建築学セミナー　Introduction to Architecture
[Instructor] Hiroki Suzuki, Tatsuya Hayashi
[Credits] 2
[Semester] 1st year Spring-Fall-Wed 1
[Course code] T1N001001
[Room] Respective laboratories
*Please check the bulletin board of Department of Architecture , that will noticed where the lecture is held
[Course objectives] Students and faculty members think together about study methods and attitudes as well as how to be aware of and interested in issues in the Department of Architecture. In particular, this course aims to teach the basic understanding of the fields of urban environmental and architectural planning as well as building structure design and to facilitate forming the basis of communication between the students and faculty members, by exposing the students in class in seminar format to educational research contents in each educational research field of the Department of Architecture.
[Plans and Contents] Groups of about 10 students each will be formed. Each group will take a class in seminar format covering a total of four educational research fields and spend three to four weeks per field. The three to four week-long seminar for each field will be planned according to the characteristics of educational research in each field.
[Textbooks and Reference Books] Not particularly
[Evaluation] The grade will be determined by the average score (if absent or not turned in) of exercises to be occasionally given during the lecture hours. Students will not be graded if they do not meet the rule of the Faculty of Engineering on the number of attendance days.
[Remarks] Students will be assigned to their group in the first week. Follow the rest of the schedule to be posted.

建築デザイン基礎　Basic Architectural Design
[Instructor] Morris, Martin Norman, (Sumiko Ebara, Michiru Kanade, Shigeru Iwase)
[Credits] 2
[Semester] 2nd year-Spring-Tues 3, 4, 5
[Course code] T1N002001, T1N002002, 1N002003
[Room] Bldg.ENG-17-212
[Course enrollment] No specific number
[Candidate] Students of other departments cannot register for this course because teaching space and equipment are limited.
[Course description] This course is intended to develop skills in recording, understanding and representing buildings, designing a presentation, and expressing ideas about a building conceptually.
[Course objectives] Through the use of basic drawing conventions, sketches, diagrams, model-making techniques, and isometric drawing techniques learned in the Descriptive Geometry Course, Basic Architectural Design seeks to develop students' understanding of buildings and their ability to represent and convey information about buildings. Based on visual information and examination of an actual building, students create drawings and a 3 dimensional model. Students will also be given opportunities to study building survey and recording techniques.
[Plans and Contents] Tasks set include the following: (1) to create drawings and a model based on an actual building, each student being encouraged to explore and express in visual terms a theme of their own choice relevant to the building. (2) Establish concept. (3) Express one's imagination using narratives, drawings and spatial expressions. During the first half, students will be asked to familiarize themselves with the traditional architecture of Japan, cultivating a better understanding of architectural techniques, components, and element composition methods. To achieve this goal, a measured survey of a traditional Japanese vernacular dwelling is undertaken as a basis for making measured drawings. They are then set the problem of making a 3 dimensional frame model of the structure. Employing knowledge and techniques acquired through architectural representation classes previously taken, students are finally encouraged to choose a theme in order to express through axonometric drawing qualities found in traditional architecture which they consider important. For the first time, this year, this work on a traditional building constituted the entire course.
Guidance:
1 . A Lecture will be given to explain the overall nature of the assignment to be offered and introduce traditional Japanese timber framed architecture (especially vernacular architecture) as well as associated survey and research methods. Students will be asked to study basic concepts relating to the timber-framed architecture of Japan and methods of surveying and recording it. — E1
2. Students will tour a traditional building (a vernacular building with designated cultural property status) and undertake a building survey. Students will conduct a survey of this traditional Japanese building, make field notes, and grasp the process. — E1
3. Referring to individually prepared field notes, students will be asked to create accurate ink drawn plans and sections of the vernacular building with designated cultural property status. While developing drawing techniques, students will deepen their understanding of this particular building and others like it. — E1
4. Students will be asked to create a 1:50 model in wood representing the timber frame of the subject building, with the aim of developing accurate and careful modeling techniques to improve their understanding of the way in which building components are assembled together. — E1
5. Through criticisms of the completed model, students will be given an opportunity to describe their findings about the structure of the building to develop their ideas and improve their presentation techniques. — E1
6. Students will be given the assignment of designing and creating axonometric/isometric drawings representing the building selected as the subject of the whole assignment. This course will aim to improve the architectural presentation abilities of students. All work is to be hand-drawn — E1
7. Through criticism of the completed axonometric and isometric drawings, students will be given an opportunity to improve presentation techniques associated with exhibiting and presenting their work. — E1
[Keywords] image, actualize, drawing, model, traditional building
[Evaluation] Assessment will be based on the value of points gained from each stage of the assignment, with a points deducted for non-attendance. Details about mark allocation can be found in the handout. For the first half, points are distributed as follows: 10 points for the survey and field notes, 20 points for the plan & section drawings, 30 points for the model, and 40 points for the isometric.
[Related courses] Descriptive Geometry
[Course requirements] Students must have taken the course of Descriptive Geometry.
[Remarks] Since the assignment does not end in the classroom time, students need to proceed with the work in their own time, in accordance with the comments set out for each Esquisse, and reference books. Students must work on the assignment by themselves without the help of others. Also, they should avoid any action that infringes copyright.

建築の構造 Structure of Buildings
[Instructor] Nobuyuki Izumi
[Credits] 2
[Semester] 1st year-Spring-Fri 2, 3　1 term
[Course code] T1N003001, T1N003002
[Course enrollment] 85（It is up to the limit of the lecture room）
[Candidate] 1st year and other grade students of Department of Architecture (Only a few other Department students is acceptable, who needs prior consent.)
[Course description] The basics of the role of structure, structural system (materials, forms, and construction methods), and structural design of buildings to create an architectural space will be lectured. Specific building structures will be covered to explain the structural system of structure from the viewpoints of “height” and “span”. Also, the basics of the structural design of buildings will be explained from the viewpoint of “safety”.
[Course objectives] To understand the basics of the role of structure, structural system (materials, forms, and construction methods), and structural design of buildings which is the most fundamental component in creation of an architectural space. To be able to give a brief overview of typical structural systems from two viewpoints of “height” and “span”. To be able to point out the importance of structural design of buildings and give its brief overview from the viewpoint of “safety”.
[Plans and Contents] The class will be conducted in a lecture format with three main themes of the basics of structure, structural systems, and structural design of buildings and include visual presentation of specific structures. Students will understand key points of the lecture by filling out a lecture summary sheet with the contents of the lecture in class. After the lecture, students will review the lecture contents and check the level of their understanding by submitting a small paper assignment. At that time, they will deepen the level of their understanding by studying again reference points in the textbook and reference book indicated in the lecture summary sheet. Also, in preparation for the following lecture, students review the contents of relevant lecture summary notes from previous lectures. The lecture summary notes and small paper assignment will be handed out in class or need to be downloaded from a website related to this class prior to the lecture. (Details will be provided in class.)
1. Structure and its functions: (1) what is “structure of buildings”?
2. Structure and its functions (2) Functions of “structure of buildings”.
3. System and design of structure.
4. Basics of structure (1) Structural types.
5. Basics of structure (2) Structural forms.
6. Basics of structure (3) Construction methods
7. Categories of structural systems.
8. Structural system for 'height' (1) multistory rigid frame and walls.
9. Structural system for 'height'(2) Tubes and super frame.
10. Structural system for ' span ' (1) Arch, truss, and single story rigid frame.
11. Structural system for ' span '(2) Shells, folded plate, cable, and membrane.
12. Basics of structural design.
13. Structural design for 'safety' (1) Earthquake, wind, snow, and fire.
14. Structural design for 'safety'(2) Earthquake resistances, vibration control, aseismic isolation, wind resistance, diagnosis, and reinforcement.
15. Research of structural design and engineering.
16. Examination
[Keywords] structure, structural type, structural form, construction method, structural design
[Textbooks and Reference Books] Textbook: Textbook on Structure Architectural Institute of Japan）
Reference Book: Structural System for Architecture（Shoukokusya）
[Evaluation] Evaluation is given by Small reports and final exams. For an overview of the structural system (material, form, and construction method) and structural design, student's understanding of each item will be assessed by reports, and their overall level of understanding for the subject will be assessed through the final examination. Minimum credits required for a pass is 60 points.
[Remarks] Generally, lectures will be provided on the second slot of Fridays. For the first half of the spring program, the third slot of Fridays will also be used as an extension of the second slot (exact dates of the third slot use will be confirmed in lectures). Student's attendance is compulsory for accreditation.

構造力学 Ⅰ　Structural Mechanics I
[Instructor] Toru Takahashi
[Credits] 2
[Semester] 1st year-Fall-Mon 3
[Course code] T1N004001
[Room] Bldg.ENG-9-106
[Course enrollment] 90
[Candidate] Students, except 1st year of Department of Architecture must consult with instructor.
[Course description] As an introductory class to design a building structure, statically determinate structures will be covered, and modeling of load and external force on the structures as well as stress generated in the structures and their state of deformation will be outlined.
[Course objectives] The weight of accumulated snow, wind pressure, and external force and disturbance caused by earthquakes act on buildings in addition to their own weight and the weight of their loads. To construct safe buildings against these factors, students will learn structural mechanics, the mechanics for knowing what kind of force acts on pillars and joists and how they are deformed. In particular, the objective of this class is for the students to be able to figure out the cross section force and outline of deformation of statically determinate structures.
[Plans and Contents] If students are absent from class, they will experience difficulty in the next class because basically one unit is going to be covered by one lecture. They will need to make an effort to review the missed lecture by borrowing notes, for example, before the next class.
1. Guidance, necessity of structural mechanics, and equilibrium of forces: Understanding equilibrium of forces, the required condition for a structure to sufficiently support itself.
2. Concept of moment: Understanding the concept of moment and conditions for equilibrium of forces working on the structure as a whole.
3. Expansion and contraction of components, unit stress, and distortion: Understanding the concept of unit stress and distortion which is required for obtaining amount of expansion and contraction in components subjected to compressive and tensile forces.
4. Principle of supports, joints, and trusses: Becoming able to model structure and supports, judge stability and instability, and be able to understand the principle of trusses.
5. Solving trusses (joint method and section method): Solving truss structure using joint method and section method, with various truss structures as examples.
6. Solving trusses (Cremona's solution): Solving truss structures using Cremona's solution, with various truss structures as examples.
7. Simple beam and forces in structural members (shearing force and bending moment): Understanding the concept of shearing force and bending moment on a simple beam as an example, while also understanding how to draw stress diagrams (axial force diagram, shearing force diagram, and bending moment diagram).
8. Distributed load: Understanding the concept and calculation methods of distributed load on simple beams, and methods for obtaining forces in structural members of simple beams subjected to distributed load.
9. Summary and revision.
10. Cantilever: Understanding methods for solving cantilevers subjected to the intensive load and distributed load.
11. Intensity of bending stress and deflection: Understanding the concept of bending stress intensity on beams, resulting values of deflection and its outline.
12. Sectional design of simple beams: Understanding the relationship between the bending stress intensity and material strength, and learning the flow of sectional design for a simple beam.
13. Statically determinate frame (cantilever): Understanding the method for solving statically determinate frame, with a statically determinate frame in cantilever form as an example. Understanding methods for drawing stress diagram for a statically determinate frame.
14. Statically determinate frame (simple beam): Understanding the method for solving statically determinate frame of a simple beam.
15. Simple beam (three-hinged frame): Understanding the method for solving three-hinged frame by comparing against the method for solving statically determinate frame of a cantilever and a simple beam.
16. Final examination.
[Keywords] Force, Statically determinate structures, Stress, Beam, Axial force, Shear force, Bending moment
[Textbooks and Reference Books] Since many textbooks on structural mechanics are available from bookstores, it is advisable for students to obtain a copy once the lecture has progressed.
[Evaluation] Basically, it will be evaluated by interim exam and the final exam. To meet attendance regulation is the minimum condition to take an exam.
[Related courses] Structure of Buildings, Seminar on Structural Mechanics I
[Course requirements] Because Structural Mechanics I and Seminar on Structural Mechanics I are a unit course, student must take both courses.
[Remarks] It is possible to bring alpha calculator to exams (not calculator of mobile phone).

構造力学演習 Ⅰ　Seminar on Structural Mechanics I
[Instructor] Toru Takahashi
[Credits] 2
[Semester] 1st year-Fall-Mon 4
[Course code] T1N005001
[Room] Bldg.ENG-9-106
[Course enrollment] 50
[Candidate] Students, except 1st year of Department of Architecture must consult with instructor.
[Course description] As an introductory class to design a building structure, statically determinate structures will be covered, and students will solve exercises on modeling of load and external force on the structures as well as stress generated in the structures and their state of deformation to understand them.
[Course objectives] The weight of accumulated snow, wind pressure, and external force and disturbance caused by earthquakes act on buildings in addition to their own weight and the weight of their loads. To construct safe buildings against these factors, students will learn structural mechanics, the mechanics for knowing what kind of force acts on pillars and joists and how they are deformed. The objective of this seminar is for students to deepen their understanding of the basics of structural mechanics by solving practice exercises on the contests learned in the lecture, Structural Mechanics I, and putting them together in a small paper.
[Plans and Contents]
1. Balancing of force: to understand what it means that “force is balanced,” which is a condition for buildings to stand on their own.
2. Force and moment: to understand the concept of moment and conditions for force acting on the whole building to be balanced.
3. Member expansion and contraction, stress intensity, and strain: to understand the concepts of stress intensity and strain required for calculating the amount of change in length of a member to receive compressive or tensile force.
4. Support points, joints, and truss principle: to be able to model a building and supporting points and determine its stability/instability; to understand the truss principle.
5. Truss analysis (joint method and section method): to be able to analyze truss structures by the joint method and section method by studying several truss structures as examples.
6. Truss analysis (Cremona method): to be able to analyze truss structures by the Cremona method by studying several truss structures as examples.
7. Simple beams and member force (shearing force and bending moment): to study simple beams to understand the concepts of shearing force and bending moment and to understand how to draw a stress diagram (axial force diagram, shearing force diagram, and bending moment diagram).
8. Distributed load: to understand the concept and calculation method of distributed load on a simple beam and how to calculate the member force of the simple beam under distributed load.
9. Cantilever: to understand how to calculate a cantilever under concentrated load and distributed load.
10. Bending stress and deflection: to understand the concept of bending stress generated in a beam; the value and outline of deflection generated as a result of the bending stress.
11. Simple design of beam section: to understand the relationship between bending stress and material strength and to learn a flow in creating a simple design of beam section.
12. Statically determinate frame (cantilever type): to study cantilever type statically determinate frames to understand how to solve statically determinate frame problems; to understand how to draw a stress diagram of the statically determinate frame.
13. Statically determinate frame (simple beam type): to understand how to solve simple beam type statically determinate frame problems.
14. Statically determinate frame (three-hinge frame): to understand how to solve three-hinge frame problems in comparison with methods of how to solve cantilever type and simple beam type statically determinate frame problems.
15. To deepen understanding of the overall subject through review exercises of the overall subject for the final examination in the lecture, Structural Mechanics I.
[Keywords] Force, Statically determinate structures, Stress, Beam, Axial force, Shear force, Bending moment
[Textbooks and Reference Books] Since many textbooks on structural mechanics are available from bookstores, it is advisable for students to obtain a copy once the lecture has progressed.
[Evaluation] The attendance of students will be marked by a submission of each report within a designated time frame (reports with insufficient contents will be subjected to resubmission). Minimum condition for a pass requires attendance to meet the regulation set out by the Faculty of Engineering.
[Related courses] Structural Mechanics I
[Course requirements] Because Structural Mechanics I and Seminar on Structural Mechanics I are a unit course, student must take both courses. Seminars will be offered in a two-class format. The class assignment will be notified at the beginning of the academic year.
[Remarks] Students must bring devices which can perform numerical calculation (alpha calculator, pocket able computer).

日本建築史 History of Japanese Architecture
[Instructor] Sumiko Ebara
[Credits] 2
[Semester] 1st year-Fall-Tues 4
[Course code] T1N007001
[Room] Bldg.ENG-17-112
[Course enrollment] 100
[Candidate] Students of Faculty of Engineering, other Faculties, and Specially Registered Non-Degree Student. Students with good understanding of Japanese.
[Course description] To deepen students' understanding of Japanese architecture, lectures will cover basic structural components of architecture, structural styles, and decorative features from each historical period. Lectures will mainly focus on developing students' ability to analytically interpret architecture through the basic drawings such as plan, elevation, section and layout. In addition, since Japan faced a stylistic conflict between traditional architecture and modern architecture over the process of its modernization, the class will also touch on architects from the Meiji period and later and their activities in relation to the movements in the Western countries.. By covering the histories up to the post war architecture, the lecture aims to offer a scope into the architectural history which can act as a guideline for students' future activities as architects.
[Course objectives]Obtain fundamental knowledge related to Japanese architecture, and viewpoints to analyze Japanese architecture. 1. Understanding terminologies of Japanese architectural history. 2. Understanding chronological transition of Japanese architecture, and becoming able to distinguish differences in architectural styles. 3. Being familiar with architecture of historic importance and prominent architects.
[Plans and Contents]Students will aim to cultivate their knowledge of architectural history, a fundamental knowledge for wide range of activities related to architecture. Lectures will follow historic events in a standard chronological manner, and each lecture covers a specific theme. In addition to textbooks, slide projection will be utilized as much as possible in order to explain architecture in detail. To promote greater understandings and revisions, students will be asked to take as many notes as possible on handouts, and on their own notebooks. As a supplementary study, students will be asked to complete and submit a report including hand sketches, at each lecture slot (the report theme will be provided on each lecture slot).
1. Learning from architecture: 'Architecture without architects' and 'Learning from Villages. — E1
2. From Jomon period to Yayoi period: Tateanajukyo (pit dwelling houses) and takayuka jukyo (raised-floor houses) from — E1
3. Shinto architecture: Variation of Shinto architecture. — E1
4. Buddhist architecture: Layout of temples and configuring elements. — E1
5. Architecture of Esoteric Buddhism and Jodo Sect: Buddhist architecture from the Heian period. — E1
6. Urban planning of ancient , capitals, palace and their dwellings. — E1
7. Daibutsuyo — E1
8. Zenshuyo — E1
9. Houses from the middle ages to early modern times: Shinden-zukuri to Shoin-zukuri. — E1
10. Castles and shrines in Momoyama period. — E1
11. Sukiya-zukuri and tea rooms in Edo period. — E1
12. Summary and midterm examination. — E1
13. Architecture from the period of country opening: Architecture by foreign architects and quasi-western architecture. — E1
14. J. Conder and his apprentices: Emergence of Japanese architects. — E1
15. Search for architectural style: Mastering Western architecture, Secession and Modern Architecture. — E1
[Keywords] temple, shrine, housing, private house, city, traditional Japanese style, Daibutsu-style, Zen-style, Shinden-zukuri, Shoin-zukuri
[Evaluation]For the achievement targets 1 to 3, students must achieve the minimum total credit of 60 points for obtaining a pass, consisting of reports (10%), interim examination (30%) and end of term examination (60%). Reports must be submitted to meet the deadlines. Students cannot bring non-permitted items to examinations.
[Related courses] History of World Architecture, Architectural History Field Trip, Architectural conservation and renovation, Advanced Architectural Studies III.
[Remarks]The curriculum substitutes the "History of Humanity and Architecture" held until 2005.

世界建築史 World History of Architecture
[Instructor] Sumiko Ebara
[Credits] 2
[Semester] 1st year-Fall-Wen 3
[Course code] T1N008001
[Room] Bldg.ENG-15-110
[Course enrollment] 150
[Candidate] Students of Faculty of Engineering, other Faculties, and Specially Registered Non-Degree Student
[Course description] Tracing the medieval Romanesque and Gothic styles from Greco-Roman roots, and proceeding to review the Renaissance Movement of Early Modern times, and the development of Western Architecture into the modern age, this course offers a systematic introduction to the story of Western Architecture down to the Modernist Architecture of the 20^{th} century. While on the one hand reflecting technological innovation, architecture is also a product of political, economic and social conditions. In addition, factors such as the personality of the architect also need to be taken into consideration. This course aims to help students acquire a basic grounding of knowledge concerning such aspects of architecture as constituent elements and their nomenclature, different styles, the famous architects of each era, and how to analyze buildings from plans, sections and elevations, and thus achieve an understanding and appreciation of them.
[Course objectives] ① To enable students to understand the names of parts of Western buildings. ② to enable them to understand the overall flow of Western architectural history. ③ to familiarize them with famous architects and surviving structures important in the history of Western architecture.
[Plans and Contents]
To aim to cultivate in students an understanding of the framework of architectural history embracing the entire range of building activity. While highlighting the overall flow of development from one era to another as a continuous historical narrative, every effort is made to make each lecture a self-contained account of a particular historical style or theme. To illustrate building construction, not only textbooks, but illustrated PowerPoint presentations will be much used. In order to increase their understanding and help them to review, students will be expected to fill in handout problem sheets and make their own illustrated notes, using their own hands and eyes as far as possible.
1. Western Classical Antiquity: Understanding the features and characteristics of Greek and Roman architecture.
2. Early middle Ages: Understanding Early Christian architecture, Byzantine architecture, and, by extension, the architecture of Eastern Asia Minor.
3. Romanesque: Understanding the features and characteristics of Romanesque architecture
4. Gothic: Understanding the features and characteristics of Gothic architecture.
5. Renaissance: Understanding the concepts of harmony and proportion in Western Architecture, and the revival of Classical Antiquity.
6. Mannerism and Baroque: Explained in conjunction with the Counter Reformation Movement and notions of Absolute Monarchy. Students will be helped to an understanding the features and significance of Mannerism and Baroque.
7. Neo-Classicism: Explained against the background of the Enlightenment, and the role of Neo-Classicism in the Age of Reason. In this way, students will be helped to understand its characteristics and significance.
8. Gothic Revival: Understanding the nature and characteristics of this movement (also a revival movement) from the perspective of the relationships between religion, society and architecture.
9. The end of the 19th century: this period saw the emergence of new creative styles not dependent on the revival of a past style, exemplified by the Arts and Crafts Movement and Art Nouveau. Students will be helped to understand this process.
10. Early twentieth century: Understanding the nature and characteristics of the “Sezession Movements”.
11. Summary and mid-term exams.
12. American Architecture: Understanding its features and characteristics, with particular emphasis on the work of F.L. Wright and the emergence of the high-rise buildings created by the Chicago School.
13. The emergence of the Modern Movement: Understanding the characteristic features of this movement through the works of Le Corbusier, Gropius, Mies van der Rohe, etc.
14. Development of the International Style and Modern Movement: Understanding how the Modern Movement achieved acceptance in various national contexts.
15. The world of architecture today: Understanding new ways of expressing construction, High-tech, and the architecture of the Deconstruction School.
[Evaluation] Marks given will be divided as follows: weekly reports 10%, mid-term exam 30%, final exam, and 60%. A total of over 60% is required to pass this course. Reports must be submitted by the set deadlines. Only books or notes specified may be brought into tests.
[Related courses] History of Japanese Architecture, Architectural conservation and renewal, ,Architectural History Field Trip

建築設計 I Architectural Design I
[Instructor] Hiroki Suzuki (Tomoro Aida, Aya Yamagishi)
[Credits] 2
[Semester] 2nd year-Spring-Tues 3, 4, 5 First half
[Course code] T1N010001, T1N010002 T1N010003
[Room] Bldg.10-412 Drawing Room
[Course enrollment] 20 /1 class
[Candidate] Students of Department of Architecture
[Course description] Students will learn how to design a house (single-family residential house). And the goal is to conduct an analysis of the issue conditions, while utilizing the combined knowledge such as architectural planning, equipment and structure, and to be explained and discussion properly what they have set.
[Course objectives] The objective of this class is for students to master basic architectural components that comprise a house, basic space structure of a house, basic space configuration of a house, and basic dimensions of each part in consideration of human scale.
[Plans and Contents]
1. Introduction of assignment, analysis of design conditions, conception (type of house to be designed), and examination of layout plan. Grouping — P11
2. Floor planning (overall planning). — P13
3. Floor planning (detailed planning of small spaces). — P13
4. Sectional planning (in relation to the floor planning). — P13
5. Planning of vertical sections (daylighting concept and interior planning). — P13
6. Sketch (checking design and drawing contents) — P13
7. Presentation and criticism. — P13
[Keywords] designing a house, human scale
[Evaluation] It will be comprehensively evaluated by attendance, presentation, and submitted works.
[Related courses] Architectural Design II
[Course requirements] Students must have taken credits of Descriptive Geometry, and Basic Architectural Design.
[Remarks] Since the assignment does not end in the classroom time, students need to proceed with the work overtime on the basis of the comments for Esquisse, and reference books. Students must work on the assignment by themselves without the help of others. Also, do not perform any action that infringes the copyright.

建築設計 II　Architectural Design II
[Instructor] Akiko Okabe, (Hiroshi Miyazaki)
[Credits] 2
[Semester] 2nd year-Spring-Tues 3, 4, 5 First half
[Course code] T1N011001, T1N011002, T1N011003, T1N011004, T1N011005, T1N011006
[Room] Bldg.ENG-10-412 Drawing Room
[Course enrollment] 20 students/ group
[Candidate] Students of Department of Architecture
[Course description] Designs learned in Architecture Design I will be applied. Students will work on small-scale collective housing and surrounding landscaping (exterior planning).
[Course objectives] Students will learn what is a comfortable and functional space and architecture for multiple people, through small-scale collective housing. Also, they will learn what is architecture in consideration of not only structures but also surrounding landscape and environment. And the goal is to conduct an analysis of the issue conditions, while utilizing the combined knowledge such as architectural planning, equipment and structure, and to be explained and discussion properly what they have set.
[Plans and Contents]
1. Introduction, grouping, analysis of design conditions, conception, and evaluation of floor planning. — P11
2. Floor planning (including overall planning and floor planning). And landscape planning. — P13
3. Floor planning (detailed planning of small spaces), sectional planning, and elevational planning. — P11 P13
4. Sketch (checking design and drawing contents). — P13
5. Sketch (checking design and drawing contents)... P13
6. Sketch (checking design and drawing contents)... P13
7. Presentation and criticism. — P13
[Keywords] collective housing
[Textbooks and Reference Books] Kenchiku Sekkei Shiryo Syusei (Architectural Design Archives), compact edition.
[Evaluation] It will be comprehensively evaluated by attendance, presentation, and submitted works.
[Related courses] Architectural Design I
[Course requirements] Students must have taken ccredits of Architectural Design I.
[Remarks] Since the assignment does not end in the classroom time, students need to proceed with the work overtime on the basis of the comments for Esquisse, and reference books. Students must work on the assignment by themselves without the help of others. Also, do not perform any action that infringes the copyright.

建築設計学　Architectural Design Method
[Instructor] Hiroki Suzuki
[Credits] 2
[Semester] 2nd year-Spring-Tues 2
[Course code] T1N012001
[Room] Bldg.ENG-9-106
[Teaching Methods] Lecture
[Course enrollment] 85
[Candidate] 2nd year of Department of Architecture
[Course description] This class will illustrate how to design the overall soft and hard environments surrounding us, by extracting various design components and presenting domestic and overseas cases. Slides will be used in this class and simple assignments will be given to students.
[Course objectives] To acquire basic technology and knowledge, including attitude as a designer and how to design the building by illustrating with specific cases a variety of content related to architecture. Aim to operate how to master design techniques that can be observed from various domestic and overseas cases.
[Plans and Contents]
Give a lecture linked to the class, such as architectural design
1. Guidance/At the beginning (roles of architectural design and how to proceed architectural design)
2. Housing Theory 1 (Architecture concept and space representation)
3. Housing Theory 2 (Architecture concept and space representation)
4. Basic knowledge of architectural design 1(1.1space/function, 1.2 sense/perception, 1.3 memory/image)
5. Sense of the dimensions involved in the design
6. Overview of building regulations necessary to architectural design
7. Basic knowledge of architectural design 2 (1.4 dimensions/ proportions, 1.5activity/ flow line 1.6 piazza courtyard)
8. Basic knowledge of architectural design 3 (1.7 approach /sequence, 1.8 street and landscape, 1.9villages and urban)
9. Learn how architectural design 1 (2.1 housing (independent housing /complex housing))
10. Learn how architectural design 2(Live it together (relationship ties))
11. Basic knowledge of architectural design 4 (1.10 landscape/environment, 1.11 preservation/regeneration
1.12 plotting and expression)
12. Learn how architectural design 3 (landscape to create, protect landscape)
13. Learn how architectural design 4 (museums, office building (business))
14. Learn how architectural design 5 (aesthetics awareness (hospitality))
15. Learn how architectural design 6 (environment/energy/city/architecture)
[Evaluation] Evaluation is given by attendance, submitted assignments, and report.
[Remarks] Information and tips of architectural design are hidden in everyday life. It is recommended the training to notice a constant awareness. It is also recommended to carry a camera or like a measure always, to measure what it was worrisome and recorded. Students are given the keywords during class to help design in the class, and expected to exam overtime.

建築設計 III　Architectural Design III
[Instructor] Akiko Okabe（Hiroshi Miyazaki）
[Credits] 2
[Semester] 2nd year-Fall-Wen 4, 5, 6 Second half
[Course code] T1N013001, T1N013002, T1N013003 T1N013004, T1N013005, T1N013006
[Room] Bldg.ENG-9-206
[Course enrollment] About 20
[Candidate] students of Department of Architecture
[Course description] Architecture is closely related to urban space. Students will design small scale public building that is deeply related to cities and can take into account communities of people.
[Course objectives] Following Architectural Design II, this class will offer design training to learn a method to shape and design architecture, set a plan, and organize all together as architecture. Besides mastering how to design a building, students will learn through assignments what kind of structures and equipment systems architecture consists of.
Also, the goal is to analyze the task conditions, while utilizing the combined knowledge of such construction planning, equipment and structures can be described and discussion contents appropriately they have designed.
[Plans and Contents] Besides mastering how to design a building, students will learn through assignments what kind of structures and equipment systems architecture consists of.
1. Introduction and class assignment.
2. Concept sketch.
3. Basic plans, sections, elevations and design sketches.
5. Specific plans, sections, elevations and design sketches.
6. Final sketch.
7. Submission and criticism.
[Keywords] public building
[Textbooks and Reference Books] Kenchiku Sekkei Shiryo Syusei (Architectural Design Archives), compact edition.
[Evaluation] Marks will be based on the total evaluation of attendances to sketch sessions, submissions, the interim presentation, and the final project.
[Related courses] Architectural Design I, II
[Course requirements] Students must have taken credits of　Descriptive Geometry, and　Basic Architectural Design、Architectural Design I, II.
[Remarks] Since the assignment does not end in the classroom time, students need to proceed with the work overtime on the basis of the comments for Esquisse, and reference books. Students must work on the assignment by themselves without the help of others. Also, do not perform any action that infringes the copyright.

建築環境計画Ⅰ　Architectural Environment Planning I
[Instructor] Tatsuya Hayashi, Jun Munakata
[Credits] 2
[Semester] 2nd year-Spring-Mon 1
[Course code] T1N015001
[Room] Bldg.ENG-9-106
[Course enrollment] 80
[Candidate] Students of Faculty of Engineering, other Faculties, and Specially Registered Non-Degree Student. But only a few.
[Course description] Lectures will cover various environmental elements, such as sound, heat, air, light, and color, in architectural space comprehensively. The knowledge that students obtain from these lectures will be necessary for carrying out a design assignment.
[Course objectives] The indoor environment of a building is created by various environmental factors, such as light, sound, heat, and air, affected by conditions of the external space of the building and design condition of the building itself. Students will learn comprehensive knowledge about each environmental factor to make the architectural environment comfortable and prevent it from becoming uncomfortable. In addition, the objective of this class is for the students to be able to utilize the knowledge in designing a comfortable architectural environment for each factor of light, sound, heat, and air.
[Plans and Contents] A lecture will be given for each environmental factor, such as sound, heat, light, and air. It is desirable that students try to apply the knowledge acquired in the lecture to their design assignment that is in progress at the same time to review and ensure mastering of the knowledge.
1. Students will learn basic knowledge of solar orbit and the sun, and also solar radiation shielding and shade.
2. Students will learn the definition of the photometric quantity and type. The also learn basis of visual, glare, and daylighting planning.
3. Students will learn characteristics of artificial lighting, light source type and its performance, and lighting calculation method.
4. Students will learn about basis of color, color system, color mixing theory, harmony theory and color effects.
5. Students will learn about the way interacting with architecture and sound environment, the physical characteristics of the sound waves, the definition of an indicator of sound and types and also the psychological attributes of sound.
6. Students will learn building materials related indicators of sound insulation and sound absorption, they also learn noise control.
7. Students will learn about indicators and the concept of reverberation time. They also learn room acoustics plan and the specific phenomenon of sound.
8. Students will learn about definition and measuring methods of temperature, and heat transmission of walls, and the case examples with consideration for the cold and hot weather protection.
9. Students will learn about definition and measurement method of radiation, principles of thermal radiation through the wall and case example in utilizing the thermal radiation.
10. Students will learn the definition, and measurement method of humidity, principles of the condensation, moisture permeation coefficient for the wall, to learn about the case examples with due consideration to prevent dew condensation of cold climates.
11. Students will learn about six elements of thermal environment, thermal sensation indicators, and thermal comfort range of the human body.
12. Students will learn the need for ventilation, type of the ventilation system, the ventilation calculation method in accord with cases of space that require ventilation.
13. Students will learn indoor air quality, sick building, sick school, ventilation efficiency, air age, life expectancy for air, etc.
14. Students will learn about the energy to maintain building and keep indoor air quality, and learn about various global environmental issues resulting from energy consumption.
15. Review: Students will have a comprehensive review on what they learned in this class and conduct their final assignment.
[Textbooks and Reference Books] ”The engineering of Architectural Environment” attributed to Yukiko Yamada and published from BAIFUKAN.
[Evaluation] Academic results will be based on the final assignment. Students failing to meet the attendance rate specified by the Faculty of Engineering will not be evaluated.
[Remarks] Delay over15minutes will be counted as an absence.

建築環境計画演習（平成 24 年度（2012 年度）以前入学者用）Seminar on Architectural Environment Planning
[Instructor] Jun Munakata & Tatsuya Hsyashi
[Credits] 2
[Semester] 2nd year-Spring-Mon 2
[Course code] T1N016001
[Room] Bldg.ENG-9-106
[Course enrollment] 80
[Candidate] Students in other departments in the own faculty, in other faculties, and Specially Registered Non-Degree Student may take this course.
[Course description] Corresponding to the content of Architectural Environment Planning I, students will strengthen their knowledge through their work in this seminar.
[Course objectives] The objective of this seminar is for students to learn knowledge related to architectural environmental engineering through actual calculation, measurement and analysis of its results. By taking this class, students aim are expected to acquire a deep understanding of architectural environment by each element, such as sound, heat, air, and light, on the basis of their numerical values rather than simply depending on qualitative knowledge to apply what they learned to designing.
[Plans and Contents] Seminars will be offered on the basis of per topic, covering local environment, daylighting, artificial lighting, color, sound, heat, and air.
1. After performing guidance, students will learn how to calculate the amount of insolation and insulate from the sun.
2. Students will learn how to understand the performance of the solar radiation shielding device.
3. Students will learn how to understand the daylighting performance.
4. Students will learn basic calculation methods of photometric quantities.
5. Students will learn how to understand the artificial illumination.
6. Students will learn how to use the (light meter and sound level meter) measuring instruments of physical indicators of sound and photometric quantity.
7. Students will learn the relationship of the actual situation and evaluation of the environment through the measurement of illuminance.
8. Students will learn the relationship of the actual situation and evaluation of the environment through the measurement of the noise level.
9. Students will learn how to calculate the amount of heat transmission through the wall.
10. Students will learn how to calculate the amount of thermal radiation through the building.
11. Students will learn how to read a psychometric chart, and generation of condensation.
12. Students will learn how to use the measuring equipment temperature, humidity, radiation temperature, etc.
13. Students will learn how to calculate the necessary amount of ventilation.
14. Students will learn how to calculate the energy consumption which is used by the equipment.
15. Review: Students will learn about a comprehensive environmental assessment method of buildings, CASBEE.
[Evaluation] Students will be assessed on their seminar achievement. Students failing to meet the attendance rate specified by the Faculty of Engineering or failing to meet the exercise submission will not be evaluated.
[Related courses] Architectural Environment Planning I
[Course requirements] Seminars will be offered to meet the lecture contents of the Architectural Environment Planning I. Therefore, students undertaking the seminar must attend the lecture at the same time (or must have the course completed in the previous academic year).

材料力学　Strength of Materials
[Instructor] Takeo Hirashima
[Credits] 2
[Semester] 2nd year-Spring-Thurs 1
[Course code] T1N017001
[Room] Bldg.ENG-5-104
[Course enrollment] 80
[Candidate] Students in other Departments cannot take this course.
[Course objectives] In Structural Mechanics I, students learned how to find: reaction at supports of statically determinate structures under external force; and the internal force (normal force, shear force, and bending moment) generated in structural members (columns, joists, and trusses) of the statically determinate structures, by using the equilibrium condition. In Strength of Materials, students will learn how to find distributions of stress and strain generated in cross section of members subjected to external force, deflection of beams, buckling of slender columns, and yielding and ultimate strength of beams.
[Plans and Contents] At each lecture period, students will be asked to study and understand the following items:
1. Textbook chapter 2: Normal stress, Shear stress, principle of Saint-Venant, change of stress intensity and direction of the cross-section.
2. Textbook chapter 2:Mohr's stress circle, conjugate relation of shear stress.
3. Textbook chapter 3.4 : Normal strain, shear strain, elasticity and plasticity, Young's modulus, Poisson's ratio.
4. Textbook chapter 7:Bending stress, Navier hypothesis, neutral axis, curvature, flexural rigidity, and combined stress.
5. Textbook chapter 6:Geometrical moment of area, centroid, and geometrical moment of inertia of area, section modulus.
6. Textbook chapter 8:Shear deformation, bending stress and shear stress, and distribution of shear stress in cross section of beams.
7. Textbook chapter12: Torsion of circular cross-section bar, torque, torsional rigidity, polar moment of inertia of area.
8. Interim examination and commentary.
9. Textbook chapter 10:Deflection of beam, deflection curve, curvature, deflection angle, flexural rigidity, and boundary condition.
10. Textbook chapter 10:Mohr's theorem. Deflection and reaction force in the statically indeterminate structure.
11. Textbook chapter 11: Strain energy, Castigliano's theorem.
12. Textbook chapter 13:Buckling, Euler buckling load, buckling length, slenderness ratio, and radius of gyration.
13. Textbook chapter 13:Buckling and eccentricity, eccentric load, stress of the member subjected to eccentric load, and core of cross section
14. Collapse of the structure, yield moment, fully plastic moment, plastic section modulus.
15. End of term examination and commentary.
[Textbooks and Reference Books] Kenchiku-zairyo-rikigaku, Akira Enami, Syokokusha Co., Ltd., 2650 yen (in Japanese).
[Evaluation] Evaluation is given by interim exams(40%),the end of term exams (40%),and attendance(20%).
[Related courses] (T1F075001), (T1F067001), (T1F083001)
[Course requirements] Students must have taken course of Seminar on Strength of Materials.
[Remarks] Assignment and answers examples of exercises will be posted on Moodle. Make the registration of Moodle.

材料力学演習　Seminar on Strength of Materials
][instructor] Takeo Hirashima
[Credits] 2
[Semester] 2nd year-Spring-Thurs 2
[Course code] T1N018001
[Room] Bldg.ENG-5-104
[Course enrollment] 80
[Candidate] Students in other Departments cannot take this course.
[Course objectives] In Seminar on Structural Mechanics I, students learned how to find: support reaction of statically determinate structures under external force; and internal force (normal force, shear force, and bending moment) generated in structural members (columns, beams, and trusses) of the statically determinate structures, by using the equilibrium condition. In Seminar on Strength of Materials, students will learn how to find distributions of stress and strain generated in cross section of members subjected to external force, deflection of beams, buckling of slender columns, and yielding and ultimate strength of beams.
[Plans and Contents] At each lecture period, students will be asked to study and understand the following items:
1. Normal stress, Shear stress, principle of Saint-Venant, change of stress intensity and direction of the cross-section
2. Mohr's stress circle, conjugate relation of shear stress.
3. Normal strain, shear strain, elasticity and plasticity, Young's modulus, Poisson's ratio.
4. Bending stress, Navier hypothesis, neutral axis, curvature, flexural rigidity, and combined stress.
5. Geometrical moment of area, centroid, and geometrical moment of inertia of area, section modulus.
6. Shear deformation, bending stress and shear stress, and distribution of shear stress in cross section of beams.
7. Torsion of circular cross-section bar, torque, torsional rigidity, polar moment of inertia of area.
8. Interim examination and commentary.
9. Deflection of beam, deflection curve, curvature, deflection angle, flexural rigidity, and boundary condition.
10. Mohr's theorem. Deflection and reaction force in the statically indeterminate structure.
11. Strain energy, Castigliano's theorem.
12. Buckling, Euler buckling load, buckling length, slenderness ratio, and radius of gyration.
13. Buckling and eccentricity, eccentric load, stress of the member subjected to eccentric load, and core of cross section
14. Collapse of the structure, yield moment, fully plastic moment, plastic section modulus.
15. End of term examination and commentary.
[Textbooks and Reference Books] Kenchiku-zairyo-rikigaku, Akira Enami, Syokokusha Co., Ltd., 2650 yen (in Japanese).
[Evaluation] Evaluation is given by interim exams (30%) and the end of term exams (30%), notes (20%), and an attendance(20%).
[Related courses] (T1F075001), (T1F067001), (T1F083001)
[Course requirements] Students must have taken course of Strength of Materials.
[Remarks] Assignment and answers examples of exercises will be posted on Moodle. Make the registration of Moodle. Prepare (A4 version is desirable) a dedicated note of Strength of Materials, and Seminar on Strength of Material.

建築生産 I　Building Production I
[Instructor] Gakuhito Hirasawa
[Credits] 2
[Semester] 2nd year-Fall-Wen 2
[Course code] T1N020001
[Room] Bldg.ENG-9-206
[Course enrollment] 85
[Candidate] 2nd year of Department of Architecture
[Course description] Students will learn the method of construction parts, and construction method, and also about the history and technology used therein.
[Course objectives] Students will master the knowledge of technologies and production processes of around the various parts construction methods roof and outer circumferential wall and interior (such as floor, inner wall, ceiling), construction methods. Also, they will aim to understand what to do function when building parts is made. [Plans and Contents]
1. Orientation / Ground business
2. Foundation
3. Roof: Thatched, wipe single, lazuli
4. The roofing of metal Itabuki, other
5. Roof: Waterproof construction method of a flat roof
6. Outer circumferential wall: Traditional residential wall construction method
7. Outer circumferential wall: Housing Walls of modern
8. Outer circumferential wall: Walls of non-residential
9. Outer circumferential wall: Curtain wall.
10. Openings/Joinery: External joinery・Sash
11. Openings/Joinery: Glazing construction method of the other
12. Openings/Joinery: Internal joinery, furniture fittings
13. Floors, stairs
14. Ceiling
15. Summary and End of term exam for confirmation of understanding
[Keywords] method of construction
[Evaluation] Students will be assessed on combined factors consisting of their final examination marks (100%) and small reports (additional elements) .Students needs over 60% to pass. Those who lack of attendance will be failed. It is not evaluated behind the submission of such reports.
[Related courses] Building Production II, Building Production III
[Remarks] Method of construction parts is the function that the part except the building skeleton has and the structure building those, and essential knowledge for both design and construction.

都市環境デザイン Urban Environment Design
[Instructor] Akiko Okabe
[Credits] 2
[Semester] 2nd year-Fall-Fri 2
[Course code] T1N022001
[Room] Bldg.ENG-9-107
[Candidate] Students of Faculty of Engineering, other Faculties, and Specially Registered Non-Degree Student
2nd year of Department of Architecture is the target of this course, however, students who are interested in the Urban Problems, Urban Planning may take this course.
[Course description] After understanding issues over urban environment today, students will look back at the history of urban formation and planning to learn from it and study an overview of move for new urban planning.
[Course objectives] The objective of this class is for students to clarify their own awareness of issues in the urban environment and acquire skills to shape proposals for approaching urban environmental issues through the action of designing from a specialist's point of view. Goals of this class are: to organize and understand issues currently in discussion over urban environment; to gain basic knowledge on the history of urban formation that an architectural expert should have to face cities of modern times; and to expand own thoughts on the basis of the knowledge.
[Plans and Contents] In Part I, students will understand how the topic of "urban environment" is discussed as a present-day issue, especially what the urban environment is in terms of architectural issues. In Part II, they will look back at the history of the urban environment and go back to pre-modern times to see how people formed cities then. The history of urban formation will be traced, while reflecting on the awareness of issues in modern times, by studying topics including: what was placed and how it was arranged in an area of a city after enclosing the area; how the overall city was put in order by using grid divisions and axes; and philosophy of modern urban planning established in response to rapid population increase. Note, in Part II, students will be asked to read one chapter of the textbook before each class to deepen their understanding in the relevant lecture. In Part III, they will explore strategic possibility of designing a physical space around the ideas of "shrinking cities" and "sustainable cities."
1. Part 1 - Issues in urban environments and architecture: Students will be asked to understand changes in urban environments occurred through the transition from modern times until present, cultivate the foundation to think about the relationship between the background of such issues, and various challenges the present day environment and architecture are facing (report submission). — P12
2. Part 1 Issues in urban environments and architecture: Students will be asked to understanding the system of the urban planning of today and establish an opinion about their roles as specialists of architecture.-12
3. Part 1 Issues in urban environments and architecture: Students will be asked to understand urban theories advocated by Japanese architects and establish their own critical minds for limitations in suggested possibilities. — P12
4. Part II World history of urban planning - textbook chapter 1 – Walled cities: Understanding types of walled cities such as towns in Medieval Europe, Islamic cities, and castle towns in Japan. — P12
5. Part II World history of urban planning - textbook chapter 2:Urban facilities and housings: Understanding ancient cities of Europe, agora and forum, public spaces, Athens, Rome and Florence (report must be submitted at the beginning of the class) —.12
6. Part II World history of urban planning - textbook chapter 3〈Grid plan cities: Understanding the lineage of grid planning in cities such as Hippodamos, Chang'an, merchant districts of castle towns, Ginza Renga-gai, and Manhattan> — P12
7. Report criticism and related lectures. —P12
8. Part II World history of urban planning - textbook chapter 4:Baroque cities: Understanding the principle and lineage of Baroque urban planning such as Renaissance ideal city, Baroque city intervention and Ottoman Empire. — P12
9. Part II World history of urban planning - textbook chapter 5Cities of Reformism: Understanding tides attempted to resolve urban social issues, from Howard's garden city and Perry's neighborhood unit to new towns of today. — P12
10. Part II World history of urban planning - textbook chapter 6:Cities of the modern urban planning systems: Understanding the modern urban planning theories of the Athens Charter compiled with Le Corbusier as the central figure and also understands critical opinions against the theory. — P12
11. Part II World history of urban planning - textbook chapter 7 :Metropolis and megalopolis: Understanding the necessity and particulars of metropolitan planning such as London, Tokyo, and greenbelts. — P12
12. PartII World history of urban planning - textbook chapter: Students will be asked to revise with the part 2 supplement and verify their understanding with the part 2 examination. — P12
13. Part III Urban environment design beyond the modern urban planning: Understanding difficulties associated with urban policies under decline of population and preparing to challenge pending issues through organization of issues. — P12
14. Part III Urban environment design beyond the modern urban planning: Understanding the concept of sustainable development and deepening knowledge about how the new direction gained through the departure from the modern urban planning is being discussed today. — P12
15. Summary. — P12
[Keywords] urban planning, urban theory, historic cities, modern urban planning, urban area, sustainable cities, shrinking cities
[Textbooks and Reference Books] textbook：Hibata, Yasuo, World History of Urban Planning. Kodansha(2008). Reference book: editorial committee of urban history maps and drawings collection ed. Urban History Maps and Drawings. Shokoku-sha（1999）.

[Evaluation] Based on the examination and report submissions (1:1 ratio), students' knowledge and their thinking abilities based on such knowledge will be evaluated. In addition, students will also be assessed comprehensively on their proactive involvements in the subject, exhibited through their attendance and their optional submission of reports and questionnaires.
[Related courses] Urban & Regional Design I

建築実践研究 I　Architecture in Theory & Practice I
[Instructor] Sumiko Ebara Akiko Okabe
[Credits] 1
[Semester] 2nd year-Spring-Fri 3,4,5
[Course code] T1N023001, 1N023002, T1N023003
[Room] Bldg.ENG-15-110
[Course enrollment] 85
[Candidate] 2nd year of Department of Architecture (Including the Department of Design Science students studying architecture)
[Course description] Students will master basic skills, which will be required in conducting activities related to architecture, through training (short-term designing) on putting together in a comprehensive manner the knowledge and skills that they have learned through class and design assignments up to this stage. Also, this class will guide their knowledge and interest to leading-edge technology and research in architecture by utilizing programs consisting of various events that have been arranged, such as lectures, visits, open laboratories, forums, research presentations, discussion meetings, research conferences, and exhibitions for presentation.
[Course objectives] Students will master the skills of "generalizing and expressing conditions," which will be required in conducting activities related to architecture. They will deepen their knowledge of, and raise their interest in, leading-edge technology and research in architecture.
[Plans and Contents] (1) Students will work on a short-term designing assignment (required). (2) Students will participate in events that are planned or recommended by the Department, such as lectures, visits, open laboratories, forums, research presentations, discussion meetings, research conferences, exhibitions for presentation, and others. Their themes, contents, and schedules will be announced at the beginning of the semester.
[Keywords] generalizing,, short-term designing, recognition of Architectural Regulation, leading-edge technology and research
[Textbooks and Reference Books] Not particularly
[Evaluation] Short-term designing will be graded based on the completed work. The ability to grasp conditions (ability to imagine and analyze), the ability to generalize the conditions (ability to plan and design), and the ability to express them will be evaluated. Tardiness and absence will be subject to reduced points. For events, grading will be based on a report submitted after each event with the number of times the student participated taken into consideration. Note, the required number of times of participation in the events will be determined depending on how the short-term designing is conducted.
[Related courses] All subjects in architecture mainly consisting of architectural design.
[Course requirements] Students must also take Architectural Design I and II at the same semester.
[Remarks] The events will include various types, including the ones prepared for this subject, common with Architecture in Theory & Practice III for juniors, open to students other than juniors or outside of the university, or held off-campus. Please take note of postings for any schedule updates or changes.
The name of this subject was changed in the 2005 academic year from Architectural Design Process I.

建築実践研究ＩＩ　Architecture in Theory & Practice II
[Instructor] Akiko Okabe Sumiko Ebara
[Credits] 1
[Semester] 2nd year-Fall-Fri 3,4,5
[Room] Bldg.ENG-9-106
[Course enrollment] 85
[Candidate] 2nd year of Department of Architecture (Including the Department of Design Science students studying architecture)
[Course description] Students will master basic skills, which will be required in conducting activities related to architecture, through training (short-term designing) for putting together in a comprehensive manner the knowledge and skills that they have learned through class and design assignments up to this stage. Also, this class will guide their knowledge and interest to leading-edge technology and research in architecture by utilizing programs consisting of various events that have been arranged, such as lectures, visits, open laboratories, forums, research presentations, discussion meetings, research conferences, and exhibitions for presentation.
[Course objectives] Students will master the skills of "generalizing and expressing conditions," which will be required in conducting activities related to architecture. They will deepen their knowledge of, and raise their interest in, leading-edge technology and research in architecture. Also, they will be able to work on their assignment while taking legal compliance into consideration.
[Plans and Contents] (1) Students will work on a short-term designing assignment (required). (2) Students will participate in events that are planned or recommended by the Department, such as lectures, visits, open laboratories, forums, research presentations, discussion meetings, research conferences, exhibitions for presentation, and others. Their themes, contents, and schedules will be announced at the beginning of the semester.
[Keywords] Generalization, short term designing, legal compliance, leading-edge technology and research
[Textbooks and Reference Books] Not particularly
[Evaluation] Short-term designing will be graded based on its completed work. The ability to grasp conditions (ability to imagine and analyze), the ability to generalize the conditions (ability to plan and design), and the ability to express them will be evaluated. Tardiness and absence will be subject to reduced points. For events, grading will be based on a report submitted after each event with the number of times the students participated taken into consideration. Note, the required number of times of participation in the events will be determined depending on how the short-term designing is conducted.
[Related courses] All subjects offered in architecture field centrally Architectural Design
[Course requirements] Students must also take Architectural Design III and IV at the same semester.
[Remarks] The events will include various types, including the ones prepared for this subject, common with Architecture in Theory & Practice IV for juniors, open to students other than juniors or outside of the university, or held off-campus. Please take note of postings for any schedule updates or changes.
The name of this subject was changed in the 2005 academic year from Architectural Design Process II.

構造実験 Ⅰ　Experiments of Structural Engineering I
[Instructor] Nobuyuki Izumi and Yuko Shimada
[Credits] 4
[Semester] 2nd year-Fall-Tues 4,5
[Course code] T1N025001, T1N025002
[Room] Bldg.ENG-9-206
[Course enrollment] 48 (The number will be subject to change implementation status of practice and experiments.)
[Candidate] 2nd year and other grade of Department of Architecture
[Course description] Each group will conduct a structural planning exercise and a structural experiment related to architectural structural systems. For students who learned structure of buildings and structural mechanics in their first year, it is extremely important to understand space and structure. Each group will select one structural system of building. First, in the structural planning exercise, students will check the shape of frames that form architectural space by taking a look at an architectural work that employs the structural system that they selected. Then, they will make a model frame to understand its shape and force. Next, in the structural experiment, students will conduct a model test of basic frames that constitute the structural system to feel the relationship between frame force and deformation.
[Course objectives] The objective of this class is for students to learn architectural space and structure, understand the shape of frames that form space and force, and feel frame force and deformation. In the structural planning exercise, students will learn space and structure in actual architectural work and feel, by making a model frame, the shape of space and structure and force. In the structural experiment, students will increase their degree of understanding of structural mechanics by experiencing the relationship between force and deformation of frames and participate in an experiment presentation to deepen their interest in structures.
[Plans and Contents] Each group will conduct a structural planning exercise and a structural experiment related to structural system of buildings. Enrolled students first select one structural system that is used in a multi-story structure or single-story structure and form a group with other enrolled students who selected the same structural system. Then, they will participate in a structural planning exercise and structural experiment to be conducted by each group, take part in presentation by each group, and individually create a comprehensive report on the structural planning exercise and structural experiment of the structural system that they chose.
1. Overview of the structural planning exercise and structural experiment: Understanding the overview of classroom procedures. Group assignment for exercises and experiments.
2. Structural planning exercise(1):Selecting the structural system of building and architectural work: Students will be asked to select a structural system used for a single or multi-story building, before selecting one or more works of architectural work employing the chosen structural system.
3. Structural planning exercise (2): Space of architectural work and structure: Students will be asked to undertake researches of literatures on the relationship of space and structure achieved in the chosen work of architecture.
4. Structural planning exercise (3): Structural system and design of a structural model: By paying attention to the space of the selected work of architecture, students will be asked to design a structural model of the chosen structural system (Part or whole).
5. Structural planning exercise (4): Production of structural model 1: Production of a structural model of the chosen building structural system (part or whole).
6. Structural planning exercise (5): Production of structural model 2: Continue the production of a structural model.
7. Structural planning exercise (6): Space of the structural system: In groups, students will be asked to present the relationship of space and structure in the selected structural system.
8. Structural experiment (1): Frame test and a design of a frame model: Students will be asked to design a basic frame model to demonstrate the flow of force in the selected structural system.
9. Structural experiment (2): Frame experiment - Production of a frame model 1: Production of a frame model.
10. Structural experiment (3): Frame experiment - Production of a frame model 2: Continue the production of a frame model.
11. Structural experiment (4): Frame experiment - Loading test for the frame model: In groups, students will be asked to present design principles including the relationship of the structural system and the frame model, And carry out a loading test using the frame model.
12. Structural experiment (5): Beam experiment - Design of a beam model: Students will be asked to carry out a preparing calculation and design a beam model.
13. Structural experiment (6): Beam experiment - Production of a beam model 1: Production of a beam model.
14. Structural experiment (7): Beam experiment - Production of a beam model 2: Continue the production of a beam model.
15. Structural experiment (8): Beam experiment -Loading test for the beam model: In groups, students will be asked to present their design policy before undertaking a vertical loading test for their beam model. After the experiment, students will be asked to present their findings including relevance to the calculated value, and the amount of collapsing load.
[Keywords] Experiments of Structural Engineering, Structural Mechanics, Structural Design, Structural System for Architecture
[Textbooks and Reference Books] Reference Book: Structural System for Architecture (Shoukokusya)
[Evaluation] Students will be assessed on points gained from the group presentation and individual summary report. For accreditation, a student must attend the group based seminar and experiments, and must achieve a minimum points of 60.
[Related courses] Structure of Buildings, Structural Mechanics I, Strength of Materials, Structural Mechanics II
[Course requirements] Basically, student must have taken Structure of Buildings, Structural Mechanics I, and Strength of Materials and also, they must have taken or take Structural Mechanics II.
(If student does not meet the requirement for registration, he has to apply in the first lecture to confirm.)

[Remarks] Attendance is a precondition for acquisition of credit. This subject is a replacement subject of Experiments of Structural Engineering held until 2008.

構造力学 II Structural Mechanics II
[Instructor] Yukiko Nakamura
[Credits] 2
[Semester] 2nd year-Fall-Tues 2
[Course code] T1N026001
[Room] Bldg.ENG-9-106
[Candidate] Students from other Department are unable to take this course.
[Course description] In Structural Mechanics I that students completed, the subject was statically determinate structures for which stress could be calculated only on the basis of force and moment balance condition. This class, however, will cover statically indeterminate structures which are the majority of actual frame structures. To calculate stress and deformation, compatibility condition of deformation is needed in addition to the force and moment balance condition. In the first half of the course, the virtual work method, a typical deformation calculation method for a frame structure, will be introduced by using the relationship of displacement and rotation angle with force and moment that students already learned in Strength of Materials. Then, the force method, a method in which force and moment are selected for an unknown amount to be calculated based on compatibility condition of deformation, will be introduced. In the last half of the course, the displacement method, a method in which displacement and rotation angle are selected for unknown amount, on the contrary, to be calculated based on force and moment balance condition. Two contrasting methods, the slope deflection method and moment distribution method, will be covered.
[Course objectives] Calculating, using the knowledge that students already learned in Structural Mechanics I and Strength of Materials, stress and deformation of statically indeterminate structures that cannot be found only with force and moment balance condition is necessary as part of a structural design method for confirming structural safety. The objective of this class is for students to learn typical analysis techniques for stress and deformation generated under various loads of statically indeterminate structures. In various analysis techniques, students will accurately understand their hypothetical conditions and principles and learn characteristics and meaning of methods of analysis. For example, in the slope deflection method, students will understand the basics of a method of analysis employed in computer analysis programs. In the moment distribution method, students will learn means to check analysis results by a computer and useful means for structural planning to be conducted prior to structural designing. Also, students will develop a sense of mechanics for frame structures.
[Plans and Contents] Calculating, using the knowledge that students already learned in Structural Mechanics I and Strength of Materials, stress and deformation of statically indeterminate structures that cannot be found only with force and moment balance condition is necessary as part of a structural design method for confirming structural safety. The objective of this class is for students to learn typical analysis techniques for stress and deformation generated under various loads of statically indeterminate structures. In various analysis techniques, students will accurately understand their hypothetical conditions and principles and learn characteristics and meaning of methods of analysis. For example, in the slope deflection method, students will understand the basics of a method of analysis employed in computer analysis programs. In the moment distribution method, students will learn means to check analysis results by a computer and useful means for structural planning to be conducted prior to structural designing. Also, students will develop a sense of mechanics for frame structures.
Students must review the content of the previous class and prepare questions outside of class. -25-
1. Guidance: Students will understand the relationship of this class with other classes that they have taken before and the syllabus of this class, and go over class completion requirements, grading methods, and class formats. – S21
2. Stress of statically determinate structures (statically determinate structures 1): Students will review, as preparation for studying deformation generated in statically determinate structures, a method of analysis for stress of statically determinate structures. – S21
3. Virtual work method and deformation of statically determinate truss (statically determinate structures 2): Students will study about the principles of the virtual work method as a typical deformation calculation method and learn its deformation calculation method of statically determinate trusses. – S21
4. Statically indeterminate trusses (force method 2): Students will learn a method of analysis for statically indeterminate trusses by the force method. – S21
5. Statically determinate rigid frames (statically determinate structures 3): Students will learn a deformation calculation method of statically determinate rigid frames by the virtual work method and review a calculation method based on the Mohr's theorem that they have already learned. – S21
6. Force method and statically indeterminate rigid frames (force method 1): Students will learn about the principles of the force method as well as its method of analysis for statically indeterminate rigid frames and deepen their understanding of fixed end moments as preparation for the displacement method to be covered in the last half of the course. – S21
7. Review of deformation calculation and the force method: Students will have a comprehensive review on deformation calculation and the force method. – S21
8. Questions on deformation calculation and the force method: Students will ask questions about deformation calculation and the force method to ensure remembering the content that was covered in the class. – S21
9. Displacement method and slope deflection method (slope deflection method 1): Students will understand characteristics of the displacement method and meaning of the slope deflection method and ensure remembering basic points for studying these subjects. – S21
10. Statically indeterminate rigid frames without joint displacement (slope deflection method 2): Students will learn a method of analysis by the slope deflection method for statically indeterminate rigid frames without joint displacement. – S21
11. Statically indeterminate rigid frames with joint displacement (slope deflection method 3): Students will learn a method of analysis by the slope deflection method for statically indeterminate rigid frames with joint displacement. – S21

12. Statically indeterminate rigid frames without joint displacement and with a single angle of rotation of joint (moment distribution method 1): Students will understand characteristics and meaning of the moment distribution method and learn a method of analysis by the moment distribution method for the simplest statically indeterminate rigid frame. – S21
13. Statically indeterminate rigid frames without joint displacement and with multiple angles of rotation of joint (moment distribution method 2): Students will learn a method of analysis by the moment distribution method for statically indeterminate rigid frames without joint displacement and with multiple angles of rotation of joint. – S21
14. Statically indeterminate rigid frames with joint displacement (moment distribution method 3): Students will learn a method of analysis by the moment distribution method statically indeterminate rigid frames with joint displacement. – S21
15. Review and questions on the slope deflection method and moment distribution method: Students will have a comprehensive review of and ask questions about the slope deflection method and moment distribution method to ensure remembering the content that was covered in the class. – S21
16: Final: Students will find out the degree of their achievement in understanding the slope deflection method and moment distribution method.
[Course description]The seminar complements lectures of Structural Mechanics II. Each week, students will be asked to submit a report on exercise related each lecture contents, within a designated time frame.
[Keywords] indeterminate structure, moment frame structure, stress, displacement
[Textbooks and Reference Books] Since there are numerous reference books on structural mechanics are available, students should individually select ones that are suitable for their requirements.[Reference Book] ［Structural Mechanics I, IZUMIMasanori, Baifukan (In Japanese)
[Evaluation] (1) Requirement for acquisition of credit is the attendance of more than 4/5, and to take 2times exams. (2) Evaluation is given by the score of the exams (Midterm exam 50%, the end-of-exam 50%).
[Related courses] Exercise on Structural Mechanics II, Structural Mechanics I, Strength of Materials
[Course requirements] (1) Student must have taken Structural Mechanics I, and Strength of Materials. Basically, student must have taken Exercise on Structural Mechanics I at the same time, because Structural Mechanics II and Exercise on Structural Mechanics I is an all-in-one course.

構造力学演習 II　Exercise on Structural Mechanics II
[Instructor] Yukiko Nakamura
[Credits] 2
[Semester] 2nd year-Fall-Tues 3
[Course code] T1N027001
[Room] Bldg.ENG-9-106
[Candidate] Students from other Department are unable to take this course.
[Course description]　This is a seminar that supplements Structural Mechanics II, and students will be required to submit during the class hour seminar assignments related to the content of the lecture that is given every week.-26-
[Course objectives] The objective of this class is for students to deepen the level of their understanding through actually working on specific seminar assignments in accordance with the content of Structural Mechanics II. Students aim to be able to calculate stress and deformation of statically indeterminate structures and understand various methods of analysis. They will acquire experience and develop a sense of structural mechanics through their achievements.
[Plans and Contents]
Students will be asked to review the contents of seminars prior to staring the course, prepare any questions.
1. Guidance: Understanding the teaching outline, the relationship between the lecture contents and other study contents already studied, confirm the requirements for registration, evaluation methods, and lecture programming. — S21
2. Stress on statically determinate structure (statically determinate structure 1): As a preparation to learning deformation occurring in statically determinate structures, students will revise solutions for stress of statically determinate structure. — S21
3. Method of virtual work and deformation of statically determinate truss (statically determinate structure 2): Learning the principle of virtual works, the typical calculation method of deformation, and acquires skills to calculate the deformation of the statically determinate truss. — S21
4. Statically indeterminate truss (stress method 2): Learning solutions for the statically indeterminate truss using stress method. — S21
5. Deformation of statically determinate rigid-frame structure (statically determinate structure 3): Learning deformation calculation method of the statically determinate rigid-frame structure using the method of virtual work, and revising the calculation method of Mohr's theorem already studied. — S21
6. Stress method and statically indeterminate rigid-frame structure (stress method 1): Learning the principle of stress method and acquiring solution of the statically indeterminate rigid-frame structure, and deepening understanding of fixed end moment. — S21
7. Revising deformation calculation and stress method: Summarization of the deformation calculation and the stress method. — S21
8. Questions related to deformation calculation and stress method: Students will be advised to question points of uncertainty about the deformation calculation and the stress method to clarify their understanding. — S21
9. Displacement method and slope deflection method (slope deflection method 1): Understanding the characteristics of the displacement method and the significance of the slope deflection method, while securing fundamentals in learning these methods. — S21
10. Statically indeterminate rigid-frame structure without joint displacement (slope deflection method 2): Learning solutions for the statically indeterminate rigid-frame structure without joint displacement, using the slope deflection method. — S21
11. Statically indeterminate rigid-frame structure with joint displacement (slope deflection method 3): Learning solutions for the statically indeterminate rigid-frame structure with joint displacement, using the slope deflection method. — S21
12. Statically indeterminate rigid-frame structure without joint displacement where a single angle of rotation of joint occurs (moment distribution method 1): Understanding characteristics and the significance of the moment distribution method, and learning the solution of the statically indeterminate rigid-frame structure, by making use of the most simple moment distribution method. — S21
13. Statically indeterminate rigid-frame structure without joint displacement where a multiple angle of rotation of joint occurs (moment distribution method 2): Learning a solution of the statically indeterminate rigid-frame structure without joint displacement where a multiple angle of rotation of joint occurs by making use of the moment distribution method. — S21
14. Statically indeterminate rigid-frame structure with joint displacement (moment distribution method 3): Learning solutions for the statically indeterminate rigid-frame structure with joint displacement, using the moment distribution method. — S21
15. Revisions and questions related to the slope deflection method and moment distribution method: Students will be advised to question points of uncertainty about the slope deflection method and the moment distribution method to clarify their understanding. — S21
16. Review of end of the term examination. — S21
[Keywords]　indeterminate structure, moment frame structure, stress, displacement
[Textbooks and Reference Books]　Since there are numerous reference books on structural mechanics are available, students should individually select ones that are suitable for their requirements.[Reference Book][Structural Mechanics I, IZUMI Masanori, Baifukan (In Japanese)
[Evaluation]　(1) Both more than 4/5 of attendance and over 4/5 submission of report is requisite to obtain the credit. (2) Evaluation is given by the score of the reports. Submission of the reports in the lecture will be also the checking attendance.
[Related courses] Exercise on Structural Mechanics II, Structural Mechanics I, Strength of Materials
[Course requirements] (1)Students must have taken courses of Structural Mechanics I
And Strength of Materials. (2) Exercise on Structural Mechanics II and Exercise on Structural Mechanics II are a unit course, student must take Exercise on Structural Mechanics II at the same time. (3) Double registration is unacceptable.

構造設計 **I**　　Structural Design I
[Instructor] (Toshiaki Sato)
[Credits] 2
[Semester] 2nd year-Fall-Mon-6
[Course code] T1N028001
[Room] Bldg.ENG-9-107
[Course enrollment] 85
[Candidate] 2nd year of Department of Architecture
[Course description] Students will learn from the basic knowledge of wood structure to design specific process.
[Course objectives]
To compare with other forms of structure, the design of the wood structure is mostly method of its own.
In this lecture, the achievement goal is to learn the series of process of design needed in practical design as well as to learn the background knowledge that is the basis of them, through the specific assignment of the three types of simple design, structural design of new properties, and reinforcement design of existing properties.
[Plans and Contents] Each class will cover a topic listed below. The order of topics to be covered in each class may be switched in consideration of various conditions, such as events and long vacation.
1. Guidance: Introduce the change and the definition of the wood structure.
2. Basic characteristics of Wood structural member 1. : Types and mechanical properties of wood-based materials
3: Basic characteristics of Wood structural member 2: Basic construction methods and junction format of the wood structure
4. Relationship of mechanical properties and structural design its route and framework design:
5. Design of wooden lowered two-story house (Assignment-1)
6. Allowable stress calculation-1: External force and load. For vertical load and horizontal load.
7. Allowable stress calculation-2: Calculation of long-term load.
8. Allowable stress calculation-3: Design member and test of Framing Frame
9. Allowable stress calculation-4: Concept of seismic elements and placement balance.
10. Allowable stress calculation-5 Design of the junction and challenges work (Assignment-2)
11. Seismic diagnosis of wooden houses-1: Overview of seismic diagnosis and Case Studies
12. Seismic diagnosis of wooden houses-2: The calculation by a simple diagnostic method
13. Seismic diagnosis of wooden houses-3: Reinforcement design based on seismic diagnosis
14. Seismic diagnosis of wooden houses-4: Concept of basic and Structural design
15. Seismic diagnosis of wooden houses-5: Question and challenges work (Assignment-3)
[Keywords] wooden house, structural Design, timber
[Evaluation] Evaluation will comprehensively given by the maturity and process of assignment 1-3.
[Remarks] Specified textbooks is such that towards the several　structure designers to technician　involved in the wood structure including beginners, summarizes to design process from basic properties of wood. Lecture is not intended to be exhaustive textbooks. Students with interest are preferable to continue learning in free time.

施設デザイン計画 **I**　Architectural Programming and Design I
[Instructor] Shigeki Nakayama
[Credits] 2
[Semester] 3rd year-Spring-Mon 4
[Course code] T1N029001
[Room] Bldg.ENG-9-206
[Course enrollment] 80
[Candidate] Students of Faculty of Engineering
[Course description] Students will learn about facility architectural design and planning. They will learn the following from architectural planning point of view: knowledge on architectural designing and planning methods, means for organizing functional conditions and their practice/evaluation, especially a process for establishing design conditions with consideration of social background for educational, healthcaremedical, and welfare facilities; means to collect a wide range of knowledge and information beyond architectural techniques for practical designing and means for generalizing them to carry out designing.
[Course objectives] Students will learn concepts and means of facility architectural design and understand the content of facility management. This means to match the logic on an architecture provider's side and a client's/user's side, and students aim to learn systematizing theories of techniques for architectural construction in terms of design processes and means from client's point of view. In their educational program, students apply the knowledge base to their architectural design subjects and graduation design project.
[Plans and Contents]
1. Approach: Theories of modern architecture and practicalities of facility institutional design.
2. Design proposal and facilityinstitutional design.
3. Concept of facility institutional design and survey practicalities - Field survey 1: Image map
4. towards field survey: Field survey 2.
5. Research of architectural planning: Public facilitiesinstitutions and housing programs developed through researches.
6. History and future of institutional facilities (design proposal for a healthcaremedical facilityinstitution 1): The concept within societies, changes in technology and architecture, and future predictions - Other technologies, social environment, and architecture (social environment and design factors influencing institutional facilities).
7. Master plan (design proposal for a healthcare medical facility institution 2): Approach to the master plan and the meaning of structural planning in the institutional facility design - Area planning, scale planning, block plans, and structural design.
8. Design from the user perspective (design proposal for a healthcaremedical institution facility 3): Ward planning 1 (planning from the user perspective and a relationship with the equipment planning).
9. Design from the service provider perspective (design proposal for a medical institutionhealthcare facility 4): Ward planning 2 (planning from the service provider perspectivedevelopment of plans and design techniques).
10. Designing functional space (design proposal for a healthcare facilitymedical institution 5): Planning of outpatient departmentzones and other areas (traffic line management, activity simulation, methods for developing validation-based design technique, and a relationship between psychology and architectural planning).
11. Conversion management: Possibilities and limitations in reclaiming existing institutional facilities as a business model.
12. between houses and institutions (design proposal for a welfare institution 1): Ideal state of houses in aging societies (social issues and architecture, institution planning).
13. Characteristics of elderly residents (design proposal for a welfare institution 2): Activity hierarchy and territorial levels, sensory design and its proactive meaning (creation of healing environment) and use of original landscapes in living environments.
14. Field survey.
15. Summary of institutional design.
16. Examination
[Keywords] Architectural programming and planning, architectural design, facility management
[Textbooks and Reference Books] Textbook and Reference Books will not be specified.　Handouts provided in class on appropriate time.
[Evaluation] Evaluation is given by attendance and frequency in making remarks in the discussion, and final exam. The total score must be over 60 points to achieve a credit.
[Related courses] Drill of Architectural Programming and Design I
[Course requirements] Basically students must take Drill of Architectural Programming and Design I at the same time. Lecture and Seminar is carried out all-in-one.

施設デザイン計画演習 Ⅰ　Drill of Architectural Programming and Design I
[Instructor] Shigeki Nakayama
[Credits] 2
[Course code] T1N030001
[Room] Bldg.ENG-9-206
[Course enrollment] 80
[Candidate] Students of Faculty of Engineering
[Course description] Students will work on class assignments following Architectural Programming and Design I. They will include actual designing and presentations.
[Course objectives] Students will understand with more depth the content outlined in Architectural Programming and Design I to learn more flexible way of thinking. They will learn through experience what architectural designing is and what it means to respond to requests of the society and clients.
[Plans and Contents]
1. Carry out a simple institutional facilityarchitecture design using Laseau's design methods.
3. Creating image maps for researching the environmental psychology and carry out an analysis.
4. Undertaking field surveys.
5. Summarizing the field survey results before carrying out an analysis and a presentation.
6. Solving exercises on issues related to the social-architectural relationship.
7. Solving exercises on issues related to various guidelines in the master planning.
8. Designing the patient environment and the patient space.
9. Solving exercises on issues related to the development, evolution and examination of the design.
10. Solving exercises on issues related to design methods for a functional facilityinstitutional space.
11. Designing conversion of existing institutional facilities.
12. Solving exercises on issues related to the relationship between the living style of elderly people and retirement homes.
13. Solving exercises on issues related to territorial hierarchy in dwelling space. Look into interface design.
14. Field survey
15. Overview and summarization
[Evaluation] Evaluation is given by attendance and submission of assignments.　Score must be over 60 points to achieve a credit.
[Related courses] Architectural Programming and Design I
[Course requirements] In principle, student must take Architectural Programming and Design I at the same time. Lecture and Seminar is carried out all-in-one.

建築環境計画 ＩＩ Architectural Environment Planning II
[Instructor] Takaharu Kawase
[Credits] 2
[Semester] 3rd year-Spring-Wen 2
[Course code] T1N031001
[Room] Bldg.ENG-9-206
[Course description] Students learned in Architectural Environment Planning I about overall phisical environmental planning. In this class, they will learn planning techniques and calculation methods used in actual architectural planning with a focus on thermal environment and indoor air environment.
[Course objectives] Students will understand with more depth the content outlined in Architectural Programming and Design I to learn more flexible way of thinking. They will learn through experience physical environment aspect what architectural designing is and what it means to respond to requests of the society and clients.
[Plans and Contents] By following contents of the specified textbook, lectures will aim to cover appropriate matters to meet the study objective.
1. Introduction to building environment physics.
2. Buildings and natural environment.
3. Basic knowledge about environmental engineering.
4. Basic knowledge about environmental engineering.
5. Conditions for comfort.
6. Measuring instruments and measuring methods.
7. Daylighting and sunlight.
8. Solar radiation intensity.
9. Required amount of ventilation in buildings.
10. Ventilation planning.
11. Thermal conduction and heat transfer.
12. Solar heat gain.
13. Calculating thermal load.
14. Psychometric diagram and the usage.
15. Condensation and countermeasures.
16. Exam-BS11
[Evaluation] Students will be assessed within the total points of 100 consisting of attendance (30 points), report submission (15 points), and their result of the final examination (50 points). Minimum credits required for accreditation is 60 points.
[Course requirements] Student must have a basic knowledge of Architectural Planning, and Structure of Buildings.
[Remarks] Office hour: First Half /Thursday 10:00-11:30 (Sending email is required to make a reservation), located in Bldg.ENG-10-306

建築設備計画 Ⅰ　Architectural Equipment I
[Instructor] Takaharu Kawase
[Credits] 2
[Semester] 3rd year-Spring-Mon 3
[Course code] 1N032001
[Room] Bldg.ENG-9-206
[Course description] The advancement of architectural equipment mechanical and electrical (M&E) engineering in buildings is tremendous today, and architectural function and performance along with global environmental issues depend on architectural equipment M&E system that is installed. This class will cover architectural equipmentmechanical system in buildings that is essential in architectural planning and designing with a focus on air conditioning, plumbing systems, and disaster prevention equipment, which are is the equipment system that could affect architectural planning to a great degree among all the architectural equipmentM&E system. Also, specific examples will be included as part of the lecture besides the textbook.
[Course objectives] The objective of this class is for students to acquire basic knowledge of architectural equipmentmechanical system and develop a sense for appropriately handle architectural planning. They aim to be able to perform basic planning of air conditioning, plumbing systems, disaster prevention equipment, and energy efficiency.
[Plans and Contents]
Based on under mentioned textbooks, lectures will cover the building equipment's mechanical system as a whole, excluding electrical equipment's system and elevators.
1. Introduction to building equipment's.M&E system in buildings
2. Building, heat, air and water.
3. Building environment and building equipment'sM&E system.
4. Air conditioning equipment's.
5. Heat source equipment's.
6. Air conditioning systems.
7. Heat transfer equipment's.
8. Ventilation equipment's.
9. Buildings and water environment.
10. Water and hot water supply equipment's.
11. Plumbing fixtures.
12. Fire prevention equipment's
13. Building equipment's M&E system and energy saving in buildings.
14. Space planning for building equipment's.
15. Case studies of various projects.
16. Exams
[Evaluation] Students will be assessed within the total points of 100 consisting of attendance (30 points), report submission (15 points), and their result of the final examination (50 points). Minimum credits required for accreditation is 60 points.
[Course requirements] Student must have a basic knowledge of Architectural Planning, and Structure of Buildings.
[Remarks] Office hour:First Half /Thursday 10:00-11:30(Sending email is required to make a reservation), located in Bldg.ENG-10-306

建築生産 ＩＩ　Building Production　II
[Instructor] Hideaki Kadokura
[Credits] 2
[Semester] 3rd year-Spring-Mon 6
[Course code] T1N033001
[Room] Bldg.ENG-9-206
[Course enrollment] 85
[Candidate] Students of Faculty of Engineering, and Specially Registered Non-Degree Student
[Course description] So far on business of building production, it has focused on the process leading to the completion to delivery from design starting. However, due to a decrease in demand for new construction and changes in social environment and economic conditions, importance of business planning and ordering business are the stage before them, and maintenance, playback, dismantling and disposal such are later stage, have been increasing in recent years. In this lecture, based on the changes in the environment surrounding the building construction in recent years, students will learn the mechanism of construction production in Japan including the process of dismantling and disposal up from business planning.
[Course objectives] First, in the first half of the lecture, students will acquire knowledge about the basic elements related to building overall production through structure of the industry and social norms to create a building, the establishment conditions, etc. of the project. In the second half, students will acquire the basic knowledge necessary for the building construction business along the process of building project, learning the theory and methods and related contents of the business of each. Thus, students will understand the spread and change in the social position and act of architecture.
[Plans and Contents]
1. Guidance, and Architecture production and changes in the environment of surrounding.
2. Housing industry.
3. General construction industry.
4. Building construction and social norms.
5. How to occur the building project
6. Building project as an economic act
7. Planning of the building project
8. Contract and order
9. Design and supervision
10. Cost management
11. Production management
12. Dismantling and resource recycling
13. Sustainable management and conservation maintenance.
14. Building construction at the time of disaster
15. Building Construction in stock era and summary.
[Keywords] Construction market, Housing industry, General construction industry, Building Production system, Building construction project, Building construction business
[Evaluation]Students will be comprehensively assessed on attendances and reports.
[Related courses] Building Production Ⅰ, Building Production Design

建築施工 Construction Practice
[Instructor] (Seiichi Tsuda)
[Credits] 2
[Semester] 3rd year-Fall-Mon 3
[Course code] T1N035001
[Room] Bldg.ENG-9-206
[Course enrollment] 60
[Candidate] 3rd and 4th year of Department of Architecture. Students from other faculty and department have to consult with Instructor.
[Course description] This class will teach architecture not just as design and planning, but will instead discuss building structures themselves as acts of production. Lectures will be given on the process and connections from architectural design to construction in this case, as well as a general view of building construction. In addition to acquiring simple knowledge and technologies related to construction, efforts will be made to understand the act of design and the circumstances of construction as an action to create actual building structures. On-site tours will also be incorporated to aid understanding of the actual act of construction.
[Course objectives] Architecture is discussed as an act of production. Students learn the process and connections from architectural design to construction, as well as a general view of architectural construction.
[Plans and Contents] (Note) Contents and schedule are subject to alteration.
1. Understanding building production system and contract methods (roles of client, architect, construction manager and contractors, and system of orders).
2. Understanding the relationship of design and construction by following the flow of roles and responsibilities from conception to completion.
3. Understanding the construction industry of Japan and actual state of the building trade.
4. Understanding the outline of construction flow (flow of construction from commencement to completion, with reinforced concrete construction as an example).
5. Understanding construction preparation and construction program (various procedures during construction commencement, application to authorities, and site investigation).
6. Understanding contents and concept of temporary works.
7. Understanding vital points of foundation and groundwork (sheathing, piling, and earthwork below GL).
8. Framework construction (1): Understanding vital points of construction and management methods for reinforced concrete buildings.
9. Framework construction (2): Understanding vital points of construction and management methods for reinforced concrete buildings. (Continuation)
10. Finish work (1): Understanding the outline of finish work according to construction type.
11. Finish work (2): Understanding the outline of finish work according to construction type. (Continuation)
12. Equipment work: Understanding the outline of wide ranging equipment work and their relationship with building work.
13. Quality assurance and servicing: Understanding the concept of quality assurance in building work, current state of quality assurance, and servicing.
14. Site visit (investigate the actual conditions of building production through observing site conditions, state of temporary work and its associated planning, and on-site personnel including site managers and workers).
15. Future of building construction and examination.
[Textbooks and Reference Books] Not particularly. Handouts provided in class on appropriate time.
[Evaluation] Evaluation is given by attendance exams and reports.
[Course requirements] None

造園学　Landscape Architecture

[Instructor] Makoto Akasaka
[Credits] 2
[Semester] 3rd year-Fall-Fri 2
[Course code] T1N038001
[Room] Bldg.ENG-9-106
[Course description] This class looks at the trends and changes in landscape architecture up until the present era—focusing on familiar greenery such as gardens and parks, as well as nature of the national-park level—as well as its future prospects. In particular, this class will use examples from inside and outside Japan to elucidate nature-oriented issues in the modern society, in addition to transitions, technologies, and the history of ideologies in the field of landscape architecture.
[Course objectives] This class will give an outline of the theories and principles that support the field of landscape architecture. Lectures will be given on the position of landscape architecture as a science and art related to the environment. Understanding will be obtained about the work of landscape architects that are involved in environmental formation, as well as their social roles, while questioning what types of nature and greenery should be enjoyed by humans.
[Plans and Contents]
1. Orientation
2. Nature-oriented attitude and contemporary society: Contradiction in nature-oriented attitude of contemporary society (denial towards deforestation and inclination towards natural timber), its causes and reasons.
3. Landscape architecture and landscape domain: Domain of landscape architecture born in the modern history, roles of landscape architects through the history, and the future of profession.
4. Landscape Architecture of Japan-1.
5. Landscape Architecture of Japan-2.
6. Landscape Architecture of Europe-1.
7. Landscape Architecture of Europe-2.
8. Socialization of space - garden, cities, and landscape: Technologies to handle gardens as aesthetic space, and the process for ideologies to develop into urbanity and landscape (contemporary Europe).
9. Socialization of space - garden, cities, and landscape: Technologies to handle gardens as aesthetic space, and the process for ideologies to develop into urbanity and landscape (Japan).
10. Socialization of space - garden, cities, and landscape: Technologies to handle gardens as aesthetic space, and the process for ideologies to develop into urbanity and landscape
11. Environmental recognition and principle of behavior: Environmental ideology and conservation movement in contemporary history.
12. Environmental recognition and principle of behavior: Environmental ideology and conservation movement in contemporary history.
13. Recognition of natural beauty and aesthetic experience: Summary of aesthetic issues found in the nature-human relationship.
14. Destruction, conservation, discovery, and regeneration of sceneries: Ideology of conservation begun with destruction.
15. Summary
[Keywords] nature-oriented, contemporary society, Landscape Architecture, socialization, gardens, Fukei, regeneration, nature, human being, beauty, space experience
[Textbooks and Reference Books]　Tanaka, Masahiro: Nihon no Teien, SD23 Kajima-shuppankai/ Okazaki, Ayaakira: Yoroppa no Zouen, SD43 Kajima-shuppankai/ Berque, Augustin: Nihon no Fukei Seiyo no Keikan soshite Zoukei no Jidai, Kodansha-shinsho/ Tuan, Yi-Fu: Kukan no Keiken (Space and Place), Chikuma-shobo/ Kuwako, Toshio: Kankyo no Tetsugaku, Kodansha-gakujutsubunko/ Akasaka, Makoto: Shinrin-fukei to Media/ Aichi-shuppan/ Akasaka, Makoto ed.: Zoenn ga Wakaru Hon, Shokokusha
[Evaluation] Students will be given credit on attendance, exercises, and mini-test for verifying their understanding, at the ratio of 40%, 30%, and 30% respectively. Minimum credits required for accreditation is 60 points.
[Course requirements]　Not particularly
[Remarks]　The course includes submission of exercise assignments and landscape excursions. Applying students must have both intellectual and physical abilities. Study references will be introduced during lectures.

建築実践研究 ＩＩＩ Architecture in Theory & Practice III
[Instructor] Yukiko Nakamura, Takaharu Kawase
[Credits] 1
[Semester] 3rd year-Spring-Fri 3,4,5
[Course code] T1N039001, T1N039002, T1N039003
[Room] Bldg.ENG-9-107
[Course enrollment] 85
[Candidate] 3rd year of Department of Architecture (Including the Department of Design Science students studying architecture)
[Course description] Students participate in a program composed of events with a diverse range of content, including lectures, tours, open laboratories, forums, research introductions, debates, research presentations, exhibitions, and other events that are held for the purpose of acquiring the fundamental skills that are required to carry out activities related to architecture. This training is for the purpose of comprehensively assembling the knowledge and technologies that students have learned up until this stage via lectures and design assignments. In this way, they acquire knowledge of and become more interested in research and cutting-edge technologies related to architecture.
[Course objectives] Based on the acquisition of the skill of “synthesizing and expressing conditions”—which is required to carry out activities related to architecture—students acquire knowledge of and become more interested in research and cutting-edge technologies related to architecture.
[Plans and Contents] Students participate in events such as exhibitions, research presentations, debates, research introductions, forums, open laboratories, tours, and lectures held by the Division of Architecture and Urban Science. The specific themes, content, and schedules of these events will be announced at the beginning of the semester.
[Keywords] One day exercise of architectural design
[Textbooks and Reference Books] Not particularly
[Evaluation] Students will be assessed on attendance credits to each event, and submission of reports on their impressions upon the end of each seminar. Absence and lateness will be demerit
[Related courses] All subjects offered in architecture mainly consisting of architectural design.
[Course requirements] Student must take Architectural Design I~IV.
[Remarks] The events will include various types, including the ones prepared for this subject, common with Architecture in Theory & Practice II for sophomores, open to students other than sophomores or outside of the university, or held off-campus. Please take note of postings for any schedule updates or changes.
The name of this subject was changed in the 2005 academic year from Separation of Advanced Architectural Practice.

建築実践研究 IV Architecture in Theory & Practice IV
[Instructor] Yukiko Nakamura, Takaharu Kawase
[Credits] 1
[Semester] 3rd year-Fall-Fri 3,4,5
[Course code] T1N040001, T1N040002, T1N040003
[Room] Bldg.ENG-15-110
[Course enrollment] 85
[Candidate] 3rd year of Department of Architecture. Including the Department of Design Science students studying architecture.
[Course description] Students participate in a program composed of events with a diverse range of content, including lectures, tours, open laboratories, forums, research introductions, debates, research presentations, exhibitions, and other events that are held for the purpose of acquiring the fundamental skills that are required to carry out activities related to architecture. This training is for the purpose of comprehensively assembling the knowledge and technologies that students have learned up until this stage via lectures and design assignments. In this way, they acquire knowledge of and become more interested in research and cutting-edge technologies related to architecture.
[Course objectives] Based on the acquisition of "integration and representation of conditions", essential skills in undertaking activities related architecture, students will develop interest and knowledge of advanced technologies and researches in architecture.
[Plans and Contents] Students will be asked to attend various symposiums organized by the Department of Architecture, tours, open laboratories, forums, research introductions, discussions, research presentations, exhibitions, and other related events to be announced. The specific theme of events, contents, and schedules will be announced at the beginning of the semester.
[Keywords] Interest towards integration, practice of architecture, advanced technologies and researches.
[Textbooks and Reference Books] Not particularly
[Evaluation] Students will be assessed on attendance credits to each event, and submission of reports on their impressions upon the end of each seminar. Absence and lateness will be demerit.
[Related courses] All subjects offered in architecture mainly consisting of architectural design.
[Course requirements] Student must take Architectural Design I~IV.
[Remarks] The events will include various types, including the ones prepared for this subject, common with Architecture in Theory & Practice Ⅱ for Sophomores , open to students other than Sophomores or outside of the university, or held off-campus. Please take note of postings for any schedule updates or changes.

構造実験 II　Experiments of Structural Engineering II
[Instructor] Koichi Maeda, Takeo Hirashima, Takashi Kashiwazaki and Yuko Shimada
[Credits] 4
[Semester] 3rd year-Spring-Tues 4,5
[Course code] T1N041001, T1N041002
[Room] Bldg.ENG-9-106
[Course enrollment] 40
[Candidate] 3rd year of Department of Architecture
[Course description] Students will participate in producing reinforced concrete beams and loading tests.
[Course objectives] Through the experiment participation, students will be asked to deepen their understanding in structural design of reinforced concrete structures covered in lectures.
[Plans and Contents]
1. Guidance and grouping
2. Aggregate tests of concrete 1
3. Aggregate tests of concrete 2
4. Reinforcing bar works and formworks 1
5. Reinforcing bar works and formworks 2
6. Reinforcing bar works and formworks 3
7. Concrete placing 1
8. Concrete placing 2
9. Tensile test of the reinforcing bar and compression test of the concrete
10. Calculation of ultimate strength of RC beam specimens
11. Loading test of RC beam 1
12. Loading test of RC beam 2
13. Loading test of RC beam 3
14. Loading test of RC beam 4
15. Presentation
[Keywords] Concrete, Reinforcing bar, bending tests
[Evaluation] Evaluation is given by attendance and experiment’s report.
[Related courses] Students preferably will be taken courses of Structural Design II, at the same time.
[Course requirements] Not particularly

建築設計 Ⅴ　Architectural Design V
[Instructor] Kaname Yanagisawa, Suraj Pradhan, Akari Tanabe, Shigeki Nakayama
[Credits] 2
[Semester] 3rd year-Spring-Wen 3,4,5 First half
[Course code] T1N042001, T1N042002, T1N042003
[Room] Bldg.ENG-10-412 Drawing Room
[Course enrollment] 50. Divide into 4groups.
[Candidate] Students of Department of Architecture
[Course description] Students will learn the basic facility programming, as well as planning and design applied it for practical use. This year, the topic will be elementary schools, which everyone has attended in the past. Students will propose new idea, how future elementary schools should be by “reconstructing” the elementary schools they used to attend.
[Course objectives] The goal of this class is for students to learn basic knowledge related to facility programming, and to apply it to their planning and design. Through research and analysis on existing facilities, case studies on similar facilities, facility programming, site zoning, scale calculation-of required rooms and spaces, functional diagram, and drawings of plan, section and elevation. The specific targets for students to achieve are to understand these goals, methods, and effects, and master the capabilities of expressing and applying them to specific space plans and designs.
[Plans and Contents]

1. Introduction of assignments, grouping students, related lecture "Elementary school planning".
   Assignment: Analysis of existing school building.
   Presentation 1: Presentation and review for the analysis of existing school building.
   Assignment: Case study of similar school building, and facility programming.
2. Presentation 2: Presentation and review for the case study of similar school building, and facility programming.
   Assignment: Site zoning, scale calculation-of required rooms and spaces, rooms zoning.
3. Presentation 3:Presentation and review for the site zoning, scale calculation-of required rooms and spaces, rooms zoning.
   Assignment: Planning of floor plan, section, elevation, structure, outdoor and landscape, and typical classroom unit.
4. Presentation 4: Presentation and review for the planning of floor plan, section, elevation, structure and landscape, classroom unit plan.
   Assignment: Revised floor plan, section, elevation, structure, outdoor and landscape, and typical classroom unit.
5. Presentation 5:Presentation and review for the revised floor plan, section, elevation, structure, outdoor and landscape, and typical classroom unit.
   Assignment: Making final submissions (site plan, floor plan, section, and elevation, detail drawing of classroom units, interior perspective, and model).
6. Submission of final drawings (site plan, floor plan, section, elevation, detail drawing of classroom units, interior perspective, and model). Critique in group.

[Keywords] Research and analysis, facility programming, site zoning, functional diagram, planning of floor plan, section, elevation.
[Evaluation] Students will be assessed on the combined factors consisting of interim submission and final submission (degree of perfection, idea, level of representation, and presentation method). In addition, participation degree and lateness will also be taken into account.
[Related courses] Architectural Design VI
[Course requirements] Students must take or have taken Descriptive Geometry, Basic Architectural Design,Architectural Design I II, III.
[Remarks] The location of first class (orientation and related lecture) will be posted. Since the assignment does not end in the classroom time, students need to proceed with the work overtime on the basis of the teacher’s advices, and reference books. Students must work on the assignment by themselves without the help of others. Also, do not perform any action that infringes the copyright.

建築設計VI　Architectural DesignVI
[Instructor] Kaname Yanagisawa, Suraj Pradhan, Akari Tanabe, Shigeki Nakayama
[Credits] 2
[Semester] 3rd year-Spring-Wen 3, 4, 5 First half
[Course code] T1N043001, T1N043002, T1N043003
[Room] Bldg.ENG-10-412 Drawing Room
[Course enrollment] 50 Divide into 4groups.
[Candidate] Students of Department of Architecture
[Course description] Students will learn the basic facility programming, as well as planning and design applied it for practical use. This year, the topic will be small community facilities related to the elementary schools designed in Architectural Design V Students will conduct research on the local community and propose new idea, how to revitalize it by constructing new community facilities.
[Course objectives] The goal of this class is for students to learn basic knowledge related to facility programming, and to apply it to their planning and design. Through research and analysis on existing facilities, case studies on similar facilities, facility programming, site zoning, scale calculation of required rooms and spaces, functional diagram, and drawings of plan, section and elevation. The specific targets for students to achieve are to understand these goals, methods, and effects, and master the capabilities of expressing and applying them to specific space plans and designs.
[Plans and Contents]
7. Introduction of assignments, grouping students, related lecture "Small community facility planning".
   Assignment: Case study of small community facility, and facility programming.
8. Presentation 1: Presentation and review for the case study of small community facility, and facility programming.
   Assignment: Site zoning, scale calculation-of required rooms and spaces, rooms zoning.
9. Presentation 2:Presentation and review for the site zoning, scale calculation-of required rooms and spaces, rooms zoning.
   Assignment: Planning of floor plan, section, elevation, structure, outdoor and landscape, and typical unit plan.
10. Presentation 3: Presentation and review for the planning of floor plan, section, elevation, structure and landscape unit plan.
    Assignment: Revised floor plan, section, elevation, structure, outdoor and landscape, and typical unit plan.
11. Presentation 4:Presentation and review for the revised floor plan, section, elevation, structure, outdoor and landscape, and typical unit plan.
    Assignment: Revised floor plan, section, elevation, structure, outdoor and landscape, and typical unit plan, concerned with elementary school designed in Architectural Design V.
12. Presentation 5:Presentation and review for the revised floor plan, section, elevation, structure, outdoor and landscape, and typical unit plan, concerned with elementary school designed in Architectural Design V.
    Assignment: Making final submissions (site plan, floor plan, section, and elevation, detail drawing of unit plan, interior perspective, and model).
13. Submission of final drawings (site plan, floor plan, section, elevation, detail drawing of unit plan, interior perspective, and model). Critique in group.
14. Critique in all groups for selected best students.

[Keywords] Research and analysis, facility programming, site zoning, functional diagram, planning of floor plan, section, elevation.
[Evaluation] Students will be assessed on the combined factors consisting of interim submission and final submission (degree of perfection, idea, level of representation, and presentation method). In addition, participation degree and lateness will also be taken into account.
[Related courses] Architectural Design V
[Course requirements] Students must take or have taken Descriptive Geometry, Basic Architectural Design, Architectural Design I, II, III, IV,
[Remarks] The location of first class (orientation and related lecture) will be posted. Since the assignment does not end in the classroom time, students need to proceed with the work overtime on the basis of the teacher’s advices, and reference books. Students must work on the assignment by themselves without the help of others. Also, do not perform any action that infringes the copyright.

インターンシップ　Internship
[Instructor] Yukiko Nakamura, Takaharu Kawase
[Credits] 1
[Semester] 3rd year Spring-Fall Intensive
[Course code] T1N044001
[Room]
[Course enrollment] Depend to the offer of the company
[Candidate] 3rd year of Department of Architecture
[Course objectives] The objective is to understand the occupational abilities and responsibilities of architectural engineers.
[Plans and Contents] Through undergoing practical experience for approximately two weeks, students will understand job specifications and responsibilities of a construction engineer.
[Keywords] Professional ability, Engineering ethics
[Textbooks and Reference Books] Not particularly
[Evaluation] Through undergoing practical experience for approximately two weeks, students will understand job specifications and responsibilities of a construction engineer.
[Related courses] All Specialized Course

建築設計 Ⅶ Architectural Design Ⅶ

[Instructor] Satoshi Okada, Hiroki Suzuki, Junichi Suzuki
[Credits] 2
[Semester] 3rd year-Fall-Tues 3, 4, 5
[Course code] T1N075001, T1N075002, T1N075003
[Room] Rooms will be announced at the Orientation.
[Course enrollment] Three teachers in the field of architectural design manage their own studio. Before the first Orientation class, students are required to prepare for choosing their own studio by their concerns, and will be divided into three groups in the Orientation. In each studio, five to ten students will be assigned.
[Candidate] Students of Department of Architecture, who are required both comprehensive design knowledge and skills learned in Architectural Design I through VII.
[Course description] The advanced architectural design class consists of a studio system, in which each teacher organizes each studio independently.
[Course objectives] The objective is to integrate both comprehensive design knowledge and skills into architectural design from various professional fields: such as, architectural planning, urban planning, structural engineering, equipment, construction method, and other requirements related to each topic.
[Plans and Contents] Teaching plans and contents will be announced in each studio after the assignment in the Orientation class. In the seventh class, the mid-term critique will take place in each studio. The final presentation will be held at the end.
[Keywords] advanced architectural design, landscape design, architectural planning, urban/town planning, structural design/engineering, equipment design/engineering, construction, environmental design
[Evaluation] Evaluation is comprehensively given by attendance, presentation, and final submitted work.
[Course requirements] Students who achieve a credit Descriptive Geometry, Basic Architectural Design,Architectural Design 1-7.
[Remarks] Students must work on the assignment by themselves without the help of others. Also, do not perform any action that infringes the copyright.

建築の保全と再生　Architectural conservation and renewal
[Instructor] Morris Martin Norman
[Credits] 2
[Semester] 3rd year-Spring-Thurs 2
[Course code] T1N046001
[Room] Bldg.ENG-9-106
[Course enrollment] 80
[Candidate] Students of Faculty of Engineering, and other Faculties
[Course description] The course covers themes relating to the conservation and renewal of architecture with the aim of maintaining existing structures rather than building new ones. This year 2 lecturers will talk about the maintenance, conservation and renewal of existing architectural structures and introduce the history of this subject and current trends in Japan and in other countries.
[Course objectives] The course aims to consider how we can maintain, preserve, renew and utilize existing buildings. Students will be introduced to the basic concepts and historical background of this field by examining historic buildings, methods of preserving cityscape and the development of principles as well as techniques and issues related to the renewal of existing architecture in ways that promote environmental conservation and renewal. The lecturers will talk about these topics from their respective specialty areas. By studying both overseas and domestic examples, the aim is to encourage recognition of the global importance of conservation and renewal of architecture among the students. Students will learn to recognize the differences between various conservation and renewal methods and ways of appraising them.
[Plans and Contents] In the first half of the course (by Martin Norman Morris, sessions 1 – 8) will cover the historical development of architectural conservation from ancient times down to the 21st century at the level of individual buildings. It will also consider the conservation of groups of buildings and urban contexts, and finally it will focus on renovation of buildings for re-use, particularly as a form of conservation. The focus is mainly on the Western World. The second half (sessions 9 – 15) will focus mainly on Japan and study the administrative framework of cultural property conservation and technologies for conserving historic architecture as well as conservation work by modern architects.
Introduction: Terminology, concepts, and the scope of lectures will be explained. In addition, the lecture will cover the conservation history of traditional architecture and artworks in Europe until the end of the 18th century, with the aim of improving students' understanding of the beginnings of architectural conservation. (Morris) — E1
2. By examining the debate surrounding the conservation of traditional architecture in 19th century Europe, students will be led to an understanding of its historical development. (Morris) — E1
3. By examining the debate and events surrounding the conservation of traditional architecture in the United Kingdom (up to the end of the 19th century), students will be led to an understanding of its historical development. — E1
4. By examining some of the major trends in the conservation of traditional architecture in the 20th century, students will be led to an understanding of its development. (Morris) — E1
5. By examining the conservation of historical buildings through various recent case studies, students will be helped to deepen their understanding of the subject. (Morris) — E1
6. By examining conservation of groups of historic buildings, townscape, and landscapes consisting of historic buildings, students will aim to obtain an understanding of the subject. (Morris) — E1
7. By examining the historical development of architectural renovation in Europe, students will be helped to obtain a deeper understanding of the subject. (Morris) — E1
8. By examining the current state of architectural renovation work in Europe, looking at case studies of notable examples, and investigating the relationship between architectural conservation and renovation, especially in the context of landscapes and the environment, students will be helped to obtain a deeper understanding of the subject. (Morris) — E1
9. Students learn to understand the history of cultural property conservation in Japan. (Ebara) — E1
10. Students learn to understand timber building conservation and restoration techniques in Japan. (Ebara) — E1
11. Students learn to understand building conservation and restoration techniques in contemporary architecture. (Ebara) — E1
12. Students learn to understand the protection of historic landmarks remains and ruins. (Ebara) — E1
13. Students learn to understand restoration and renovation of existing buildings. (Ebara) — E1
14. Students learn to understand contemporary architects and their treatment of historic buildings (Ebara). — E1
15. Students learn to understand conservation of historic architecture in the context of districts designated for conservation, landscaping, and its role in the enhancement of urban contexts. — E1
[Keywords] existing buildings, groups of building, renewal, conservation, destruction
[Evaluation] Students will be asked to submit a short essay at the end of both the first and second half (deadlines to be confirmed). In addition, students must submit a mini-report at the end of each lecture. Each lecturer will assess students in an equal ratio (50% each).
[Related courses] History of World Architecture, History of Japanese Architecture, Advanced Architectural Studies III Architectural History Field Trip
[Remarks]The curriculum substitutes the "History of Conservation and Regeneration in Architecture" held until 2005.

建築環境計画 ＩＩＩ　Architectural Environment Planning III
[Instructor] Jun Munakata
[Credits] 2
[Semester] 3rd year-Fall-Mon 2
[Course code] T1N047001
[Room] Bldg.ENG-9-206
[Candidate] Students of Faculty of Engineering, other Faculties, and Specially Registered Non-Degree Student
But only a few. Students need to offer when to register.
[Course description] Specialized lectures on environmental elements related to sound, light and visual environments.
[Course objectives] Students will acquire comprehensive knowledge on designs that will create pleasant sound and light environments and prevent discomfort both inside and outside of buildings.
Objectives: Students can explain the basic knowledge of the light environment and sound environment. They can also determine the quality of the environmental performance of light and sound. Students can apply designing the technology to bring the comfort of the sound and light construction.
[Plans and Contents]
1. Sunshine, solar radiation 1: Learning how to understand the position of the sun and the utility of sunshine, solar radiation.
2. Sunshine, solar radiation 2: Learning how to understand the shade and its impact, and to learn about solar radiation adjusting device.
3. Learning about light, visual, photometric quantity: standard mechanism of vision, concept of photometric quantity and its standard, factors that is required for the clear vision,
4. Lighting calculation basis: Learning how to calculate the illumination by a variety of light source and basics for the calculation.
5. Light Source Daylight: Learning characteristics and type of the optical light source, calculation method of light illumination, the characteristics of the window units and equipment.
6. Artificial light source: Learning the characteristics of the various lamps.
7. Luminaire: Learning how to understand the features and performance of the luminaire
8. Color: Learning basic knowledge of color, the color system.
9. Color: Learning psychological effects of color and the color planning.
10. Basis for sound: Learning wave equation, to grasp the nature and method of acoustic waves.
11. Room acoustics: Learning reverberation time and its evaluation.
12. Sound insulation: mechanism and material of sound insulation, and the impact sound and also the evaluation of the noise floor.
13. Sound-absorbing material Learning the nature and absorption coefficient of the sound-absorbing material, and the method of calculation of the sound reverberation time.
14. Electro-acoustic equipment:　Learning about S electro-acoustic equipment.
15. Summary: Final assignment
[Evaluation]Students will be assessed through both interim and final assignments. Students failing to meet the attendance rate specified by the Faculty of Engineering will not be given any academic credits.

建築設備計画 II　Architectural Equipment II
[Instructor] Mutsuro Homma
[Credits] 2
[Semester] 3rd year-Fall-Fri 6
[Course code] T1N048001
[Room] Bldg.ENG-9-206
[Course objectives] This course will provide lectures mainly on the basics of electrical system in buildings aiming to develop knowledge on the overall scheme of practice and a frame of mind to make proper judgments in building planning.
[Plans and Contents]
1. Configuration and basic knowledge of electrical equipment's: Learning technologies of electrical system. Recognizing the familiarity of building electrical equipment's through use of knowledge related to electronics, and learning to appreciate the importance of creative spirits towards craftsmanship. — BS11
2. Issues in modern society and roles of electrical equipment's: Since the earthquake disaster, social structure and ideologies are being transformed. Through the investigation of electrical system, students will be asked to consider their roles in contributing to societies. — BS11
3. Substation facilities: Understanding basics of power supply and its facilities. — BS11
4. Emergency power system: Since the earthquake disaster, the importance of emergency power systems is increasing. Students will improve the basic knowledge of emergency power system in buildings, and deepen their understanding of photovoltaic power generation which can act as an emergency power source. — BS11
5. Renewable energy and supply lines and power source: In continuation from the previous week, students will deepen their understanding of power generation equipment's including wind and fuel cells, and study supply line systems which are directly related to the reliability improvement of electrical supply to buildings. — BS11
6. Electrical outlets: Adequate design contributes to easy and safe usage of electricity. In addition, the next generation of engineers must become inventive to enable a greater practical usage of electricity. Understanding the basic knowledge required for being inventive. — BS11
7. Lighting general: For Department of Architecture students, the design of lighting equipment's and lighting environment must be easiest to understand. Understanding the basics of lighting design through understanding light with the standard of physics. — BS11
8. Light source: Lighting design and light environment design undoubtedly require light sources. Students will understand luminescence mechanism of existing light sources and its characteristics. In addition, students will also acquire correct knowledge of LED, the new light source. — BS11
9. Lighting control and energy conservation: Today, switches for turning-on lighting have evolved in many forms. Such functions developed into control systems play the central role in energy conservation in lighting. Students will understand the history of control technologies. — BS11
10. Advanced lighting technologies: Understanding the advanced practical technologies related to the lighting including technologies to beautifully accentuate the appearance of objects being illuminated, technologies to feel brighter appearance while reducing the energy use, and technologies to make effective use of daylighting. — BS11
11. Security systems: Learning the significance and basic knowledge of security in buildings, and understanding that security planning is closely related to architectural planning. — BS11
12. Central monitoring facility: For airplanes to fly safely, appropriate operating instructions from the cockpit is essential. Similarly, appropriate operating instructions from a central monitoring facility can contribute to a safe operation of a building. Students will understand the history of central monitoring facilities and future developments. — BS11
13. Disaster prevention equipment's: Electrical equipment's are effective for early detection of disasters, evacuation instruction, and fire extinguishing, and required equipment's are stipulated by the building law. Students will understand details and legislations of electrical disaster prevention equipment's. — BS11
14. Serge protection and elevators: Lightning not only causes direct damages to buildings, but also causes various disturbances to electrical communication equipment's via electrical systems. While understanding the reality of serge protection, students will also deepen their understanding of elevators, an important function for vertical movement in buildings. — BS11
15. Field tour: Through a tour of Sumida Triphony Hall, students will experience manufacturing, operation management, and professional attitudes toward facility maintenance.
16. Examination and explanation: Students will be asked to demonstrate not only their knowledge, but abilities to extract problems found in societies, abilities to make proposals to resolve such issues, and expressiveness. Students will be asked to understand the importance of contrivance.
[Evaluation] Evaluated score must be over 60points to achieve a credit.

建築史野外演習　Architectural History Field Trip
[Instructor] Morris Martin Norman
[Credits] 4
[Semester] 3rd year Spring-Fall Intensive
[Course code] T1N049001
[Room] The class is usually held from late September to beginning of October. The detail will be announced later.
[Candidate] Students of Faculty of Engineering Students. This course mainly targets 3rd year of Department of Architecture.
[Course description] The class will visit and observe old architectural structures that are preserved in various locations such as temples and shrines, castles and shoin style buildings, as well as vernacular residential buildings and cityscape. We will also visit museums related to architectural history. Opportunities to visit restoration sites of designated cultural properties and archaeological excavation sites with building remains will be included as often as possible.
[Course objectives] By actually visiting and observing conserved old buildings and architectural history museums in various locations, the course aims to enable students to see and improve their understanding of the content of the lectures on Japanese architectural history. Students will be asked to sketch what they see at the various sites visited to provide them with an opportunity to acquire skills in the recording of buildings through simple sketches, which will be of great use to them as professional architects.
[Plans and Contents] Every year, the class will go on a field trip for about 8 days during the summer vacation. Different locations are selected each year, but the courses are planned to get a good mix of various styles of architecture. Some modern architecture will also be included. Kyoto and Nara are normally included, with visits to Horyuji, Toshodaiji, Byodoin, Ginkakuji and Ninnaji (for example). In certain years, we have visited museums and old buildings in the Kanto area. Generally, students gather at designated times in pre-arranged locations to view buildings, and then disperse when the visit is over. At each site visited, an explanation of the buildings from the standpoint of architectural history is offered by a student assigned the task in advance, or the lecturer. In some cases, lectures may be given by other specialists (for example, the supervisor in charge of a restoration project). Students will be given opportunities to make records of the buildings as far as possible. … E1
[Evaluation] Prior to departure, each student will be asked to research one of the buildings to be visited, produce a single A4 information sheet, distribute the sheet to the other students on the course, and give a 5-10 minute verbal presentation of the building to the whole group when they visit it. In addition, students will be asked to produce a 30-page travel-diary format report consisting of hand-drawn sketches covering details of the tour with supporting notes. These must normally be submitted about one month after the field trip. The report is a prerequisite for accreditation.
[Related Courses] History of Japanese Architecture, History of World Architecture, Architectural conservation and renewal
[Course requirements] An interest in the history of architecture and humanity.
[Remarks] The field trip this year will place in the last week of September. Details including dates and the destination will be announced at the architectural history field trip guidance sessions, prior to the end of the curriculum registration period. Students are advised to look out for information on the notice board.

近・現代建築論　Theory of Modern Architecture
[Instructor] Satoshi Okada
[Credits] 2
[Semester] Spring-Thurs 4
[Course code] T1N050001
[Room] Bldg.ENG-9-107
[Course enrollment] 80
[Candidate] Basically any student including Non-Degree one, in and after the third year, may take the class.
[Course objectives] Studying about events and thoughts in the past provides one an effective knowledge for one's way of life. The objective of the class is to provide historical perspectives through learning events and philosophies that influence on modern movements in architecture.
[Plans and Contents]
1. Orientation
2. Overview on Classicism in architecture - 1
3. Overview on Classicism in architecture - 2
4. Overview on Classicism in architecture - 3
5. Enlightenment on architecture
6. Functionalism & Structural rationalism
7. Movements in the 19th century
8. Frank Lloyd Wright
9. Movements in the early20th century - 1: Holland
10. Movements in the early20th century - 2: Germany
11. Movements in the early20th century - 3: USA
12. Mies van der Rohe
13. Le Corbusier
14. Diversification after1968
15. Contemporary architecture
[Textbooks and Reference Books]Kenneth Frampton, Modern Architecture – a critical history, Thames and Hudson 1985 (original ed.1980) Reyner Banham, Theory and Design in the First Machine Age, The MIT PRESS, 1986 (original ed. 1980)
[Evaluation] Evaluation is given by attendance and papers.

施設デザイン計画 II Architectural Programming and Design II
[Instructor] KanameYanagisawa
[Credits] 2
[Semester] 3rd year-Fall-Mon 4
[Course code] T1N051001
[Room] Bldg.ENG-9-206
[Course enrollment] about 50
[Candidate] Students in other departments in the own faculty, in other faculties, and Specially Registered Non-Degree Student may take this course.
[Course description] This course is to learn and acquire architectural design methods and process, knowledge on assessment and management of programming and designing architecture, with special emphasis on practical knowledge and the ability to make judgments and assessments based on related architectural theory, behavioral science and other theories using actual architectural examples as the main subject of study.
[Course objectives] The objective of this course is to understand the theories and methods of architectural programming and design by referring to actual architectural examples and research results. The specific goal is to acquire a wide range of architectural knowledge including architectural design, the relationship between human behavior & psychology and architectural space, architectural programming, design methods and process, assessment and management, architectural design education, occupational ability and ethics of architects and engineer, and particularly practical knowledge and the ability to make judgments and assessments based on related architectural theory, behavioral science and other theories.
[Plans and Contents] Various examples of facilities, mostly domestic and foreign public architecture, will be shown. Lectures will cover themes including: modern to contemporary architectural programming, design theory, environmental and cultural backgrounds of architecture, universal design, programming and management, planning and design process, conversions and renovations, environmental behavioral design and design education.
Students can deepen understanding of lecture by preparation of writing class theme report in advance. And also, constructing group discussion of the exercises may lead to the fixing and application of knowledge.
1. Architectural design No.1 –Modernism and post-modernism-: Learning architectural theories and examples - From modern architecture until post modernism.
2. Architectural design No.2 – Vernacular architecture and traditional architecture-: Learning architectural space and design in Japan as well as abroad.
3. People and architecture No.1 –Environmental behavioral design-: Learning theories of environmental behavior design, case studies, and human presence.
4. People and architecture No.2 –Healing design-: Leaning healing through environmental elements and design to provide enjoyments.
5. People and architecture No.3 –Universal design-: Learning concept of universal design, case studies, and barrier free.
6. Keywords of architectural planning No.1 –Residential facilities, office, and cultural facilities-: Learning concept of architectural planning in residential facilities, office, cultural facilities.
7. Keywords of architectural planning No.2 –Educational facilities and healthcare facilities-: Learning concept of architectural planning in educational facilities and healthcare facilities.
8. Architectural process No.1 -Architectural programming-: Learning concept of architectural programming and case studies.
9. Architectural process No.2 -Architectural design process-: Learning various theories and case studies related to design process.
10. Architectural process No.3 -Architectural fieldwork-: Learning significance, purpose, methods, and effectiveness of fieldwork for architectural design and planning.
11. Architectural revitalization No.1 -Management and evaluation-: Learning methods and case studies related to facility management and evaluation.
12. Architectural revitalization No.2 -Renovation and conversion-: Learning concepts and case studies of renovation and conversion.
13. Architectural future No.1 -Educations in architectural design-: Learning outlines and case studies of architectural education in Japan and abroad.
14. Architectural future No.2 -Occupational abilities and qualifications in architecture-: Learning outlines and case studies related to qualifications and occupational abilities in architecture.
15. Architectural future No.3 –Ethics for architects and engineers: Learning Ethics for architects and engineers
[Keywords] Architectural planning, Architectural programming, Architectural design process, Environmental behavioral design, Educations in architectural design
[Textbooks and Reference Books] Not particularly
[Evaluation] Results will be evaluated in conjunction with achievements in the Exercise on Architectural Programming and Design II. Students will be assessed on combined factors consisting of their achievements in theme-based report assignments to be handed out at each lecture and other on-the-spot reports to be assigned during lectures. In addition, participation degree in lecture and group discussion will also be taken into account. To obtain pass, students are required to gain a minimum points of 60.
[Course requirements] Students must have taken exercise on Architectural Programming and Design II.
[Remarks] Time of office hour, check Website go Yanagisawa (http://www.yanagisawa.archi.ta.chiba-u.jp/)

施設デザイン計画演習 II　Exercise on Architectural Programing and Design II
[Instructor] Kaname Yanagisawa
[Credits] 2
[Semester] 3rd year-Fall-Mon 5
[Course code] T1N052001
[Room] Bldg.ENG-9-206
[Course enrollment] about 50
[Candidate] Students of Faculty of Engineering, other Faculties, and Specially Registered Non-Degree Student
[Course description] This course is to learn and acquire architectural design methods and process, knowledge on assessment and management of programming and designing architecture, with special emphasis on practical knowledge and the ability to make judgments and assessments based on related architectural theory, behavioral science and other theories using actual architectural examples as the main subject of study.
[Course objectives] By practicing the content of the lectures given in Architectural Programing and design II , the course aims to review the knowledge obtained through lectures as well as to acquire applied skills. The specific goal is to acquire a wide range of architectural knowledge including architectural design, the relationship between human behavior & psychology and architectural space, architectural programming, design methods and process, assessment and management, architectural design education, occupational ability and ethics of architects and engineer, and particularly practical knowledge and the ability to make judgments and assessments based on related architectural theory, behavioral science and other theories.
[Plans and Contents] Simple drills, discussions, and writing of reports on topics covered in the lectures of Architectural Programing I. The lectures and themes covered are the same as Architectural Programing I.
Students can deepen understanding of lecture by preparation of writing class theme report in advance. And also, constructing group discussion of the exercises may lead to the fixing and application of knowledge.
1. Architectural design No.1 –Modernism and post-modernism-: Learning architectural theories and examples - From modern architecture until post modernism.
2. Architectural design No.2 – Vernacular architecture and traditional architecture-: Learning architectural space and design in Japan as well as abroad.
3. People and architecture No.1 –Environmental behavioral design-: Learning theories of environmental behavior design, case studies, and human presence.
4. People and architecture No.2 –Healing design-: Leaning healing through environmental elements and design to provide enjoyments.
5. People and architecture No.3 –Universal design-: Learning concept of universal design, case studies, and barrier free.
6. Keywords of architectural planning No.1 –Residential facilities, office, and cultural facilities-: Learning concept of architectural planning in residential facilities, office, cultural facilities.
7. Keywords of architectural planning No.2 –Educational facilities and healthcare facilities-: Learning concept of architectural planning in educational facilities and healthcare facilities.
8. Architectural process No.1 -Architectural programming-: Learning concept of architectural programming and case studies.
9. Architectural process No.2 -Architectural design process-: Learning various theories and case studies related to design process.
10. Architectural process No.3 -Architectural fieldwork-: Learning significance, purpose, methods, and effectiveness of fieldwork for architectural design and planning.
11. Architectural revitalization No.1 -Management and evaluation-: Learning methods and case studies related to facility management and evaluation.
12. Architectural revitalization No.2 -Renovation and conversion-: Learning concepts and case studies of renovation and conversion.
13. Architectural future No.1 -Educations in architectural design-: Learning outlines and case studies of architectural education in Japan and abroad.
14. Architectural future No.2 -Occupational abilities and qualifications in architecture-: Learning outlines and case studies related to qualifications and occupational abilities in architecture.
15. Architectural future No.3 –Ethics for architects and engineers: Learning Ethics for architects and engineers
[Keywords] Refer to Architectural Refer to Architectural Programing Ⅰ
[Textbooks and Reference Books] Not particularly
[Evaluation] Results will be evaluated in conjunction with achievements in Architectural Programing and design II. Students will be assessed on combined factors consisting of their achievements in theme-based report assignments to be handed out at each lecture and other on-the-spot reports to be assigned during lectures. In addition, participation degree in lecture and group discussion will also be taken into account. To obtain pass, students are required to gain a minimum points of 60.
[Course requirements] student must take Architectural Programing and design II at the same time.

構造設計 II　Structural Design II
[Instructor] Nobuyuki Izumi
[Credits] 2
[Semester] 3rd year-Spring-Tues 2
[Course code] T1N053001
[Room] Bldg.ENG-9-107
[Course enrollment] 80
[Candidate] As a general rule, only 3rd and 4th year students in the Department of Architecture (including 3rd and 4th year students in the Department of Design Science) can take this course.
[Course description] Students will learn the basic principles and fundamentals of the designing of reinforced concrete structure, the most typical structure of buildings.
[Course objectives] The objective is to understand the basic principles and fundamentals of the designing of reinforced concrete structure. Students will understand the common knowledge on reinforced concrete, such as the reason why reinforcing bars are embedded in the concrete and why they need to be fixed firmly, and will be able to explain the basics of structural design and arrangements of the major components of a building, namely columns and beams.
[Plans and Contents] The course will be in lecture form covering the main themes of the basic principles of reinforced concrete structure, performance of materials, and fundamentals of designing. Students are to take lecture notes to understand the essential points, and after the lecture, solve some exercises in their notebooks to review the lecture and check their understanding. Students are to bring their own notebooks (details will be explained in class).
1. Reinforced concrete structure: Its birth and development, characteristics, principles of reinforcing bar arrangement, and breakage of components.
2. Reinforcing bar and concrete: Material characteristics, adhesion of reinforcing bar and concrete.
3. Reinforced concrete columns under axial force: Columns subjected to compressive axial force and tensile axial force (stress and deformation, and constraining effect of horizontal constraining reinforcement).
4. Reinforced concrete beams under bending moment (1): Behavior of RC members subjected to bending moment (equilibrium of force and sectional stress).
5. Reinforced concrete beams under bending moment (2): Sectional analysis of RC members subjected to bending moment (1) Concrete cracking - before cracking and when cracking occurs).
6. Reinforced concrete beams under bending moment (3): Sectional analysis of RC members subjected to bending moment (2) Rebar yielding and compression failure of concrete.
7. Reinforced concrete beams under bending moment (4): Allowable stress design for member subjected to bending moment.
8. Reinforced concrete columns under bending moment and axial force (1): Sectional stress and deformation, and ultimate bending moment.
9. Reinforced concrete columns under bending moment and axial force (2): Interaction between axial force and bending moment.
10. Reinforced concrete components under shear force (1): Oblique crack under shear force, and shear failure of RC member.
11. Reinforced concrete components under shear force (2): Transfer of shear force and roles of shear reinforcement.
12. Reinforced concrete components under shear force (3): Designing shear reinforcement.
13. Reinforced concrete shear wall: Performance, performance against bending moment and shear force, and reinforcing bar arrangement concept.
14. Reinforced concrete foundation, beam-column connection, and slab: Roles and types, and reinforcing bar arrangement concept.
15. Performance and design of reinforced concrete structure: Required performance and seismic design concept.
16. Final examination.
[Keywords] Structure of Building, Structural Design, Reinforced Concrete
[Textbooks and Reference Books] Textbook: Reinforced Concrete Structures (Ichigaya-syuppansya)
[Evaluation] Students will be assessed within the total points of 100 consisting of submission of lecture notes and their result of the final examination. Minimum credits required for accreditation is 60 points. Lecture notes must be submitted at both mid-term and end of the term. The submissions are compulsory for accreditation.
[Related courses] Seminar on Structural Design II
[Course requirements] Student must have taken Structural Mechanics I Strength of Materials. Also student have preferably have taken Structural Mechanics II.

構造設計演習 II　Seminar on Structural Design II
[Instructor] Takashi Kashiwazaki
[Credits] 2
[Semester] 3rd year-Spring-Fri.2
[Course code] T1N054001
[Room] Bldg. ENG-9-107
[Course enrollment] 80
[Candidate] As a general rule, only 3rd and 4th year students of Department of Architecture (including 3rd and 4th year students of Department of Design Science) can take this course.
[Course objectives] The objective of this seminar is to gain hands-on experience of structural calculation and study structural design methods of reinforced concrete buildings using a simple skeleton as an actual example, in order to enhance understanding on the lectures of Structural Design II.
[Plans and Contents]
1. Basic knowledge of reinforced concrete structure: Understanding the outline of the basic knowledge about reinforced concrete structures.
2. Outline of building and structural planning, and design root: Understanding the outline of the building as the design object, and the basic concept of structural planning including framework format and rigid floor assumption. In addition, students will study the calculation root defined by building scale and a number of walls.
3. Assumed section, relative stiffness, and allowable stress: Understanding method of obtaining assumed section and relative stiffness. In addition, students will learn materials used allowable stress, and material strength.
4. Flexural design of girder 1: Learning the outline of designed internal forces for girders subjected to long and short term load by understanding the principle of the bar arrangement in a girder.
5. As above.
6. Flexural design of girder 2: Learning about the number of reinforcement bars, a minimum width of girders, and consideration for bond of longitudinal bar of girders.
7. As above.
8. Flexural design of columns: Learning the outline of designed internal forces for columns subjected to long and short term load by understanding the principle of the bar arrangement in a column.
9. Shear design of girders and columns: Calculating required sectional dimension and distance of shear reinforcement, by understanding points for designed shear force, shear reinforcements in a girder and a column (stirrup and hoop) .
10. As above.
11. Design of floor slab and beam: Understanding points of designed internal forces, bar arrangement in a floor slab and a beam, learning about slab reinforcement, longitudinal bar of beam, and design of shear reinforcement.
12. Design of shear wall: Learning method of obtaining rigidity of shear wall, and understanding the bar arrangement based on imposed shear forces.
13. As above.
14. Design of foundations: Learning method to obtain axial load on columns for design of foundations, and understand calculation of base area and reinforcement for slab, and approach to shear force and punching shear.
15. Secondary design: Learning the outline of secondary design, and understanding approach to story drift, ratio of rigidity and eccentricity.
[Keywords] Architecture, Structure, Design, Reinforced concrete
[Textbooks and Reference Books] Reinforced concrete structures with learning from structural calculation, UENO Yoshihisa, Gakugei Publication
[Evaluation] Students will be assessed within the total points of 100 consisting of attendance (60 points) and each assignment (structural calculation) (40 points). Minimum attendance required for accreditation is 80% of entire lectures. Minimum credits required for accreditation is 60 points.
[Related courses] Structural Design II
[Course requirements] Student preferably takes Structural Design II.
[Remarks] Student must submit report every lecture, and prepare calculator.

荷重外力論　Loads on Buildings
[Instructor] Toru Takahashi
[Credits] 1
[Semester] 3rd year-Spring-Tues 3 First half
[Course code] T1N055001
[Room] Bldg.ENG-9-106
[Course enrollment] 80
[Candidate] Students of Department of Architecture. Student from other faculty and department have to consult with Instructor.
[Course description] Identify various loads that act on buildings and learn the causes and how to handle them in structural design. Students majoring in architectural design are also encouraged to acquire this basic knowledge.
[Course objectives] Japan is enriched with four distinct seasons, but in contrast, such environment is harsh for buildings. The objective of this course is to acquire specialized knowledge on the characteristics of various disastrous factors such as earthquake and high wind for disaster prevention, forces that act on building structures, and disaster prevention technologies to ensure structural safety.
[Plans and Contents]
1. Guidance: Understanding the curriculum positioning, categorization and meaning of loads and external forces, and purpose of the study through examination of damage examples
2. Fixed load and live load: Understanding the meaning of fixed load and live load in building structure, and method for calculating loading capacity.
3. Snow load: Understanding the regional and annual fluctuations of snow load, and load modeling.
4. Wind load: Understanding the effect of wind load over building structure and load modeling.
5. Earthquake load: Understanding earthquake mechanism, its propagation processes, the relationship of ground classification and structural damage, and the basics of aseismic design.
6. Other loads: Examining other issues including temperature load, soil pressure, hydraulic pressure, tsunami, and impact load.
7. Other loads and load fluctuations: Understanding other loads including temperature load, soil pressure, and hydraulic pressure, recurrence interval, and the concept of extreme value distribution.
8. Examination: Students will be asked to take part in an examination to verify their understanding of the contents of lectures 1 to 7.
[Keywords] Loads, Actions, Snow, Wind, Earthquake
[Textbooks and Reference Books] Architectural Institute of Japan: Recommendations for Loads on Buildings (2004)
Jun Kanda: Visual Introduction for Architecture No.9, Buildings and Engineering, Shokokusha Publishing Co., Ltd. (2003: in Japanese)
[Evaluation] Students will generally be assessed by the result of the final examination, with their attendance and submission of reports to be submitted at each lecture slot taken into account.
[Related courses] Structural Performance
[Remarks] The semester five will be separated into the first and second half, and one credit will be offered for eight lectures in the second half.

構造耐力論 Structural Performance
[Instructor] Toru Takahashi
[Credits] 1
[Semester] 3rd year-Spring-Tues 3 Second half
[Course code] T1N056001
[Room] Bldg.ENG-9-106
[Candidate] Students of Department of Architecture. Student from other faculty and department have to consult with Instructor.
[Course description] Students will learn about variation in bearing force, the concept of reliability and basics of reliability design methods that are important in performance design. It is preferable to have students take the Loads on Buildings course in the first semester.
[Course objectives] The objective of this course is to acquire basic knowledge on new technologies for the sophistication of theories and technologies related to building structures by analyzing the destruction of architectural structures in terms of probability, and to acquire basic and practical knowledge on the bearing force of buildings and practical skills of reliability design methods based on loads and bearing force.
[Plans and Contents]
1. Guidance: Understanding the positioning of the curriculum contents and the transition of structural design methods for building structures in Japan.
2. Proof strength of building structure 1: Understanding the strength estimation of gate shaped frame based on the principle of virtual work.
3. Proof strength of building structure 2: Understanding the aseismic design method using the limit strength calculation as a result of the achievement from the recent years.
4. Structural planning of building structure: Understanding the importance of horizontal and vertical uniform strength, based on the concept of eccentricity ratio and rigidity.
5. Dispersion of proof strength and probability of failure: Understanding dispersion of load and building structure proof strength, approach to probability of failure, and the basics of reliability assessment method.
6. Second moment method and LRFD: Learning the practical application of reliability assessment method (LRFD) and examining its possibility.
7. Introduction to risk assessment: Examining how various risks of building structures learned in the course can be assessed.
8. Examination: Students will be asked to take part in an end of the term examination to verify their understanding of the contents of lectures 1 to 7.
[Keywords] Performance based design, Reliability, Probability of failure, Structural resistance
[Textbooks and Reference Books] A.H-S. Ang, W.H. Tang: Probability Concepts in Engineering, John Wiley & Sons (2007)
A.H-S. Ang, W.H. Tang: Probability Concepts in Engineering Planning and Design, John Wiley & Sons (1984)
Jun Kanda: Recommendation of Limit State Design, Kenchikugijutsu Inc. (1993: in Japanese)
R.E. Melchers: Structural Reliability Analysis and Prediction (Second Edition), John Wiley & Sons (1999)
Jun Kanda: Visual Introduction for Architecture No.9, Buildings and Engineering, Shokokusha (2003: in Japanese)
[Evaluation] Students will generally be assessed by the result of the examination, with their attendance and submission of reports to be submitted at each lecture slot taken into account.
[Related courses] Loads on Buildings, Statistics B
[Course requirements] Students preferably take Loads on Buildings.
[Remarks] The semester five will be separated into the first and second half, and one credit will be offered for eight lectures in the second half.

基礎地盤工学　　Geotechnical Engineering
[Instructor] Toru Sekiguchi, Shoichi Nakai
[Credits] 2
[Semester] 3rd year-Fall-Wed 6
[Course code] T1N57001
[Room] Bldg. ENG-9-107
[Candidate] Students of Faculty of Engineering, other Faculties, and Specially Registered Non-Degree Student
[Course description] Soil is a very important factor affecting natural disasters and environment issues, in relation to buildings and urban area. This curriculum studies the fundamental theory of how to establish the counter-plan for the disasters and environmental issues, throughout the study on the properties of soil in terms of physics, mechanics, and hydraulics. This study includes simple exercises as well as lectures.
[Course objectives] To firstly study characteristics of soil and topography. To secondly study the theory of the soil behavior, its interaction to water, and its interaction to structures. To finally understand background and issues of the disasters and environment issues in relation to soil.
[Plans and Contents]　Lessons are made up of two parts. Part I (1^{st} – 12^{th} lesson) deals with the basics of geotechnical engineering while Part II (13^{th} – 15^{th} lesson) provides an overview of geotechnical disasters.
1. Lecture outline, topography, ground and natural disaster
2. Basic properties of soil
3. Soil investigation
4. Soil stress and strain (1) Effective stress and Mohr's stress circle
5. Soil stress and strain (2) Stress, strain and elasticity theory
6. Soil water flow (1) Seepage phenomenon
7. Soil water flow (2) Seepage flow
8. Mid-term summary
9. Consolidation of clay (1) Consolidation phenomenon
10. Consolidation of clay (2) Consolidation theory and consolidation settlement
11. Soil shear (1) Failure criterion and shear test
12. Soil shear (2) Shear strength of sand and clay
13. Liquefaction
14. Groun settlement
15. Slope failure
16. End-of-term exam
[Keywords] Soil, Soil Mechanics, Elasto-plasticity, Geotechnical Disaster, Liquefaction
[Textbooks and Reference Books] Fumio Kuwabara: Jiban kougaku, Morikita Publishing, 2002
[Evaluation] Evaluation based on attendance, tutorial, mid-term exam and end-of-term exam.
[Course requirements] Students should preferably have taken material mechanics.

火災安全工学　Fire Safety Engineering
[Instructor] Takeo Hirashima
[Credits] 2
[Semester] 3rd year-Fall-Tues 2
[Course code] T1N058001
[Room] Bldg.ENG-9-206
[Course enrollment] 80 Students from other faculty and department have to consult with Instructor.
[Course description] The course consists of lectures on fire safety design of buildings.
[Course objectives] There are about 35,000 building fires each year and about 1,500 deaths by fire in our country. It is impossible to prevent fire just by human carefulness, so it is necessary to incorporate precautions when designing the building. In this lecture, students will first learn about securing evacuation routes and the importance of fireproof compartments, then study various fire safety measures from the perspectives of evacuation, prevention of fire spreading and fireproofing of structural frames.
[Plans and Contents] In each lecture slot, students will examine and understand the following areas:
1. Introduction of lecture outline, the history of urban conflagration, and fire statistics (chapter 2 of the textbook).
2. Learning from fire incidents from the past (chapter 2 of the textbook).
3. Evacuation planning and evacuation facilities (chapter 5 of the textbook).
4. Smoke, smoke compartment, and smoke exhausted plan (chapter 5 of the textbook).
5. Combustion, fire extinguishing, flashover, and fire-preventive materials (chapter 3 and 4 of the textbook).
6. Compartment fire, gas temperature in fire, and fire duration time (chapter 3 of the textbook).
7. Three forms of heat transfer: Convection, conduction, and radiation (chapter 3 of the textbook).
8. Equation of heat conduction and temperature rise in components (chapter 3 and 6 of the textbook).
9. Fire spread prevention and fire compartment (chapter 6 of the textbook).
10. Fire resistance of reinforced concrete structure (chapter 7 of the textbook).
11. Behavior of steel frame construction in fire (chapter 7 of the textbook).
12. Ultimate temperature of steel frame construction (chapter 7 of the textbook).
13. Fire performance of timber frame structure and fire-resistance test (chapter 7 of the textbook).
14. Summary
15. Examination and other commentary.
[Keywords] building fire, evacuation, heat transfer, structural fire safety engineering
[Textbooks and Reference Books] Principals of Building Fire Safety Engineering, Japan Association for Fire Science and Engineering, Kyoritsu Shuppan Co. Ltd. 2730 yen (in Japanese).
To be introduced at the first lecture.
[Evaluation] Evaluation is given by exams (70%) and attendance (30%).

構造設計 ＩＩＩ　Structural Design III
[Instructor] Yukihiro Harada
[Credits] 2
[Semester] 3rd year-Fall-Wen 3
[Course code] T1N059001
[Room] Bldg.ENG-9-107
[Course enrollment] 90
[Candidate] Students of Faculty of Engineering,
Students from other faculty and department have to consult with Instructor.
[Course description] This course is on the structural design of buildings, which is one of the subjects in the field of structural engineering, and teaches specialized knowledge on the strength and tenacity of structures and building materials using steel, design and construction techniques to assemble these structures, and technologies to ensure the safety of such structures (equivalent to specialized knowledge on architectural construction).
[Course objectives] The objective of this lecture is to consider the serviceability limit and ultimate limit states when various forces such as earthquake and wind pressure act on steel structure, in order to acquire knowledge on building materials such as columns and beams and the dynamic behavior of joints of these materials. The aim of this course is to understand the flow of structural design of steel structures by understanding the dynamic behavior of building materials and joints that constitute steel construction.
[Plans and Contents]
1. About steel frame structure and steel materials: Learning the outline of steel frame structure and various characteristics of steel materials for building structure. Be able to explain the superiority of the steel structure for the structure other formats. (Area of preparation and review: Textbook chapter 1 and 2).
2. Tensile member design: Learning the concept of allowable stress unit design, particularly the design of steel member subjected to tension. Be able to determine the cross section of the strut materials (area of preparation and review: Textbook chapter 3 and 4, section 6.1).
3. Compressive member design: Learning the buckling phenomenon in centrally loaded compressed member, particularly the design of steel member subjected to compression. Be able to determine the cross section of the struts of the pillars of the building member. (Area of preparation and review: Textbook chapter 3 and 4, section 5.2 and 6.3).
4. Bending member design: Learning the design of steel member subjected to bending.be able to determine the cross section of the material bending of the beam member, such as a building. (Area of preparation and review: Textbook section 5.3 and 6.4).
5. Design of member subjected to axial force and bending at the same time, and plate bending element: Learning design of steel member subjected to axial force and bending at the same time, and local buckling of plate bending element in steel member assembly. Be able to determine the cross section of the column members of the building. (Area of preparation and review: Textbook chapter 5.4, 5.6, and 6.5).
6. Mechanical joint (bolted connection and high strength bolted connection): Leaning mechanical joint (bolted connection and high strength bolted connection) in steel frame structure. Be able to determine the details of high-strength bolts junction of each other member of the steel frame building (required number of bolts and bolt placement) (area of preparation and review: Textbook chapter 7.1 to 7.4).
7. Welded connection: Learning the principle of welded connection, particularly the basic knowledge related to the design of welded joint. Be able to determine the details of the welded portion of the steel member each other Buildings (size and length of the required welding). (Area of preparation and review: Textbook section 7.5).
8. On the spot design (component design): Verifying the level of understanding about allowable stress unit design methods covered in lectures 1 to 7 through on-the-spot design assignment. It can be confirmed by working on the design issues to the, whether students can fully understand the class what they have learned up to the previous time, to determine the cross-section of the pillars, beams, bracing of steel-framed building with the help of that knowledge. (Area of preparation and review: Textbook chapter 1 to 7).
9. Basics of joint design: Learning the basic concept of joint design for steel frame structures with the end joint of brace material as an example. Be able to determine the details of the wood end junction of seismic bracing with angle iron (such as beams member number of high-strength bolts, the shape of the gusset plate, size or length of the fillet weld between the columns and gusset plate) (area of preparation and review: Textbook section 8.1, 8.2, and 6.6).
10. Designing joint: Learning design of joint under bending with the beam joint as an example. Be able to determine details of the beam joint. (The number and the place of high-strength bolts required by the flange-web, the thickness and the size of the gusset plate) (Area of preparation and review: Textbook section 8.3).
11. Designing beam-column connection: Learning the design of beam-column connection and a case study of beam-column connection failure in major earthquakes of the past (area of preparation and review: Textbook section 8.4).
12. Designing column base: Learning the principle format of column bases used in steel frame building structures, particularly examining the column base design of the exposed-type column base used in medium to low-rise steel frame construction (area of preparation and review: Textbook section 8.6).
13. Design of steel-concrete composite structure and composite beam: Learning the outline of steel-concrete composite structure and composite beam (area of preparation and review: Textbook section 6.4, calculation example 2).
14. Steel frame production and management: Learning the steel frame production and management (area of preparation and review: Textbook section 1.4 and 10.1).
15. On the spot design (joints): Verifying the level of understanding about joint design methods for steel frame building structures covered in lectures 9 to 14 through on-the-spot design assignment.
[Keywords] Steel structure, Structural design, Allowable stress design, Limit state design

[Textbooks and Reference Books] (Textbook) Introduction to structural steel design, 4th edition, Japanese Society of Steel Construction, Gihodo publication (Reference book) Exercises for structural steel design, 4th edition, The Japan Iron and Steel Federation, Gihodo publication
[Evaluation] Students will be assessed on their results of on-the-spot design (component design) (full mark of 100 points with a minimum points of 60 required for a pass), and one the spot design (joint design) (full mark of 100 points). To qualify to participate in on-the-spot design (joint design), students must pass on-the-spot design (component design).
[Related courses] Structural Design II
[Course requirements]Students must have taken Structural Mechanics I, Strength of Materials, Structural Mechanics II.
[Remarks] This course paired with Seminar on Structural Design III. With checking the return report of the exercises, and review well by looking back on course content, students should work on-the-spot design. Slides to be used in the lesson, It will be prepared as pdf file from Moodle site in advance as students can be downloaded. It is preferred to utilize the pdf file in conjunction with the textbook for preparation and review of the class. To work on-the-spot design, students are allowed to bring only function calculator (Calculator mobile phone is not allowed). In addition, to prevent fraudulent act, students are requested to present of student ID before on-the-spot design.

構造設計演習 ＩＩＩ Seminar on Structural Design III
[Instructor] Yukihiro Harada
[Credits] 2
[Semester] 3rd year-Fall-Wen 4
[Course code] T1N060001
[Room] Bldg.ENG-9-107
[Course enrollment] 90
[Candidate] Students of Faculty of Engineering. Students from other faculty and department have to consult with Instructor.
[Course description] This course is on the structural design of buildings, which is one of the subjects in the field of structural engineering, and teaches specialized knowledge on the strength and tenacity of structures and building materials using steel, design and construction techniques to assemble these structures, and technologies to ensure the safety of such structures (equivalent to specialized knowledge on architectural construction).
[Course objectives] The objective of this seminar is to consider the serviceability limit and ultimate limit states when various forces such as earthquake and wind pressure act on steel structure, in order to acquire knowledge on building materials such as columns and beams and the dynamic behavior of joints of these materials. The aim of this seminar is to understand the flow of structural design of steel structures by understanding the dynamic behavior of building materials and joints that constitute steel construction.
[Plans and Contents]
1. About steel frame structure and steel materials: Learning the outline of steel frame structure and various characteristics of steel materials for building structure (area of preparation and review: Textbook chapter 1 and 2). — S11 S21
2. Tensile member design: Learning the concept of allowable stress unit design, particularly the design of steel member subjected to tension (area of preparation and review: Textbook chapter 3 and 4, section 6.1). — S11 S21
3. Compressive member design: Learning the buckling phenomenon in centrally loaded compressed member, particularly the design of steel member subjected to compression (area of preparation and review: Textbook chapter 3 and 4, section 5.2 and 6.3). — S21
4. Bending member design: Learning the design of steel member subjected to bending (area of preparation and review: Textbook section 5.3 and 6.4). — S11 S21
5. Design of member subjected to axial force and bending at the same time, and plate bending element: Learning design of steel member subjected to axial force and bending at the same time, and local buckling of plate bending element in steel member assembly (area of preparation and review: Textbook chapter 5.4, 5.6, and 6.5). — S21
6. Mechanical joint (bolted connection and high strength bolted connection): Leaning mechanical joint (bolted connection and high strength bolted connection) in steel frame structure (area of preparation and review: Textbook chapter 7.1 to 7.4). — S11 S21
7. Welded connection: Learning the principle of welded connection, particularly the basic knowledge related to the design of welded joint (area of preparation and review: Textbook section 7.5). — S11 S21
8. On the spot design (component design): Verifying the level of understanding about allowable stress unit design methods covered in lectures 1 to 7 through on-the-spot design assignment (area of preparation and review: Textbook chapter 1 to 7). — S11 S21
9. Basics of joint design: Learning the basic concept of joint design for steel frame structures with the end joint of brace material as an example (area of preparation and review: Textbook section 8.1, 8.2, and 6.6). — S11 S21
10. Designing joint: Learning design of joint under bending with the beam joint as an example (area of preparation and review: Textbook section 8.3). — S11 S21
11. Designing beam-column connection: Learning the design of beam-column connection and a case study of beam-column connection failure in major earthquakes of the past (area of preparation and review: Textbook section 8.4). — S11 S21
12. Designing column base: Learning the principle format of column bases used in steel frame building structures, particularly examining the column base design of the exposed-type column base used in medium to low-rise steel frame construction (area of preparation and review: Textbook section 8.6). — S11 S21
13. Design of steel-concrete composite structure and composite beam: Learning the outline of steel-concrete composite structure and composite beam (area of preparation and review: Textbook section 6.4, calculation example 2). — S11 S21
14. Steel frame production and management: Learning the steel frame production and management (area of preparation and review: Textbook section 1.4 and 10.1). — S21 S23
15. On the spot design (joints): Verifying the level of understanding about joint design methods for steel frame building structures covered in lectures 9 to 14 through on-the-spot design assignment.
[Keywords] Steel structure, Structural design, Allowable stress design, Limit state design
[Textbooks and Reference Books] (Textbook) Introduction to structural steel design, 4th edition, Japanese Society of Steel Construction, Gihodo publication (Reference book) Exercises for structural steel design, 4th edition, The Japan Iron and Steel Federation, Gihodo publication
[Evaluation] Students will be assessed on their results of on-the-spot design (component design) (full mark of 100 points with a minimum points of 60 required for a pass), and the spot design (joint design) (full mark of 100 points). To qualify to participate in on-the-spot design (joint design), students must pass on-the-spot design (component design).
[Related courses] Structural Design II
[Course requirements] Students must have taken Structural Mechanics I, Strength of Materials, Structural Mechanics II.
[Remarks] This course paired with Seminar on Structural Design III.

建築情報処理 Information processing for architecture/engineering/construction
[Instructor] Gakuhito Hirasawa
[Credits] 2
[Semester] 3rd year-Fall-Thurs 4
[Course code] T1N061001
[Room] Bldg.ENG-9-107
[Course enrollment] 40 (maximum limit for assessing the progress of each student)
[Candidate] Students of Department of Architecture (the Department of Design Science students studying architecture). If there is no appreciable number of students, other grades may take this course, although main participants is 3rd year students.
[Course description] This course lectures the grammar and useful algorithms of the C programming language with the aim to promote intensive use of computers in the field of architecture.
[Course objectives] Students will learn the basic of C language and useful algorithm implementation methods using Microsoft VisualStudio as development environment. The course will also teach the basics on computer graphics that students learning architecture should find interesting. Students will also learn to become research-literate to be highly capable for graduation research and master's studies.
[Plans and Contents] Each class slot will consist of a combination of lecture, seminar, and assignment.
1. Guidance installing development environment.
2. Variables, types, and operation
3. Program control (1) Divergence
4. Program control (2) Frequency
5. Sequence
6. Function
7. Pragmatic program
8. Two dimensional graphics library
9. Basics of character strings
10. Pointer
11. Pointer and character strings
12. Dynamic memory operation
13. Structure
14. File processing and OS interface
15. End of the term examination
[Keywords] C language
[Evaluation] Evaluation is given by attendance (including submission of every small assignment) and total score of the end-of-exam (100points).The score must be over 60points to achieve a credit.
[Remarks] Students should read through the textbook before the lecture. Homework assignments will be announced during each lecture. Answers to the homework will be posted to the URL exclusively for students by Tuesday. It is a compulsory course for those intending to apply for Prof. Hirasawa's research lab.

先端建築環境論　Advanced Environmental Architecture
[Instructor] Tatsuya Hayashi
[Credits] 2
[Semester] 4th year-Spring-Mon 6
[Course code] T1N062001
[Room] Bldg.ENG-9-107
[Course description] Environmentally friendly planning and reduction of environmental load are critical problems in architectural design. It is necessary to struggle with these problems seriously, a systematic design approach that integrates specialized knowledge on design, structure and equipment. Through this course, students will think about this issue through advanced case studies and gain necessary knowledge. Students will also realize the important roles of architectural designers who have interdisciplinary capabilities across conventional research fields such as architecture and energy, architecture and low-carbon society, and architecture and disaster prevention.
[Course objectives] The objective is to understand the current status of global environmental issues and energy-saving issues, and to gain advanced knowledge on the relationship between those issues and architectural technologies. The course will introduce various scientific knowledge and current status of legal restrictions, and discuss specific technological theory, design methods and evaluation methods including actual case studies.
[Plans and Contents]
Students will be asked to learn in lectures, research questions, and deepen their understanding about the subject through composition of each report. The study contents will broadly cover the following subjects:
1. Lecture outline: Examining the basic requirement for planning with environmental consideration.
2. Students will learn building and equipment in the age of global climate.
3. Students will learn examining and case of proposal methods with environmental consideration.
4. Students will learn planning with environmental consideration and design case study. (1) Water environment
5. Students will learn planning with environmental consideration and design case study. (2) Light environment
6. Students will learn planning with environmental consideration and design case study. (3) Thermal environment
7. Students will learn planning with environmental consideration and design case study. (4) Air environment
8. Students will learn from the point of view of workplace productivity and energy conservation for the quality of the indoor environment
9. Students will learn about architectural design approach and low-carbon society based on the trends of laws and regulations.
10. Students will learn about the feasibility and case ZEB (zero energy building)
11. Students will learn the calculation of the energy consumption of the building, and a method for calculating the CO2 emissions. 12. Students will learn about life cycle evaluation for buildings.
13. Students will learn about the case and the situation of the smart energy network.
14. Students will learn about smart wellness houses in aging society
15. Students will learn about the trends of reform and renovation of Established building.
[Keywords] global environment, urban environment, regional environment, indoor environment, green building, Life cycle assessment
[Textbooks and Reference Books] The lecture uses the following literature as a textbook: no book
[Evaluation] Evaluation is given by attendance, submission of lecture reports (60points), and total score of comprehensive evaluation of submitted assignments (40points).

建築生産設計　Building Production Design
[Instructor] Gakuhito Hirasawa
[Credits] 2
[Semester] 4th year-Spring-Thurs 2
[Course code] T1N063001
[Room] Bldg.ENG-9-107
[Course enrollment] 20
[Course description]
[Course objectives]
[Plans and Contents]
[Keywords] management, process control, estimation
[Textbooks and Reference Books]
[Evaluation]

卒業論文演習 Thesis study
[Instructor] All professors
[Credits] 2
[Semester] 4th year-Spring Intensive
[Course code] T1N065001, T1N065002, T1N065003
[Room] Respective laboratories
[Candidate] 4th year of Department of Architecture
[Course objectives] The objective if this course is to develop the ability to establish and resolve problems, which will be necessary in preparing your graduation thesis and graduation design. It aims to have students acquire the attitude to resolves problems continuously and voluntarily.
[Plans and Contents] For graduate thesis and graduate design, students will participate in various seminar assignments. The broad outline of the course is as follows (note that contents will vary depending on laboratory):
1. Understanding the meaning of thesis composition, positioning of graduate thesis, and methods for establishing the target.
2. Learning methods for searching existing researches and understanding the necessity of research through reading existing papers.
3. Learning methods to be used to researches.
4. Collecting, organizing and understanding various information related to the research.
5. Proposing research theme and research methods.
[Textbooks and Reference Books]Follow the instruction of instructor.
[Evaluation] Students will be assessed with their attendance to seminars at assigned laboratory and report submissions. Evaluation criteria are dependent on each laboratory.
[Course requirements] Students must have taken 100 credits to register.
[Remarks] For the students' registration, please conduct from the "intensive course" column.

卒業論文 Thesis study
[Instructor] All professors
[Credits] 4
[Semester] 4th year-Fall Intensive
[Course code] T1N066001
[Room] Respective laboratories
[Candidate] 4th year of Department of Architecture
[Course description] Students will write their graduation thesis, present them at the workshop and answer to any questions.
[Course objectives] The objective of this course is to acquire the attitude to resolves problems continuously and voluntarily through the process of writing a graduation thesis. Students will aim to acquire the ability to write long papers in proper, easy-to-understand style, and the ability to make a presentation using appropriate expressions that will enable many people to understand.
[Plans and Contents] Students will draft their graduate thesis with guidance and advice from teaching supervisors. In addition, students will be asked to participate in presentation to be undertaken in the department, and an associated question and answer session.
1. Search and study existing researches, and organize problems.
2. Based on existing research findings, propose a new research theme.
3. Based on the established theme, create and undertake a research plan
4. Select an appropriate data analysis method and carry out an analysis of the prepared data. In addition, undertake an examination based on the result of the analysis.
5. Coordinate the final results and draft the main thesis.
6. Publish achievements through an appropriate presentation method.
[Evaluation] Students will be assessed by a council of tutors based on each student's comprehensive performance including the thoroughness of evaluation about the established theme, involvement of processes for resolving issues, presentation contents, and appropriateness of responses.
[Course requirements] As a general rule, students must have taken 120 credits to register.
[Remarks] For the students' registration, please conduct from the "intensive course" column.

卒業設計　Graduation Design
[Instructor] Each teacher
[Credits] 4
[Semester] 4th year-Fall Intensive
[Course code] T1N067001
[Room] Respective laboratories
[Candidate] The Department of Design Science students studying architecture 4th year
[Course description] Students will individually conduct the process of investigation, planning and design under the guidance of the supervisors of their respective research labs. Basically, there will be a guidance session by the supervisor every week.
[Course objectives] Students will work on various drill projects to acquire the expression techniques for their graduation design and to organize their thoughts on the graduation design.
[Plans and Contents] Process will be as a following: survey (3weeks), planning (4weeks), designing (4weeks), presentation (4weeks).
[Keywords] survey, planning, designing, presentation
[Textbooks and Reference Books] Not particularly
[Evaluation] Evaluation is comprehensively given by intermediate accomplishment, end production, presentation.
[Course requirements] Students must have taken credits of Basic Architectural Design in the 1st year, all Architectural Design course up to 3rd year, Drill of Graduation Design in 4th year.
[Remarks] For the students' registration, please conduct from the "intensive course" column. Since the assignment does not end in the classroom time, students need to proceed with the work overtime on the basis of the comments for sketch, and reference books. Students must work on the assignment by themselves without the help of others. Also, do not perform any action that infringes the copyright.

卒業設計演習 Drill of Graduation Design
[Instructor] Each teacher
[Credits] 2
[Semester] 4th year-Spring Intensive
[Course code] T1N068001, T1N068002, T1N068003
[Room] Bldg.ENG-10-412 Drawing Room
[Course enrollment] about 50,Lecture will be held in each laboratory.
[Candidate] Students of Department of Architecture
[Course description] Students will individually conduct the process of investigation, planning and design under the guidance of the supervisors of their respective research labs. Basically, there will be a guidance session by the supervisor every week.
[Course objectives] Each student will select his own theme, site and design as a compilation of the accumulated design works. It aims to develop the students' problem-solving capabilities as well as a wide range of other abilities required for design works, including presentation ability. Also, the goal is to analyze the task conditions, while utilizing the combined knowledge of such construction planning, equipment and structures can be described and discussion contents appropriately they have designed.
[Plans and Contents] Students will participate in seminar assignments on issues including research, analysis, presentation method, and planning methods.
[Keywords] Design Instructor
[Textbooks and Reference Books] Not particularly
[Evaluation] Evaluation is comprehensively given by attendance, and submitted work.
[Course requirements] Students must have taken credits of all Architectural Design course including Descriptive Geometry, and Basic Architectural Design.
[Remarks] For the students' registration, please conduct from the "intensive course" column. Completion of this seminar is compulsory for any student planning to compete the graduate design. Since the assignment does not end in the classroom time, students need to proceed with the work overtime on the basis of the comments for sketch, and reference books. Students must work on the assignment by themselves without the help of others. Also, do not perform any action that infringes the copyright.

建築振動論 Structural Dynamics
[Instructor] Yukiko Nakamura
[Credits] 2
[Semester] 4th year-Spring-Wen 2
[Course code] T1N069001
[Room] Bldg.ENG-5-109
[Course enrollment] 30
[Candidate] Students in other faculty and departments may not take this course.
[Course description] Building onto the knowledge on static mechanics that students have already studied including Structural Dynamics I, Structural Dynamics II, and Strength of Materials courses, this course will offer lectures on the dynamics of building structures and the behavior when subject to earthquakes (earthquake response) for students to gain basic knowledge on earthquake-resistant designs. The studies will focus on linear elastic models only, and start from single-degree-of freedom system to multi-degree-of freedom systems and from free vibration to forced vibration.
[Course objectives] Building onto the knowledge on static mechanics that students have already studied, this course will offer lectures on the dynamics of building structures and the behavior when subject to earthquakes (earthquake response) for students to gain basic knowledge on earthquake-resistant designs. Through this study, students will learn how to replace the linear elastic framework with a vibration model in order to induce dynamic balance, how to determine the behavior (response) when various earthquake movements are applied to the vibration model, and techniques to check the validity of the earthquake response analysis results using a computer program.
[Plans and Contents] Students will be asked to review the contents of seminars prior to staring the course, prepare any questions.
1. Guidance: Understanding the teaching outline, the relationship between the lecture contents and other study contents already studied, confirm the requirements for registration, evaluation methods, and lecture programming.
2. SDOF model and equation of motion: Learning structural modeling and learning to be able to equate single-degree-of-freedom system equation of motion. — S21
3. SDOF system free vibration (undamped): Learning time history response and natural period by derivation of general solution. — S21
4. SDOF system free vibration (attenuated): Learning attenuation and general solutions for such system. — S21
5. SDOF system forced vibration (harmonic oscillator): Learning steady-state response against harmonic oscillator, including complex
6. SDOF system forced vibration (harmonic ground motion): Learning steady-state response against harmonic ground motion, including transient response. — S21
7. SDOF system forced vibration (various external forces): Learning various external forces including step, rectangular pulse, and impulse, as well as occurring conditions when subjected to any of the external forces. — S21
8. Earthquake response analysis using numerical integration: Learning various numerical integration methods including Nigam-Jennings method and approximation method using Taylor expansion. — S21
9. Earthquake response spectrum: Leaning seismic response spectrum, its characteristics, spectrum intensity, and design response spectrum. — S21
10. MDOF system free vibration: Learning strength matrix for shearing and bending systems, and multi-degree-of-freedom system equation of motion. — S21
11. Motion characteristics of MDOF system: Learning eigenvalue problem and orthogonality of characteristic vector. — S21
12. MDOF system free vibration: Leaning free vibration in undamped or proportional damping, and method for creating proportional damping matrix. — S21
13. MDOF system forced vibration (ground motion): Learning ground motion response, participation function, and the concept of equivalent mass and equivalent height. — S21
14. Calculation of maximum responses using response spectrum method: Learning various abbreviated calculation methods for maximum responses using response spectrum. — S21
15. Revision and questions: By summarizing contents of lectures and questioning point of uncertainty, students will secure their understanding of the subject. — S21
[Keywords] Single-degree-of-freedom system, Earthquake response spectrum, Earthquake response analysis, Vibrational eigenvalue, Seismic design
[Textbooks and Reference Books] DYNAMIC ANALYSIS OF EARTHQUAKE RESISTANT STRUCTURES, Shibata Akenori, Tohoku University Press
[Evaluation] Attendance of more than 4/5 and submission of reports of more than 4/5 is requisite to achieve credits. Grading is due to the seminar reports.
[Related courses] Exercise on Structural Dynamics, Structural Mechanics I, Structural Mechanics II, Strength of Materials.
[Course requirements] Besides students must have taken Structural Mechanics I, Structural Mechanic II, and Strength of Materials, they have to take Structural Dynamics and Exercise on Structural Dynamics at the same time.
[Remarks] The curriculum substitutes the "Earthquake Resistant Structure" held until 2006.

建築振動論演習 Exercise on Structural Dynamics
[Instructor] Yukiko Nakamura
[Credits] 2
[Semester] 4th year-Spring-Wen 3
[Course code] T1N070001
[Room] Bldg.ENG-15-109
[Course enrollment] 30
[Candidate] Students in other faculty and other departments may not take this course.
[Course description] This is an exercise course to supplement the lectures in Structural Dynamics. Students will work on exercise drills and write reports that relate to the lectures held each week.
[Course objectives] The objective is to acquire various engineering skills to handle structural dynamics and enhance understanding on the vibration of buildings by actually solving exercise drills that relates to the lectures.
[Plans and Contents]Students will be asked to review the contents of seminars prior to staring the course, prepare any questions.
1. Guidance: Understanding the teaching outline, the relationship between the lecture contents and other study contents already studied, confirm the requirements for registration, evaluation methods, and lecture programming.
2. Horizontal stiffness of framework: Revising calculation methods for horizontal stiffness of single story moment frame structure.
3. SDOF system eigenperiod: Learning transformation of single story moment frame structure eigenperiod caused by changes in beam bending stiffness.
4. SDOF system free vibration: Learning transformation of free vibration waveform caused by initial condition or damping factor.
5. SDOF system forced vibration (harmonic oscillator): Learning steady-state response against harmonic oscillator, including the principle of dynamic response factor.
6. SDOF system forced vibration (harmonic ground motion): Learning beat and resonance phenomenon occurring against harmonic ground motion.
7. SDOF system forced vibration (various external forces): Derivate theoretical solution for transient response under transient ground motion.
8. Earthquake response analysis using numerical integration: Programing seismic response analysis on spreadsheet for analyzing the case from the lecture five.
9. Earthquake response spectrum: Expanding the program create in the lecture seven and drafting a seismic response spectrum.
10. Strength matrix and flexibility matrix: Learning to directly obtain strength matrix and flexibility matrix for two-degree-of-freedom system, and verifying their reverse matrix relationship.
11. MDOF motion characteristics: Learning calculation methods for eigenperiod, natural vibration form, generalized mass, and generalized stiffness, and verifying orthogonality of natural vibration form.
12. MDOF free vibration: Learning method for obtaining solutions of multi-degree-of-freedom system free vibration caused by various initial conditions highlighted in the lecture nine, with the use of modal synthesis.
13. MDOF forced vibration (ground motion): Understanding methods for obtaining participation function when the multi-degree-of-freedom system highlighted in the lecture nine is subjected to ground motion, and also learning methods for obtaining steady-state vibration factor when harmonic ground motion is applied.
14. Calculation of maximum responses using response spectrum method: Acquiring methods for obtaining various maximum responses for the multi-degree-of-freedom system highlighted in the lecture nine using response spectrum method.
15. Revision and questions: By summarizing contents of lectures and questioning point of uncertainty, students will secure their understanding of the subject.
[Keywords] Single-degree-of-freedom system, Earthquake response spectrum, Earthquake response analysis, Vibrational eigenvalue, Seismic design
[Textbooks and Reference Books] DYNAMIC ANALYSIS OF EARTHQUAKE RESISTANT STRUCTURES, Shibata Akenori, Tohoku University Press
[Evaluation] Attendance of more than 4/5 and submission of reports of more than 4/5 is requisite to achieve credits. Grading is due to the seminar reports.
[Related courses] Structural Dynamics, Structural Mechanics I, Structural Mechanics II, Strength of Materials
[Course requirements] Besides students must have taken Structural Mechanics I, Structural Mechanic II, and Strength of Materials, they have to take Structural Dynamics and Exercise on Structural Dynamics at the same time.
[Remarks] The curriculum substitutes the Vibration Engineering and Seismic Design Seminar held until 2003, and the Earthquake Resistant Structure Seminar held until 2006.

建築構造デザイン Ⅰ　Structural Design I
[Instructor] Tomoyuki Someya
[Credits] 2
[Semester] 4th year-Spring-Thurs 3,4First half
[Course code] T1N071001, T1N071002
[Room] Bldg.ENG-9-206
[Course enrollment] 30
[Candidate] 4th year of Department of Architecture
[Course description] This course is a basic subject to comprehensively examine the information studied in various structural design courses, and to apply the knowledge in practical Structural Design. Each student will conceive his own reinforced concrete building, identify various loads that act on that building (such as earthquake and wind pressure) and determine to stress and deformation on the structural frame due to these loads to design sections. Students will also calculate the load-bearing capacity of the structural flame to verify that it exceeds the loads on the building.
[Course objectives] Through these exercises, the aim is to acquire a general understanding on the practice of structural design of architectural buildings and to gain basic understanding on the structural design of reinforced concrete buildings.
[Plans and Contents] Students will learn methods of structural design for reinforced concrete structures in order.
1. Guidance: Understanding the characteristics of reinforced concrete structure through the introduction of the assignment 1. Students may ask questions about the design flow and submit a framework outline. — S21
2. Calculating assumed section based on a simplified component design, applying corrections, and submitting the result. — S22
3. Calculating the building weight based on the information of loading chart and component load (calculation of C, M0, Q, axial load on columns, and seismic load). — S22
4. Undertaking a frame stress calculation (using moment distribution method for vertical load and D-value method for horizontal load). — S22
5. Undertaking the remaining frame stress calculation for sections (columns, beams, joists, slabs, and foundation). — S22
6. Continuing the sectional calculation, verifying various design regulations, and completing the structural calculation. — S22
7. Final check of design components and drafting of structural drawing. — S22
8. Criticism by all tutors of structural engineering. — S22
[Textbooks and Reference Books] All textbooks and reference books used in lectures of structural engineering.
[Evaluation] Evaluation is comprehensively given by attendance, intermediate assignment, and end work.
[Related courses] T1N053001, T1N072001
[Course requirements] Students have preferably taken structural lecture and seminar courses.
[Remarks] Students also preferably take course of Structural Design II(T1N072001).
The lecture substitutes the Structural Design offered held until 2005.

建築構造デザイン ＩＩ　Structural Design II
[Instructor] (Hitoshi Watanabe)
[Credits] 2
[Semester] 4th year-Spring-Thurs 3, 4 second half
[Course code] T1N072001, T1N072002
[Room] Bldg.ENG-9-206
[Course enrollment] 60
[Candidate] 4th year of Department of Design Science students studying architecture
[Course description] This course is a basic subject to comprehensively examine the information studied in various structural design courses, and to apply the knowledge in practical Structural Design. Each student will conceive his own reinforced concrete building, identify various loads that act on that building (such as earthquake and wind pressure) and determine the to stress and deformation on the structural frame due to these loads to design sections, and explain the necessity of considering the joints and fits of materials in steel structure buildings. Students will also calculate the load-bearing capacity of the structural frame to verify that it exceeds the loads on the building.
[Course objectives] Through these exercises, the aim is to acquire a general understanding on the practice of structural design of architectural buildings and to gain basic understanding on the structural design of reinforced concrete buildings and the importance of material joints and fits specific to structural design. Students will also calculate the load-bearing capacity of the structural frame to verify that it exceeds the loads on the building.
[Plans and Contents] 9-15. Steel frame structure
1. 9 Assignment 2: Introduction and guidance. Explaining characteristics of steel frame structure. Questions and answers related to the design flow. Submission of the framework outline (plan composition).
2. 10 Performing assumed section (simplified component design and correction of assumed section). Submission of assumed section.
3.11. Calculating the loading chart, component load, and building weight (calculation of C, M0, Q, axial load on columns, and seismic load).and seismic load).
4. 12 Frame stress calculation (using moment distribution method for vertical load and D-value method for horizontal load).
5. 13 Calculating section of each component (columns, beams, joists, slabs, and foundation), verifying various design regulations, and completing the structural calculation.
6. 14 Final check of design components (verification of joint details and welding for each components), and drafting of structural drawing.
7. 15 Assignment 2: Criticism
[Textbooks and Reference Books] All textbooks and reference books used in lectures of structural engineering.
[Evaluation] Evaluation is comprehensively given by attendance, intermediate assignment, and end work.
[Course requirements] Students have preferably taken structural lecture and seminar courses.
[Remarks] Students also preferably take course of Structural Design I. The lecture substitutes the Structural Design offered held until 2005.

建築設計 Ⅶ　Architectural Design Ⅶ

[Instructor] Satoshi Okada, Hiroki Suzuki, Junichi Suzuki
[Credits] 2
[Semester] 3rd year-Fall-Tues 3, 4, 5
[Course code] T1N075001, T1N075002, T1N075003
[Room] Rooms will be announced at the Orientation.
[Course enrollment] Three teachers in the field of architectural design manage their own studio. Before the first Orientation class, students are required to prepare for choosing their own studio by their concerns, and will be divided into three groups in the Orientation. In each studio, five to ten students will be assigned.
[Candidate] Students of Department of Architecture, who are required both comprehensive design knowledge and skills learned in Architectural Design I through VII.
[Course description] The advanced architectural design class consists of a studio system, in which each teacher organizes each studio independently.
[Course objectives] The objective is to integrate both comprehensive design knowledge and skills into architectural design from various professional fields: such as, architectural planning, urban planning, structural engineering, equipment, construction method, and other requirements related to each topic.
[Plans and Contents] Teaching plans and contents will be announced in each studio after the assignment in the Orientation class. In the seventh class, the mid-term critique will take place in each studio. The final presentation will be held at the end.
[Keywords] advanced architectural design, landscape design, architectural planning, urban/town planning, structural design/engineering, equipment design/engineering, construction, environmental design
[Evaluation]
Evaluation is comprehensively given by attendance, presentation, and final submitted work.
[Course requirements] Students who achieve a credit Descriptive Geometry, Basic Architectural Design, Architectural Design 1-7.
[Remarks] Students must work on the assignment by themselves without the help of others. Also, do not perform any action that infringes the copyright.

建築設計. Ⅷ　Architectural Design Ⅷ

[Instructor] Satoshi Okada, Hiroki Suzuki, Junichi Suzuki
[Credits] 2
[Semester] 3rd year-Fall-Tues 3, 4, 5
[Course code] T1N075001, T1N075002, T1N075003
[Room] Rooms will be announced at the Orientation.
[Course enrollment] Three teachers in the field of architectural design manage their own studio. Before the first Orientation class, students are required to prepare for choosing their own studio by their concerns, and will be divided into three groups in the Orientation. In each studio, five to ten students will be assigned.
[Candidate] Students of Department of Architecture, who are required both comprehensive design knowledge and skills learned in Architectural Design I through VII.
[Course description]　The advanced architectural design class consists of a studio system, in which each teacher organizes each studio independently.
[Course objectives] The objective is to integrate both comprehensive design knowledge and skills into architectural design from various professional fields: such as, architectural planning, urban planning, structural engineering, equipment, construction method, and other requirements related to each topic.
[Plans and Contents] Teaching plans and contents will be announced in each studio after the assignment in the Orientation class. In the seventh class, the mid-term critique will take place in each studio. The final presentation will be held at the end.
[Keywords] advanced architectural design, landscape design, architectural planning, urban/town planning, structural design/engineering, equipment design/engineering, construction, environmental design
[Evaluation] Evaluation is comprehensively given by attendance, presentation, and final submitted work.
[Course requirements] Students who achieve a credit Descriptive Geometry, Basic Architectural Design,Architectural Design1-7.
[Remarks] Students must work on the assignment by themselves without the help of others. Also, do not perform any action that infringes the copyright.

構造力学演習 Ⅰ　Seminar on Structural Mechanics I
[Instructor] Toru Takahashi
[Credits] 1
[Semester] 1st year-Fall-Mon 4
[Course code] T1N076001
[Room] Bldg.ENG-9-106
[Course enrollment] 50
[Candidate] Students, except 1st year of Department of Architecture must consult with instructor.
[Course description] As an introductory class to design a building structure, statically determinate structures will be covered, and students will solve exercises on modeling of load and external force on the structures as well as stress generated in the structures and their state of deformation to understand them.
[Course objectives] The weight of accumulated snow, wind pressure, and external force and disturbance caused by earthquakes act on buildings in addition to their own weight and the weight of their loads. To construct safe buildings against these factors, students will learn structural mechanics, the mechanics for knowing what kind of force acts on pillars and joists and how they are deformed. The objective of this seminar is for students to deepen their understanding of the basics of structural mechanics by solving practice exercises on the contests learned in the lecture, Structural Mechanics I, and putting them together in a small paper.
[Plans and Contents]
1. Balancing of force: to understand what it means that “force is balanced,” which is a condition for buildings to stand on their own.
2. Force and moment: to understand the concept of moment and conditions for force acting on the whole building to be balanced.
3. Member expansion and contraction, stress intensity, and strain: to understand the concepts of stress intensity and strain required for calculating the amount of change in length of a member to receive compressive or tensile force.
4. Support points, joints, and truss principle: to be able to model a building and supporting points and determine its stability/instability; to understand the truss principle.
5. Truss analysis (joint method and section method): to be able to analyze truss structures by the joint method and section method by studying several truss structures as examples.
6. Truss analysis (Cremona method): to be able to analyze truss structures by the Cremona method by studying several truss structures as examples.
7. Simple beams and member force (shearing force and bending moment): to study simple beams to understand the concepts of shearing force and bending moment and to understand how to draw a stress diagram (axial force diagram, shearing force diagram, and bending moment diagram).
8. Distributed load: to understand the concept and calculation method of distributed load on a simple beam and how to calculate the member force of the simple beam under distributed load.
9. Cantilever: to understand how to calculate a cantilever under concentrated load and distributed load.
10. Bending stress and deflection: to understand the concept of bending stress generated in a beam; the value and outline of deflection generated as a result of the bending stress.
11. Simple design of beam section: to understand the relationship between bending stress and material strength and to learn a flow in creating a simple design of beam section.
12. Statically determinate frame (cantilever type): to study cantilever type statically determinate frames to understand how to solve statically determinate frame problems; to understand how to draw a stress diagram of the statically determinate frame.
13. Statically determinate frame (simple beam type): to understand how to solve simple beam type statically determinate frame problems.
14. Statically determinate frame (three-hinge frame): to understand how to solve three-hinge frame problems in comparison with methods of how to solve cantilever type and simple beam type statically determinate frame problems.
15. To deepen understanding of the overall subject through review exercises of the overall subject for the final examination in the lecture, Structural Mechanics I.
[Keywords] Force, Statically determinate structures, Stress, Beam, Axial force, Shear force, bending moment
[Textbooks and Reference Books] Since many textbooks on structural mechanics are available from bookstores, it is advisable for students to obtain a copy once the lecture has progressed.
[Evaluation] The attendance of students will be marked by a submission of each report within a designated time frame (reports with insufficient contents will be subjected to resubmission). Minimum condition for a pass requires attendance to meet the regulation set out by the Faculty of Engineering.
[Related courses] Structural Mechanics I
[Course requirements] Because Structural Mechanics I and Seminar on Structural Mechanics I are a unit course, student must take both courses. Seminars will be offered in a two-class format. The class assignment will be notified at the beginning of the academic year.
[Remarks] Students must bring devices which can perform numerical calculation (alpha calculator, pocket able computer).

構造力学演習 Ⅰ Seminar on Structural Mechanics I
[Instructor] Takashi Kashiwazaki
[Credits] 1
[Semester] 1st year, Fall, Mon. 4
[Course code] T1N076002
[Room] Bldg. ENG-9-107
[Course enrollment] 50
[Candidate] 1st year students of Department of Architecture
[Course description] As an introductory class to design a building structure, statically determinate structures will be covered, and students will solve exercises on modeling of load and external force on the structures as well as stress generated in the structures and their state of deformation to understand them.
[Course objectives] The external forces and disturbance (snow loads, wind pressures, and seismic forces) act on buildings in addition to their own weight and the weight of their loads. To construct safe buildings against these factors, students will learn structural mechanics, the mechanics for knowing what kind of force acts on columns an beams and how they are deformed. The objective of this seminar is for students to deepen their understanding of the basics of structural mechanics by solving practice exercises on the contests learned in the lecture, Structural Mechanics I, and putting them together in a small paper.
[Plans and Contents]
1. Balancing of force: to understand what it means that “force is balanced,” which is a condition for buildings to stand on their own. – S11; S12
2. Force and moment: to understand the concept of moment and conditions for force acting on the whole building to be balanced. – S11
3. Member expansion and contraction, stress intensity, and strain: to understand the concepts of stress intensity and strain required for calculating the amount of change in length of a member to receive compressive or tensile force. – S11
4. Support points, joints, and truss principle: to be able to model a building and supporting points and determine its stability/instability; to understand the truss principle. – S11
5. Truss analysis (joint method and section method): to be able to analyze truss structures by the joint method and section method by studying several truss structures as examples. –S11
6. Truss analysis (Cremona method): to be able to analyze truss structures by the Cremona method by studying several truss structures as examples. –S11
7. Simple beams and member force (shear force and bending moment): to study simple beams to understand the concepts of shear force and bending moment and to understand how to draw a stress diagram (axial force diagram, shear force diagram, and bending moment diagram). – S11
8. Distributed load: to understand the concept and calculation method of distributed load on a simple beam and how to calculate the member force of the simple beam under distributed load. – S11
9. Cantilever: to understand how to calculate a cantilever under concentrated load and distributed load. – S11
10. Bending stress and deflection: to understand the concept of bending stress generated in a beam; the value and outline of deflection generated as a result of the bending stress. – S11
11. Simple design of beam section: to understand the relationship between bending stress and material strength and to learn a flow in creating a simple design of beam section. – S11
12. Statically determinate frame (cantilever type): to study cantilever type statically determinate frames to understand how to solve statically determinate frame problems; to understand how to draw a stress diagram of the statically determinate frame. – S11
13. Statically determinate frame (simple beam type): to understand how to solve simple beam type statically determinate frame problems. – S11
14. Statically determinate frame (three-hinge frame): to understand how to solve three-hinge frame problems in comparison with methods of how to solve cantilever type and simple beam type statically determinate frame problems. – S11
15. To deepen understanding of the overall subject through review exercises of the overall subject for the final examination in the lecture, Structural Mechanics I. – S11
[Keywords] Structure, Mechanics, Statically determinate structure, Load, External force, Internal force, Deformation, Axial force, Shear force, Bending moment
[Textbooks and Reference Books] Since many textbooks on structural mechanics are available from bookstores, it is advisable for students to obtain a copy once the lecture has progressed.
[Evaluation] The attendance of students will be marked by a submission of each report within a designated time frame (reports with insufficient contents will be subjected to resubmission). Minimum condition for a pass requires attendance to meet the regulation set out by the Faculty of Engineering.
[Related courses] Structural Mechanics I
[Course requirements] Because Structural Mechanics I and Seminar on Structural Mechanics I are a unit course, student must take both courses. Seminars will be offered in a two-class format. The class assignment will be notified at the beginning of the academic year.
[Remarks] Students must bring devices which can perform numerical calculation (calculator, pocket computer).

建築環境計画演習 Seminar on Architectural Environment Planning
[Instructor] Jun Munakata & Tatsuya Hsyashi
[Credits] 1
[Semester] 2nd year-Spring-Mon 2
[Course code] T1N077001
[Room] Bldg.ENG-9-106
[Course enrollment] 80
[Candidate] Students of Faculty of Engineering, other Faculties, and Specially Registered Non-Degree Student
[Course description] Corresponding to the content of Architectural Environment Planning I, students will strengthen their knowledge through their work in this seminar.
[Course objectives] The objective of this seminar is for students to learn knowledge related to architectural environmental engineering through actual calculation, measurement and analysis of its results. By taking this class, students are expected to acquire a deep understanding of architectural environment by each element, such as sound, heat, air, and light, on the basis of their numerical values rather than simply depending on qualitative knowledge to apply what they learned to designing.
[Plans and Contents] Seminars will be offered on the basis of per topic, covering local environment, daylighting, artificial lighting, sound, heat, and air.
1. After performing guidance, students will learn how to calculate the amount of insolation and insulate from the sun.
2. Students will learn how to understand the performance of the solar radiation shielding device.
3. Students will learn how to understand the daylighting performance.
4. Students will learn basic calculation methods of photometric quantities.
5. Students will learn how to understand the artificial illumination.
6. Students will learn how to use the (light meter and sound level meter) measuring instruments of physical indicators of sound and photometric quantity.
7. Students will learn the relationship of the actual situation and evaluation of the environment through the measurement of illuminance.
8. Students will learn the relationship of the actual situation and evaluation of the environment through the measurement of the noise level.
9. Students will learn how to calculate the amount of heat transmission through the wall.
10. Students will learn how to calculate the amount of thermal radiation through the building.
11. Students will learn how to read a psychometric chart, and generation of condensation.
12. Students will learn how to use the measuring equipment temperature, humidity, radiation temperature, etc.
13. Students will learn how to calculate the necessary amount of ventilation.
14. Students will learn how to calculate the energy consumption which is used by the equipment.
15. Review: Students will learn about a comprehensive environmental assessment method of buildings, CASBEE.
[Evaluation] Students will be assessed on their seminar achievement. Students failing to meet the attendance rate specified by the Faculty of Engineering or failing to meet the exercise submission will not be evaluated.
[Related courses] Architectural Environment Planning I
[Course requirements] Seminars will be offered to meet the lecture contents of the Architectural Environment Planning I. Therefore, students undertaking the seminar must attend the lecture at the same time (or must have the course completed in the previous academic year).

材料力学演習 Seminar on Strength of Materials
[Instructor] Takeo Hirashima
[Credits] 1
[Semester] 2nd year-Spring-Thurs 2
[Course code] T1N078001
[Room] Bldg.ENG-5-104
[Course enrollment] 80
[Candidate] Students in other Departments cannot take this course.
[Course objectives] In Seminar on Structural Mechanics I, students learned how to find: support reaction of statically determinate structures under external force; and internal force (normal force, shear force, and bending moment) generated in structural members (columns, beams, and trusses) of the statically determinate structures, by using the equilibrium condition. In Seminar on Strength of Materials, students will learn how to find distributions of stress and strain generated in cross section of members subjected to external force, deflection of beams, buckling of slender columns, and yielding and ultimate strength of beams.
[Plans and Contents] At each lecture period, students will be asked to study and understand the following items:
1. Normal stress, Shear stress, principle of Saint-Venant, change of stress intensity and direction of the cross-section
2. Mohr's stress circle, conjugate relation of shear stress.
3. Normal strain, shear strain, elasticity and plasticity, Young's modulus, Poisson's ratio.
4. Bending stress, Navier hypothesis, neutral axis, curvature, flexural rigidity, and combined stress.
5. Geometrical moment of area, centroid, and geometrical moment of inertia of area, section modulus.
6. Shear deformation, bending stress and shear stress, and distribution of shear stress in cross section of beams.
7. Torsion of circular cross-section bar, torque, torsional rigidity, polar moment of inertia of area.
8. Interim examination and commentary.
9. Deflection of beam, deflection curve, curvature, deflection angle, flexural rigidity, and boundary condition.
10. Mohr's theorem. Deflection and reaction force in the statically indeterminate structure.
11. Strain energy, Castigliano's theorem.
12. Buckling, Euler buckling load, buckling length, slenderness ratio, and radius of gyration.
13. Buckling and eccentricity, eccentric load, stress of the member subjected to eccentric load, and core of cross section
14. Collapse of the structure, yield moment, fully plastic moment, plastic section modulus.
15. End of term examination and commentary.
[Textbooks and Reference Books] Kenchiku-zairyo-rikigaku, Akira Enami, Syokokusha Co., Ltd., 2650 yen (in Japanese).
[Evaluation] Evaluation is given by interim exams (30%) and the end of term exams (30%) notes (20%), and an attendance(20%).
[Related courses] (T1F075001), (T1F067001), (T1F083001)
[Course requirements] Students must have taken course of Strength of Materials.
[Remarks] Assignment and answers examples of exercises will be posted on Moodle. Make the registration of Moodle. Prepare (A4 version is desirable) a dedicated note of Strength of Materials, and Seminar on Strength of Materials.

構造実験Ⅰ　Experiments of Structural Engineering I
[Instructor] Nobuyuki Izumi and Yuko Shimada
[Credits] 4
[Semester] 2nd year-Fall-Tues 4, 5
[Course code] T1N079001, T1N079002
[Room] Bldg.ENG-9-206
[Course enrollment] 48 (The number will be subject to change implementation status of practice and experiments.)
[Candidate] 2nd year and other year of Department of Architecture
[Course description] Each group will conduct a structural planning exercise and a structural experiment related to architectural structural systems. For students who learned structure of buildings and structural mechanics in their first year, it is extremely important to understand space and structure. Each group will select one structural system of building. First, in the structural planning exercise, students will check the shape of frames that form architectural space by taking a look at an architectural work that employs the structural system that they selected. Then, they will make a model frame to understand its shape and force. Next, in the structural experiment, students will conduct a model test of basic frames that constitute the structural system to feel the relationship between frame force and deformation.
[Course objectives] The objective of this class is for students to learn architectural space and structure, understand the shape of frames that form space and force, and feel frame force and deformation. In the structural planning exercise, students will learn space and structure in actual architectural work and feel, by making a model frame, the shape of space and structure and force. In the structural experiment, students will increase their degree of understanding of structural mechanics by experiencing the relationship between force and deformation of frames and participate in an experiment presentation to deepen their interest in structures.
[Plans and Contents] Each group will conduct a structural planning exercise and a structural experiment related to structural system of buildings. Enrolled students first select one structural system that is used in a multi-story structure or single-story structure and form a group with other enrolled students who selected the same structural system. Then, they will participate in a structural planning exercise and structural experiment to be conducted by each group, take part in presentation by each group, and individually create a comprehensive report on the structural planning exercise and structural experiment of the structural system that they chose.
1. Overview of the structural planning exercise and structural experiment: Understanding the overview of classroom procedures. Group assignment for exercises and experiments.
2. Structural planning exercise(1):Selecting the structural system of building and architectural work: Students will be asked to select a structural system used for a single or multi-story building, before selecting one or more works of architectural work employing the chosen structural system.
3. Structural planning exercise (2): Space of architectural work and structure: Students will be asked to undertake researches of literatures on the relationship of space and structure achieved in the chosen work of architecture.
4. Structural planning exercise (3): Structural system and design of a structural model: By paying attention to the space of the selected work of architecture, students will be asked to design a structural model of the chosen structural system (Part or whole).
5. Structural planning exercise (4): Production of structural model 1: Production of a structural model of the chosen building structural system (part or whole).
6. Structural planning exercise (5): Production of structural model 2: Continue the production of a structural model.
7. Structural planning exercise (6): Space of the structural system: In groups, students will be asked to present the relationship of space and structure in the selected structural system.
8. Structural experiment (1): Frame test and a design of a frame model: Students will be asked to design a basic frame model to demonstrate the flow of force in the selected structural system.
9. Structural experiment (2): Frame experiment - Production of a frame model 1: Production of a frame model.
10. Structural experiment (3): Frame experiment - Production of a frame model 2: Continue the production of a frame model.
11. Structural experiment (4): Frame experiment - Loading test for the frame model: In groups, students will be asked to present design principles including the relationship of the structural system and the frame model, And carry out a loading test using the frame model.
12. Structural experiment (5): Beam experiment - Design of a beam model: Students will be asked to carry out a preparing calculation and design a beam model.
13. Structural experiment (6): Beam experiment - Production of a beam model 1: Production of a beam model.
14. Structural experiment (7): Beam experiment - Production of a beam model 2: Continue the production of a beam model.
15. Structural experiment (8): Beam experiment -Loading test for the beam model: In groups, students will be asked to present their design policy before undertaking a vertical loading test for their beam model. After the experiment, students will be asked to present their findings including relevance to the calculated value, and the amount of collapsing load.
[Keywords] Experiments of Structural Engineering, Structural Mechanics, Structural Design, Structural System for Architecture
[Textbooks and Reference Books] Reference Book: Structural System for Architecture (Shoukokusya)
[Evaluation] Students will be assessed on points gained from the group presentation and individual summary report. For accreditation, a student must attend the group based seminar and experiments, and must achieve a minimum points of 60.
[Related courses] Structure of Buildings, Structural Mechanics I, Strength of Materials, Structural Mechanics II
[Course requirements] Basically, student must have taken Structure of Buildings, Structural Mechanics I, and Strength of Materials and also, they must have taken or take Structural Mechanics II.
(If student does not meet the requirement for registration, he has to apply in the first lecture to confirm.)

[Remarks] Attendance is a precondition for acquisition of credit.

建築計画Ⅰ　Architectural Programming I
[Instructor] Kaname Yanagisawa
[Credits] 2
[Semester] 3rd year-Fall-Mon 1
[Course code] T1N080001
[Room] Bldg.ENG-5-104
[Course enrollment] about 50
[Candidate] Students of Faculty of Engineering, other Faculties, and Specially Registered Non-Degree Student
[Course description] This course is to learn and acquire architectural design methods and process, knowledge on assessment and management of programming and designing architecture, with special emphasis on practical knowledge and the ability to make judgments and assessments based on related architectural theory, behavioral science and other theories using actual architectural examples as the main subject of study.
[Course objectives] The objective of this course is to understand the theories and methods of architectural programming and design by referring to actual architectural examples and research results. The specific goal is to acquire a wide range of architectural knowledge including architectural design, the relationship between human behavior & psychology and architectural space, architectural programming, design methods and process, assessment and management, architectural design education, occupational ability and ethics of architects and engineer, and particularly practical knowledge and the ability to make judgments and assessments based on related architectural theory, behavioral science and other theories.
[Plans and Contents] Various examples of facilities, mostly domestic and foreign public architecture, will be shown. Lectures will cover themes including: modern to contemporary architectural programming, design theory, environmental and cultural backgrounds of architecture, universal design, programming and management, planning and design process, conversions and renovations, environmental behavioral design and design education.
Students can deepen understanding of lecture by preparation of writing class theme report in advance. And also, constructing group discussion of the exercises may lead to the fixing and application of knowledge.
1. Architectural design No.1 –Modernism and post-modernism-: Learning architectural theories and examples - From modern architecture until post modernism.
2. Architectural design No.2 – Vernacular architecture and traditional architecture-: Learning architectural space and design in Japan as well as abroad.
3. People and architecture No.1 –Environmental behavioral design-: Learning theories of environmental behavior design, case studies, and human presence.
4. People and architecture No.2 –Healing design-: Leaning healing through environmental elements and design to provide enjoyments.
5. People and architecture No.3 –Universal design-: Learning concept of universal design, case studies, and barrier free.
6. Keywords of architectural planning No.1 –Residential facilities, office, and cultural facilities-: Learning concept of architectural planning in residential facilities, office, cultural facilities.
7. Keywords of architectural planning No.2 –Educational facilities and healthcare facilities-: Learning concept of architectural planning in educational facilities and healthcare facilities.
8. Architectural process No.1 -Architectural programming-: Learning concept of architectural programming and case studies.
9. Architectural process No.2 -Architectural design process-: Learning various theories and case studies related to design process.
10. Architectural process No.3 -Architectural fieldwork-: Learning significance, purpose, methods, and effectiveness of fieldwork for architectural design and planning.
11. Architectural revitalization No.1 -Management and evaluation-: Learning methods and case studies related to facility management and evaluation.
12. Architectural revitalization No.2 -Renovation and conversion-: Learning concepts and case studies of renovation and conversion.
13. Architectural future No.1 -Educations in architectural design-: Learning outlines and case studies of architectural education in Japan and abroad.
14. Architectural future No.2 -Occupational abilities and qualifications in architecture-: Learning outlines and case studies related to qualifications and occupational abilities in architecture.
15. Architectural future No.3 –Ethics for architects and engineers: Learning Ethics for architects and engineers
[Keywords] Architectural planning, Architectural programming, Architectural design process, Environmental behavioral design, Educations in architectural design
[Textbooks and Reference Books] Not particularly
[Evaluation] Results will be evaluated in conjunction with achievements in the Exercise on Architectural Planning I. Students will be assessed on combined factors consisting of their achievements in theme-based report assignments to be handed out at each lecture and other on-the-spot reports to be assigned during lectures. In addition, participation degree in lecture and group discussion will also be taken into account. To obtain pass, students are required to gain a minimum points of 60.
[Course requirements] Students must have taken exercise on Architectural Programming I
[Remarks] Time of office hour, check Website go Yanagisawa (http://www.yanagisawa.archi.ta.chiba-u.jp/)

建築計画演習 Ⅰ Exercise on Architectural Programing Ⅰ

[Instructor] Kaname Yanagisawa
[Credits] 1
[Semester] 2nd year-Fall-Mon 2
[Course code] T1N081001
[Room] Bldg.ENG-5-104
[Course enrollment] about 50
[Candidate] Students of Faculty of Engineering, other Faculties, and Specially Registered Non-Degree Student
[Course description] This course is to learn and acquire architectural design methods and process, knowledge on assessment and management of programming and designing architecture, with special emphasis on practical knowledge and the ability to make judgments and assessments based on related architectural theory, behavioral science and other theories using actual architectural examples as the main subject of study.
[Course objectives] By practicing the content of the lectures given in Architectural Programing I, the course aims to review the knowledge obtained through lectures as well as to acquire applied skills. The specific goal is to acquire a wide range of architectural knowledge including architectural design, the relationship between human behavior & psychology and architectural space, architectural programming, design methods and process, assessment and management, architectural design education, occupational ability and ethics of architects and engineer, and particularly practical knowledge and the ability to make judgments and assessments based on related architectural theory, behavioral science and other theories.
[Plans and Contents] Simple drills, discussions, and writing of reports on topics covered in the lectures of Architectural Programing I. The lectures and themes covered are the same as Architectural Programing I.
Students can deepen understanding of lecture by preparation of writing class theme report in advance. And also, constructing group discussion of the exercises may lead to the fixing and application of knowledge.
1. Architectural design No.1 –Modernism and post-modernism-: Learning architectural theories and examples - From modern architecture until post modernism.
2. Architectural design No.2 – Vernacular architecture and traditional architecture-: Learning architectural space and design in Japan as well as abroad.
3. People and architecture No.1 –Environmental behavioral design-: Learning theories of environmental behavior design, case studies, and human presence.
4. People and architecture No.2 –Healing design-: Leaning healing through environmental elements and design to provide enjoyments.
5. People and architecture No.3 –Universal design-: Learning concept of universal design, case studies, and barrier free.
6. Keywords of architectural planning No.1 –Residential facilities, office, and cultural facilities-: Learning concept of architectural planning in residential facilities, office, cultural facilities.
7. Keywords of architectural planning No.2 –Educational facilities and healthcare facilities-: Learning concept of architectural planning in educational facilities and healthcare facilities.
8. Architectural process No.1 -Architectural programming-: Learning concept of architectural programming and case studies.
9. Architectural process No.2 -Architectural design process-: Learning various theories and case studies related to design process.
10. Architectural process No.3 -Architectural fieldwork-: Learning significance, purpose, methods, and effectiveness of fieldwork for architectural design and planning.
11. Architectural revitalization No.1 -Management and evaluation-: Learning methods and case studies related to facility management and evaluation.
12. Architectural revitalization No.2 -Renovation and conversion-: Learning concepts and case studies of renovation and conversion.
13. Architectural future No.1 -Educations in architectural design-: Learning outlines and case studies of architectural education in Japan and abroad.
14. Architectural future No.2 -Occupational abilities and qualifications in architecture-: Learning outlines and case studies related to qualifications and occupational abilities in architecture.
15. Architectural future No.3 –Ethics for architects and engineers: Learning Ethics for architects and engineers
[Keywords] Refer to Architectural Refer to Architectural Programing I
[Textbooks and Reference Books] Not particularly
[Evaluation] Results will be evaluated in conjunction with achievements in Architectural Programing I. Students will be assessed on combined factors consisting of their achievements in theme-based report assignments to be handed out at each lecture and other on-the-spot reports to be assigned during lectures. In addition, participation degree in lecture and group discussion will also be taken into account. To obtain pass, students are required to gain a minimum points of 60.
[Course requirements] student must take Architectural Programing I at the same time.

構造力学演習 II　Exercise on Structural Mechanics II
[Instructor]: Yukiko Nakamura
[Credits] 1
[Semester] 2nd year-Fall-Tues 3
[Course code] T1N082001
[Room] Bldg.ENG-9-106
[Candidate] Students from other Faculty and Department are unable to take this course.
[Course description] This is a seminar that supplements Structural Mechanics II, and students will be required to submit during the class hour seminar assignments related to the content of the lecture that is given every week.-
[Course objectives] The objective of this class is for students to deepen the level of their understanding through actually working on specific seminar assignments in accordance with the content of Structural Mechanics II. Students aim to be able to calculate stress and deformation of statically indeterminate structures and understand various methods of analysis. They will acquire experience and develop a sense of structural mechanics through their achievements.
[Plans and Contents]
Students will be asked to review the contents of seminars prior to staring the course, prepare any questions.
1. Guidance: Understanding the teaching outline, the relationship between the lecture contents and other study contents already studied, confirm the requirements for registration, evaluation methods, and lecture programming.
2. Stress on statically determinate structure (statically determinate structure 1): As a preparation to learning deformation occurring in statically determinate structures, students will revise solutions for stress of statically determinate structure. 3. Method of virtual work and deformation of statically determinate truss (statically determinate structure 2): Learning the principle of virtual works, the typical calculation method of deformation, and acquires skills to calculate the deformation of the statically determinate truss.
4. Statically indeterminate truss (stress method 2): Learning solutions for the statically indeterminate truss using stress method.
5. Deformation of statically determinate rigid-frame structure (statically determinate structure 3): Learning deformation calculation method of the statically determinate rigid-frame structure using the method of virtual work, and revising the calculation method of Mohr's theorem already studied.
6. Stress method and statically indeterminate rigid-frame structure (stress method 1): Learning the principle of stress method and acquiring solution of the statically indeterminate rigid-frame structure, and deepening understanding of fixed end moment. 7. Revising deformation calculation and stress method: Summarization of the deformation calculation and the stress method. 8. Questions related to deformation calculation and stress method: Students will be advised to question points of uncertainty about the deformation calculation and the stress method to clarify their understanding.
9. Displacement method and slope deflection method (slope deflection method 1): Understanding the characteristics of the displacement method and the significance of the slope deflection method, while securing fundamentals in learning these methods.
10. Statically indeterminate rigid-frame structure without joint displacement (slope deflection method 2): Learning solutions for the statically indeterminate rigid-frame structure without joint displacement, using the slope deflection method.
11. Statically indeterminate rigid-frame structure with joint displacement (slope deflection method 3): Learning solutions for the statically indeterminate rigid-frame structure with joint displacement, using the slope deflection method.
12. Statically indeterminate rigid-frame structure without joint displacement where a single angle of rotation of joint occurs (moment distribution method 1): Understanding characteristics and the significance of the moment distribution method, and learning the solution of the statically indeterminate rigid-frame structure, by making use of the most simple moment distribution method.
13. Statically indeterminate rigid-frame structure without joint displacement where a multiple angle of rotation of joint occurs (moment distribution method 2): Learning a solution of the statically indeterminate rigid-frame structure without joint displacement where a multiple angle of rotation of joint occurs by making use of the moment distribution method.
14. Statically indeterminate rigid-frame structure with joint displacement (moment distribution method 3): Learning solutions for the statically indeterminate rigid-frame structure with joint displacement, using the moment distribution method.
15. Revisions and questions related to the slope deflection method and moment distribution method: Students will be advised to question points of uncertainty about the slope deflection method and the moment distribution method to clarify their understanding.
16. Review of end of the term examination.
[Keywords] indeterminate structure, moment frame structure, stress, displacement
[Textbooks and Reference Books] Since there are numerous reference books on structural mechanics are available, students should individually select ones that are suitable for their requirements. [Reference Book][Structural Mechanics I, IZUMIMasanori, Baifukan (In Japanese)
[Evaluation] (1) Both more than 4/5 of attendance and submission of assignment is requisite to obtain the credit. (2) Evaluation is given by the score of the reports. Submission of the reports in the lecture will be also the checking attendance.
[Related courses] Exercise on Structural Mechanics II, Structural Mechanics I, Strength of Materials
[Course requirements] (1)Students must have taken courses of Structural Mechanics I and Strength of Materials. (2) Exercise on Structural Mechanics II and Exercise on Structural Mechanics II are a unit course, student must take Exercise on Structural Mechanics II at the same time. (3) Double registration is unacceptable.

造形演習　Design Aesthetics (Lab.)
[Instructor] Akira Ueda
[Credits] 2
[Semester] 1st year-Spring-Tues 5
[Course code] T1Y016001
[Room] Bldg. ENG-2-201
[Course description] Engineering is manufacturing, and manufacturing is a formative activity. The Design Aesthetics (Lab.) course aims to evoke students' interest in Engineering = manufacturing through several formative design projects and to awaken the individual talents in formative arts.
[Course objectives] Specific objectives of this course are as follows: (1) to cultivate the attitude to learn; (2) to develop multilateral observation skills; (3) to recognize the existence of various solutions; (4) to enhance presentation skills. In the Design Aesthetics (Lab.) course, students are required to challenge each of these 4 assignments, and continue until they achieve satisfaction. Students will learn to associate their brain and hands, and "move their hands, work up a sweat, let imagination loose, and create."
[Plans and Contents]
1. Overall guidance.
2. Assignment 1: Precision drawing using a pencil.
3. Assignment 1: Seminar.
4. Assignment 1: Criticism.
5. Assignment 2: Drawing of a solid object based on the elevation drawing.
6. Assignment 2: Seminar.
7. Assignment 2: Criticism.
8. Interim presentation
9. Assignment 3: Production of a tabletop lamp shade.
10. Assignment 3: Seminar.
11. Assignment 3: Criticism.
12. Assignment 4: Modeling of flying object.
13. Assignment 4: Seminar.
14. Assignment 4: Criticism.
15. Exhibition, summary, and criticism.
[Keywords] Observation, Thinking, Design, move their hands, work up a sweat, let imagination loose, and create Presentation
[Textbooks and Reference Books] Not particularly.
[Evaluation] Evaluation is given by attendance works, and presentation.
[Related courses] Not particularly
[Course requirements] Not particularly
[Remarks] Not particularly

造形演習　Design Aesthetics (Lab.)
[Instructor] Takatoshi Tauchi
[Credits] 2
[Semester] 1st year-Spring-Tues 5
[Course code] T1Y016002
[Room] Innovation Plaza, Faculty of Engineering
[Course objectives] When awareness towards an issue leads to some form of result by an engineering means, making something with a better organized form in mind and making something without such cognition will produce very different results. Through exercise, students will learn what better organized forms are. In specific, students will be given assignments for each item shown in the course plan based on the specialized areas of the faculty member.
[Plans and Contents]
1. Overall guidance.
2. Assignment 1: Pencil sketch of a hand.
3. Assignment 1: Seminar.
4. Assignment 1: Seminar/Criticism.
5. Assignment 2：:Sketch of a solid object based on the three orthographic views.
6. Assignment 2: Seminar/Criticism
7. Assignment 3：Production of elastic band driven car.
8. Assignment 3: Seminar: Presentation of work based on the research findings.
9. Assignment 3: Production
10. Assignment 3: Presentation.
11. Assignment4: Production of a paper sandal.
12. Assignment4: Presentation of work based on the research findings.
13. Assignment4: Production
14. Assignment 4: Presentation.
15. Exhibition and criticism.
[Evaluation] Evaluation is comprehensively given by attendance, works, and the quality of presentation.
[Remarks] Wearing sandals and high-heeled shoes are strictly prohibited in Innovation Plaza, Faculty of Engineering

造形演習　Design Aesthetics(Lab.)
[Instructor] Yoichi Tamagaki, Yoshihiro Shimomura
[Credits] 2
[Semester] 1st year-Spring-Tues 5
[Course code] T1Y016003
[Room] Bldg. ENG-2–atelier (2–601)
[Course objectives] When awareness towards an issue leads to some form of result by an engineering means, making something with a better organized form in mind and making something without such cognition will produce very different results. Through exercise, students will learn what better organized forms are. In specific, students will be given assignments for each item shown in the course plan based on the specialized areas of the faculty member.
[Plans and Contents]
[Evaluation]

造形演習　Design Aesthetics(Lab.)
[Instructor] Yosuke Yoshioka
[Credits] 2
[Semester] 1st year-Spring-Tues 5
[Course code] T1Y016004
[Room] Bldg. ENG-1- 110
[Course objectives] When awareness towards an issue leads to some form of result by an engineering means, making something with a better organized form in mind and making something without such cognition will produce very different results. Through exercise, students will learn what better organized forms are. In specific, students will be given assignments for each item shown in the course plan based on the specialized areas of the faculty member.
[Plans and Contents]
[Evaluation]

造形演習　Design Aesthetics(Lab.)
[Instructor] Ueda Edilson Shindi
[Credits] 2
[Semester] 1st year-Spring-Tues 5
[Course code] T1Y016005
[Room] Bldg. ENG-2-102
[Course enrollment] 60
[Candidate] Students of Faculty of Engineering, other Faculties, and Specially Registered Non-Degree Student
[Course description] Engineering is manufacturing, and manufacturing is a formative activity. The Design Aesthetics (Lab.) course aims to evoke students' interest in Engineering = manufacturing through several formative design projects and to awaken the individual talents in formative arts.
[Course objectives] When awareness towards an issue leads to some form of result by an engineering means, making something with a better organized form in mind and making something without such cognition will produce very different results. Through exercise, students will learn what better organized forms are. In specific, students will be given assignments for each item shown in the course plan based on the specialized areas of the faculty member.
[Plans and Contents]
1. Overall guidance.
2. Assignment 1: Precision drawing using a pencil.
3. Assignment 1: Seminar.
4. Assignment 1: Criticism.
5. Assignment 2: Drawing of a solid object based on the elevation drawing.
6. Assignment 2: Seminar.
7. Assignment 2: Criticism.
8. Interim presentation
9. Assessment 3: Select a theme from water, fire, soil, or wind, and freely create a form
10. Assignment 3: Seminar.
11. Assignment 3: Criticism.
13. Assignment 4: Seminar.
14. Assignment 4: Criticism.
15. Exhibition
[Keywords] Observation, Thinking, Design, move their hands, work up a sweat, let imagination loose, and create Presentation
[Textbooks and Reference Books] Not particularly
[Evaluation] Evaluation is given by attendance, works and quality of presentation. Attendance 40%, Presentation 60%.
[Related courses] Not particularly
[Course requirements] Not particularly
[Remarks] Not particularly

工学倫理　Engineering Ethics
[Instructor] Kenta Ono
[Credits] 2 Credits
[Semester] 3rd year-Fall-Mon 5
[Course code] T1Z051001
[Room] Large Lecture Room ※Large Lecture Room is located in 2nd Building of Faculty of Educations,
[Candidate] 2nd to 4th year of Faculty of Engineering (Direction is given by each Department)
[Course description] Engineering is a practical area of learning that utilizes various scientific and technological achievements to enhance our lives and living environment. However, if used in an inappropriate manner, it will create major social dislocations and loss which may even jeopardize our personal lives. This course discusses the missions, norms, roles, rights and responsibilities of engineers in relation to the society from a broad perspective.
[Course objectives] The objective of this course is to acquire the basic concepts and knowledge for engineers to promote the advancement of technology and contribute to society based on sound ethics.
[Plans and Contents] * The schedule and contents are subject to alteration.
1. Introduction to ethics (Kyuichiro Takahashi, Center of General Education, Chiba University)
2. Characteristics of engineering ethics (Keizo Kutsuna, the Center for General Education, Chiba University)
3. Compliance and general principles of ethics (Moriyoshi Konami, professional engineer)
4. Product liability (Moriyoshi Konami, professional engineer)
5. Whistleblowing (Moriyoshi Konami, professional engineer)
6. Resolving ethical problems (Moriyoshi Konami, professional engineer)
7. Preparedness as an engineer and professional (Moriyoshi Konami, professional engineer)
9. Information technology and copyright: Private sound recording and the Copyright Levy Framework for audiovisual recordings (Heitoh Zen, Institute of Media and Information Technology, Chiba University)
109. Proprietary rights including intellectual property rights (1) (Masayoshi Takahashi, patent attorney)
10. Proprietary rights including intellectual property rights (2) (Masayoshi Takahashi, patent attorney)
11. Proprietary rights including intellectual property rights (3) (Masayoshi Takahashi, patent attorney)
12. Natural resource consumption and environmental ethics (Motoi Machida, Safety and Health Organization, Chiba University)
13. Safety and risks (1) (Yukinobu Shinoda, Industrial Safety Consultant)
14. Safety and risks (2) (Yukinobu Shinoda, Industrial Safety Consultant)
15. Group Discussion (Education committee member of each department)
[Keywords] Mission of engineers, morals, obligations, discipline, and engineering ethics.
[Textbooks and Reference Books] 1) Norifumi Saitoh et al., HAJIMETE NO KOUGAKU RINRI (Introduction of Engineering Ethics) second edition, Showado, (2005), 1400 yen + Tax, 2) Taiji Sugimoto et al, GIJYUTUSHA NO RINRI NYUMON (Introduction of ethics for engineer) fourth edition, Maruzen Publishing Co., Ltd., (2008), 1700 yen + Tax
[Evaluation] Students will be assessed by results of mini-tests at the end of each lecture. Students must attend a minimum of 12 lectures for accreditation. The yes or no entry to Moodle is treated as attendance. Students need to answer it during every review time.
[Course requirements] Refer to syllabus available online for subject categories of each faculty. Consult a faculty member of Board of Education when the information is not available.
[Remarks] Lecture schedule and contents are subject to alteration depending on availability of lecturers. Students are required to attend the guidance session to be held on the first class.

知的財産権セミナー Seminar: Intellectual Property Rights
[Instructor] (Satoru Asakura)
[Credits] 2
[Semester] Spring Intensive ／ June-July, Tue 4, 5
[Course code] T1Z052001
[Room] Bldg.ENG-2-101
[Course enrollment] 32
[Candidate] Students of Faculty of Engineering
[Course description] Rights to intellectual property that are created through unique intellectually creative activities are protected by law, and effective utilization of these intellectual property rights leads to creation of new intellectual property. Promoting such intellectual creation cycle is lately recognized as an important national strategy. The objective of this course is to acquire the basic knowledge and practical approach to intellectual property rights, mainly focusing on industrial property rights as represented by patents.
[Course objectives] The goals for this course are as follows: 1) to be able to explain the concepts such as intellectual property and intellectual property rights; 2) to be able to understand the requirements for patentability of inventions; and 3) to be able to conduct patent search using the Industrial Property Digital Library.
[Plans and Contents]
Lectures mainly covered patent systems for protecting inventions, and explained other related legislation and recent trends. The lecture contents were subject to change depending on student interests and requests.
1. Outline of patent system.
2. Industrially applicable invention.
3. Potential of industrial use
4. Novelty and inventiveness.
5. Patent categories and prior art search.
6. Using Industrial Property Digital Library.
7. Patent claim and patent specification.
8. Preparing patent application.
9. Patent examination.
10. Patent appeal.
11. Patent litigation.
12. Economic use of patent rights.
13. Outline of utility model system and design system.
14. Summary and examination.
[Keywords] intellectual property, intellectual property rights, industrial property, industrial property rights, invention, patent
[Textbooks and Reference Books] Students were asked to bring a statute book covering the Patent Act. Printed materials and the following title were handed out as-reference textbooks:
INDUSTRIAL PROPERTY RIGHTS, National Center for Industrial Property Information and Training
[Evaluation] Comprehensive evaluation was conducted by means of reports. Students had to obtain over 60 points to achieve credits.
[Course requirements] Although the course taught basic terms of patent laws, knowledge of the law was not required. Any students interested in the subject were welcome.
[Remarks] In 2014, lectures were held in the 4th and 5th time slots, Tuesday, June 3, 10, 17, 24 and July 1, 8, 15.

工業技術概論 Introduction to Industrial Technologies
[Instructor] Yun Lu
[Credits] 2
[Semester] Spring-Mon5
[Course code] T1Z05400
[Room] Bldg.ENG-17-111
[Candidate] Students of Faculty of Engineering, and other Faculties
[Course description] First, the course will discuss the development of global industrial technologies with focus on Japanese technologies, changes of people's lives caused by technologies, environment and energy situations, and the history, current situation and future of industrial technologies. The course will also provide lectures on the necessary mindset as industrial engineers, resource research, how to write technical papers, and how to give research presentation, as well as guidance on studying and report writing techniques for students majoring in science and engineering.
[Course objectives] The objective is to increase the understanding of foreign exchange student majoring in science and engineering towards the development of industrial technologies and changes of people's lives caused by technology development, environment and energy situations, and to teach students the basic abilities that are required as industrial engineers (mindset, resource research, how to write technical papers, and how to give research presentation, etc.) as well as guidance on studying and report writing techniques for students majoring in science and engineering. At the same time, the course is aimed to enable foreign exchange students to gain a better understanding on the industrial technologies of Japan and to acquire the ability to contribute to the development of industries and technologies in their home countries or to work in Japanese companies in the future.
[Plans and Contents] The lectures will be given in 2 parts. Part 1: History, current situation and future of industrial technologies (Classes 1 – 9), and Part 2: Path to becoming a researcher. To ensure a better understanding, lecture resumes will be distributed on the web and lectures will be given using a projector. Achievements will be evaluated by reports and presentation (Classes 10 – 15).
1. Orientation and discussion about course content
2. Advances in industrial technology worldwide
3. Advances in industrial technology in Japan
4. Unique industrial technology
5. Industrial technology and life
6. Industrial technology and energy, the environment
7. 21st century industrial technology
8. How to write a report
9. Assignment presentation 1
10. Basic R&D thinking 1
11. Basic R&D thinking 2
12. Resource research
13. How to write a technical paper
14. Research presentations
15. Research presentations 2
16. Research presentations 3
[Textbooks and Reference Books] Textbook is not specified. Handouts will be provided via http://apei.tu.chiba-u.jp/Luyun-HP.html. Reference books will be introduced in class time.
[Evaluation] Attendance (30%) and exercises, report (30%) and presentation (40%), the total score 60 accredited.
[Course requirements] Not particularly
[Remarks] Foreign students only, the choice subject (F30 or F36) and no credit for Japanese students(Z99).

居住のデザインと生活技術　Dwelling Design and Living Technology
[Instructor] Yun Lu
[Credits] 2
[Semester] Fall-Fri 4
[Course code] T1Z055001
[Room] Bldg.ENG-17-213
[Class Enrollment] about40
[Candidate] Students of Faculty of Engineering, other Faculties, and Specially Registered Non-Degree Student
[Course description] This course will be led by grand fellow Atsushi Maruyama.
[Course objectives] In the life of a person, there are various schemes being repeated in our given environment, the various designs that lead to scales of city or region from around us cannot be done elsewhere.　For foreign students aiming to go to form a professional environment, firstly, they need to focus on design and life skills for such residence, then think of the parallel development, also, in the present, they need to understand what is being deployed.
[Plans and Contents] We would like to discuss, in seminar format, examples of native students not only in the case in Japan, regarding the technology and lifestyle design for residential, and deepen the understanding. There are also plans of visits outside the university during the term.
1. October 3 – Orientation: What does “living” mean? How have people designed living spaces thus far?
2. October 10 – What types of houses can be found now in Japanese urban and rural areas?
3. October 17 – What types of houses can be found in Japanese historical rural and fishing areas?
4. October 19 (Sunday) – On-site observation: Boso Hudokinooka Open air Museum. (Bus tour)
5. October 24 – What types of houses can be found in Japanese historical urban areas?
6. November 7 – What trends have been seen in designing dining spaces kichen and family room?
7. November 14 – What trends have been seen in designing drawing rooms to allow for social relationships?
8. November 21 – What trends have been seen in designing amusement spaces for Noh and Kabuki?
9. November 28 – What trends have been seen in designing amusement spaces in Tokyo Disney land?
10. December 5 – How people have designed tea houses and Sukiya houses facing four seasons and nature?
11. December 12 – How people have designed tea gardens and imperial villa facing four seasons and nature?
12. December 19– How people designed religious spaces in dwelling houses and community during Bon and Shogatsu?
13. January 9 – How people designed religious spaces, Temples and Shrines in community?
14. January 23 – How people designed religious monument such as five storied pagodas ?
15. January 30 – Summary and Overall Discussion
[Keywords] Dwelling house, Design, Living Technology, Mealtime, Relationship, Religious Belief
[Textbooks and Reference Books] Textbook is not specified. Reference books will be introduced with the process of class on appropriate time.
[Evaluation] Evaluation will be given by small questionnaire with attendance sheet, presentation of the report in seminars at each research room, and the final report.
[Course requirements] Not particularly
[Remarks] Foreign students only, subject of choice (F30 or F36) and no credit for Japanese students(Z99)