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. Materials and structures for architectural buildings and civil infrastructure
10. Frontier of architecture and construction materials
11. Construction techniques for high-rise buildings and space structures, Part 1
12. Construction techniques for high-rise buildings and space structures, Part 2
13. Lessons learned from past earthquake disasters
14. Countermeasures for Nankai Trough Earthquake
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

(Assessment method) Each instructor individually assigns a report task related to the lecture, scores the report contents, and comprehensively evaluates the total score.

(Assessment criteria) 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.
Lecture is held by ONLINE by using Zoom or Teams.

●Contacting Faculty

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

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(at)nagoya-u.jp
tsune(at)nagoya-u.jp

Replace (at) with @

Introduction to Information Processing (2.0credits) (情報処理序説)

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

Hiroyuki Tomita and Yasuhiro Saito: Fortran 90/95 programing, Baifu-kan

●Additional Reading

Introduced according to the process of the lecture.

●Grade Assessment

Ability to make a documents of self-introduction, web site developments, and computer programing knowledge are required, and the report on them are evaluated.
Sixty points or more out of 100 points are required to pass.

●Notes

Not required.
Class is online using Teams or Zoom.
URL is informed through NUCT [Announcements].

●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	Keiichi ARAKI Professor

●Course Purpose

To learn the basic relationships between shape and forces in structures and inquire about 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 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

The handout is distributed in the lecture via NUCT.

●Additional Reading

Reference books are introduced in 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

No special requirement is necessary.

●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	AratаKATAYAMA Professor	Satoru IIZUKA Professor
	Teruyuki SAITO Associate Professor		

●Course Purpose
Understanding the environmental influences on human life, production and infrastructure

●Prerequisite Subjects
Not designated.

●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
The criterion for passing this course understands the relationship between human activities and the environment as an impact-response system that considers feedback from natural, human-made, and social networks. Students are required to submit reports on each lecture's contents during the lecture period and at the end of the term. Besides, if students submit independent reports, those reports will be evaluated and added to evaluate the related assignments.

●Notes
Not designated.

●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
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

Students are required to read the corresponding part of the textbook prior to the lecture, and review exercises given in the lecture.

●Textbook

●Additional Reading

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

●Notes
No prerequisite.

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

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

There is no requirement.

●Contacting Faculty

Office hour will be set up on appointment basis. Emailyasu(at)nuac.nagoya-u.ac.jp
* Replace (at) with @.

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. Assingments 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

Not required.In principle, this lecture will be provided online using Zoom or Microsoft Teams.

●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(at)nagoya-u.jp, Bldg. 9 Rm. 317Kentaro NAKAI, Ext: 5203, E-mail: nakai(at)civil.nagoya-u.ac.jp, Bldg. 9 Rm. 313Please replace (at) with @.

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	Emi KANO Assistant 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 quizes (20%). Credit will be issued for the scores of 60% or higher.

●Notes

Registration conditions are not required. Please access the NUCT system regularly as we will contact you about the lectures and the handouts through the NUCT.

●Contacting Faculty

Students can send questions directly to the lecturer. Make an appointment(takeda@i.nagoya-u.ac.jp) 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

The lecture in AY2021 is planned to be offered by on-line.
Make sure you check this course's sled at NUCT.

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

All the materials must be downloaded from NUCT.

●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

No prerequisite is required.

●Contacting Faculty

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 Lecturer
	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

IntroductionCharacteristics of fluidHydrostaticsStability of floating bodyDescription of flow of ideal fluid Relative hydrostaticsBernoulli's principleEnergy analysis in one dimensional problemUnsteady Bernoulli's principleDescription of flow of viscous fluidEnergy lossPipe flowAnalysis based on momentum (1)Analysis based on momentum (2)

●Textbook

●Additional Reading

●Grade Assessment

Report 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

Students need to prepare the next lecture to understand basic parts. After each lecture, the assignments must be completed and submitted by the deadline.

●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

No requirements
Students who have a question on this class can contact to Takeshi HANJI (hanji(at)civil.nagoya-u.ac.jp).

●Contacting Faculty

Email: hanji(at)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	Kentaro NAKAI Associate Professor	SAKAITakayuki Assistant Professor
	YOSHIKAWATakahiro 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. Assingments for home study are also given as appropriate.

●Textbook

Soil mechanics (Corona): by Masaki NakanoPrinted 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

Not required.

●Contacting Faculty

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

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	Ryota TSUBAKI Associate Professor	Tomio MIWA Associate Professor	NAKAMURAShinichiro Associate Professor
	NISHIGUCHI Koji Lecturer	OBANAMakiko Lecturer	Hiroya HOSHIBA Assistant Professor
	Masaru Shimizu Assistant Professor	YonghwanCHO Assistant Professor	SAKAITakayuki Assistant Professor
	YOSHIKAWATakahiro Assistant Professor	Yuji KAKIMOTO Assistant Professor	KASAI Takuya Assistant Professor
	GUO Jing 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

No course requirements are specified.

●Contacting Faculty

Please e-mail each professor whenever you have a question.
Email: miwa[at]nagoya-u.jp

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).You will be asked an assignment in each class on NUCT, so please submit it by the due date.

●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

Grades will be evaluated according to the score, which is the total score of the assignments given in each class converted to a maximum of 50 points, and the total score of the mid-term exam (maximum of 25 points) and the final exam (maximum of 25 points). A total of 60 points or more is considered as a pass.
Home works and tests 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

Bring a triangle ruler and a compass for drawing in each 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 and the skill for selecting and applying the appropriate methods will be obtained.

●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 (first type, second type and third type)
8. Principal component analysis
9. Cluster analysis
10. Factorial analysis
11. 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 and exam. If the fundamental problem is solved, the credit is earned. Higher score will be given as the difficulty solved correctly.

●Notes

Not required.
Classes will be conducted remotely (online) and will use Teams or Zoom.
Questions about lesson content is invited. Student can ask a question through chat system during a lecture and by email after a lecture.
Details will be explained at the time of the first lecture.

●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	Taito Miura Associate Professor

●Course Purpose

The objective is to promote understanding the fundermental knowledge related to construction materials for concrete structures such as cement hydration, concrete characteristics before and after hardening, mechanical behavior of the reinforcements, durability.

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

Concrete Understanding with Manga, Tetsuya IshidaIn Japanese

●Grade Assessment

Evaluation method:
60% or more are accepted by the result of midterm exam and final exam.
If the absence without notice is more than a half, the attendance of final examination cannot be accepted.

Acceptance Criterion:
The acceptance criteria is to be able to understand the fundermental knowledge of cementitious materials, and the score will be reflected if the student acqires further deep knowledge.

●Notes

There is no requirement of the course.

●Contacting Faculty

Office hour: 16:30-18:00 of Thursday. Welcome to come to room directly anytime and question by e-mail: t.miura@civil.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.
<Entered after 2020>
95-100: A+
80-94: A
70-79: B
65-69: C

60-64: C-
-59: F
<Entered before 2019>
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	OBANAMakiko Lecturer

●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

No course requirements are specified.

●Contacting Faculty

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

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

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

●Course Purpose

The objective is to learn the basics of steel and concrete structuresexperientially 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.Observation of the failure of reinforced concrete beams
8.Group competition

Students need to prepare the next experiment to understand basic parts. After each experiment, the reports must be completed and submitted by the deadline.

●Textbook

Text will be distributed at the first class.

●Additional Reading

Reference books will be recommended at the right time.

●Grade Assessment

C- grade or more are accepted by the result of all reports and group works.

●Notes

No requirements
Students who have a question on this class can contact to Takeshi HANJI (hanji(at)civil.nagoya-u.ac.jp).

●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 foundamental knowledges of continuum mechanicsto derive the governing equations for stuructural mechanics, soil mechanics and hydraulicsto understand the characteristics of the governing equations for stuructural 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	Hikaru NAKAMURA Professor

●Course Purpose

The objective is to promote understanding the behavior of concrete structures until ultimate stage subjected to bending moment and axial force, and calculation method of bending stress and moment capacity.

After completing this class, students will be able to:
1. Explain principal of concrete structures
2. Explain concrete cracking and reinforcement arrangement
3. Calculate bending stress
4. Calculate moment capacity
5. Explain flexural failure modes
6. Explain failure under axial force and calculate axial force capacity.

●Prerequisite Subjects

Introduction to Structural Mechanics, Fundamentals of Structural Analysis with Exercises, Material Engineering, Structural Mechanics and Tutorial

●Course Topics

1. Engineering ethics, Introduction of concrete structures
2. Basic of structural mechanics and application to RC structures
3. Flexure behavior of RC member
4. Bending stress of RC beam
5. Moment capacity and deformation of RC beam
6. Failure behavior of RC column

Before class, please read the designated part of the textbook. After class, please solve the problem exercises in textbook and distributed materials.

●Textbook

Learning of concrete -Structure- (Rikotosho Co.ltd) (In Japanese)

●Additional Reading

Reference books will be recommended at the right time

●Grade Assessment

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

(Assessment criteria) Acceptance criteria are to be able to understand the principle of concrete structures, concrete cracking and reinforcement arrangement, calculate method of bending stress and moment capacity, flexural failure modes, failure behavior under axial force.

●Notes

No course requirements are required.
Lecture is held by ONLINE by using Zoom.

●Contacting Faculty

Office hour: 15:00-17:00 of Friday. Welcome to come to room directly anytime and question by e-mail hikaru(at)cc.nagoya-u.ac.jp

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

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

The degree of achievement of goals is comprehensively evaluated by a report (20%), an intermediate exam (40%), and a final exam (40%). 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
Lecture is held face-to-face.

●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(at)civil.nagoya-u.ac.jp

Coastal and Maritime Hydrodynamics (2.0credits) (沿岸海象力学)

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

●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

Students are required to review their notes and handouts after the lecture.
Reports given during the lecture are asked to submit by the next lecture.

●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

No prerequisite.

- This class will be given face-to-face.
- However, the number of students attending this class can exceed the maximum of 50 for Room 911. If so, this class will be given online in the on-demand format. Details will be announced on NUCT.

- For the on-demand format, if you have any questions, please contact to the lecturer via e-mail or "Massages" of NUCT. If you want to exchange information among students, please use "Message" of NUCT.

●Contacting Faculty

Visiting faculty's office or asking by e-mail.
Contact:
Tomoaki Nakamura (ext. 4632, tnakamura(at)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	Part-time Faculty

●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(every 2 weeks), and a final exam focused on assessing your reading and listening comprehension.
1) Reports and other class assignments 60%
2) Final exam (Final Report + Final Presentation) 40%

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

●Notes

For remote (online) class sessions we will use Teams or Zoom

●Contacting Faculty

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

Email: leleito#$#nagoya-u.jp
Please change #$# to @

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	Ryota TSUBAKI Associate Professor	YonghwanCHO Assistant Professor
	OBANAMakiko Lecturer		

●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

No course requirements are specified.

●Contacting Faculty

Visiting the faculties' office or asking by e-mail.
Contact:
Ryota Tsubaki (Extension 4625, rtsubaki(at)civil.nagoya-u.ac.jp)
Tomoaki Nakamura (Extension 4632, tnakamura(at)nagoya-u.jp)
Makiko Obana (Extension 4635, mobana(at)civil.nagoya-u.ac.jp)
Yonghwan Cho (Extension 4634, yhcho(at)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, the students will be divided into 8 groups and the experiments will be carried out jointly. Prior to the experiment, a preliminary lecture for experiment will be held to study the purpose, the method of implementation, and the arrangement of the results in advance, and a pre-report (preparatory report) should be submitted. In this experiment, students voluntarily proceed with the experiment based on the contents of the pre-report. After this experiment, prepare and submit a report. After all the experiments are completed, the results of the experiments will be presented.

●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

Not required.
In principle, classes are conducted face-to-face.

●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 (at) civil.nagoya-u.ac.jp
Takayuki SAKAI, Ext: 2734, E-mail: t-sakai (at) civil.nagoya-u.ac.jp
Takahiro YOSHIKAWA, Ext: 3834, E-mail: yoshikawa (at) civil.nagoya-u.ac.jp
Tomohiro TOYODAExt: 5072, E-mail: toyoda (at) civil.nagoya-u.ac.jp
Please replace (at) with @.

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	Part-time Faculty

●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, and a final exam focused on assessing your Speaking and Writing skills.
1) Reports and other class assignments 60%
2) Final exam (Final Report + Final Presentation) 40%

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

●Notes

For remote (online) class sessions we will use Teams or Zoom

●Contacting Faculty

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

Email: leleito#$#nagoya-u.jp
Please change #$# to @

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

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

●Course Purpose

The objective is to learn the basics of steel and concrete structuresexperientially 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.Bending 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

Students need to prepare the next experiment to understand basic parts. After each experiment, the reports must be completed and submitted by the deadline.

●Textbook

Text will be distributed at the first class.

●Additional Reading

Reference books will be recommended at the right time.

●Grade Assessment

C- grade or more are accepted by the result of all reports and group works.

●Notes

No requirements
Students who have a question on this class can contact to Takeshi HANJI (hanji(at)civil.nagoya-u.ac.jp).

●Contacting Faculty

Questions are accepted at any time.

Exercises in Information Processing (1.0credits) (情報処理演習)

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 by the achievements of this course objectives. In a case that the number of submission of report is less than 8 times, NOT to be evaluated.
You can pass this course to accomplish the deal with the basic issue related numerical analysis/simulation on civil and environmental engineering. And I will grade the comprehensive discussion on results of numerical analysis/simulation related to implementation topics in the field of civil and environmental engineering.

●Notes

You need to install gfortran software on your PC or to access the web programming site, for example ideone.com,

●Contacting Faculty

HIRAYAMA Nagahisa052-747-6824Emailhirayama.nagahisa@nagoya-u.jp
Webhttps://hirayamalab.com/lecture/

Numerical Analysis (2.0credits) (数値解析学)

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 assingments and final exams. A score of 60 or more out of 100 is a passing score.

●Notes

Not required.

●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	AratаKATAYAMA 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

On Water treatment technology
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

The students are expected to have learned general chemistry and hydrology prior to this class.
Depending on the situation of the new corona virus infection, the lecture may be conducted as a remote lecture using internet at home or elsewhere. The method of conducting the lecture will be informed to the

students through NUCT. Please make sure to check the method of conducting lectures posted on NUCT.

●Contacting Faculty

After the class
or
Responding to individual questions: by appointment of date/time by telephone/email.

Email address (Please change <a> with @, then send email)
Hirayama, Nagahisa: hirayama.nagahisa<a>j.mbox.nagoya-u.ac.jp
Katayama, arata: a-katayama<a>imass.nagoya-u.ac.jp

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	Satoru IIZUKA Professor
	Teruyuki SAITO Associate Professor	Takashi HIRAI Assistant Professor	Yuji KAKIMOTO Assistant Professor
	UKAI Makiko Assistant Professor	Part-time Faculty	GUO Jing Assistant Professor

●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 Kyozai I/II

●Grade Assessment
Attendance and reports

●Notes
Not required.
Basically, face-to-face classes are conducted.
* If there is a change in the class form, etc. after registration, we will guide you on the NUCT class site.

●Contacting Faculty
Students can ask questions to professors during classes.
Questions during off-class hours can be asked via call: Yamamoto at yamamoto(at)civil.nagoya-u.ac.jp or 789-4636, Tobita at 789-3754 and Saito at saito(at)nuac.nagoya-u.ac.jp.
* Please replace (at) by @.

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

The handout is distributed in the lecture via NUCT.

●Additional Reading

Reference books are introduced in the lecture.

●Grade Assessment

Passing score is 60% or more based on reports (20%) and regular exam (80%).

●Notes

No special requirement is necessary.

●Contacting Faculty

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

You can contact with the following e-mail address if necessary.
junjikato(at)nagoya-u.jp

Replace (at) by @ when you send e-mail.

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 and reports.

●Notes

Not required.
Lecture is by face-to-face at the classroom.

●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

Urban Environmental Systems Engineering (2.0credits) (都市環境システム工学)

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

no requirement.
On line lecture will be provided by teams, zoom, etc.
Questions to teacher will be by NUCT message function.

●Contacting Faculty

In the class and/or by e-mail.
The exchange of opinions among students will be conducted by NUCT message function.

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 Finite Element Method (FEM) based on linear elasticity.
Performance targets:
1) To understand the basic concept of FEM.
2) To explain the solution method of FEM for linear elastic body.
3) To make a program for a simple FEM and solve some structural problems.

●Prerequisite Subjects

Introduction to Structural Mechanics, Structural Mechanics, Applied Structural Mechanics

●Course Topics

1. Introduction of finite element method
2. FEM for continua
3. FEM for discrete structures
4. Programming

Several reports will be given after lectures.

●Textbook

Handout is distributed.

●Additional Reading

Reference books are introduced at the first lecture.

●Grade Assessment

Passing score is 60% or more based on reports (50%) and regular exam (50%)

●Notes

No special requirement is necessary.

●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 enginering 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	Hikaru NAKAMURA Professor

●Course Purpose

The objective is to promote understanding the interaction behavior of axial force and bending moment, shear failure, bond mechanism and principle of prestress concrete.

After completing this class, students will be able to:
1. Explain interaction behavior of axial force and bending moment
2. Explain shear failure and calculate shear capacity
3. Explain bond mechanism and its effect
4. Explain principle of prestress concrete

●Prerequisite Subjects

Introduction to Structural Mechanics, Fundamentals of Structural Analysis with Exercises, Material Engineering, Structural Mechanics and Tutorial, Concrete Structures I

●Course Topics

1. Interaction behavior of axial force and bending moment
2. Shear failure
3. Bond mechanism and its effect
4. Prestress concrete

Before class, please read the designated part of the textbook. After class, please solve the problem exercises in textbook and distributed materials.

●Textbook

Learning of concrete -Structure- (Rikotosho Co.ltd) (In Japanese)

●Additional Reading

Reference books will be recommended at the right time

●Grade Assessment

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

(Assessment criteria) Acceptance criteria are to be able to understand the interaction behavior of axial force and bending moment, shear failure and calculation method of shear capacity, bond mechanism and its effect, principle of prestress concrete.

●Notes

No course requirements are required.

●Contacting Faculty

Office hour: 15:00-17:00 of Monday. Welcome to come to room directly anytime and question by e-mail hikaru(at)cc.nagoya-u.ac.jp

Geotechnical Engineering (2.0credits) (地盤工学)

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%). 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.
Lecture is held face-to-face.

●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(at)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 foundamental 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.Tsunami and storm surge disasters and countermeasures
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

It is an important ability to utilize the knowledge gained through lectures and to summarize and explain the findings. This course aims at understanding the fundamentals of infrastructure and spatial planning and learning basic analytical methods and presentation skill. In addition, this course aims at acquiring an ability to explain them in English.
The goal is to obtain the ability to find a problem in the field of the infrastructure and spatial planning and skills for explaining them adequately.

●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. Higher score will be given as the difficulty and adequacy treated.

●Notes

Not required.

●Contacting Faculty

Please e-mail each professor whenever you have a question.
Tomio Miwa: miwa[at]nagoya-u.jp

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	GUO Jing Assistant Professor

●Course Purpose

Through this lecture, students will learn information processing techniques to solve environmental problems using the Geographic Information Systems (GIS). The practice will improve students' ability to find out the problem and address it.The goals of this lecture are as follows.1. Discover problems based on the conservation and utilization of environmental resources.2. Acquire the information processing ability required for a systematic approach to solving environmental problems through problem-solving stories such as evaluation of alternatives for environmental improvement.

●Prerequisite Subjects

Academic Information Processing and Exercises, Social Capital Planning, Probability and Statistics, Sanitary Engineering, Urban Environmental Systems Engineering

●Course Topics

Week 1 Introduction (What to Learn in Exercises)Weeks 2-3 Basic operations of the application 1 (spreadsheet, GIS)Weeks 4-6 Basic operations of the application 2 (spreadsheet, GIS)Weeks 7-10 Problem Discovery 1: Data processing about urban activity and environmental conditions (GIS)Weeks 11-14 Problem Discovery 2: Basics of Correlation Analysis to Capture Relationships between Elements (GIS)Week 15 Summary

●Textbook

Hand out in the class

●Additional Reading

Information of references will provided in the class.

●Grade Assessment

Evaluation is carried out by reports (100%). Those with less than 80% attendance in the class will not be evaluated.

●Notes

No pre-requirements. The class will be mainly online.

●Contacting Faculty

Questions will be accepted in the classroom after the exercise.For other times, please discuss the time with the instructor in advance by email or phone.Prof. TanikawaTel. 3840, tanikawa@nagoya-u.jp

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 Associate 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 bridges2. Observation of N2U-BRIDGE3. Design concept, Design condition, Analytical model, First report4. Analytical theory and FEM(beam element)5. Calculation of load, Analytical method, Submission of first report6. Explanation of first report, design of main girder, return of first report7. Design of lateral direction, Final repot8. Preparation of design document9. Bridge construction site seeingBefore 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

(Assessment method)Final report is assigned to student who submitted all reports. Final report is scored by the report content.(Assessment criteria) Acceptance criteria are to be able to conduct structural analysis of PC cable-stayed bridge and to make design draft and structural drawing.

●Notes

Therer is no requirement of the course.

●Contacting Faculty

Welcome to come to room directly anytime and question.Assis.Prof.Miura: t.miura(at)civil.nagoya-u.ac.jpProf.Nakamura: hikaru(at)cc.nagoya-u.ac.jp

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

Course Type	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%). 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.
Lecture is held by face-to-face or ONLINE by using Zoom or Teams.
Ask questions to lecturer using E-mail.

●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(at)civil.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

* Civil and Environmental Engineering Program

No requirements.

* Architecture Program

It is desirable that there are few courses that have not been taken.

●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

* Civil and Environmental Engineering Program
No requirements.

* Architecture Program
It is desirable that there are few courses that have not been taken.

●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.
Through this lecture, students will be able to explain these contents in writing.

●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

This course aims at understanding the historical progress of civil infrastructure and urban planning from ancient to the modern times and acquiring the ability to think future infrastructure/urban design.
The goal of this course is to learn philosophy and necessity of civil engineering through its history.

●Prerequisite Subjects

History of City and Civilization, Development of Structure and Technology

●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 report1. 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

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.

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

The way of this lecture will be announced on NUCT.

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 the test (reports in the case of pandemic): 100% will be evaluated. Total 60 points out of 100 points is a pass grade.

●Notes

There is no special conditions.

●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)

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.Basic theory of space design
7.Field work
8-10.Planning theory for House
11-14.Basics of 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(60%) and final examination(40%).
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 TABATAtabata(at)cc.nagoya-u.ac.jp

Techniques for Natural Disaster Prevention and Mitigation (2.0credits) (防災・減災技術)

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
	AarataKATAYAMA 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

Not required.
In principle, this lecture will be provided online using Zoom or Microsoft Teams.

●Contacting Faculty

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

Noda, T.　Ex. 3833, noda(at)nagoya-u.jp
Nakamura, H.Ex. 5690, hikaru(at)nagoya-u.jp
Toda, Y.　Ex. 5176, ytoda(at)cc.nagoya-u.ac.jp
Katayama, A.Ex. 5856, katayama.arata(at)nagoya-u.jp
Tanikawa, H.Ex. 3223, tanikawa(at)nagoya-u.jp
Nakano, M.Ex. 4622, nakano(at)civil.nagoya-u.ac.jp
Kato, H.　Ex. 5104, kato(at)genv.nagoya-u.ac.jp
Nakai, K.　Ex. 5203, nakai(at)civil.nagoya-u.ac.jp
Nakamura, T.Ex. 4632, tnakamura(at)nagoya-u.jp
Nakamura, S.Ex. 2773, shinichiro(at)civil.nagoya-u.ac.jp
Please replace (at) with @.

Infrastructure Design and Maintenance (2.0credits) (社会基盤施設の設計と維持管理)

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

●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 ethics2. Design, construction and maintenance of structures of inter city expressway, Engineering ethics3. Role and management of inside city expressway, Engineering ethics4. Role of power plant and design of structures, Engineering ethics5. Role of communication facility and maintenance of structure, Engineering ethics6. Construction site seeingBefore class, please examine the related structures. After class, the assignments must be completed and submitted by the deadline.

●Textbook

There are no textbooks, but materials are distributed in each lecture.

●Additional Reading

Reference books will be recommended at the right time

●Grade Assessment

(Assessment method) Each instructor individually assigns a report task related to the lecture, scores the report contents, and comprehensively evaluates the total score.(Assessment criteria) Acceptance criteria are to be able to understand the process from infrastructure design to maintenance, importance of maintaining the function of the lifeline structure, role and importance of engineers in the construction and maintenance of infrastructure.

●Notes

None

●Contacting Faculty

Welcome to come to room directly anytime and question by e-mail hikaru@cc.nagoya-u.ac.jphikaru(at)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, alumini 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

●Contacting Faculty

I cope after a lecture every time. Or ask the staff of the educational affairs section.E-mail:t-nagasaki@energy.nagoya-u.ac.jp

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

It is recognized as an urgent issue to create low-carbon society in order to mitigate global warming. The objective of this lecture is to understand the current situation of Japan in terms of energy supply and demand as well as technologies of energy conservation and renewable energy utilization. Energy policy of Japan such as Energy Basic Plan is also one of the topics.
It is expected that the lecture provides fundamental understanding of measures to deal with reducing primary energy consumption.

●Prerequisite Subjects

Fundamentals of Engineering

●Course Topics

1. Situation of Japan with respect to energy
2. Energy policy and Energy Basic Plan
3. Solar energy technologies
4. Energy conservation technologies with wasted heat recovory
5. Social systems for low-carbon society
6. Try "Test of Energy"

●Textbook

None.

●Additional Reading

To be distributed in the lecture.
"Test of Energy", http://www.ene-kentei.jp

●Grade Assessment

Reports are required to be submitted during the lecture. The subjects are presented in the lecture.

●Notes

There are no prerequisites.

●Contacting Faculty

All questions are encouraged to be presented during the lecture.

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	Emanuel LELEITO Lecturer	GRIB Dina Lecturer	Gang ZENG Lecturer
	Kiyohisa NISHIYAMA Designated 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 tasks 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.

4. Societal, Cultural and Economic Contexts of Engineering Practice in Japan (Dina GRIB)
- The last part of this course introduces you to the Science, Technology and Society studies (STS) field and provides a brief overview of how Japanese cultural, economic, societal and political tradition affects technological innovation and scientific research as well as how STI in turn affect Japanese culture, society and politics.
- The participants will be invited to conduct a mini case study using online materials, share their findings in class and participate in group discussions.

●Textbook
Lecture materials will be distributed in class during each lecture.

●Additional Reading
References and materials for additional reading will be introduced 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 valuate 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 to do independent online research to gather necessary information and present the topic in 3-5 minutes. 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
None

●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		

●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 momorize the most important sentences which they will study in the next lecture.

●Textbook

Elementary ClassNIHONGO Breakthrough, From suruival 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 ClassClass performance 20Assignments 20Interview test and examination30, Presentation 30
In each item, the ability of comversation is an important check point.
Intermediate ClassClass performance 20Assignments 10Interview test 20Written examination20, Presentation 30.

In each item, 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

There are no prerequisites.

●Contacting Faculty

E-mail:roofrate3-nug@yahoo.co.jp

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	Part-time Faculty	

●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 normalization2. Basis of statistics- Statistics representing data- Moment3. Statistic estimation and test- Sampling- Error and uncertainty- Estimation- Hypothesis test4. Correlation and regression- Statistic independence- Explanatory and objective variables- Linear regression equation5. Level of measurement6. 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

There are no prerequisites.

●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	Emanuel LELEITO Lecturer	Gang ZENG Lecturer	GRIB Dina 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. Research skills
1.1 Academic literacy and critical reading
1.2 Logical thinking and structuring logic
1.3 Avoiding plagiarism
2. Writing skills
2.1 Understanding document structure
2.2 Organizing document structure
2.3 Writing abstracts in English
3. Presentation skills
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

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

●Contacting Faculty

Questions will be accepted during or 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

No requirement for the course.

●Contacting Faculty

Introduction to Civil Engineering and Architecture (2.0credits) (環境土木・建築学概論)

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 through site visits. A report is requested to submit after each visit.1)Orientation2)Lecture & Site-visit 1: Preservation of Historical Area – “The Cultural Path” located in the downtown of Nagoya* Before lecture, please see following website ; http://www.futabakan.jp/english/cultural_path.html3)Lecture and Site-visit 2: Architecture and culture –Nagono and Shike-michi district4)Lecture 3: Social infrastructure and civil engineering (1) Expressway Development in Japan5)Lecture and Site-visit 4: Nagoya University Disaster Mitigation Research Center6)Lecture 5: Social infrastructure and civil engineering (2) Maintenance and Operation of Expressway7)Site-visit 6: Ichinomiya Traffic Control Center (Central Nippon Expressway Co., Ltd)8)Site-visit 7: E-MAC Technical Training Center (Central Nippon Expressway Co., Ltd)

●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 requirements.

●Contacting Faculty

Questions are welcome. Questions can be sent by e-mail.E-mail: nakamura@genv.nagoya-u.ac.jp (Prof. Nakamura), tobita@sharaku.nuac.nagoya-u.ac.jp (Prof. 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

[purpose of the class] In the corporate management, I learn it about the management of the technique that is essential for the growth, development and the innovation.
[arrival target] I become able to understand a way of thinking and the basics of management. I understand an organization change and an organization design, the management of the innovation and come to be able to give explanation.

●Prerequisite Subjects

●Course Topics

Management of technology (MOT) and knowledge management
Management and artefact (artifact)
Organization to realize innovation
Science, technique, sense of values
Innovation and organization learning

[instructions of the class overtime learning]
Preparing a next class range, and understanding the meanings of the technical term.

●Textbook

Isao Naito, Yukihiro Wakuta edition (2016) " organization theory of the representation" CHUOKEIZAI-SHA

●Additional Reading

Instructions will be given as necessary in class

●Grade Assessment

[evaluation method] I give a small test to look back on the lecture content of the day before the end of the lecture of every time and have you finally submit a report. I evaluate it at 50% of normal points, report point 50%. In addition, I do not accept the submission of the report when there is absence more than 1/3.
[point of reference] Pass in understanding the basic concept and term in conjunction with the management engineering definitely; is based.

●Notes

There are no prerequisites.

●Contacting Faculty

I accept questions during the class.