while examining the contents related to the lecture. Require answers and explanations of exercise questions during the class.

Textbook

Learning of concrete -Material and Construction- (Rikotosho Co.ltd) (In Japanese)

Additional Reading

Reference books will be recommended at the right time

Grade Assessment

60% or more are accepted by the result of midterm exam (50%) and final exam (50%).

Notes

None

Contacting Faculty

Office hour: 16:30-18:00 of Thursday. Welcome to come to room directly anytime and question by e-mail hikaru@cc.nagoya-u.ac.jp

Spatial Planning (2.0credits) (空間計画論)

Course Type	Specialized Courses	
Class Format	Lecture	
Course Name	Civil Engineering	Architecture
Starts 1	2 Autumn Semester	2 Autumn Semester
Elective/Compulsory	Compulsory	Elective
Lecturer	Hirokazu KATO Professor	

Course Purpose

You will understand spatial planning theories taking into account the development stages of nations and cities with economic mechanisms and land systems as background.

You will learn about the actual spatial planning systems in Japan and abroad. And you will compare them to explore the ideal spatial planning required of Japan and the world in the 21st century.

The goals by learning this lecture is as follows:

1. To get and explain the basic knowledge on economics, land system, stock, public investment, which is necessary for thinking about spatial planning, and the knowledge on the expansion to planning.
2. To understand and explain the outline of spatial planning in Japan and its problems.
3. To understand and explain the spatial planning, which is necessary for Japan in the future.

Prerequisite Subjects

Infrastructure Planning, Human Activities and the Environment

Course Topics

1. Overview -Why do we need spatial planning?-
2. Spatial planning and the mechanism of growth, decline and regeneration of countries and cities
3. Economics needed to understand spatial planning
4. Stock Economics
5. Socio-economic significance of public goods and public investment
6. Relationship between land tax system, land information, land market system and spatial planning
7. Impacts of spatial planning on environmental issues
8. The overall structure and process of the spatial planning system in Japan
9. Problems of urban planning and improvement measures in Japan
10. Spatial planning for sustainable city management
11. Spatial planning under aging and declining population
12. Ethics required of nation and urban planning engineers

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 in the talk. You submit a brief comment at the end of each lecture. Sometime, you will be required to submit report.

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

Final Examination(70%), Report(30%)

Passed applicants must have basic knowledge of economics, land system, stock, public investment, and the expansion to spatial planning.

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>

Open Channel Hydraulics (2.0credits) (開水路水理学)

Course Type	Specialized Courses
Class Format	Lecture
Course Name	Civil Engineering
Starts 1	2 Autumn Semester
Elective/Compulsory	Compulsory
Lecturer	Ryota TSUBAKI Associate Professor

Course Purpose

The goal of this lecture is to understand the hydraulics of open-channel flow based on the knowledge obtained by 'Fundamentals of Hydrodynamics with Exercises' to analyze water depth and velocity distribution along with an open-channel.

The objectives of this lecture are

1. to derive basic equations of the open-channel flow based on the energy and momentum conservations.
2. to understand the concepts of sub-critical, critical and super-critical flows.
3. to use the flow resistance models and apply the models for water surface profile prediction.
4. to understand the fundamentals of a turbulent model and utilize this model for predicting velocity distribution at a flow cross-section.

Prerequisite Subjects

Fundamentals of Hydrodynamics with Exercises

Course Topics

1. Ethics about Open Channel Flow, State of Flow
2. Basic Equations of Open Channel Flow
3. Specific Force and Specific Energy
4. Resistance Law and Mean Velocity Formulae
5. Vertical Velocity Profile for Uniform Flow
6. Gradually Varied Flow Analysis and Water Surface Profiles
7. Unsteady Flow in Open Channel

Reading the corresponding part of the coursebook and course handout prior to each lecture is needed. Reports are asked to submit during the exercise.

Textbook

Hand out,

Ven Te Chow: Open-channel hydraulics, the blackburn press.

Additional Reading

Graf and Altinakar: Fluvial Hydraulics, Wiley

Grade Assessment

Evaluated based on the score of the final examination (65%), the mid-term examination and reports (35%). Understanding fundamental parts of the objectives (including concepts and laws in the open-channel hydraulics) is a criterion to pass. The understanding of the advanced contents will be reflected in the grade.

Notes

Not specified

Contacting Faculty

Visiting faculty's lab. or asking by e-mail. Contact: Ryota Tsubaki, phone: 4625, e-mail: rtsubaki@civil.nagoya-u.ac.jp)

Experiments in Materials and Structures I (1.0credits) (構造材料実験)

Course Type	Specialized Courses		
Class Format	Experiment		
Course Name	Civil Engineering		
Starts 1	2 Autumn Semester		
Elective/Compulsory	Compulsory		
Lecturer	Kazuo TATEISHI Professor	Hikaru NAKAMURA Professor	Junji KATO Professor
	Takeshi HANJI Associate Professor	Yoshihito Yamamoto Associate Professor	Taito Miura Assistant Professor
	Masaru Shimizu Assistant Professor	Hiroya HOSHIBA Assistant Professor	

Course Purpose

The objective is to learn the basics of steel and concrete structures experientially and theoretically. Through basic material tests on steel and concrete, students can understand the stress-strain relationship of steel and concrete, and learn mechanical behavior on steel and concrete members. In addition, through group competition, students can develop the ability to think, express, and teamwork.

After completing this course, students will be able to:

1. understand concrete mix design,
2. understand material properties on steel and concrete, and
3. understand mechanical behavior of members.

Prerequisite Subjects

Introduction to Structural Mechanics

Fundamentals of Structural Analysis and Tutorial

Course Topics

1. Introduction
2. Aggregate tests
3. Concrete mix design
4. Tension and compression tests on steel
5. Material tests on concrete
6. Loading tests of simply-supported beams
7. Fracture tests of concrete beams
8. Group competition

Textbook

Text will be distributed at the first class.

Additional Reading

Reference books will be recommended at the right time.

Grade Assessment

Reports

Notes

None

Contacting Faculty

Questions are accepted at any time.

Mechanics for Civil Engineering (2.0credits) (土木の力学)

Course Type	Specialized Courses
Class Format	Lecture
Course Name	Civil Engineering
Starts 1	3 Spring Semester
Elective/Compulsory	Compulsory
Lecturer	Yuji Toda Professor

Course Purpose

The objectives of this class are:to understand the fundamental knowledges of continuum mechanicsto derive the governing equations for sturctural mechanics, soil mechanics and hydraulicsto understand the characteristics of the governing equations for sturctural mechanics, soil mechanics and hydraulics

Prerequisite Subjects

Course Topics

Textbook

Additional Reading

Grade Assessment

Notes

Contacting Faculty

Concrete Structures I (2.0credits) (コンクリート構造第1)

Course Type	Specialized Courses
Class Format	Lecture
Course Name	Civil Engineering
Starts 1	3 Spring Semester
Elective/Compulsory	Compulsory
Lecturer	Yoshihito Yamamoto Associate Professor

Course Purpose

Introduction of basic theories in order to have a basic concept and designing ability of concrete structures subjected to bending moment and axial load

Prerequisite Subjects

Material Engineering, Structural Mechanics

Course Topics

- 1.Introduction of concrete structures
- 2.Material models of concrete and reinforcing bar
- 3.Flexure theory of RC beams
- 4.Ultimate Strength and curvature of RC beams
- 5.Behavior and loading capacity of RC Columns
- 6.Interaction of axial load and bending moment

Textbook

Additional Reading

Grade Assessment

Examination

Notes

Contacting Faculty

Course Type	Specialized Courses
Class Format	Lecture
Course Name	Civil Engineering
Starts 1	3 Spring Semester
Elective/Compulsory	Compulsory
Lecturer	Masaki NAKANO Professor

Course Purpose

The aim of this course is to explain the engineer ethics related to civil engineering and geotechnical engineering, and as a mechanical behavior of a remolded saturated soil, to understand the basic matters related to elasto-plastic response of soil skeleton, to cultivate the ability to explain mechanical behavior of soil in various states as the effect of coupled effect between soil skeleton and pore water, and to cultivate the ability to apply it to the mechanical behavior of soil structures as well as how to derive and apply classical stability analysis.

The goals of this course are to

- (1) Explain the unified concept of soil compression and shear characteristics.
- (2) Explain the elasto-plastic behavior of typical recast clay under drained and undrained conditions, and calculates shear behavior using given soil constants.
- (3) Explain the basics and principles of the ground stability problem.

Prerequisite Subjects

Soil Mechanics with Exercises, Geotechnical Engineering, Experiment in Geomaterials, Civil engineering geology

Course Topics

1. Engineer ethics related to civil engineering and geotechnical engineering
2. Compression behavior of saturated soil and shear behavior of saturated soil
Learning mainly the expression of stress and strain in three-dimensional space and the description of the compressive behavior of geotechnical material in p' - q - v space.
3. Critical state and state boundary surface of soil, failure criterion and undrained shear strength
Learning mainly the representation of the mechanical behavior of saturated clay in p' - q - v space and the state boundary surface.
4. Soil compaction characteristics and quality control
Learning mainly the laboratory compaction test, the characteristics and factors of the compaction curve, and the mechanical behavior of the compacted soil.
5. Stability analysis method and classical stability analysis method for soil structures (earth pressure theory, bearing capacity analysis, slope stability)
Learning mainly derivation of Coulomb earth pressure and Rankine earth pressure, bearing capacity formula, and slope stability analysis method.
6. Lecture Summary

After the class, you should review the distributed prints. In addition, you will be required to submit a report task several times.

Textbook

Masaki Nakano (2012) Geotechnical mechanics, CORONA PUBLISHING CO., LTD. ISBN978-4-339-05621-1

Additional Reading

K. Ishihara (1995) Soil Mechanics, Masuzen press

Grade Assessment

Soil and Foundation Engineering (2.0credits) (土質・基礎工学)

The degree of achievement of goals is comprehensively evaluated by a report (20%), an intermediate exam (40%), and a final exam (40%). And, a passing requirement is C grade or higher. Acceptance criteria are to be able to understand the compression and shear properties of soil, the elasto-plastic behavior of typical remolded clay under drained and undrained conditions, and the fundamentals and principles of ground stability problems. If you can, reflect it in your grades accordingly.

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

Course Type	Specialized Courses
Class Format	Lecture
Course Name	Civil Engineering
Starts 1	3 Spring Semester
Elective/Compulsory	Compulsory
Lecturer	Tomoaki NAKAMURA Associate Professor

Course Purpose

The objective of this course is to learn the basics of wave characteristics and wave deformation, as well as engineering ethics in coastal engineering.

After completing this course, students will be able to:

1. understand the physical meaning of the wave celerity, wavelength, flow velocity, water particle displacement, etc. based on the small-amplitude wave theory
2. understand the physical meaning of the wave energy and group velocity based on the energy flux conservation law
3. understand the physics of wave deformation such as shoaling, wave breaking, reflection, refraction, diffraction
4. understand the statistical characteristics of irregular waves
5. estimate wind waves using the SMB method
6. understand coastal ecosystem

Prerequisite Subjects

Fundamentals of Hydrodynamics with Exercises

Course Topics

1. Introduction and engineering ethics
2. Basic theory of water waves
3. Small-amplitude wave theory
4. Finite-amplitude wave theory
5. Wave deformation
6. Irregular waves
7. Wave estimation
8. Coastal ecosystem

Textbook

Printed documents as needed.

Additional Reading

Directed as needed.

Grade Assessment

Your final grade will be calculated according to the following process: reports (10%) and final examination (90%). To pass, students must understand the theory of ocean waves.

Notes

Not required

Contacting Faculty

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

Contact:

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

Technical English 1 (1.0credits) (技術英語 1)

Course Type	Specialized Courses
Class Format	Lecture
Course Name	Civil Engineering
Starts 1	3 Spring Semester
Elective/Compulsory	Compulsory
Lecturer	Emanuel LELEITO Lecturer

Course Purpose

This course will help you develop the essential English language skills needed for effective communication of technical and scientific content related to your specialist field (Civil Engineering and Architecture). The purpose of the Technical English 1 course is to strengthen your Reading and Listening skills.

Prerequisite Subjects

There is no background courses required. The course will begin from the basics of Technical English Reading and Writing.

Course Topics

The course focuses on helping you to:

- Understand and practice academic reading and listening techniques.
- Expand technical vocabulary (words and phrases).
- Recognize useful word patterns for expressing technical ideas.
- Improve reading and listening comprehension of technical material.
- Identify and summarize or paraphrase main ideas in technical documents or speeches.
- Develop a critical thinking mindset for analyzing information and expressing personal opinion.

Current topics of critical importance in the field of Civil Engineering and Architecture will be introduced and used in class for learning and practice. A part of this course will be taught online. Preparation assignments (homework) will be given each week, and a short review test every 2 weeks.

Textbook

There are no set texts for this course. You will be given study materials in class.

Additional Reading

- Additional readings, and learning material will be distributed in class
- You will be provided access to web-based learning resources in class

Grade Assessment

To pass this class, students will be evaluated based on completion of short reports and assignments(each week), two short tests and a final exam focused on assessing your reading and listening comprehension.

- 1) Reports and other class assignments 40%
- 2) Short tests 30%
- 3) Final exam 30%

* On a scale of 0 - 100, the passing score is 60.

Notes

No requirements

Contacting Faculty

Questions are received in class, after class (office hour) or by email.

Experiments in Hydraulics (1.0credits) (水理学実験)

Course Type	Specialized Courses		
Class Format	Experiment		
Course Name	Civil Engineering		
Starts 1	3 Spring Semester		
Elective/Compulsory	Compulsory		
Lecturer	Tomoaki NAKAMURA Associate Professor OBANAMakiko Assistant Professor	Ryota TSUBAKI Associate Professor	YonghwanCHO Assistant Professor

Course Purpose

Comprehension of various hydraulic phenomena through their mathematical formulation from observation of hydraulic experiments

Prerequisite Subjects

Fundamental of Hydrodynamics with Exercises, Open Channel Hydraulics, and Coastal and Maritime Hydrodynamics

Course Topics

1. Hydraulics of Open Channel Flows and Velocity Profile
2. Hydraulics of Pipe Flow and Laminar/Turbulent State
3. Water Waves

Textbook

Textbook will be directed for each experiment.

Additional Reading

Grade Assessment

Report (65%), group presentation (10%) and examination (25%). To acquire and explain the basic knowledge and skills and knowledge regarding three experiments are the criteria to pass.

Notes

Not specified

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)

Makiko Obana (Extension 4635, mobana@civil.nagoya-u.ac.jp)

Yonghwan Cho (Extension 4634, yhcho@civil.nagoya-u.ac.jp)

Experiments in Geomaterials (1.0credits) (地盤材料実験)

Course Type	Specialized Courses		
Class Format	Experiment		
Course Name	Civil Engineering		
Starts 1	3 Spring Semester		
Elective/Compulsory	Compulsory		
Lecturer	Masaki NAKANO Professor	Toshihiro NODA Professor	Kentaro NAKAI Associate Professor
	SAKAITakayuki Assistant Professor	YOSHIKAWATakahiro Assistant Professor	

Course Purpose

In order to plan, design and execute civil engineering work safely and economically, it is important to accurately understand the properties, characteristics, and conditions of the target ground and soil materials. The purpose of this lecture is to acquire laboratory test methods for understanding the physical and mechanical properties of soil materials, and to cultivate the ability to extract, organize, and interpret facts from observations of experiments. In addition, through the presentation of experimental results, students will develop the ability to present and discuss.

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

1. Explain the purpose and procedure of the laboratory experiment.
2. The experiment can be performed according to an appropriate procedure.
3. The measured experimental data can be processed and properly organized.
4. From analysis of experimental results, facts can be extracted and interpreted and explained correctly.

Prerequisite Subjects

Soil Mechanics, Soil and Foundation Engineering

Course Topics

1. Soil particle density test
2. Liquid limit and plastic limit test
3. Grain size analysis test
4. Maximum and minimum density of sand
5. Soil compaction test
6. Permiability test
7. Oedometer test
8. Triaxial compression test

In this lecture, students will be divided into 8 groups, and experiments will be conducted jointly. All students always lead the two experiments. A preliminary experiment will be conducted before the actual experiment, and the staffs and teaching assistants will explain to the group leader the purpose and procedure of the experiments, and method of organizing the results. After the preliminary experiment, the team leader submits a pre-report (preparation report) that describes the purpose and procedure of the experiment. At the time of actual experiment, the group leader should prepare for the experiment in advance in order to proceed with the experiment while explaining the purpose, procedure, and method of organizing the results to the group members. After the experiment, all students, including the group leader, create and submit reports. After all experiments are completed, a presentation of the experimental results will be held.

Textbook

- Practical guide for experiments of soil(edited by the Japan Geotechnical Society)

Documents describing test methods, data arrangement methods, summary of peripheral knowledge, and report issues will be distributed for each experiment.

Additional Reading

- Soil Experiment -its background and role- (written by Minoru Matsuo)

Grade Assessment

Evaluate the level of achievement for the target by the total score of all reports. Acceptance criteria are to be able to correctly answer all the reports issues given for each experiment. Participation in active discussions at the final presentation will add to the score. A score of 60 or more out of 100 is a passing score.

Notes

No credit will be granted for late arrivals or absent absences, as we require the acquisition of all experiments.

Contacting Faculty

Questions during lectures and experiments are welcome. We will also respond to questions coming to the room and questions by e-mail as appropriate. See the guidance material for contacting the person in charge for each experiment.

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

Takayuki SAKAI, Ext: 2734, E-mail: t-sakai@civil.nagoya-u.ac.jp

Takahiro YOSHIKAWA, Ext: 3834, E-mail: yoshikawa@civil.nagoya-u.ac.jp

Technical English 2 (1.0credits) (技術英語 2)

Course Type	Specialized Courses
Class Format	Lecture
Course Name	Civil Engineering
Starts 1	3 Autumn Semester
Elective/Compulsory	Compulsory
Lecturer	Emanuel LELEITO Lecturer

Course Purpose

This class is a continuation of Technical English 1. However, Technical English 2 focuses on developing your Spoken (oral) and Written presentation skills for effective communication of technical and scientific content (in the field of Civil Engineering and Architecture).

Prerequisite Subjects

Technical English () 1

Course Topics

The course focuses on helping you to:

- Organize ideas in a logical, clear and concise manner that the audience (readers or listeners) can easily follow.
- Practice effective use of technical words and phrases to better express technical ideas.
- Deliver a technical oral presentations effectively.
- Practice responding to audience questions.
- Participate in a group discussion on technical matters.

Current topics of critical importance in the field of Civil Engineering and Architecture will be introduced and used in class for learning and practice. A part of this course will be taught online. Preparation assignments (homework) will be given each week, and a short review test every 2 weeks.

Textbook

There are no set texts for this course. You will be given study materials in class.

Additional Reading

- Additional readings, and learning material will be distributed in class
- You will be provided access to web-based learning resources in class

Grade Assessment

To pass this class, students will be evaluated based on completion of short reports and assignments(each week), two short tests and a final exam assessing the speaking and writing skills you have learnt in this class.

- 1) Reports and other class assignments 40%
- 2) Short tests 30%
- 3) Final exam 30%

* On a scale of 0 - 100, the passing score is 60.

Notes

No requirements

Contacting Faculty

Questions are received in class, after class (office hour) or by email.

Experiments in Materials and Structures II (1.0credits) (構造材料実験)

Course Type	Specialized Courses		
Class Format	Experiment		
Course Name	Civil Engineering		
Starts 1	3 Autumn Semester		
Elective/Compulsory	Compulsory		
Lecturer	Kazuo TATEISHI Professor	Hikaru NAKAMURA Professor	Junji KATO Professor
	Takeshi HANJI Associate Professor	Yoshihito Yamamoto Associate Professor	Taito Miura Assistant Professor
	Masaru Shimizu Assistant Professor	Hiroya HOSHIBA Assistant Professor	

Course Purpose

The objective is to learn the basics of steel and concrete structures experientially and theoretically. Through static loading tests on steel and concrete members, students can understand their fracture behavior, and learn calculation method of the load-carrying capacity of steel and concrete members. In addition, through group competition, students can develop the ability to think, express, and teamwork.

After completing this course, students will be able to:

1. understand fracture behavior of steel beams,
2. understand fracture behavior of concrete beams, and
3. understand the basics of finite element method.

Prerequisite Subjects

Experiments in Materials and Structures I
Introduction to Structural Mechanics
Fundamentals of Structural Analysis and Tutorial
Material Engineering
Structural Mechanics and Tutorial
Applied Structural Mechanics
Concrete Structures I

Course Topics

1. Introduction
2. Static fracture tests of RC beams
3. Static fracture tests of steel beams
4. Structural analysis with finite element method
5. Inspection and non-destructive tests through N2U-Bridge
6. Group competition

Textbook

Text will be distributed at the first class.

Additional Reading

Reference books will be recommended at the right time.

Grade Assessment

Reports

Notes

None

Contacting Faculty

Questions are accepted at any time.

Course Type	Specialized Courses
Class Format	Exercise
Course Name	Civil Engineering
Starts 1	2 Spring Semester
Elective/Compulsory	Elective
Lecturer	NagahisaHIRAYAMA Associate Professor

Course Purpose

The objective of this class are to understand the FORTRAN program and to obtain the ability on computer programming in order to solve problems on civil & environmental engineering.

1. Understanding of algorithm
- 2, Usage parameters in FORTRAN
3. Numerical analysis

Prerequisite Subjects

Introduction to Information Science

Course Topics

1. Introduction, Computer programming
2. Program structure, parameter
3. If ... else statement, Do loop, Accuracy of numerical analysis
4. Format
5. Array
6. Sub-routine
7. Exercise

Fibonacci number, Trapezoidal rule, Newton's method, Prime number, Pascal's triangle, Gaussian elimination, Polar coordinate transformation, Tower of Hanoi, Monte-Carlo method.

Textbook

Handouts will be provided.

Additional Reading

Handouts.

Fortran77 or Fortran90

Grade Assessment

60% or more are accepted by the result of reports. In a case that the number of submission of report is less than 8 times, NOT to be evaluated.

Notes

No requirement.

Contacting Faculty

HIRAYAMA Nagahisa052-747-6824Emailhirayama.nagahisa@nagoya-u.jp

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

Numerical Analysis (2.0credits) (数值解析学)

Course Type	Specialized Courses
Class Format	Lecture
Course Name	Civil Engineering
Starts 1	2 Autumn Semester
Elective/Compulsory	Elective
Lecturer	Kentaro NAKAI Associate Professor

Course Purpose

The basic theory of a numerical analysis method using a computer will be described. In the mechanics of civil engineering, students learn to describe various physical phenomena by differential equations. In this lecture, students learn how to obtain approximate solutions of the differential equations by numerical analysis.

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

1. Explain the basic theory of various numerical analysis methods.
2. Using the learned numerical analysis method, students can actually build a program.
3. Appropriate numerical analysis methods can be applied to basic computational engineering problems.
4. In order to be able to handle more advanced numerical analysis methods, students can understand the contents described in books and the like relating to numerical analysis methods.

Prerequisite Subjects

Introduction to Information Processing,
Academic Information Processing with Exercises

Course Topics

1. Nonlinear equations
2. System of linear equations
3. Function interpolation
4. Numerical integration
5. Eigenvalue problem for symmetric matrices
6. Initial value problem for ordinary differential equations
7. Partial differential equations

Conduct lectures and programming exercises. Submit the source code and output results as students are required to perform several programming assignments to review the lecture contents.

Textbook

Printed documents will be distributed.

Additional Reading

References will be introduced as necessary.

Grade Assessment

Evaluate the level of achievement for the goals by programming assignments and final exams. A score of 60 or more out of 100 is a passing score.

Notes

Lectures will be given assuming that students have taken the Introduction to Information Processing, and Academic Information Processing with Exercises. Students who have not taken these lectures should understand Fortran grammar in advance.

Contacting Faculty

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

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

Sanitary Engineering (2.0credits) (衛生工学)

Course Type	Specialized Courses	
Class Format	Lecture	
Course Name	Civil Engineering	Architecture
Starts 1	3 Spring Semester	3 Spring Semester
Elective/Compulsory	Elective	Elective
Lecturer	ArataKATAYAMA Professor	NagahisaHIRAYAMA Associate Professor

Course Purpose

This lecture starts from water quality as basics, and deals the topics on the planning, system, method and assessment of water supply, on those of sewage treatment system, and on those of waste treatment. Students are expected to build up themselves with the ability to consider how should be water managed.

By learning sanitary engineering, the students should be able to do the following things.

1. To understand water quality indicators and to be able to explain the water quality required.
2. To understand the mechanism of water supply and to be able to explain treatment plans, water supply and distribution system, and treatment methods.
3. To understand the sewer system and to be able to explain treatment plans, removal system of sewage and rainwater, and treatment methods.
4. To understand waste treatment required in water treatment and to be able to explain it.
5. To understand the issues of water and sewage in natural disasters and to be able to explain them.
6. To understand the environmental assessment and to be able to explain it.

Prerequisite Subjects

chemistry, human activities and environment, hydrology, Social environmental conservation

Course Topics

1. Introduction to Sanitary Engineering: 2. Water quality: 3. Drinking water supply (planning, delivery and distribution, treatment): 4. Sewer system (planning, catchment and discharge, wastewater treatment) and sewage sludge treatment: 5. Wastewater treatment without sewer system: 6. disaster countermeasure: 7. Environmental Impact Assessment

After the class, the reference reviews are recommended to have comprehensive understanding of the issues. The students will be given assignments and requested to solve and submit them as reports.

Textbook

Upon the class, the lecture documents are provided on the intranet of the University (NUCT and etc.) where students can freely access and download them.

Additional Reading

G. Kiely "Environmental Engineering" McGraw-Hill International, Singapore, 1996, 979pp.

J.G. Henry, G. W. Heinke, "Environmental Science and Engineering" Prentice Hall, Eaglewood Cliffs, N.J. 1989, 728pp.

Grade Assessment

Report and Examination

Higher than 60 points in 100 as full mark is passed.

Grade "pass" is given to the students who are able to explain the individual basic issues on water quality, water supply system, sewer system, and the related issues such as waste treatment, natural disaster countermeasures and environmental assessment. The students who shows the comprehensive understandings on the difficult complex problems will be reflected on the grades.

Notes

It is mandatory for students to join the technical tours to the drinking water treatment plant and waste water treatment plant.

Contacting Faculty

After the class

or

Responding to individual questions: by appointment of date/time by telephone/email.

Measurement Technology and Experiments (2.5credits) (計測技術及び実習)

Course Type	Specialized Courses		
Class Format	Lecture and Practice		
Course Name	Civil Engineering	Architecture	
Starts 1	3 Spring Semester	3 Spring Semester	
Elective/Compulsory	Elective	Elective	
Lecturer	Toshiyuki YAMAMOTO Professor	Jun TOBITA Professor	Teruyuki SAITO Associate Professor
	Satoru IIZUKA Associate Professor	Takashi HIRAI Assistant Professor	Yuji KAKIMOTO Assistant Professor
	UKAI Makiko Assistant Professor	Part-time Faculty	

Course Purpose

To learn the principles and tools of measurements required for design, manufacturing, and management of structures. Field and laboratory experiments are included.

Prerequisite Subjects

Probability and Statistics, Fundamentals of Hydrodynamics with Exercises, Engineering on Physical Environment, Human Activities and Environment

Course Topics

Surveying practice (distance surveying, leveling, measurement of angle, plane table surveying), Error estimation (law of error propagation, method of least squares), Measurement of temperature, humidity and wind velocity, Visualization of fluid, Measurement of meteorological factors, luminous environment, traffic noise and vibration.

Textbook

Introduced according to the process of the lecture.

Additional Reading

Architectural Institute of Japan: Kankyo Kogaku Jikkenyo Kyozaï I/II

Grade Assessment

Attendance and reports

Notes

Not required

Contacting Faculty

Students can ask questions to professors during classes.

Questions during off-class hours can be asked via call: Yamamoto at 789-4636, Tobita at 789-3754 and Saito at 789-5240.

Applied Structural Mechanics (2.0credits) (応用構造力学)

Course Type	Specialized Courses
Class Format	Lecture
Course Name	Civil Engineering
Starts 1	3 Spring Semester
Elective/Compulsory	Elective
Lecturer	Junji KATO Professor

Course Purpose

To understand the energy principle, the force method, and the displacement method, and to acquire the analytical methods of statically determinate and indeterminate structures.

Performance targets:

- 1) To understand the principle of virtual work for the elastic body, and to be able to analyze statically determinate and indeterminate structures and compute the displacement.
- 2) To understand the concept of the stress method, and to be able to analyze statically indeterminate structures and compute the displacement.
- 3) To understand the concept of the displacement method, and to be able to analyze statically indeterminate structures and compute the displacement.

Prerequisite Subjects

Introduction to Structural Mechanics, Fundamentals of Structural Analysis with Exercises

Course Topics

1. Energy principle
 - Principle of virtual work for an elastic body
 - Unit load method
 - Castigliano's theorem
 - Reciprocal theorem
2. Force method
 - Compatibility equation
3. Displacement method
 - Matrix structural analysis

Several reports will be given after lectures.

Textbook

Additional Reading

Grade Assessment

Passing score is 60% or more based on reports (20%), midterm exam (30%), and final exam (50%).

Notes

Contacting Faculty

Questions in the class are welcome. Students should also visit the instructor for questions.

Transportation Planning (2.0credits) (交通論)

Course Type	Specialized Courses		
Class Format	Lecture		
Course Name	Civil Engineering	Architecture	
Starts 1	3 Spring Semester	4 Spring Semester	
Elective/Compulsory	Elective	Elective	
Lecturer	Hideki NAKAMURA Professor	Toshiyuki YAMAMOTO Professor	Tomio MIWA Associate Professor

Course Purpose

Understand the role of transportation in forming land use patterns and learn demand analysis methods and traffic engineering.

Prerequisite Subjects

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

Course Topics

1. Introduction
2. Characteristics of road traffic flow
3. Traffic flow theory
4. Road capacity
5. Fundamental traffic signal control
6. Road capacity at signalized intersection
7. Transportation planning and evaluation
8. Traffic management and ITS
9. Transportation survey
10. Travel demand forecasting (four-step model)
11. Trip distribution model
12. Network assignment model
13. Disaggregate model of travel demand

Textbook

Yasunori Iida and Ryuichi Kitamura: Transportation Engineering, Ohmsha

Additional Reading

Introduced according to the process of the lecture.

Grade Assessment

Examination (75%) and reports (25%)

Notes

Contacting Faculty

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

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

Course Type	Specialized Courses
Class Format	Lecture
Course Name	Civil Engineering
Starts 1	3 Spring Semester
Elective/Compulsory	Elective
Lecturer	Kiichiro HAYASHI Hiroki tanikawa Professor Professor

Course Purpose

The objective of this lecture is to learn the basic academic knowledge and the ability to solve the issues related to environmental engineering and environmental system engineering under civil engineering. To understand environmental issues related to urbanization and socio-economic system, this lecture provides basics and applied skills of analysis methods, measures and cases which can be useful to address these issues. Then comprehensive approach will be studied.

The goal of this lecture is that the students will understand the environmental issues, explain measures and policies to solve the issues and then study the analytical method of the issues.

Prerequisite Subjects

Human activities and environment: Infrastructure Planning

Course Topics

- 1.Orientation of environmental system engineering
- 2.Global environment and sustainable development
- 3.Carrying capacity and resource constrain
- 4.Environmental system analysis and environmental indicators
- 5.Growth theory and environmental modeling
- 6.Environmental economics
- 7.Environmental valuation
- 8.Biodiversity and waste management issues
- 9.Ethic of engineers

After the lecture, the students will study some example problems provided through the lecture as home-study.

Textbook

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

Additional Reading

environmental white paper, etc.

Grade Assessment

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

The success criteria is to understand the basics of Environmental engineering and Environmental system engineering.

The C level is the minimum requirement for passing this lecture

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.

Strength of Structures in Ultimate States (2.0credits) (極限強度学)

Course Type	Specialized Courses
Class Format	Lecture
Course Name	Civil Engineering
Starts 1	3 Autumn Semester
Elective/Compulsory	Elective
Lecturer	Junji KATO Professor

Course Purpose

To learn basic concept of stability and dynamics of structures.

Performance targets:

- 1) To understand the basic concept of buckling phenomena using a rigid body-spring model and to be able to analyze the buckling analysis.
- 2) To understand the buckling analysis based on elastic column and beam-column and to be able to analyze the basic calculation.
- 3) To understand the concept of the dynamic structural behavior with 1-dimensional structure and to be able to analyze natural period.

Prerequisite Subjects

Introduction to Structural Mechanics, Structural Mechanics, Applied Structural Mechanics

Course Topics

1. Buckling analysis

- The basic concept of buckling phenomena using a rigid body-spring model
- Linear pre-buckling analysis and finite displacement analysis assuming beam-column structure

2. Structural dynamics

- Dynamic response of 1-dimensional structure

Several reports will be given after lectures.

Textbook

Handout and Earthquake Engineering Lecture Note (Ichiryusha Pub.)

Additional Reading

Reference books are introduced at the first lecture.

Grade Assessment

Passing score is 60% or more based on reports (20%), midterm exam (40%), and final exam (40%)

Notes

Contacting Faculty

Visiting my office is also welcome.

Steel Structures (2.0credits) (鋼構造工学)

Course Type	Specialized Courses
Class Format	Lecture
Course Name	Civil Engineering
Starts 1	3 Autumn Semester
Elective/Compulsory	Elective
Lecturer	KazuoTATEISHI Professor

Course Purpose

As an application of the basic knowledge on material engineering and structural mechanics, design method of steel structures is lectured. The contents are, properties of steel material, design concept, mechanical behavior, design calculation, maintenance and fabrication technique.

Prerequisite Subjects

Material Engineering Structural Mechanics

Course Topics

- 1.Introduction
- 2.Outline of designing method
- 3.Steel material and fracture mode
- 4.Tension member
- 5.Compression member(column)
- 6.Compression member(plate)
- 7.Torsion member
- 8.Beam
- 9.Shear member
- 10.Combined actions
- 11.Weld joint
- 12.Bolt joint
- 13.Corrosion prevention
- 14.Fatigue
- 15.Fabrication and engineer ethics

Textbook

Additional Reading

Grade Assessment

Final examination.The minimum requirement for pass is 60%.

Notes

Contacting Faculty

Concrete Structures II (2.0credits) (コンクリート構造第2)

Course Type	Specialized Courses
Class Format	Lecture
Course Name	Civil Engineering
Starts 1	3 Autumn Semester
Elective/Compulsory	Elective
Lecturer	Yoshihito Yamamoto Associate Professor

Course Purpose

The basic mechanical behaviors of reinforced concrete structures subjected to compression and shear are lectured. Moreover, mechanism bond, cracking and principle of prestressed concrete are lectured.

Prerequisite Subjects

Concrete structure 1, Structural Mechanics, and Material Engineering

Course Topics

- 1.Strength and deformation of the RC linear structure member subjected to axial force.
- 2.Strength and deformation of the RC linear structure member subjected to shear.
- 3.Cracks and combination action between concrete and steel bar
- 4.Prestressed Concrete

Textbook

Additional Reading

Grade Assessment

Examination

Notes

Contacting Faculty

Course Type	Specialized Courses
Class Format	Lecture
Course Name	Civil Engineering
Starts 1	3 Autumn Semester
Elective/Compulsory	Elective
Lecturer	Masaki NAKANO Professor

Course Purpose

The aim of this course is to learn the basics of vector tensor analysis, to express the various quantities used in mechanics by vector and tensor and to understand the basic theory of limit analysis accurately before deriving the limit theorem. In addition, the purpose is to develop the applied ability to solve the ground failure problem of earth pressure and bearing capacity using the limit theorem.

The goals of this course are to

- (1) Understand the basics of vector tensor analysis, correctly understand stress and strain as tensors, and solve related problems.
- (2) Understand the basic theory necessary for limit analysis and derive the limit theorem.
- (3) Understand and solve geotechnical failure problems such as earth pressure and bearing capacity based on the limit theorem.

Prerequisite Subjects

Soil Mechanics with Exercises, Soil and Foundation Engineering, Experiment in Geomaterials, Civil engineering geology

Course Topics

1. An overview of stability problems and design methods for geotechnical structures.

Learning the purpose of this course and the outline of limit analysis.

2. Basics of vector tensor analysis

Learning the basics of vector tensor analysis, eigenvalues and eigenvectors of the basic tensor.

3. Basic theory for limit analysis

Learning the force balance and stress, deformation rate and strain rate, principle of virtual work, principle of maximum plastic work, and limit theorem.

4. Limit analysis of ground

Learning the application of Mohr-Coulomb plastics and limit analysis to soil pressure problems and bearing capacity problems

5. Lecture Summary

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

References will be introduced as needed.

Grade Assessment

The degree of achievement of goals is comprehensively evaluated by a report (20%), an intermediate exam (40%), and a final exam (40%). And, a passing requirement is C grade or higher. Acceptance criteria are to be able to understand the basics of vector tensor analysis, understand the basic theory for limit analysis, and understand ground failure problems such as earth pressure and bearing capacity based on the limit theorem. If you can, reflect it in your grades accordingly.

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

Hydrology and River Engineering (2.0credits) (水文・河川工学)

Course Type	Specialized Courses
Class Format	Lecture
Course Name	Civil Engineering
Starts 1	3 Autumn Semester
Elective/Compulsory	Elective
Lecturer	Yuji Toda Professor

Course Purpose

The objectives of this class are 1)to understand the fundamental knowledges of river basin hydrology and fluvial hydraulics and 2) to acquire the methodology for river planning.The target achievements of this class :1) to understand the processes of direct run-off and base run-off in river basion2) to learn run-off model 3) to learn sediment transport and fluvial processes4) to acquire the methodology of river and river basin planning

Prerequisite Subjects

Course Topics

Textbook

Additional Reading

Grade Assessment

Notes

Contacting Faculty

Coastal and Ocean Engineering (2.0credits) (海岸・海洋工学)

Course Type	Specialized Courses
Class Format	Lecture
Course Name	Civil Engineering
Starts 1	3 Autumn Semester
Elective/Compulsory	Elective
Lecturer	norimi mizutani Professor Part-time Faculty

Course Purpose

To understand mechanism and evaluation of wave forces on coastal, harbor and offshore structures, and nearshore current and tidal flow, lectures on related subjects will be given.

Prerequisite Subjects

Course Topics

- 1.Coasts and Ports in Japan
- 2.Wave controlling facilities
- 3.Wave force and wave pressure
- 4.Wave force on small fixed structures
- 5.Wave forces on large fixed structures
- 6.Wave pressure on breakwater
- 7.Stability of armor units
- 8.Port and airport design and planing
- 9.Nearshore current and tidal current
- 10.Ethics in coastal and ocean engineering

Textbook

Additional Reading

Grade Assessment

The goal attainment level is evaluated by the term end examination. 60 points or higher out of 100 points full marks are accepted.

Notes

Contacting Faculty

Email is recommended.

Exercise on Infrastructure and Spatial Planning (1.0credits) (社会資本・空間計画学演習)

Course Type	Specialized Courses		
Class Format	Exercise		
Course Name	Civil Engineering		
Starts 1	3 Autumn Semester		
Elective/Compulsory	Elective		
Lecturer	Takayuki MORIKAWA Professor	Hideki NAKAMURA Professor	Toshiyuki YAMAMOTO Professor
	Hirokazu KATO Professor	Tomio MIWA Associate Professor	Yuji KAKIMOTO Assistant Professor

Course Purpose

Understanding the fundamentals of infrastructure and spatial planning, and learning basic analytical methods and presentation skill.

Prerequisite Subjects

Probability and Statistics, Infrastructure Planning, Spatial Planning, Transportation Planning, History of Civil Engineering, Urban and National Land Planning

Course Topics

1. Orientation: analytical tools for infrastructure planning
2. Exercise on statistical test
3. Exercise on correlation analysis and regression analysis
4. Exercise on demand function
5. Exercise on cost benefit analysis
6. Group working on empirical studies (Data collection and analysis, preparation of presentation)
7. Presentation in English

Reports will be assigned by each instructor.

Textbook

Materials will be distributed.

Additional Reading

Materials to be introduced.

Grade Assessment

Level of understanding of fundamentals of analytical methods for infrastructure and spatial planning, and presentation skill will be evaluated. All reports and final presentation are required. 60% of evaluation is required for credit earning.

Notes

Not required.

Contacting Faculty

Please e-mail each professor whenever you have a question.

Exercise in Environmental Information Processing (1.0credits) (環境情報演習)

Course Type	Specialized Courses
Class Format	Exercise
Course Name	Civil Engineering
Starts 1	3 Autumn Semester
Elective/Compulsory	Elective
Lecturer	Hiroki tanikawa Professor

Course Purpose

Prerequisite Subjects

Course Topics

Textbook

Additional Reading

Grade Assessment

Notes

Contacting Faculty

Bridge Design Exercise (1.0credits) (橋梁設計演習)

Course Type	Specialized Courses		
Class Format	Exercise		
Course Name	Civil Engineering		
Starts 1	4 Spring Semester		
Elective/Compulsory	Elective		
Lecturer	Hikaru NAKAMURA Professor	Taito Miura Assistant Professor	Part-time Faculty

Course Purpose

The objective is to learn procedures from planning to structural analysis and design for a real prestressed concrete (PC) cable-stayed bridge. After completing this class, students will be able to: 1. Understand and explain the principle of prestressed concrete. 2. The structural analysis of the PC cable stayed bridge can be performed using the program. 3. A design report and a general structure drawing can be created.

Prerequisite Subjects

Concrete Structure 1, Concrete Structure 2, Class related to Structural Mechanics

Course Topics

1. Example of construction and design process of PC cable stayed bridges
2. Observation of N2U-BRIDGE
3. Design concept, Design condition, Analytical model, First report
4. Analytical theory and FEM (beam element)
5. Calculation of load, Analytical method, Submission of first report
6. Explanation of first report, design of main girder, return of first report
7. Design of lateral direction, Final report
8. Preparation of design document
9. Bridge construction site seeing
Before class, please read the designated part of the textbook. After class, the assignments must be completed and submitted by the deadline.

Textbook

Distribute document of design rule and design process at the first lecture.

Additional Reading

Reference books will be recommended at the right time

Grade Assessment

60% or more are accepted by the result of final report.

Notes

None

Contacting Faculty

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

Graduation Thesis A (5.0credits) (卒業研究A)

Course Type	Specialized Courses	
Class Format	Experiment and Exercise	
Course Name	Civil Engineering	Architecture
Starts 1	4 Spring Semester	4 Spring Semester
Elective/Compulsory	Compulsory	Compulsory
Lecturer	Associated Faculty	Associated Faculty

Course Purpose

* Civil and Environmental Engineering Program

Each student will do exercises on how to solve unknown problems. Specifically, he/she will select a research topic by consulting with their supervisor, clarify issues on the research topic through reviews based on literature surveys, etc., and consider methods for solving the issues. Then, he/she will practice the methods themselves, analyze the material obtained from the practice, and derive the answer to the issues. Finally, he/she will compile a series of these processes into a bachelor thesis, and give a presentation at a final defense.

* Architecture Program

Through the selecting research topic, conducting research and making a presentation of the outcomes, students are expected to acquire the ability to understand and analyze the problems related to architecture from the overall viewpoint and to improve the quality of architecture and urban environment.

Prerequisite Subjects

Lectures in his/her freshman to junior year

Course Topics

* Civil and Environmental Engineering Program

Each student will do lab-based seminars, discussions with faculty members, self-learning in the laboratory, work on experiments, analysis, surveys, etc., preparation of the bachelor thesis, presentations, etc. Prior to the seminars, discussions, and presentations, work such as self-learning in the laboratory, experiments, analysis, surveys, and paper writing should be carried out. Specific work will be carried out with meetings with his/her supervisor.

* Architecture Program

With consult with his/her adviser, each student selects a research topic for his/her senior paper, learns background of that topic, and conducts research. Under the guidance of his/her adviser, he/she shall carry out literature review, experiments, and/or analyses by himself/herself. Through this process, he/she will do exercise on the fundamental methodology for the investigation/analysis for solving a problem.

Textbook

Directed by his/her adviser

Additional Reading

Directed by his/her adviser

Grade Assessment

Reports and presentation

Notes

Contacting Faculty

Directed by his/her adviser

Graduation Thesis B (5.0credits) (卒業研究B)

Course Type	Specialized Courses	
Class Format	Experiment and Exercise	
Course Name	Civil Engineering	Architecture
Starts 1	4 Autumn Semester	4 Autumn Semester
Elective/Compulsory	Compulsory	Compulsory
Lecturer	Associated Faculty	Associated Faculty

Course Purpose

* Civil and Environmental Engineering Program

Each student will do exercises on how to solve unknown problems. Specifically, he/she will select a research topic by consulting with their supervisor, clarify issues on the research topic through reviews based on literature surveys, etc., and consider methods for solving the issues. Then, he/she will practice the methods themselves, analyze the material obtained from the practice, and derive the answer to the issues. Finally, he/she will compile a series of these processes into a bachelor thesis, and give a presentation at a final defense.

* Architecture Program

Through the selecting research topic, conducting research and making a presentation of the outcomes, students are expected to acquire the ability to understand and analyze the problems related to architecture from the overall viewpoint and to improve the quality of architecture and urban environment.

Prerequisite Subjects

Lectures in his/her freshman to junior year

Graduation Thesis A

Course Topics

* Civil and Environmental Engineering Program

Each student will do lab-based seminars, discussions with faculty members, self-learning in the laboratory, work on experiments, analysis, surveys, etc., preparation of the bachelor thesis, presentations, etc. Prior to the seminars, discussions, and presentations, work such as self-learning in the laboratory, experiments, analysis, surveys, and paper writing should be carried out. Specific work will be carried out with meetings with his/her supervisor.

* Architecture Program

With consult with his/her adviser, each student selects a research topic for his/her senior paper, learns background of that topic, and conducts research. Under the guidance of his/her adviser, he/she shall carry out literature review, experiments, and/or analyses by himself/herself. Through this process, he/she will do exercise on the fundamental methodology for the investigation/analysis for solving a problem.

Textbook

Directed by his/her adviser

Additional Reading

Directed by his/her adviser

Grade Assessment

Reports and presentation

Notes

Contacting Faculty

Directed by his/her adviser

National Planning and Construction Projects (2.0credits) (国土のデザインとプロジェクト)

Course Type	Related Specialized Courses	
Class Format	Lecture	
Course Name	Civil Engineering	Architecture
Starts 1	2 Spring Semester	4 Spring Semester
Elective/Compulsory	Elective	Elective
Lecturer	Takashi TOMITA Professor Part-time Faculty	NAKAMURASHinichiro Associate Professor Part-time Faculty

Course Purpose

In Japan, the importance of capturing the relationship between the use of national land and the infrastructures has been reaffirmed through the historical severe disasters: the Isewan Typhoon, the Great Hanshin-Awaji Earthquake, and the Great East Japan Earthquake. On the other hand, looking at the world, not only disasters, but also securing and managing food, water and energy have become vital to the nation. The infrastructures have important role to support them. In this lecture, from the viewpoints of national land design, you will learn the importance of integrated design of infrastructure suitable for population trends, economic growth and land use. which are the basic elements of an infrastructure projects, to design the land and support the society, economy, and environment to be realized, the necessary requirements are set for the natural and social conditions of the country and region. The purpose of this lecture is to understand the necessary requirements for infrastructure projects from the three perspectives, technology, citizens, and industry, with considering social circumstances, spatial differences, and temporal changes.

Prerequisite Subjects

Course Topics

Textbook

Additional Reading

Grade Assessment

Notes

Contacting Faculty

History of Civil Engineering (2.0credits) (土木史)

Course Type	Related Specialized Courses	
Class Format	Lecture	
Course Name	Civil Engineering	Architecture
Starts 1	3 Spring Semester	4 Spring Semester
Elective/Compulsory	Elective	Elective
Lecturer	Part-time Faculty	Part-time Faculty

Course Purpose

The goal of this course is to learn philosophy and necessity of civil engineering through its history.

Prerequisite Subjects

History of City and Civilization

Course Topics

1. Guidance, General discussion
 2. Birth of settlement, or town
 3. Appearance of polis
 4. Foundation in ancient Japan
 5. Formation of Europe
 6. Renaissance and Baroque
 7. Pre-modern Japanese Civil Engineering
 8. Industrial Revolution
 9. Grave urban problems
 10. Civilization and Construction of the modern nation
 11. System of water management
 12. Urban modernization, Industrial bases
 13. Parks and Greens
 14. City and Regional Planning
 15. Review and final report
- Short report
1. Guidance, General discussion
 2. Birth of settlement, or town
 3. Appearance of polis
 4. Foundation in ancient Japan
 5. Formation of Europe
 6. Renaissance and Baroque
 7. Pre-modern Japanese Civil Engineering
 8. Industrial Revolution
 9. Grave urban problems
 10. Civilization and Construction of the modern nation
 11. System of water management
 12. Urban modernization, Industrial bases
 13. Parks and Greens
 14. City and Regional Planning
 15. Review and final report

Short worksheet will be assigned every lecture. In addition, several reports will be assigned.

Textbook

Related books will be introduced in lectures.

Additional Reading

Related books will be introduced in lectures.

Grade Assessment

History of Civil Engineering (2.0credits) (土木史)

Knowledge about philosophy and history of civil engineering obtained through this course will be evaluated. The evaluation is based on worksheets to be submitted every lecture and several reports reports. 60% of evaluation is required for credit earning.

Notes

Not required.

Contacting Faculty

Questions may be accepted via the worksheet which should be submitted in every lecture, then it would be responded in an ex post facto lecture.

Internship (1.0credits) (学外実習)

Course Type	Related Specialized Courses
Class Format	Practice
Course Name	Civil Engineering
Starts 1	3 Spring Semester
Elective/Compulsory	Elective
Lecturer	Associated Faculty

Course Purpose

This course introduces the basic knowledge to create a good social environment through practical training (practice, survey, design, construction, maintenance, and management). The aim of this course is to acquire the qualities required for civil engineer who is useful in the real world and to understand how skills are required in the real world, and how what has been learned at the university is utilized in companies and government offices. The goals of this course are to (1) Have knowledge about environmental, economic and social issues. (2) Have a perspective on your responsibility to create a good social environment. (3) Provide efficient explanations using documents, oral and information media. (4) Have applicability and creativity to solve issues by combining basic knowledge and expertise. (5) Integrated a wide variety of specialized knowledge and to meet the issues in order to overcome the constraints. (6) Understand the social responsibilities and ethics of environmental civil engineering.

Prerequisite Subjects

Subjects offered by the Department of Civil Engineering.

Course Topics

On-site training

Textbook

The slides and prints will be distributed as materials

Additional Reading

References will be introduced as needed.

Grade Assessment

"Pass" is given if following requirements are satisfied. (1) Experience minimum 10 days or 64 hours of on-site training (2) Judgement of "Good" or higher by the supervisor of the accepted institute or organization (3) Submit a report relating to the training and make presentation

Notes

No course requirements are required

Contacting Faculty

Questions are accepted anytime through email.

Urban and National Land Planning (2.0credits) (都市・国土計画)

Course Type	Related Specialized Courses	
Class Format	Lecture	
Course Name	Civil Engineering	
Starts 1	3 Autumn Semester	
Elective/Compulsory	Elective	
Lecturer	MIYAWAKIMasaru Associate Professor	NAKAMURAShinichiro Associate Professor

Course Purpose

The purpose of this course is to recognize the importance of urban and regional planning as a field related to sustainability and quality of life, learn the history of urban and regional planning and to understand the current planning system. The aim of this course is to be able to explain the above items comprehensively.

Prerequisite Subjects

History of City and Civilization, City and Environment, Spatial Planning, Spatial Design, Architecture, History of Civil Engineering

Course Topics

1. Current situation, issues and approaches of Nagoya region
2. Current situation, issues and approaches of various cities around the world
3. Various urban planning ideas, modern urban planning and contemporary urban planning
4. Machizukuri in Japan
5. Contemporary urban and regional planning: national, region, municipality, area and district levels
6. Characteristics, issues and prospects of Japanese urban and regional planning

Review of textbook is required after every class.

Textbook

Book to Understand Landscape and Urban Design (Asakura-shoten)

Additional Reading

Kokudokeikaku-no-Hensen (Kajimashuppankai)

Machizukuri Keyword Dictionary (Gakugei Shuppan-sha)

Sustainable Site Design 100 Cases: Acupuncture of Sustainable Urban Regeneration (Shokokusha)

Grade Assessment

In-class Final examination and reports: 100% will be evaluated. 60 points out of 100 points is a pass grade.

Notes

There is no requirement.

Contacting Faculty

Questions are welcome.

Please make an appointment beforehand.

E-mail: miyawaki@nuac.nagoya-u.ac.jp(Dr. Miyawaki), shinichiro@civil.nagoya-u.ac.jp (Dr. Nakamura)

Environmental Engineering (2.0credits) (社会環境保全学)

Course Type	Related Specialized Courses		
Class Format	Lecture		
Course Name	Civil Engineering		
Starts 1	4 Spring Semester		
Elective/Compulsory	Elective		
Lecturer	Hiroki tanikawa Professor	Ozaki Fuminobu Associate Professor	ArataKATAYAMA Professor

Course Purpose

Lecture on relationship between human activity and carrying capacity air pollution, taking material and energy flow, water quality and environmental conservation technology as examples.

Prerequisite Subjects

Sanitary Engineering Environmental System Engineering Building Services Engineering Statistics and Probability

Course Topics

1. Environment and Human Activity

(1) Global Warming, Climate Change (2) Carrying Capacity (3) Economic Growth, Energy, Resource and Environment (4) Regional Environmental Management and Index (5) Sound Material Society and Material Flow

Environmental conservation technology

(1)and(2) Technological development and Decrease in environmental load. (3)and(4) Environmental conservation technology and Intellectual property. (5)LCA for buildings

3. Human Activity and Water Resource

(1) Basic of Water quality (2) Environmental Standard of Water quality

Textbook

to be distributed by each lecturer

Additional Reading

Committee on Environmental Systems Research, Japan Society of Civil Engineers Environmental Systems, Asakura, 1998 Vital Signs, The trends that are shaping our future, World Watch Japan, 2009

Grade Assessment

Short essay (17%), in-class exam (50%) and final examination (33%).

Notes

There is no condition for taking this class.

Contacting Faculty

Contact to Professor Tanikawa ex3840, tanikawa@nagoya-u.jp

Basic Theory of Space Design (2.0credits) (空間設計論)

Course Type	Related Specialized Courses
Class Format	Lecture
Course Name	Civil Engineering
Starts 1	4 Spring Semester
Elective/Compulsory	Elective
Lecturer	Eisuke TABATA Associate Professor

Course Purpose

To understand the basic theory of space design for architecture and city in followings wide view points.
Relationship between human body, psychology, behavior, life, society, culture, and space.
Planning theory for House which is the basis of various architectural designs.
Building construction methods and materials for various structures.

Prerequisite Subjects

History of cities and civilizations, Graphic Science, Human Activities and Environment

Course Topics

1-6.Basics of architectural planning
7.Field work
8-10.Planning theory for House
11-14.Building construction method
15.Conclusion and Discussion

Textbook

Y. Nagasawa, Architectural Planning, Ichigaya
Y. Uchida, Building Construction, Ichigaya

Additional Reading

AIJ, SPATIAL STUDIES, Inoue shoin

Grade Assessment

Total performance of every lesson reports(40%) and final examination(60%).
Pass: 60 point

Notes

Contacting Faculty

Besides the class, the questions would be answered if the appointment for meeting would be taken by emailing.

Eisuke TABATA tabata@cc.nagoya-u.ac.jp

Civil engineering geology (2.0credits) (土木地質学)

Course Type	Related Specialized Courses	
Class Format	Lecture	
Course Name	Civil Engineering	
Starts 1	4 Spring Semester	
Elective/Compulsory	Elective	
Lecturer	Masaki NAKANO Professor	Part-time Faculty

Course Purpose

The aim of this course is to learn basic knowledge on the geological structure and mechanical properties of the ground and bedrock, which are the basic conditions of civil engineering, underground structure exploration methods, topographic and geological maps, rock classification, etc., and to understand events and their effects related closely to planning, design and construction of civil engineering structures. Also, the aim is to deepen the understanding of events and their effects, and to cultivate advanced application and creativity to solve civil engineering problems through understanding of geological phenomena.

The goals of this course are to

- (1) Acquire basic knowledge of geology, understand the geological structure and mechanical properties of ground and rock mass in civil engineering geology, and explain the outline.
- (2) Contribute to the improvement of design ability for planning, design, construction, and management of civil engineering structures.
- (3) Acquire knowledge of topography, how to read geological maps, rock classification, etc., and explain the outline.
- (4) Explain the significance and necessity of the civil engineering geological survey method prior to the design and construction of civil engineering structures.
- (5) Understand the outline of the civil engineering geological survey method and explain its advantages and applicability.
- (6) Acquire the evaluation viewpoint as a designer / constructor through the planning of civil engineering and geological surveys and examples of results.

Prerequisite Subjects

Soil Mechanics with Exercises, Soil and Foundation Engineering, Geotechnical Engineering, Experiment in Geomaterials

Course Topics

1 Guidance on civil engineering geology

Learning especially the role of civil engineering in civil engineering, the history and view of the earth, geology of the world and geology of Japan Lecture on rock deterioration (weathering).

2 Basic geology exercises

Deepening the understanding of lecture contents through basic geology exercises (aerial photo interpretation, mineral and rock identification methods and engineering evaluation methods).

3 Civil engineering and geological survey methods

Learning mainly civil engineering geological survey methods (surface exploration, drilling, in-situ tests, geophysical surveys, etc.) and their applicability and evaluation methods

4 Geological mapping exercises

Understand the meaning of geological maps used in the field of civil engineering through geological mapping exercises (how to write, read, and evaluate general geological maps and civil engineering geological maps).

5 Procedures and contents of civil engineering geological surveys

Learning mainly procedures and contents of civil engineering geological surveys for dams, tunnels, roads, and landslide disasters.

6 Exercise on civil engineering geological survey plan

Learning mainly exercise on civil engineering geological survey plan (planning and evaluation of civil

engineering geological plan for planning, design and construction of civil engineering structures) and case study of civil engineering geological survey.

After the class, you should review the distributed prints.

Textbook

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

Additional Reading

References will be introduced as needed.

Grade Assessment

The degree of achievement of goals is comprehensively evaluated by a report (30%), and a final exam (70%). And, a passing requirement is C grade or higher. Acceptance criteria are to be able to understand basic knowledge of geology, geological structure and mechanical characteristics of ground and rock mass, how to read topographical and geological maps, rock mass classification, outline of civil engineering geological survey methods, etc. If you can, reflect it in your grades accordingly.

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

Course Type	Related Specialized Courses		
Class Format	Lecture		
Course Name	Civil Engineering		
Starts 1	4 Spring Semester		
Elective/Compulsory	Elective		
Lecturer	Toshihiro NODA Professor	Hikaru NAKAMURA Professor	Yuji Toda Professor
	ArataKATAYAMA Professor	Hiroki tanikawa Professor	Masaki NAKANO Professor
	Hirokazu KATO Professor	Kentaro NAKAI Associate Professor	Tomoaki NAKAMURA Associate Professor
	NAKAMURASHinichiro Associate Professor		

Course Purpose

Japan is a country that suffers from a variety of natural disasters due to its topographical and geographical reasons. To realize a safe and secure society, knowledge on disaster prevention and mitigation is indispensable. In this lecture, we will first explain the basic knowledge of natural disasters, including their history. In addition, lectures will be given on technologies for reducing natural disasters and their basic principles from hardware to software. Through this lecture, the purpose of this course is to learn the future of disaster prevention and mitigation, and to develop the ability to explain basic knowledge about natural disasters, the characteristics of natural disasters, and technical measures for hardware and software.

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

Explain basic knowledge about natural disasters.

Explain the characteristics of natural disasters.

Be able to explain hardware and software countermeasures against natural disasters.

Prerequisite Subjects

All lectures related to structural materials, ground, water works, planning, and environment.

Course Topics

Natural disasters and their historical background (earthquake, tsunami, flood, storm surge, liquefaction, etc.)

Natural disasters in civil engineering structures and countermeasures (structural materials)

Natural Disasters on Ground and Embankment and Countermeasures Technology (Ground)

Natural disasters and their countermeasures in rivers and coastal areas (water works)

Urban and transportation systems for natural disasters (planning)

Environmental problems caused by natural disasters and countermeasures (environment)

In order to prepare a report on the content of each lesson, after the class, in addition to the review, the relevant knowledge must be acquired from the literatures as appropriate.

Textbook

Handouts will be distributed by each faculty member.

Additional Reading

Reference books will be introduced as appropriate according to the related content and progress.

Grade Assessment

The degree of achievement for the achievement target is evaluated by the total score of each report.

In each report, after comprehending the contents of the lectures, if students can answer the basic knowledge on the characteristics of natural disasters or the questions on countermeasures from the hardware side and software side appropriately, the students will receive a score of 60%. In addition, for example, if deeper considerations such as future response and comparison with other disaster cases are made, the score will be added.

Notes

No course requirements are required.

Contacting Faculty

Welcome questions during the class. Each faculty member also accepts questions at the room and by e-mail at any time.

(Noda ExE. 3833, noda@nagoya-u.jp)

River and Coastal Environmental Engineering (2.0credits) (水域環境学)

Course Type	Related Specialized Courses		
Class Format	Lecture		
Course Name	Civil Engineering		
Starts 1	4 Spring Semester		
Elective/Compulsory	Elective		
Lecturer	norimi mizutani Professor	Yuji Toda Professor	Tomoaki NAKAMURA Associate Professor

Course Purpose

Lecture on river and coastal environmental engineering

Prerequisite Subjects

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

Course Topics

1. Material transport and ecosystem in river
2. Advection and diffusion
3. Organic material and nutrient
4. Habitat evaluation and population dynamics
5. Physics and biology in coastal sea area
6. Sediment transport and beach erosion
7. Wave-induced currents in nearshore
8. Coastal environment and ecosystem
9. Environmental assessment
10. Engineering ethics

Textbook

Printed documents as needed

Additional Reading

Directed as needed

Grade Assessment

Notes

Not required

Contacting Faculty

Course Type	Related Specialized Courses	
Class Format	Lecture	
Course Name	Civil Engineering	
Starts 1	4 Spring Semester	
Elective/Compulsory	Elective	
Lecturer	Hikaru NAKAMURA	Part-time Faculty
	Professor	

Course Purpose

The objective is to learn about basic concept and practical process of several lifeline structures in design and maintenance. By listening to the contents based on the experience of engineers representing various lifeline administration, and students cultivate applied skills and comprehensive skills that are not merely knowledge. After completing this class, students will be able to: 1. Explain the basic concept of infrastructure structural planning. 2. Explain the process from infrastructure design to maintenance. 3. Explain the importance of maintaining the function of the lifeline structure. 4. Explain the role and importance of engineers in the construction and maintenance of infrastructure.

Prerequisite Subjects

Whole class of course

Course Topics

1. Design concept of infrastructure, Engineering ethics
2. Design, construction and maintenance of structures of inter city expressway, Engineering ethics
3. Role and management of inside city expressway, Engineering ethics
4. Role of power plant and design of structures, Engineering ethics
5. Role of communication facility and maintenance of structure, Engineering ethics
6. Construction site seeing
Before class, please examine the related structures. After class, the assignments must be completed and submitted by the deadline.

Textbook

Distribute documents in each class

Additional Reading

Reference books will be recommended at the right time

Grade Assessment

60% or more are accepted by the result of report given for each lifeline structure.

Notes

None

Contacting Faculty

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

Outline of Engineering 1 (1.0credits) (工学概論第 1)

Course Type	Related Specialized Courses		
Class Format	Lecture		
Course Name	Department of Chemistry and Biotechnology	Department of Materials Science and Engineering	Department of Physical Science and Engineering
	Department of Energy Science and Engineering	Department of Electrical Engineering, Electronics, and Information Engineering	Department of Mechanical and Aerospace Engineering
	Civil Engineering	Architecture	
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	
Elective/Compulsory	Elective	Elective	Elective
	Elective	Elective	Elective
	Elective	Elective	
Lecturer	Part-time Faculty		

Course Purpose

Based upon the wide and deep experiences, alumni and/or aluminae of Nagoya University, who work the hub of society, give future perspectives, foster internal and external active personality and propose guideline for their further study.

Prerequisite Subjects

Because it is a common subject not to affect a specialized subject, I do not appoint the subject to become the background.

Course Topics

Experience every time own as "do your best younger student" a senior playing an active part in the social center I perform a class on the basis of this. In all eight times of classes, I perform orientation and the lecture by seven outside lecturers. What I check about a lecturer and a title released before a class of every time beforehand. After a lecture, conduct an additional investigation depending on the need including contents and the phrase handled in a lecture. In addition, submit it as you impose the report problem about lecture contents every time.

Textbook

I distribute a slide or the print which the person in charge of each time lecturer uses as a lecture document.

Additional Reading

Instructions will be given as necessary in class

Grade Assessment

I evaluate an acquirement degree for the accomplishment by a report. I keep lecture contents of every time under control, and it is said that I pass if I can collect own thought and lets results reflect it according to the depth of the contents which were able to learn it such as the grasp of lecture contents, a guideline for the future dream, study of oneself.

Notes

There are no prerequisites

Contacting Faculty

I cope after a lecture every time. Or ask the staff of the educational affairs section.

Outline of Engineering 2 (1.0credits) (工学概論第2)

Course Type	Related Specialized Courses		
Class Format	Lecture		
Course Name	Department of Chemistry and Biotechnology	Department of Materials Science and Engineering	Department of Physical Science and Engineering
	Department of Energy Science and Engineering	Department of Electrical Engineering, Electronics, and Information Engineering	Department of Mechanical and Aerospace Engineering
	Civil Engineering	Architecture	
Starts 1	4 Spring Semester	4 Spring Semester	4 Spring Semester
	4 Spring Semester	4 Spring Semester	4 Spring Semester
	4 Spring Semester	4 Spring Semester	
Elective/Compulsory	Elective	Elective	Elective
	Elective	Elective	Elective
	Elective	Elective	
Lecturer	Part-time Faculty		

Course Purpose

In the world, the social formation of the low-carbon model becomes the problem in the face of the issue of global warming. I grasp a summary of the energy supply and demand of Japan by this lecture and am intended that I understand the trend of the energy saving and renewable energy technology and introduction promotion plan. In addition, I comment on "a basic energy plan" to become the guideline of the energy policy of our country.

Prerequisite Subjects

Course Topics

Textbook

Additional Reading

Grade Assessment

Notes

Contacting Faculty

Outline of Engineering 3 (2.0credits) (工学概論第3)

Course Type	Related Specialized Courses		
Class Format	Lecture		
Course Name	Department of Chemistry and Biotechnology	Department of Materials Science and Engineering	Department of Physical Science and Engineering
	Department of Energy Science and Engineering	Department of Electrical Engineering, Electronics, and Information Engineering	Department of Mechanical and Aerospace Engineering
	Civil Engineering	Architecture	
Starts 1	4 Autumn Semester	4 Autumn Semester	4 Autumn Semester
	4 Autumn Semester	4 Autumn Semester	4 Autumn Semester
	4 Autumn Semester	4 Autumn Semester	
Elective/Compulsory	Elective	Elective	Elective
	Elective	Elective	Elective
	Elective	Elective	
Lecturer	Kiyohisa NISHIYAMA Lecturer	Emanuel LELEITO Lecturer	Gang ZENG Lecturer

Course Purpose

This course will introduce the history, the current state and future prospects of R&D (research and development) in various sectors related to the field of engineering in Japan. The course will expose you to a wide range of issues being tackled by engineers in different fields, with the aim of motivating and preparing you to pursue your research interest. You will have an opportunity to explore basic concepts and real world applications, and to do a mini research task leading to a final presentation. Apart from the engineering field related knowledge, this lecture will also help you develop the following skills:

Cross-disciplinary Communication skills

Communication across language barriers (English/Japanese)

Online search and research skills for information gathering

Presentation skills

Prerequisite Subjects

You do not require any background knowledge to join this class. Each lecturer will provide the basic knowledge that might be needed to understand the lecture topics.

Course Topics

This class consists of “omnibus-style” lectures on the following topics.

1. Science, Technology and Innovations in Embedded Computing Systems (Gang ZENG)

- This lecture gives an overview of the embedded computing systems related technologies in Japan. In particular, the latest innovations on the low-energy and automotive applications will be introduced.
- The students are asked to participate in group discussion to share their ideas and thoughts about energy conservation and future automobiles.

2. The innovative factors of technologies in Japan (Kiyohisa NISHIYAMA)

- This lecture provides the participants with the concept of 40 innovation principles. Some Japanese technologies are broken down into the combination of the principles as examples.
- The students each are asked to analyse a technology of interest found in Japan. The students will be able to grab the concepts of any technological innovations after completing this lecture.

3. Science, Technology and Innovation for Disaster Risk Reduction (Emanuel LELEITO)

- This lecture gives students an overview of the Scientific and Technology Innovations that have contributed to Japan's leading role in Disaster Risk Reduction (DRR).
- DRR related discussions and presentation in class will help students exercise their creative thinking and problem solving skills.

Outline of Engineering 3 (2.0credits) (工学概論第3)

Each lecturer will give you assignments to read in preparation for each of the lectures.

Textbook

Lecture materials will be distributed in class during each lecture.

Additional Reading

Lecture materials will be distributed in class during each lecture.

Grade Assessment

Credits will be awarded to those students who score over 60 out of 100 based on the following evaluation criteria:

- 1) Reports (60%): Each lecturer will ask you to prepare and submit reports to evaluate your understanding of the topics taught. The reports will be worth 60% of the total score.
- 2) Presentation (40%): You will be asked to do a final presentation based on one or a combination of the topics taught. The presentation will require that you do independent online research to gather necessary information and present the topic in a 3-5 minute video. Your understanding of the topic as well as the effectiveness of your presentation will be evaluated. The presentation is worth 40% of the total score.

Notes

The students are required to actively participate in class discussions, submit reports and presentations on time.

Contacting Faculty

Questions are received during or after class time. Lecturers will provide contact information during class orientation.

Outline of Engineering 4 (3.0credits) (工学概論第4)

Course Type	Related Specialized Courses		
Class Format	Lecture		
Course Name	Department of Chemistry and Biotechnology	Department of Materials Science and Engineering	Department of Physical Science and Engineering
	Department of Energy Science and Engineering	Department of Electrical Engineering, Electronics, and Information Engineering	Department of Mechanical and Aerospace Engineering
	Civil Engineering	Architecture	
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	
Elective/Compulsory	Elective	Elective	Elective
	Elective	Elective	Elective
	Elective	Elective	
Lecturer	Part-time Faculty	Yukio ISHIDA Designated Professor	

Course Purpose

Elementary ClassThis course is intended to teach Japanese to students who have not learnt Japanese before or who have learned only a very little. Basic Japanese which is necessary for daily life in Japan will be taught.

The students study the fundamentals of grammar and basic conversational expressions. The students are requested to communicate in daily life using simple expressions.

Intermediate ClassThis course is intended to teach Japanese to students who already learned Japanese of Elementary level. The aims of this study are to obtain the ability necessary to explain their experiences concretely.

The students are requested to communicate in their study in Japanese. Depending on the students' Japanese ability, the advanced class will also be prepared.

Prerequisite Subjects

Elementary ClassNone

Intermediate ClassElementary Japanese

Course Topics

Elementary Class1.Pronunciation of Japanese 2.Structure of Japanese sentences 3.Fundamental vocabulary and expressions 4.Conversation practice 5.Listening practice, Students must read the part which they will study in the next lecture.

Intermediate Class1 Grammar, 2 Conversation, 3 Opinion delivery, 4 Reading comprehension, 5 Listening practice, The students must memorize the most important sentences which they will study in the next lecture.

Textbook

Elementary ClassNIHONGO Breakthrough, From survival to communication in Japanese, JAL Academy, ASK Publishing Co.Ltd.

Intermediate Classweekly J : 6

Additional Reading

I introduce it to progress appropriately

Grade Assessment

Elementary ClassAttendance 20Class performance and assignments 20Interview test and examination30, Presentation 30

In each item (except attendance), the ability of conversation is an important check point.

Outline of Engineering 4 (3.0credits) (工学概論第4)

Intermediate Class Attendance 20 Class performance and assignments 10 Interview test 20 Written examination 20, Presentation 30.

In each item (except attendance), the ability of correct expressions is an important check point. These scores are summed and evaluated. The students with the evaluation S, A, B, or C can pass this subject.

Notes

This subject is open for NUSIP students.

Contacting Faculty

Ext. 6797 ishida@nuem.nagoya-u.ac.jp

Engineering Ethics (2.0credits) (工学倫理)

Course Type	Related Specialized Courses		
Class Format	Lecture		
Course Name	Department of Chemistry and Biotechnology	Department of Materials Science and Engineering	Department of Physical Science and Engineering
	Department of Energy Science and Engineering	Department of Electrical Engineering, Electronics, and Information Engineering	Department of Mechanical and Aerospace Engineering
	Civil Engineering	Architecture	
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	
Elective/Compulsory	Elective	Elective	Elective
	Compulsory	Elective	Elective
	Elective	Elective	
Lecturer	Part-time Faculty		

Course Purpose

All students will push forward the preparations to a member of society through a college life having high flexibility as well as the lecture of the university, but this is the conscious problem that it is independent and should work on. Therefore, about life, the responsibility of the necessary member of society (a person of occupation and researcher solving another person such as engineers and social problem situation), found ability, ethic, it is the purpose of the class that gets an image at the beginning of student life. I solved many problems until now, and the engineer developed the society, but had much failure, accidents and the ethical disgraceful affair. I understand basic power to act as a member of society, an engineer ethically while having the viewpoint to the future a little while referring to a lot of such failure examples. In addition, I acquire a custom to think on the spot, and to be settled necessary for an engineer, a member of society. (the lecturer is engaged in a study and the business of the engineer ethic in professional engineer (nation qualification) with the work experience.)

Prerequisite Subjects

Course Topics

Textbook

Additional Reading

Grade Assessment

Notes

Contacting Faculty

Statistics and Analysis B (2.0credits) (データ統計解析 B)

Course Type	Related Specialized Courses		
Class Format	Lecture		
Course Name	Department of Physical Science and Engineering	Department of Electrical Engineering, Electronics, and Information Engineering	Department of Mechanical and Aerospace Engineering
	Civil Engineering	Architecture	
Starts 1	4 Spring Semester	4 Spring Semester	4 Spring Semester
	4 Spring Semester	4 Spring Semester	
Elective/Compulsory	Elective	Elective	Elective
	Elective	Elective	
Lecturer	Yoji YAMADA Professor	Shogo OKAMOTO Associate Professor	

Course Purpose

In the first half of the course, we study the basic statistics with underlying mathematics for data analysis. In the second half of the course, we study a few representative multivariate analysis techniques. Through the analysis of actual data using these techniques, we are to attain insights into the mechanisms behind the data.

Prerequisite Subjects

There is no specific requirement to enroll in this course.

Course Topics

1. Probabilistic distribution- Random variable and probabilistic distribution function- Gaussian distribution and normalization
 2. Basis of statistics- Statistics representing data- Moment
 3. Statistic estimation and test- Sampling- Error and uncertainty- Estimation- Hypothesis test
 4. Correlation and regression- Statistic independence- Explanatory and objective variables- Linear regression equation
 5. Level of measurement
 6. Multiple regression analysis- Theory including generalized inverse matrix- Variable selection- Extension to nonlinear analysis- Presentation by students

Textbook

Additional Reading

Provided in the class accordingly.

Grade Assessment

Homework (60%) and examination (40%). After this course, the students should be able to analyze their own data and reach some conclusions by themselves.

Notes

Potential attendees are not required to have finished Data Statistics Analysis A.

Contacting Faculty

It is preferred that questions are asked, solved, and shared with all the attendees during the class. Emails or direct visits with appointments are acceptable.- Prof. Yoji Yamada, yamada-yoji@mech.nagoya-u.ac.jp, Room 302 at 2nd eng. build.- Dr. Shogo Okamoto, okamoto-shogo@mech.nagoya-u.ac.jp, Room 305 at 2nd eng. build.

Technical Writing (2.0credits) (テクニカルライティング)

Course Type	Related Specialized Courses		
Class Format	Lecture		
Course Name	Department of Materials Science and Engineering	Department of Physical Science and Engineering	Department of Energy Science and Engineering
	Department of Electrical Engineering, Electronics, and Information Engineering	Department of Mechanical and Aerospace Engineering	Civil Engineering
	Architecture		
Starts 1	4 Spring Semester	4 Spring Semester	4 Spring Semester
	4 Spring Semester	4 Spring Semester	4 Spring Semester
	4 Spring Semester		
Elective/Compulsory	Elective	Elective	Elective
	Elective	Elective	Elective
	Elective		
Lecturer	Kiyohisa NISHIYAMA Lecturer	Gang ZENG Lecturer	Emanuel LELEITO Lecturer

Course Purpose

This course is to learn the logical thinking and the method of expression for sending scientific and technical contents to others in English and learn how to apply these methods to technical writing and presentation in English.

What you will get in this course:

1. Understand logical thinking and structure issues.
2. Understand and write the document structure that leads to problem solving.
3. Write abstracts of scientific and technical papers in English.
4. Apply the above methods to presentations and debates in English.

Prerequisite Subjects

This course will be taught from the basics, background subjects are not specified.

Course Topics

1. Logical thinking
 - 1.1 Logical thinking
 - 1.2 Structuring logic
 - 1.3 Problem Solving
2. Writing skill
 - 2.1 Understanding document structure
 - 2.2 Organizing document structure
 - 2.3 Writing abstracts in English
3. Presentation skill
 - 3.1 Creating slides in English
 - 3.2 Presentation and Q & A in English
 - 3.3 Discussion in English

Students are required to read related contents of next lecture in advance. Reports will be assigned after each lecture, which should be completed independently by searching necessary information. Reports and final presentation will be used for evaluation.

Textbook

No textbook is specified. Lecture materials will be distributed in each class.

Additional Reading

2019

2018

, 2016

A Manual for Writers of Research Papers, Theses, and Dissertations: Chicago Style for Students and Researchers (Chicago Guides to Writing, Editing, and Publishing) - Kate L. Turabian, Revised by Wayne C. Booth, Gregory G. Colomb, Joseph M. Williams, Joseph Bizup, William T. FitzGerald and the University of Chicago Press Editorial Staff.

Grade Assessment

Evaluation will be conducted based on reports and final presentation. Credits will be awarded to those students who can write abstract and present idea using basic skills.

Notes

No course requirements.

Contacting Faculty

Questions will be accepted in the classroom after the lecture.

Industry and Economy (2.0credits) (産業と経済)

Course Type	Related Specialized Courses		
Class Format	Lecture		
Course Name	Department of Chemistry and Biotechnology	Department of Physical Science and Engineering	Department of Electrical Engineering, Electronics, and Information Engineering
	Department of Mechanical and Aerospace Engineering	Civil Engineering	Architecture
Starts 1	4 Autumn Semester	4 Autumn Semester	4 Autumn Semester
	4 Autumn Semester	4 Autumn Semester	4 Autumn Semester
Elective/Compulsory	Elective	Elective	Elective
	Elective	Elective	Elective
Lecturer	Part-time Faculty		

Course Purpose

I learn knowledge about the economy while examining the background, structure, influence about various economic phenomena, pocketbook issues.

I learn the economic thought method that economists built that understanding, explanation solves a pocketbook issue at the same time.

A target: In this lecture, a student attending a lecture aims for coming to be able to do the next thing.

1. As a member of society, an industrial person, I learn necessary and useful economic knowledge and come to be able to inflect.
2. I understand structure and the mechanism of the economic phenomenon, pocketbook issue and come to be thought systematically.
3. I understand the way of economic thought (view, way of thinking) and learn it and become able to inflect.

Prerequisite Subjects

Because it is not a specialized subject, I do not appoint it in particular.

Course Topics

1. Economic circulatory structure ... give-and-take
2. Change ... prosperous conditions and recession of the economy
3. Foreign exchange rate ... strong yen and weak yen
4. Role ... annual revenue and annual expenditure of the government
5. Maintenance of role ... price stability and the trust order of Bank of Japan
6. Problem ... overflow of population of the population and too few population
7. Economic history ... Smith and Keynes
8. Free-market economy ... light and shadow
9. Japanese economy ... inflation and deflation after World War II

Reading as I appoint the range that should read a textbook beforehand at the time of a lecture of every time for the next time.

In addition, reviewing it as I show a part to review and a method about the document which I distributed, and deepening understanding.

Textbook

Nakaya"Nyumonsho wo yomumae no Keizaigaku nyumon",Doubunkan

Additional Reading

P. A.Samuelson, W. D.Node house "economics" (Iwanami Shoten) Kennichi Miyazawa () "introduction to industrial linkage analysis" (Nikkei library, Nihon Keizai Shimbun, Inc.) Iwao Ozaki "industrial structure of Japan" (Keio University publication society)

R. A.I introduce it at the time of a lecture of every time including Feldman "economic latest lecture of the Dr. Feldman in Japan" (Bungeishunju Ltd.).

Grade Assessment

Understand a basic concept about the economy definitely, and keep the structure of the pocketbook issue under control, and, in wearing an economic thought method, pass; is based. I evaluate an accomplishment degree by a small report (20%) to assign at the time of a lecture of every time and the regular examination (80%) of the term end and do higher than 60 points with a pass at one hundred perfect score. In addition, the absentee of the regular examination assumes it "absence".

Notes

There are no prerequisites

Contacting Faculty

Around during the lecture and lecture time, a charge teacher copes in a lecture room

Patent and Intellectual Property (1.0credits) (特許及び知的財産)

Course Type	Related Specialized Courses		
Class Format	Lecture		
Course Name	Department of Chemistry and Biotechnology	Department of Physical Science and Engineering	Department of Energy Science and Engineering
	Department of Electrical Engineering, Electronics, and Information Engineering	Department of Mechanical and Aerospace Engineering	Civil Engineering
	Architecture		
Starts 1	2 Autumn Semester	4 Autumn Semester	4 Autumn Semester
	4 Autumn Semester	4 Autumn Semester	4 Autumn Semester
	4 Autumn Semester		
Elective/Compulsory	Elective	Elective	Elective
	Elective	Elective	Elective
	Elective		
Lecturer	Masahiro KITO Professor		

Course Purpose

Understand the necessity and significance of patents from the viewpoint of researchers and engineers at universities and companies

Acquire basic knowledge of patents and acquire what researchers and engineers who invent should do.

Attainment target

1. Understand the purpose and necessity of the patent system
2. Understand the basics of patent application procedures and how to write application documents
3. Can perform basic patent search
4. Understand how companies and universities use patents

Prerequisite Subjects

Course Topics

Textbook

Additional Reading

Grade Assessment

Notes

Contacting Faculty

Course Type	Related Specialized Courses		
Class Format	Lecture		
Course Name	Civil Engineering	Architecture	
Starts 1	4 Autumn Semester	4 Autumn Semester	
Elective/Compulsory	Elective	Elective	
Lecturer	Hideki NAKAMURA Professor	Jun TOBITA Professor	Yasuhiko NISHIZAWA Professor
	Hisashi KOMATSU Professor	Part-time Faculty	

Course Purpose

The objectives of this course are (1) to establish scenarios for certain social infrastructure projects, and thereby introduce relevant civil engineering theories and construction technology, as well as conduct site-visits; (2) to survey, through technical site visits, various aspects of urban and architectural studies, including building material experiments, energy conservation, and the recent development of regional disaster mitigation activities.

Prerequisite Subjects

As the objective of this class is to understand fundamentals of civil engineering and architecture, no background class is assigned.

Course Topics

You can understand some characteristics of infrastructure, buildings and townscape with visiting sites. A report is requested to submit after each visit.

Textbook

Suggested in the class, if necessary.

Additional Reading

Suggested in the class, if necessary.

Grade Assessment

Students will be evaluated on attendance and written reports. 100-90:S, 89-80:A, 79-7:B, 69-60:C, less than 60:F. Attendance to the site visits and proper understanding on civil engineering and architecture are evaluated as a condition of obtaining a credit of this course.

Notes

No condition is required.

Contacting Faculty

Questions are welcome. Please send your questions by e-mail. E-mail: nakamura@genv.nagoya-u.ac.jp (Dr. Nakamura), tobita@sharaku.nuac.nagoya-u.ac.jp (Dr. Tobita).

Management Engineering (2.0credits) (経営工学)

Course Type	Related Specialized Courses
Class Format	Lecture
Course Name	Civil Engineering
Starts 1	4 Autumn Semester
Elective/Compulsory	Elective
Lecturer	Part-time Faculty

Course Purpose

Prerequisite Subjects

Course Topics

Textbook

Additional Reading

Grade Assessment

Notes

Contacting Faculty