Anan College	Course of Civil Engineering	Year	2024
Department Goals			

Course Category		Course Title	Course Code	Credit Type	Credits	Class Hours per Week																Instructor	Division in Learning
						1st Year				2nd Year				3rd Year				4th Year				5th Year			
						1st		2nd		1st		2nd		1st		2nd		1st		2nd		1st		2nd	
						1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q		
Specialized	Compulsory	Architectural Drawing	1812401	School Credit	1					2																Tada Yutaka	
Specialized	Compulsory	Mini-Research on Civil Engineering 1	1812501	School Credit	1					2																Kagemasa Shuka,Osada Kengo	
Specialized	Compulsory	Surveying theory and Practice 1	1812A02	School Credit	4					4	4															Kadono Takuma,Osada Kengo	
Specialized	Compulsory	Fundamental of Structural Mechanics	1812C04	School Credit	1						2															Moriyama Takuro	
Specialized	Compulsory	Architectural Planning 1	1812D01	School Credit	2					2	2															Tada Yutaka	
Specialized	Compulsory	Fundamental of Civil Engineering	1812T02	School Credit	1					2																Inoue Takafumi	
Specialized	Compulsory	Basic Practice in Civil Engineering	1813601	School Credit	2									2	2											Osada Kengo,Kagemasa Shuka	
Specialized	Compulsory	Surveying 2	1813A01	School Credit	2									2	2											Tada Yutaka,Inoue Takafumi	
Specialized	Compulsory	Structural Mechanics 1	1813C02	School Credit	2									2	2											Inoue Takafumi	
Specialized	Compulsory	Soil Mechanics	1813D01	School Credit	2									2	2											Yoshimura Hiroshi	
Specialized	Compulsory	Hydraulics	1813E01	School Credit	2									2	2											Osada Kengo	
Specialized	Compulsory	Surveying Practice 2	1813T01	School Credit	3									2	4											Tada Yutaka,Inoue Takafumi	
Specialized	Elective	Architectural Desing 1	1893402	School Credit	2									2	2											Ebisuno Akio,Moriyama Takuro	
Specialized	Elective	Civil Engineering Practice 1	1893602	School Credit	2									2	2											Yoshimura Hiroshi,Moriyama Takuro	

Specialized	Compulsory	Probability and Statistics	1514A01	Academic Credit	2											2							Sugino Ryuzaburo	
Specialized	Compulsory	Engineering Mechanics	1514B01	Academic Credit	2											2							Moriyama Takuro	
Specialized	Compulsory	Materials	1814B03	Academic Credit	2											2							Kadono Takuma	
Specialized	Compulsory	Structural Engineering 1	1814C02	Academic Credit	2												2						Moriyama Takuro	
Specialized	Compulsory	StructuralMechanics2	1814C04	Academic Credit	2											2							Moriyama Takuro	
Specialized	Compulsory	StructuralMechanics3	1814C05	Academic Credit	2												2						Inoue Takafumi	
Specialized	Compulsory	Geotechnical Engineering	1814D01	Academic Credit	2											2							Yoshimura Hiroshi	
Specialized	Compulsory	Hydraulic Engineering	1814E01	Academic Credit	2											2							Osada Kengo	
Specialized	Compulsory	Environmental Engineering	1814F02	Academic Credit	2											2							Kagemasa Shuka	
Specialized	Compulsory	City Planning	1814G01	Academic Credit	2												2						,́Moriyama Takuro	
Specialized	Compulsory	Regional Planning	1814G02	Academic Credit	2												2						Moriyama Takuro	
Specialized	Compulsory	ConstructionWorkControl	1814H01	Academic Credit	2												2						Yoshimura Hiroshi	
Specialized	Compulsory	Civil Engineering Experiment 1	1814T04	Academic Credit	2											4							Yoshimura Hiroshi,Inoue Takafumi	
Specialized	Compulsory	Civil Engineering Experiment 2	1814T05	Academic Credit	2												4						Kadono Takuma	
Specialized	Elective	CivilEngineeringPractice2	1894601	School Credit	2												4						Yoshimura Hiroshi,Moriyama Takuro,Osada Kengo,Kadono Takuma,Kagemasa Shuka	

Specialized	Elective	Civil Engineering Seminar	1894602	School Credit	1													2							Yoshimura Hiroshi,Moriyama Takuro,Osada Kengo,Tada Yutaka,Inoue Takafumi,Kadono Takuma,Kagemasa Shuka	
Specialized	Elective	Architectural Planning 2	1894D01	Academic Credit	2													2							Tada Yutaka	
Specialized	Elective	Internship	1894R11	School Credit	1												2	2							Kagemasa Shuka	
Specialized	Compulsory	Research for Graduation Thesis	1815000	School Credit	10																10	10			Yoshimura Hiroshi,Moriyama Takuro,Osada Kengo,Tada Yutaka,Inoue Takafumi,Kadono Takuma,Kagemasa Shuka	
Specialized	Compulsory	Structural Engineering 3	1815C03	Academic Credit	2																2				Kadono Takuma	
Specialized	Compulsory	Structural Engineering 2	1815C04	Academic Credit	2																2				Inoue Takafumi	
Specialized	Compulsory	Programming	1815I01	Academic Credit	2																	2			Inoue Takafumi	
Specialized	Compulsory	Civil Engineering Experiment 3	1815T05	Academic Credit	2																4	4			Osada Kengo,Kagemasa Shuka	
Specialized	Elective	Design and Drawing 2	1895402	Academic Credit	2																2	2			Ebisuno Akio,Moriyama Takuro	
Specialized	Elective	Architectural Planning 3	1895D01	Academic Credit	2																2				Tada Yutaka	
Specialized	Elective	Low of Construction	1895H01	Academic Credit	2																	2			Tada Yutaka	

Anan College	Year	2024	Course Title	Architectural Drawing

Course Information

Course Code	1812401	Course Category	Specialized / Compulsory
Class Format	Lecture	Credits	School Credit: 1
Department	Course of Civil Engineering	Student Grade	2nd
Term	First Semester	Classes per Week	前期:2
Textbook and/or Teaching Materials	(1) Architectural Design and Drawing for Housing (Gakugei Shuppansha), (2) How Wooden Houses are Built (X-Knowledge), (3) Standards for Preparation of Building Construction Design Documents (Ministry of Land, Infrastructure, Transport and Tourism), (4) Perspective drawing materials, (5) Drawings for wooden houses		
Instructor	Tada Yutaka		

Course Objectives

1 To be able to think in three dimensions and express them (to be able to think about three-dimensional space by looking at two-dimensional drawings, etc.)
2 Understand the characteristics of drafting tools and be able to distinguish lines.
3 To be able to identify and apply drafting symbols based on the general rules of architectural drawing.
4. To be able to draw design drawings (plan, elevation, section, and development) of wooden houses.
5. Understand materials and other aspects of exterior and interior finishes of wooden houses.

Rubric

	Ideal Level	Standard Level	Unacceptable Level
Achievement 1	At least 80% of the students are able to accurately represent the issues related to one-point perspective, two-point perspective, and model making.	At least 70% of the students are able to accurately represent the issues related to one-point perspective, two-point perspective, and model making.	At least 60% of the students are able to accurately represent the issues related to one-point perspective, two-point perspective, and model making.
Achievement 2	Draw lines of three different thicknesses (very thick, thick, and thin) in three different densities.	Draw lines of three different thicknesses (very thick, thick, and thin) in two different densities.	Draw lines of three different thicknesses (very thick, thick, and thin) with one density.
Achievement 3	Identify and apply at least 80% of the drafting symbols for the general rules of architectural drafting for plans, elevations, sections, and developments.	Identify and apply at least 70% of the drafting symbols for the general rules of architectural drafting for plans, elevations, sections, and developments.	Identify and apply at least 60% of the drafting symbols for the general rules of architectural drafting for plans, elevations, sections, and developments.
Achievement 4	Draw wooden house plans (floor plan, elevation, section, and development) with at least 80% accuracy compared to the model.	Draw wooden house plans (floor plan, elevation, section, and development) with at least 70% accuracy compared to the model.	Draw wooden house plans (floor plan, elevation, section, and development) with at least 60% accuracy compared to the model.
Achievement 5	Understand at least 80% of the issues related to materials for exterior and interior finishes of wooden houses.	Understand at least 70% of the issues related to materials for exterior and interior finishes of wooden houses.	Understand at least 60% of the issues related to materials for exterior and interior finishes of wooden houses.

Assigned Department Objectives

学習・教育到達度目標 E-1

Teaching Method

Outline	This course is designed to provide students with a basic understanding of drawing representation (a method of representing a three-dimensional space in two dimensions) for architectural and civil engineering design. This course is taught by faculty members who have worked in architectural design at companies and who will use their experience in teaching this subject.
Style	This class will be conducted in the form of exercises. Therefore, please be sure to bring the designated items such as rulers, etc. to each class. Class hours: 30 hours.
Notice	This course is a designated subject for the architectural examinations, and students who complete it will have an advantage in the number of years of work experience and other qualifications to take the examinations. Students will be able to realize that their technical, academic, and artistic abilities will be developed year by year by repeating, repeating, and "learning again and again" from the second year to the fifth year.

Characteristics of Class / Division in Learning

☑ Active Learning	☑ Aided by ICT	□ Applicable to Remote Class	☑ Instructor Professionally Experienced

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	Let's do a sketch.	Sketches in the early stage of architectural design and actual works will be compared to understand the importance of sketches. Students will learn how to make sketches and actually make sketches. Textbook 4
		2nd	Understanding 3D space with 2D drawings	To represent three-dimensional space with two-dimensional drawings using BIM software. Students will understand the types of architectural drawings. Textbook 4
		3rd	Let's draw hand-drawn perspective	Drawing of the interior view of a building using one-point perspective. Textbook 4

		4th	Let's draw hand-drawn perspective	Drawing the exterior of a building using the two-point perspective method. Textbook 4
		5th	Creating 3D space from 2D drawings	Understand how to draw a plan of a wooden house and be able to copy it.
		6th	Creating 3D space from 2D drawings	Understand how to draw a plan of a wooden house and be able to copy it.
		7th	Creating 3D space from 2D drawings	This week is designed for students to understand the relationship between 2D drawings and 3D space by creating a White model from wooden house drawings (plan, elevation, and section). Textbook (5)
		8th	Midterm examination	
	2nd Quarter	9th	Creating 3D space from 2D drawings	The student will be able to visit a wooden house for which he/she has made a white model and explain the differences between his/her model and the actual work and the reasons for the differences. Textbook (5)
		10th	Let's draw a design drawing!	This course is designed to provide students with an understanding of the general rules of drafting related to floor plans and to draw floor plans using drafting symbols, etc. Textbooks (1) and (3).
		11th	Let's draw a design drawing!	This course is designed to provide students with an understanding of the general rules of drafting related to architectral drawings and to draw floor plans using drafting symbols, etc. Textbooks (1) and (3).
		12th	Let's draw a design drawing!	This course is designed to provide students with an understanding of the general rules of drafting related to f architectral drawings and to draw elevation using drafting symbols, etc. Textbooks (1) and (3).
		13th	Let's draw a design drawing!	This course is designed to provide students with an understanding of the general rules of drafting related to architectral drawings and to draw intelier elevation using drafting symbols, etc. Textbooks (1) and (3).
		14th	Let's draw a design drawing!	This course is designed to provide students with an understanding of the general rules of drafting related to architectral drawings and to draw intelier elevation using drafting symbols, etc. Textbooks (1) and (3).
		15th	Let's draw a design drawing!	Understand the design intent from documents and drawing reproductions related to masterpiece houses.
		16th	Return of final examinations	Prepare exterior and interior perspective drawings from wooden house drawings. The students will bind the drawings and compile them into a book. Textbooks (1) and (4)

Evaluation Method and Weight (%)

	Examination	Quiz	Portfolio	Presentation and Attitude		Other	Total
Subtotal	30	10	50	10	0	0	100
Basic Proficiency	30	10	20	10	0	0	70
Specialized Proficiency	0	0	30	0	0	0	30
Cross Area Proficiency	0	0	0	0	0	0	0

Anan College	Year	2024	Course Title	Mini-Research on Civil Engineering 1

Course Information

Course Code	1812501	Course Category	Specialized / Compulsory
Class Format	Lecture	Credits	School Credit: 1
Department	Course of Civil Engineering	Student Grade	2nd
Term	First Semester	Classes per Week	前期:2
Textbook and/or Teaching Materials	The teachers distribute documents.		
Instructor	Kagemasa Shuka,Osada Kengo		

Course Objectives

1. Able to investigate the latest trends and techniques in each field of civil engineering. Able to organize investigation results and one's own opinions as a report.
2. Able to plan 'an attractive future city' under given conditions.
3. Able to collect and organize information necessary for planning with co-working in a group.
4. Able to prepare a presentation poster for proposing a group plan and present with co-working in a group.

Rubric

	Ideal Level	Standard Level	Minimum Level
Course Objective 1	Able to investigate the latest trends and techniques in each field of civil engineering by taking the initiative. Able to organize investigation results and one's own opinions as a report.	Able to investigate the latest trends and techniques in each field of civil engineering. Able to organize investigation results and one's own opinions as a report.	Able to investigate the latest trends and techniques in each field of civil engineering. Able to organize investigation results as a report.
Course Objective 2	Able to plan 'an attractive and functional future city' under given conditions.	Able to plan 'an attractive future city' under given conditions.	Able to plan 'a future city' under given conditions.
Course Objective 3	Able to collect and organize information necessary for planning with co-working in a group accurately.	Able to collect and organize information necessary for planning with co-working in a group.	Able to collect and organize information necessary for planning.
Course Objective 4	Able to prepare clearly a presentation poster for proposing a group plan and present with co-working in a group.	Able to prepare a presentation poster for proposing a group plan and present with co-working in a group.	Able to prepare a presentation poster for proposing a group plan and conduct a presentation.

Assigned Department Objectives

学習・教育到達度目標 A-3 学習・教育到達度目標 B-1 学習・教育到達度目標 C-2

Teaching Method

Outline	In the first quarter of this class, the learner aims to obtain knowledge about roles and the latest trends and techniques regarding each field of civil engineering: structure, material, hydraulic engineering, environment engineering, geotechnical engineering, construction management, city and region planning, and architecture. The learner investigates civil engineering fields using the internet and organizes investigation results and one's own opinions as a report. Through these tasks, the learner can raise knowledge and understanding about civil engineering fields. In the second quarter of this class, the learner plans 'an attractive future city' under given conditions and presents with co-working in a group.
Style	The first quarter: The teachers explain the outline of each field of civil engineering at the beginning of class. Then, the learners investigate each field on the internet and organize the obtained results and one's own opinions as a report. The second quarter: The teachers give the conditions for planning 'an attractive future city'. The learners create a future city with attractive and functional under given conditions by co-working in a group. The learners prepare a presentation poster on the contents of the group plan and conduct the presentation by working together in a group. The teachers will evaluate the academic achievement through reports and presentation ability. (The learning time: 30 hours)
Notice	

Characteristics of Class / Division in Learning

☐ Active Learning	☐ Aided by ICT	☐ Applicable to Remote Class	☐ Instructor Professionally Experienced

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	Class guidance. Explanation of structure and material fields Investigation of the latest trends and techniques of structure and material fields Preparation of investigation report	Able to investigate the latest trends and techniques in structure and material fields and organize investigation results as a report.
		2nd	Explanation of structure and material fields Investigation of the latest trends and techniques of structure and material fields Preparation of investigation report	Able to investigate the latest trends and techniques in structure and material fields and organize investigation results as a report.
		3rd	Explanation of hydraulic and environmental engineering fields Investigation of the latest trends and techniques in hydraulic and environmental engineering fields Preparation of investigation report	Able to investigate the latest trends and techniques in hydraulic and environmental engineering fields and organize investigation results as a report.

		4th	Explanation of hydraulic and environmental engineering fields Investigation of the latest trends and techniques in hydraulic and environmental engineering fields Preparation of investigation report	Able to investigate the latest trends and techniques in hydraulic and environmental engineering fields and organize investigation results as a report.
		5th	Explanation of geotechnical engineering and construction management fields Investigation of the latest trends and techniques in geotechnical engineering and construction managing fields Preparation of investigation report	Able to investigate the latest trends and techniques in geotechnical engineering and construction management fields and organize investigation results as a report.
		6th	Explanation of geotechnical engineering and construction management fields Investigation of the latest trends and techniques in geotechnical engineering and construction managing fields Preparation of investigation report	Able to investigate the latest trends and techniques in geotechnical engineering and construction management fields and organize investigation results as a report.
		7th	Explanation of city and regional planning fields Investigation of the latest trends and techniques in city and regional planning fields Preparation of investigation report	Able to investigate the latest trends and techniques in city and regional planning fields and organize investigation results as a report.
		8th	Explanation of city and regional planning fields Investigation of the latest trends and techniques in city and regional planning fields Preparation of investigation report	Able to investigate the latest trends and techniques in city and regional planning fields and organize investigation results as a report.
	2nd Quarter	9th	Explanation of the architecture field Investigation of the latest trends and techniques in the architecture field Preparation of investigation report	Able to investigate the latest trends and techniques of architecture and organize investigation results as a report.
		10th	Explanation of the architecture field Investigation of the latest trends and techniques in the architecture field Preparation of investigation report	Able to investigate the latest trends and techniques of architecture and organize investigation results as a report.
		11th	Planning of a future city with attractions (a group activity)	Able to plan a future city with attractions in a group and organize proposal contents as a presentation poster.
		12th	Planning of a future city with attractions (a group activity)	Able to plan a future city with attractions in a group and organize proposal contents as a presentation poster.
		13th	Planning of a future city with attractions (a group activity)	Able to plan a future city with attractions in a group and organize proposal contents as a presentation poster.
		14th	Planning of a future city with attractions (a group activity)	Able to plan a future city with attractions in a group and organize proposal contents as a presentation poster.
		15th	Group presentation: proposal of a future city with attractive	Able to present a future city with attractions in a group using a presentation poster.
		16th		

Evaluation Method and Weight (%)

	Midterm/final Exam	Quiz	Portfolio	Presentation/Attitude	Other	Total
Subtotal	0	0	80	20	0	100
Basic Proficiency	0	0	20	10	0	30
Specialized Proficiency	0	0	60	10	0	70
Cross Area Proficiency	0	0	0	0	0	0

Anan College	Year	2024	Course Title	Surveying theory and Practice 1

Course Information

Course Code	1812A02	Course Category	Specialized / Compulsory
Class Format	授業・実習	Credits	School Credit: 4
Department	Course of Civil Engineering	Student Grade	2nd
Term	Year-round	Classes per Week	前期:4 後期:4
Textbook and/or Teaching Materials	Surveying I , Second Edition(CORONA PUBLISHING CO., LTD.), Handouts		
Instructor	Kadono Takuma,Osada Kengo		

Course Objectives

1. Able to understand and explain the basics of surveying in general, basic calculatio method and the errors.
2. Able to understand the outline of distance surveying, leveling, angular surveying, traverse surveying, and plane surveying, and be able to explain the basics and how to handle measuring instruments.
3. Able to work cooperatively in practical training and be able to measure distance, level, angular, traverse, and plane surveying tasks to a specified level of accuracy.
4. Able to calculate values obtained from distance, level, angular, traverse, and plane surveys, and report results and prepare plan drawings.
5. Able to understand how to calculate area and volume and be able to explain basic matters.

Rubric

	Ideal Level	Standard Level	Minimum Level
Achievement 1	Able to understand and explain the basics of surveying in general, basic calculation methods, and error handling methods.	Able understand and explain the basics of surveying in general, basic calculation methods and how to handle errors.surveying.	Able to explain the basics of surveying in general, basic calculation methods, and how to handle errors.
Achievement 2	Able to understand the outline of distance surveying, leveling, angular surveying, traverse surveying, and plane tabel surveying, and explain the basics and how to handle the measuring instruments with competence.	Able to understand the outline of distance surveying, leveling, angular surveying, traverse surveying, and plane tabel surveying, and explain the basics and how to handle measuring instruments.	Able to explain the overview of distance surveying, leveling, angular surveying, traverse surveying, and plane tabel surveying (basic information and how to handle measuring equipment).
Achievement 3	Able to work cooperatively in practical training, and measure and explain the results of distance, level, angular, traverse, and plane tabel surveying assignments to a specified level of accuracy.	Able to work cooperatively in practical training, and measure distance, level, angular, traverse, and plane tabel surveying tasks to a specified level of accuracy.	Able to work cooperatively in practical training, and perform basic measurements in distance, leveling, angular, traverse, and plane tabel surveying setups.
Achievement 4	Able to calculate and evaluate values obtained from distance, leveling, angular, traverse, and plane tabel surveying, etc., and then report results and prepare plan drawings.	Able to calculate values obtained from distance, leveling, angular, traverse, and plane tabel surveying, and report results and prepare plan drawings.	Able to perform basic processing of values obtained from distance, leveling, angular, traverse, and plane tabel surveys, and to report results and prepare plan drawings.
Achievement 5	Able to understand and explain contents of calculation methods of area and volume.	Able to understand and explain basic contents of calculation methods of area and volume.	Able to explain basic contents of calculation methods of area and volume.

Assigned Department Objectives

学習・教育到達度目標 B-2 学習・教育到達度目標 D-1 学習・教育到達度目標 E-2

Teaching Method

Outline	Surveying theory and Practice 1 is the study of quantfying and charting distances, angles, areas, volumes and other information, which is used land development, environment conservation and construction work. This course is a lecture-based course parallel to the pracice, and to aquire knowledge, application skills, problem-solving skills and self-learning abilities learing knowlege, techniques and caluclaction methods relayed to surveying. In this course, faculty member who was in charge of construction manegement at company use its experience to teach surveying in lecture-based.
Style	【61 hours of calss time +61 hours of practice time + final exam】
Notice	Absences are strictly prohibted as this course is exempt from the national examinations for registered surveyor and assistant registered surveyor. In case of unavoidable circumstances, the notice of absense must be submitted. This course is an imprtant course that directly leads to 'Surveying theory and Practice 1' in the third grade. In addition, students should always come to school prepared for both courses (lecture and practice), as courses may be altered depending on the progress of the practice, weather conditions.

Characteristics of Class / Division in Learning

☐ Active Learning	☐ Aided by ICT	☐ Applicable to Remote Class	☑ Instructor Professionally Experienced

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	Guidance Outline of surveying, Handling of calculation and error	Able to understand and explain the aim and significance of this course.
		2nd	Handling of calculation and error, Distance surveying	Able to explain significant figures, rounding of figures, least squares method. And, able to understand and explain the outline, classification, and instruments used in distance surveying.

		3rd	Distance surveying	Able to measure distances using a glass fiber tape and a steel tape. And able to explain and calculate the errors that can be caused by distance surveying.
		4th	Distance surveying	Able to understand and explain the method of distance survey using the electro-optical distance measuring instrument.
		5th	Leveling	Able to understand and explain the outline, classification, and instruments used in leveling.
		6th	Leveling	Able to understand and explain the calculation method of the error for leveling by elevating system.
		7th	Leveling	Able to understand and explain the calculation method of the error for leveling by instrumental-height system.
		8th	Midterm Exam, Leveling	Able to understand and explain the calculation method of the error for leveling by instrumental-height system.
	2nd Quarter	9th	Return of answer, Angular surveying	Able to understand and explain the outline, category and equipment of angular surveying.
		10th	Angular surveying	Able to understand and explain the outline, category and equipment of angular surveying.
		11th	Angular surveying	Able to explain angular surveying methods (single, double, and directional methods) and calculate angles. And, able to perform installing total stations and mesureing distance and angle using the total station.
		12th	Angular surveying	Able to explain angular surveying methods (single, double, and directional methods) and calculate angles. And, able to mesure angles by double method using the total station.
		13th	Angular surveying	Able to explain directional method and calculate angles. And, able to mesure angles by double method using the total station.
		14th	Angular surveying	Able to explain directional method and calculate angles. And, able to mesure angles by double method using the total station.
		15th	Traverse surveying	Able to explain directional method and calculate angles. And, able to mesure angles by double method using the total station.
		16th	Final exam, Return of answer	
2nd Semester	3rd Quarter	1st	Traverse surveying	Able to understand and explain the outline, classification, and instruments used in traverse surveying. And able to perform traverse surveying using a total station.
		2nd	Traverse surveying	Able to understand and calculate azimuth, directional angle, and bearing. And able to perform traverse surveying using a total station.
		3rd	Traverse surveying	Able to understand and calculate the closed traverse. And able to perform traverse surveying using a total station.
		4th	Traverse surveying	Able to understand and calculate the closed traverse. And able to perform traverse surveying using a total station.
		5th	Traverse surveying	Able to understand and calculate the fixed traverse. And able to perform traverse surveying using a total station.
		6th	Traverse surveying	Able to understand and calculate the error of closure and its ratio.
		7th	Traverse surveying	Able to understand and calculate the total latitude and departure, and the calculation method of area.
		8th	Midterm Exam, Traverse surveying	Able to drow the traverse from the results obtained.
	4th Quarter	9th	Return of answer, Plane table surveying	Able to understand and explain the outline, category and equipment of plane table surveying. And able to install and operate the plane table surveying euipments.
		10th	Plane table surveying	Able to understand and explain the method of plane table surveying. And able to draw geographic features on a drawing by using plane table surveying.
		11th	Plane table surveying	Able to understand and explain methods of plane table surveying(graphical traversing method, radiation method, intersection method).
		12th	Plane table surveying	Able to understand the calculation methods of the accuracy and error of plane table surveying and calculate them. And able to draw geographic features on a drawing by using plane table surveying.

		13th	Plane table surveying	Able to understand the calculation methods of the accuracy and error of plane table surveying and calculate them. And able to draw geographic features on a drawing by using plane table surveying.
		14th	Methods of area and volume	Able to understand the calculation methods of the area and volume, and calculate them.
		15th	Methods of area and volume	Able to understand the calculation methods of the area and volume, and calculate them.
		16th	Final exam, Return of answer	

Evaluation Method and Weight (%)

	Examination	Presentation	Mutual Evaluations between students	Behavior	Portfolio	Other	Total
Subtotal	50	0	40	10	0	0	100
Basic Proficiency	20	0	30	5	0	0	55
Specialized Proficiency	30	0	10	5	0	0	45
Cross Area Proficiency	0	0	0	0	0	0	0

Anan College	Year	2024	Course Title	Fundamental of Structural Mechanics

Course Information

Course Code	1812C04	Course Category	Specialized / Compulsory
Class Format	Lecture	Credits	School Credit: 1
Department	Course of Civil Engineering	Student Grade	2nd
Term	Second Semester	Classes per Week	後期:2
Textbook and/or Teaching Materials	Sakimoto Tatsuro : Kouzourikigaku Dai 2 han・Shinnsoubann Jou Seiteibann（Morikita Shuppann）		
Instructor	Moriyama Takuro		

Course Objectives

1. Able to perform calculations using force balance formulas and moment balance formulas.
2. Able to calculate reaction force of static beams.
3. Able to calculate sectional force and to draw section force diagram of static beams.

Rubric

	Ideal Level	Standard Level	Minimum Level
Achievement 1	Able to confimly perform calculations using force balance formulas and moment balance formulas .	Able to almost perform calculations using force balance formulas and moment balance formulas.	Able to understand calculation methods using force balance formulas and moment balance formulas.
Achievement 2	Able to confirmly to calculate reaction force of static beams.	Able to almost calculate reaction force of static beams.	Able to understand how to calculate reaction force of static beams.
Achievement 3	Able to calculate section force and to draw sectiononal force diagram on static beams confirmly.	Able to calculate sectiononal force and to draw section force diagram on static beams.	Able to understand how to calculate sectiononal force and to draw section force diagrams on static beams.

Assigned Department Objectives

学習・教育到達度目標 B-2 学習・教育到達度目標 B-3 学習・教育到達度目標 D-1

Teaching Method

Outline	Structural mechanics is a subject for learning the way of thinking necessary for designing structures safely, and is one of the most important subjects in the construction field. The purpose of this lecture is not only to develop the dynamics learned in physics and to understand the content of structural mechanics, but also to understand the concepts and calculation methods that will be the basis for general mechanics-related specialized subjects in the field of construction that will be studied in the future. I'm doing it.
Style	Classes are basically done on the blackboard. You may need to explain things that are not written in the textbook, so be sure to write down what you wrote on the board in your notebook. [Class time 30 hours]
Notice	In class, we will explain as many example problems as possible, and give practice problems as homework as needed. For examples and homework, please use paper and a pencil and try to understand the contents while thinking enough in your head. If you don't understand something, don't hesitate to ask.

Characteristics of Class / Division in Learning

☐ Active Learning	☐ Aided by ICT	☐ Applicable to Remote Class	☐ Instructor Professionally Experienced

Course Plan

			Theme	Goals
2nd Semester	3rd Quarter	1st	Force and moment	Able to understand calculation methods using force balance formulas and moment balance formulas.
		2nd	Force and moment	Able to understand calculation methods using force balance formulas and moment balance formulas.
		3rd	Force and moment	Able to understand calculation methods using force balance formulas and moment balance formulas.
		4th	Reaction force of static beam	Able to understand the types of support points, force and beams.
		5th	Reaction force of static beam	Able to calculate reaction forces of simple beams.
		6th	Reaction force of static beam	Able to calculate reaction forces of cantilever beams.
		7th	Reaction force of static beam	Able to calculate reaction forces of Gerber beams.
		8th	【Midterm examination】	
	4th Quarter	9th	Sectional force diagram of static beam	Able to culculae reaction force and sectional force of simple beam.
		10th	Sectional force diagram of static beam	Able to culculae reaction force and sectional force of cantilener beam.
		11th	Sectional force diagram of static beam	Able to culculae reaction force and sectional force of Gerber beam.
		12th	Sectional force diagram of static beam	Able to draw sectional force diagram of simple beam.
		13th	Sectional force diagram of static beam	Able to draw sectional force diagram of simple beam.
		14th	Sectional force diagram of static beam	Able to draw sectional force diagram of cantilever beam.

		15th	Sectional force diagram of static beam	Able to draw sectional force diagram of Gerber beam.
		16th	【Final examination】	

Evaluation Method and Weight (%)

	midterm/final exam	quiz	portfolio	presentation/attitude	other	Total
Subtotal	70	0	30	0	30	130
Basic Proficiency	35	0	15	0	15	65
Specialized Proficiency	35	0	15	0	15	65
Cross Area Proficiency	0	0	0	0	0	0

Anan College	Year	2024	Course Title	Architectural Planning 1

Course Information

Course Code	1812D01	Course Category	Specialized / Compulsory
Class Format	Lecture	Credits	School Credit: 2
Department	Course of Civil Engineering	Student Grade	2nd
Term	Year-round	Classes per Week	前期:2 後期:2
Textbook and/or Teaching Materials	(1) Architectural Planning for Housing (Gakugei Shuppansha), (2) Satoshi Irei's Housing Design (X-Knowledge), (3) How Wooden Houses are Made (X-Knowledge), (4) Illustration Easy Architectural Planning (Gakugei Shuppansha), (5) Compact Edition of Architectural History Japan and the West (Shokoku-sha), (6) Housing in Modern Times (Recruit Publications, Inc.		
Instructor	Tada Yutaka		

Course Objectives

1 To understand the basic dimensioning system and architectural predicates related to architectural planning
2 To understand the architectural plans for independent dwellings
3. To understand the architectural planning for housing complexes.
4 Understanding of architectural history of Japan and the West
5. To understand architectural planning for different types of buildings (educational, social, medical, commercial)

Rubric

	Ideal Level	Standard Level	Unacceptable Level
Achievement 1	80% or more accurate understanding of issues related to basic dimensional systems and architectural predicates involved in architectural planning.	70% or more accurate understanding of issues related to basic dimensional systems and architectural predicates involved in architectural planning.	60% or more accurate understanding of issues related to basic dimensional systems and architectural predicates involved in architectural planning.
Achievement 2	80% or more accurate understanding of the issues involved in the architectural planning of an independent dwelling.	70% or more accurate understanding of the issues involved in the architectural planning of an independent dwelling.	60% or more accurate understanding of the issues involved in the architectural planning of an independent dwelling.
Achievement 3	80% or more accurate understanding of issues related to architectural planning for multi-family housing.	70% or more accurate understanding of issues related to architectural planning for multi-family housing.	60% or more accurate understanding of issues related to architectural planning for multi-family housing.
Achievement 4	80% or more accurate understanding of Japanese and Western architectural history.	70% or more accurate understanding of Japanese and Western architectural history.	60% or more accurate understanding of Japanese and Western architectural history.
Achievement 5	80% or more accurate understanding of the issues involved in building planning by building type (educational, social, medical, commercial facilities).	70% or more accurate understanding of the issues involved in building planning by building type (educational, social, medical, commercial facilities).	60% or more accurate understanding of the issues involved in building planning by building type (educational, social, medical, commercial facilities).

Assigned Department Objectives

学習・教育到達度目標 A-1 学習・教育到達度目標 A-2 学習・教育到達度目標 B-1

Teaching Method

Outline	Students will learn the basic dimensional systems and architectural predicates involved in building planning. Students will learn about independent residences, apartment buildings, and other building types (educational, social, medical, and commercial). Students will learn about the history of architecture in Japan and the West. This course is taught by faculty members who have experience in architectural design in the corporate world.
Style	This class will be conducted in a lecture format. Group study may be conducted during the course of the class. Class hours: 60 hours
Notice	This course is a designated subject for the architectural examinations, and students who complete this course will have an advantage in the number of years of work experience and other qualifications to take the examinations. By repeating and learning "from the beginning to the end" from the second year to the fifth year, students can feel that they are acquiring technical, academic, and artistic skills year after year.

Characteristics of Class / Division in Learning

☑ Active Learning	☑ Aided by ICT	☐ Applicable to Remote Class	☑ Instructor Professionally Experienced

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	Dimension system used in construction	Understand the measurement system and modules. Understand the basic dimensions of the human body and the dimensions of movement. To understand the basic dimensions of the human body and its movements.
		2nd	Memorize architectural predicates	Students will memorize the names of basic building predicates such as roof shape, openings, floors, ceilings, insulation, etc., by looking at photographs and actual objects. The textbooks (1), (3), and (4).

		3rd	Memorize architectural predicates	Students will learn basic building predicates related to window lighting, ventilation, and privacy, and will be able to perform calculations related to lighting and ventilation. The textbook (3) and (4)
		4th	Memorize architectural predicates	Students will learn the names of basic construction predicates related to structural materials by looking at photographs and actual materials. The textbook (3) and (4)
		5th	Study the unit space of an independent house	To understand the basic layout of a modern dwelling. Understanding of the basic layout of a modern house. The textbook (4) and (5)
		6th	Study the unit space of an independent house	To understand the architectural planning of living room, kitchen and dining room. Textbooks (2) and (4)
		7th	Study the unit space of an independent house	This course is designed to provide students with an understanding of the living room in independent dwellings, an important aspect of modern architectural history, from an architectural planning perspective. Textbooks (5) and (6)
		8th	midterm examination	
	2nd Quarter	9th	Study the unit space of an independent house	To understand the architectural plans for bedrooms, children's rooms, sanitary rooms, and storage areas. Textbooks (2) and (4).
		10th	Study the unit space of an independent house	This course is designed to provide students with an understanding of the architectural planning aspects of private rooms in independent dwellings, an important element in the history of modern architecture. Textbooks (5) and (6)
		11th	Architectural plans for independent housing	To understand how to organize the given conditions (requirements, site, laws, etc.). Use textbooks (1) and (2).
		12th	Architectural plans for independent housing	To understand room zoning and scale planning. Use textbooks (1) and (2).
		13th	Architectural plans for independent housing	To understand the design planning of the exterior of the building. Textbooks (1) and (2)
		14th	Architectural plans for housing complexes	The students will understand room zoning and scale planning. Textbook (4)
		15th	Architectural plans for housing complexes	To understand how to express a plan plan into an elevation plan. Textbook (4)
		16th	Return of final examinations at the end of the first semester	
2nd Semester	3rd Quarter	1st	Understanding architectural works through architectural history	Students will learn about prehistoric life and architecture in Japan and the West. Textbook (5)
		2nd	Understanding architectural works through architectural history	Students will understand ancient life and architecture in Japan and the West. Students will understand ancient life and buildings in Japan and the West. Textbook (5)
		3rd	Understanding architectural works through architectural history	Students will understand medieval life and architecture in Japan and the West. Students will understand the history of Japanese architecture in terms of temple architecture, and the history of Western architecture in terms of Romanesque and Gothic architecture. Textbook (5)
		4th	Understanding architectural works through architectural history	Students will learn about life and architecture in Japan in the early modern period. In the history of Japanese architecture, students will understand Shoin-zukuri, Sukiya-zukuri, Machiya, Farmhouse, and Castle architecture. Textbook (5)
		5th	Understanding architectural works through architectural history	Students will understand life and architecture in the early modern period in the West. In the history of Western architecture, students will understand Renaissance, Baroque, and Neoclassicism. Textbook (5)
		6th	Understanding architectural works through architectural history	Understanding of modern life and architecture in Japan and the West (up to the prewar period). Students will understand urban problems, Art Nouveau, the modern architecture movement (modernism), hired foreigners, and the birth of Japanese architects. Textbook (5)

		7th	Understanding architectural works through architectural history	To understand modern life and architecture in Japan and the West (postwar). Understanding of postwar reconstruction and postmodernism. Textbook (5)
		8th	midterm examination	
	4th Quarter	9th	Learn about building plans by building type	Students will understand the laws and regulations governing the establishment of elementary schools, the purpose of facilities, the basic number of facilities, zoning, architectural plans for unit spaces, and actual works of architecture. Textbook (4)
		10th	Learn about building plans by building type	Students will understand the architectural planning of kindergartens and nursery schools, including the laws and regulations governing the establishment of facilities and their purposes, the basic number of facilities, zoning, architectural planning of unit spaces, and actual works of art. Textbook (4)
		11th	Learn about building plans by building type	Students will understand the architectural planning of libraries, including the laws and regulations governing the establishment of facilities and their purposes, the basic number of facilities, zoning, architectural planning of unit spaces, and actual works. Textbook (4)
		12th	Learn about building plans by building type	Students will understand the laws and regulations governing the establishment of museums, their purpose, the basic number of facilities, zoning, architectural planning of unit spaces, and actual works of art. Textbook (4)
		13th	Learn about building plans by building type	Students will understand the laws and regulations governing the establishment of hospitals, their purposes, the basic number of facilities, zoning, architectural plans for unit spaces, and actual works of art. Textbook (4)
		14th	Learn about building plans by building type	Students will understand the laws and regulations governing the establishment of commercial facilities and their purposes, the basic number of facilities, zoning, architectural planning of unit spaces, and actual works. Textbook (4)
		15th	Learn about building plans by building type	Students will learn about the architectural planning of office buildings, including the laws and regulations governing the establishment of facilities and their purposes, the basic number of facilities, zoning, architectural planning of unit spaces, and actual works. Textbook (4)
		16th	Return of final examinations at the end of the first semester	

Evaluation Method and Weight (%)

	Examination	Quiz	Portfolio	Presentation and Attitude		Other	Total
Subtotal	50	25	25	0	0	0	100
Basic Proficiency	20	0	0	0	0	0	20
Specialized Proficiency	30	25	25	0	0	0	80
Cross Area Proficiency	0	0	0	0	0	0	0

Anan College	Year	2024	Course Title	Fundamental of Civil Engineering

Course Information

Course Code	1812T02	Course Category	Specialized / Compulsory
Class Format	Lecture	Credits	School Credit: 1
Department	Course of Civil Engineering	Student Grade	2nd
Term	First Semester	Classes per Week	前期:2
Textbook and/or Teaching Materials	Kouzourikigaku dai 2 han shinsouban jyou seiteihen (Morikita Publishing Co., Ltd.)		
Instructor	Inoue Takafumi		

Course Objectives

1. Able to calculate units correctly.
2. Able to perform calculations required in the field of construction engineering.
3. Able to perform calculations using force composition and decomposition.

Rubric

	Ideal Level	Standard Level	Minimum Level
Achievement 1	Able to definitely ask for the unit.	Able to almost find the unit.	Able to understand how to find the units.
Achievement 2	Able to reliably perform calculations required in the field of construction engineering.	Able to do most of the calculations required in the field of construction engineering.	Able to understand calculations required in the field of construction engineering.
Achievement 3	Able to reliably perform calculations using force composition and decomposition.	Able to almost do calculations using force composition and decomposition.	Able to understand calculation methods using force composition and decomposition.

Assigned Department Objectives

学習・教育到達度目標 B-2 学習・教育到達度目標 B-3 学習・教育到達度目標 D-1

Teaching Method

Outline	From weeks 1 to 10, you will learn the basic things you will need to study specialized subjects in the field of construction engineering. In the future, you will be studying various subjects in the construction field, but these will be common items regardless of the subject. From weeks 11 to 15, students will learn the basics of structural mechanics, which is the basis for all specialized mechanics subjects in the construction field. The goal is to develop the mechanics learned in physics and to understand the basic concepts and calculation methods of structural mechanics.
Style	Classes are basically written on the blackboard. We may explain content that is not written in the textbook, so please be sure to write down what you have written on the board in your notebook.
Notice	In class, we will explain as many examples as possible, and if necessary, we will give you practice problems as homework. Please use paper and pencil to answer example questions and homework while thinking carefully on your own, and try to understand the content. If you don't understand something, please feel free to ask.

Characteristics of Class / Division in Learning

☐ Active Learning	☐ Aided by ICT	☐ Applicable to Remote Class	☐ Instructor Professionally Experienced

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	unit system	Able to understand the unit system and to convert units.
		2nd	unit system	Able to understand the unit system and to convert units.
		3rd	unit system	Able to understand the unit system and to convert units.
		4th	unit system	Able to understand the unit system and to convert units.
		5th	calculation practice	Acquire the computational skills required in the field of construction engineering.
		6th	calculation practice	Acquire the computational skills required in the field of construction engineering.
		7th	calculation practice	Acquire the computational skills required in the field of construction engineering.
		8th	midterm exam	
	2nd Quarter	9th	calculation practice	Acquire the computational skills required in the field of construction engineering.
		10th	calculation practice	Acquire the computational skills required in the field of construction engineering.
		11th	What is structural mechanics? force and moment	Able to understand an overview of structural mechanics. Able to understand the three elements of force, basic principles, and the concept of moment.
		12th	force and moment	Able to understand the three elements of force, basic principles, and the concept of moment.
		13th	force and moment	Able to perform calculations using force composition and decomposition.
		14th	force and moment	Able to perform calculations using force composition and decomposition.

		15th	force and moment	Able to perform calculations using force composition and decomposition.
		16th	Answer return	

Evaluation Method and Weight (%)

	Examination	Presentation	Mutual Evaluations between students	Behavior	Portfolio	Other	Total
Subtotal	70	0	0	0	30	0	100
Basic Proficiency	35	0	0	0	15	0	50
Specialized Proficiency	35	0	0	0	15	0	50
Cross Area Proficiency	0	0	0	0	0	0	0

Anan College	Year	2024	Course Title	Basic Practice in Civil Engineering

Course Information

Course Code	1813601	Course Category	Specialized / Compulsory
Class Format	Seminar	Credits	School Credit: 2
Department	Course of Civil Engineering	Student Grade	3rd
Term	Year-round	Classes per Week	前期:2 後期:2
Textbook and/or Teaching Materials	The teacher distributes documents and data		
Instructor	Osada Kengo,Kagemasa Shuka		

Course Objectives

1. Able to use the essential functions of Word, Excel, and PowerPoint.
2. Able to explain that many algorithms for a helpful solution exist to one problem.
3. Able to develop and run a simulation program that fits a given problem and can obtain simulation results.

Rubric

	Ideal Level	Standard Level	Minimum Level
Course Objective 1	Able to use the various functions of Word, Excel, and PowerPoint.	Able to use the essential functions of Word, Excel, and PowerPoint.	Able to use a little function of Word, Excel, and PowerPoint.
Course Objective 2	Able to explain enough that many algorithms for a helpful solution exist to one problem.	Able to explain that many algorithms for a helpful solution exist to one problem.	Able to slightly explain that many algorithms for a helpful solution exist to one problem.
Course Objective 3	Able to develop properly and run a simulation program that fits a given problem and can obtain simulation results.	Able to develop and run a simulation program that fits a given problem and can obtain simulation results.	For a learner, it is challenging to develop and run a simulation program that fits a given problem.

Assigned Department Objectives

学習・教育到達度目標 B-4 学習・教育到達度目標 D-1

Teaching Method

Outline	Students study fundamental functions of Word, Excel, and PowerPoint that are crucial for jobs and research in the future through some problems: data processing, making figures, and making documents. Moreover, students learn how to develop and run calculation programs through some problems.
Style	The teacher distributes documents and data on problem. The teacher evaluates academic results based on portfolios submitted by students. (The learning time: 60 hours)
Notice	

Characteristics of Class / Division in Learning

☐ Active Learning	☐ Aided by ICT	☐ Applicable to Remote Class	☐ Instructor Professionally Experienced

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	Orientation Document making using Word	Able to draw up the document
		2nd	Document making using Word	Able to draw up the document
		3rd	Document making using Word Making PDF file	Able ton draw up the document Able to change the Word file to a PDF file
		4th	Document making using Word Making PDF file	Able to draw up the document Able to change the Word file to a PDF file
		5th	Document making using Word Making PDF file	Able to draw up the document Able to change the Word file to a PDF file
		6th	The calculation, data processing, and making of figures using Excel	Able to calculate, process data, and make figures using Excel
		7th	The calculation, data processing, and making of figures using Excel	Able to calculate, process data, and make figures using Excel
		8th	The calculation, data processing, and making of figures using Excel	Able to calculate, process data, and make figures using Excel
	2nd Quarter	9th	The calculation, data processing, and making of figures using Excel	Able ton calculate, process data, and make figures using Excel
		10th	The calculation, data processing, and making of figures using Excel Making documents using PowerPoint	Able to calculate, process data, and make figures using Excel Able to understand the handling methods of PowerPoint
		11th	The calculation, data processing, and making of figures using Excel Making documents using PowerPoint	Able to calculate, process data, and make figures using Excel Able ton understand the handling methods of PowerPoint
		12th	The calculation, data processing, and making of figures using Excel Making documents using PowerPoint	Able to calculate, process data, and make figures using Excel Able ton understand the handling methods of PowerPoint

		13th	The calculation, data processing, and making of figures using Excel Making documents using PowerPoint	Able to calculate, process data, and make figures using Excel Able to understand the handling methods of PowerPoint
		14th	The calculation, data processing, and making of figures using Excel Making documents using PowerPoint	Able to calculate, process data, and make figures using Excel Able to understand the handling methods of PowerPoint
		15th	The calculation, data processing, and making of figures using Excel Making documents using PowerPoint	Able to calculate, process data, and make figures using Excel Able to understand the handling methods of PowerPoint
		16th		
2nd Semester	3rd Quarter	1st	Outline of programming language Foundation of a simulation program The practice of developing and running a simulation program	Able to understand that there are various programming languages Able to understand the foundation of a simulation program Able to understand the foundation of developing and running a simulation program
		2nd	The practice of developing and running a simulation program	Able to understand the foundation of developing and running a simulation program
		3rd	The practice of developing and running a simulation program	Able to understand the foundation of developing and running a simulation program
		4th	The practice of developing and running a simulation program	Able to develop and run a simulation program Able to obtain simulation results for given problem
		5th	The practice of developing and running a simulation program Problem 1 of developing and running a simulation program	Able to develop and run a simulation program Able to obtain simulation results for given problem
		6th	Problem 1 of developing and running a simulation program	Able to develop and run a simulation program Able to obtain simulation results for given problem
		7th	Problem 1 of developing and running a simulation program	Able to develop and run a simulation program Able to obtain simulation results for given problem
		8th	Problem 1 of developing and running a simulation program Problem 2 of developing and running a simulation program	Able to develop and run a simulation program Able to obtain simulation results for given problem
	4th Quarter	9th	Problem 2 of developing and running a simulation program	Able to develop and run a simulation program Able to obtain simulation results for given problem
		10th	Problem 2 of developing and running a simulation program	Able to develop and run a simulation program Able to obtain simulation results for given problem
		11th	Problem 2 of developing and running a simulation program	Able to develop and run a simulation program Able to obtain simulation results for given problem
		12th	Problem 3 of developing and running a simulation program	Able to develop and run a simulation program Able to obtain simulation results for given problem
		13th	Problem 3 of developing and running a simulation program	Able to develop and run a simulation program Able to obtain simulation results for given problem
		14th	Problem 3 of developing and running a simulation program	Able to develop and run a simulation program Able to obtain simulation results for given problem
		15th	Problem 3 of developing and running a simulation program	Able to develop and run a simulation program Able to obtain simulation results for given problem
		16th		

Evaluation Method and Weight (%)

	Midterm/Final Exam	Quiz	Portfolio	Presentation/Attitude	Other	Total
Subtotal	0	0	100	0	0	100
Basic Proficiency	0	0	20	0	0	20
Specialized Proficiency	0	0	80	0	0	80
Cross Area Proficiency	0	0	0	0	0	0

Anan College	Year	2024	Course Title	Surveying 2

Course Information

Course Code	1813A01	Course Category	Specialized / Compulsory
Class Format	Lecture	Credits	School Credit: 2
Department	Course of Civil Engineering	Student Grade	3rd
Term	Year-round	Classes per Week	前期:2 後期:2
Textbook and/or Teaching Materials	Revised Surveying I (Corona Publishing Co., Ltd.), Revised Surveying II (Corona Publishing Co., Ltd.)		
Instructor	Tada Yutaka,Inoue Takafumi		

Course Objectives

1. To be able to explain the methods of topographic surveying. Explain the properties and use of contour lines.
2. To be able to explain monocentric curves, easing curves, and longitudinal curves related to line surveying.
3 Explain the principles and methods of photogrammetric surveying.
4 Explain the principles of GNSS wave length quantification.
5. To be able to explain the principle of the least square method and to be able to perform calculations considering the principle.

Rubric

	Ideal Level	Standard Level	Unacceptable Level
Achievement 1	Understand topographic surveying and be able to adapt it to various problems.	Understand and explain topographical surveying.	Understand the fundamentals of topographic surveying.
Achievement 2	Understand the content related to curve and and klothoiden curve and be adapt it to various problems.	Understand single curve and and klothoiden curve, and perform the calculations necessary for curve installation.	Understand curve and and klothoiden curve, and various calculation methods.
Achievement 3	Understand photogrammetry and be able to adapt it to various problems.	Understand photogrammetry and be able to perform basic calculations.	Understand photogrammetry.
Achievement 4	Understand GNSS surveying and GIS and be able to adapt to various problems.	Understand and explain the principles of GNSS and GIS.	Understand the fundamentals of GNSS and GIS.
Achievement 5	Understand the principle of the least-squares method and apply it to various problems.	Understand and explain the principle of the least-squares method.	Understand the least-squares method.

Assigned Department Objectives

学習・教育到達度目標 B-2

Teaching Method

Outline	Maps obtained from surveying serve as the basic data for planning and execution of many construction structures that support the foundation of social activities. This course applies the basic knowledge of Surveying 1 and Surveying Practice 1 acquired in the second year of the course.
Style	Lectures will provide an overview of each survey and basic knowledge and calculation methods. Practical training will include many hands-on exercises to increase understanding of the surveying content.
Notice	Knowledge of Surveying 1 and Surveying Practice 1 from the second year is required. Therefore, students should thoroughly review and understand the subject. Note that mastery of this subject is a prerequisite for the Assistant Professional Surveyor certification.

Characteristics of Class / Division in Learning

☑ Active Learning	☑ Aided by ICT	☐ Applicable to Remote Class	☑ Instructor Professionally Experienced

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	Surveying Classification, Laws and Regulations Triangulation	Explain surveying systems (e.g., Control point) Understand triangulation
		2nd	Ttriangulation	Understand triangulation Understand angular eccentricity correction
		3rd	Ttriangulation	Understand triangulation Understand angular eccentricity correction
		4th	Topographical survey	Understand the terminology involved in topographical surveying
		5th	Topographical survey	Understand topographic surveying methods Explain the nature of contour lines and how to use them
		6th	Topographical survey	Understand topographic surveying methods Explain the nature of contour lines and how to use them
		7th	Topographical survey	Understand topographic surveying methods Explain the nature of contour lines and how to use them
		8th	Midterm examination	
	2nd Quarter	9th	Route survey	Explain curves
		10th	Route survey	Explain curves
		11th	Route survey	Explain curves
		12th	Route survey	Explain klothoid curves

		13th	Route survey	Explain klothoid curves
		14th	Route survey	Explain longitudinal curves
		15th	Route survey	Explain longitudinal curves
		16th	Exam Return	
2nd Semester	3rd Quarter	1st	Photographic surveying	Explain the principles and methods of photogrammetry
		2nd	Photographic surveying	Explain the principles and methods of photogrammetry
		3rd	Photographic surveying	Explain the principles and methods of photogrammetry
		4th	Photographic surveying	Explain the principles and methods of photogrammetry
		5th	Photographic surveying	Explain the principles and methods of photogrammetry
		6th	Photographic surveying	Explain the principles and methods of photogrammetry
		7th	Photographic surveying	Explain the principles and methods of photogrammetry
		8th	Midterm examination	
	4th Quarter	9th	GNSS surveying	Explain the principles of GNSS surveying
		10th	GNSS surveying	Explain the principles of GNSS surveying
		11th	GNSS surveying	Explain the principles of GNSS surveying
		12th	GNSS surveying	Explain the principles of GNSS surveying
		13th	River surveying	Understand the surveying of river topography Understand flow observation and flow calculation methods
		14th	Random number theory	Explain the principle of the least-squares method and perform calculations taking it into account
		15th	Random number theory	Explain the principle of the least-squares method and perform calculations taking it into account
		16th	Exam Return	

Evaluation Method and Weight (%)

	Examination	Quiz	Portfolio				Total
Subtotal	60	20	20	0	0	0	100
Basic Proficiency	20	10	10	0	0	0	40
Specialized Proficiency	40	10	10	0	0	0	60
Cross Area Proficiency	0	0	0	0	0	0	0

Anan College	Year	2024	Course Title	Structural Mechanics 1

Course Information

Course Code	1813C02	Course Category	Specialized / Compulsory
Class Format	Lecture	Credits	School Credit: 2
Department	Course of Civil Engineering	Student Grade	3rd
Term	Year-round	Classes per Week	前期:2 後期:2
Textbook and/or Teaching Materials	Kouzourikigakudai2han・shinnsoubann jyou seiteibann（Morikita syuppann）		
Instructor	Inoue Takafumi		

Course Objectives

1 It is possible to obtain the fulcrum reaction force and sectional force of the static rigid frame, and to be able to draw a sectional force diagram.
2 Be able to draw a line of influence that is statically determined.
3 In a static truss, the fulcrum reaction force and member force can be obtained, and the line of influence can be drawn.
4 Able to perform calculations using Hooke's law and stress and strain.
5 Able to calculate cross-sectional quantities such as cross-sectional moment of inertia.

Rubric

	Ideal Level	Standard Level	Minimum Level
Achievement 1	A level at which the fulcrum reaction force and cross-sectional force of a static rigid frame can be obtained, and the cross-sectional force diagram can be drawn accurately.	At a level where the fulcrum reaction force and cross-section force of a static rigid frame can be almost obtained, and a cross-section force diagram can be drawn.	At a level where you can almost determine the fulcrum reaction force and section force of a static rigid frame and understand how to draw a section force diagram.
Achievement 2	Level at which the lines of influence of statically determined beams can be accurately drawn.	The level at which the shape of the line of influence of static beams can be drawn.	A level at which you can understand how to draw the influence line of a static fixed beam.
Achievement 3	A level at which the fulcrum reaction force and member force can be obtained for a static truss, and the line of influence can be drawn accurately.	At a statically determined truss, the fulcrum reaction force and member force can be almost obtained, and the shape of the line of influence can be drawn.	Ability to determine fulcrum reaction force and member force in a static truss, and to understand how to draw influence lines.
Achievement 4	A level at which the elongation and axial force of a member can be accurately determined using Hooke's law and stress and strain.	A level at which the elongation and axial force of a member can be approximately determined using Hooke's law and stress and strain.	Ability to understand how to determine the elongation and axial force of members using Hooke's law and stress and strain.
Achievement 5	A level that can accurately calculate cross-sectional quantities such as geometrical moment of inertia.	A level that can almost calculate the cross-sectional quantity such as the moment of inertia of the cross-section.	Ability to understand how to calculate cross-sectional quantities such as moment of inertia.

Assigned Department Objectives

学習・教育到達度目標 B-2

Teaching Method

Outline	This lecture is a continuation of the 2nd year Basic Structural Mechanics. First, we will learn about concepts such as stress and strain and how to calculate cross-sectional properties such as moment of inertia. In addition, students will learn how to think about and calculate cross-sectional forces for structures that model actual structures such as beams, trusses, and rigid frames. In order to deepen understanding, we plan to conduct exercises during class.
Style	Classes are basically written on the blackboard. You may need to explain content that is not included in the textbook, so please write down what you have written on the board in your notebook.
Notice	In class, we explain as many example problems as possible, and practice problems are given as homework as necessary. For examples and homework, please use paper and a pencil and try to understand the contents while thinking enough in your head. Since the amount of calculation will increase, please carefully transform the formula properly so as not to make a mistake.

Characteristics of Class / Division in Learning

☐ Active Learning	☐ Aided by ICT	☐ Applicable to Remote Class	☐ Instructor Professionally Experienced

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	Sectional force diagram of static rigid frame	Able to understand the types of static rigid frame and find the fulcrum reaction force and sectional force.
		2nd	Sectional force diagram of static rigid frame	Able tocalculate the fulcrum reaction force and section force of a static rigid frame, and draw a section force diagram.
		3rd	Sectional force diagram of static rigid frame	Able tocalculate the fulcrum reaction force and section force of a static rigid frame, and draw a section force diagram.
		4th	Influence line of statically determined beam	A function of the line of influence of the statically determined beam can be calculated and the line of influence can be drawn.

		5th	Influence line of statically determined beam	A function of the line of influence of the statically determined beam can be calculated and the line of influence can be drawn.
		6th	Influence line of statically determined beam	A function of the line of influence of the statically determined beam can be calculated and the line of influence can be drawn.
		7th	Influence line of statically determined beam	The line of influence value can be used to calculate the fulcrum reaction force and sectional force of a statically defined beam.
		8th	Midterm exam	
	2nd Quarter	9th	Member force of static truss	Understand the types of trusses and their stability and instability.
		10th	Member force of static truss	The member force of a statically determinant truss can be obtained using the nodal method.
		11th	Member force of static truss	Member forces of statically deterministic trusses can be obtained using the nodal method.
		12th	Member force of static truss	Member forces of statically deterministic trusses can be obtained using the nodal method.
		13th	Member force of static truss	The member force of a statically determinate truss can be obtained using the section method.
		14th	Member force of static truss	The member force of a statically determinate truss can be obtained using the section method.
		15th	Final exam	
		16th	Answer return	
2nd Semester	3rd Quarter	1st	Static truss line of influence	Able to draw the line of influence of a static truss.
		2nd	Static truss line of influence	Able to draw the line of influence of a static truss.
		3rd	Static truss line of influence	Able to draw the line of influence of a static truss.
		4th	Stress and Strain	Able to understand stress, strain, elastic modulus, and Poisson's ratio.
		5th	Stress and Strain	
		6th	Stress and Strain	Able to obtain the elongation and axial force of a member using Hooke's law and the concept of stress and strain.
		7th	Stress and strain	Hooke's law and the concept of stress and strain can be used to obtain the elongation and axial force of a member.
		8th	late midterm exam	
	4th Quarter	9th	Cross Sectional Quantities	Understand the bending stress and neutral axis of beams.
		10th	Cross Sectional Quantities	Able to understand the primary moment of cross section and the centroid, and determine the position of the centroid.
		11th	Sectional Quantities	Able to understand geometrical moment of inertia and section modulus.
		12th	Sectional Quantities	Able to obtain the geometrical moment of inertia of a simple figure.
		13th	Sectional Quantities	Able to obtain the moment of inertia of a collective figure.
		14th	Sectional Quantities	Able to obtain the moment of inertia of a group of figures.
		15th	Year end exam	
		16th	Answer return	

Evaluation Method and Weight (%)

	midterm/final exam	quiz	portfolio	presentation/attitude	other	Total
Subtotal	70	0	30	0	30	130
Basic Proficiency	35	0	15	0	15	65
Specialized Proficiency	35	0	15	0	15	65
Cross Area Proficiency	0	0	0	0	0	0

Anan College	Year	2024	Course Title	Soil Mechanics

Course Information

Course Code	1813D01	Course Category	Specialized / Compulsory
Class Format	Lecture	Credits	School Credit: 2
Department	Course of Civil Engineering	Student Grade	3rd
Term	Year-round	Classes per Week	前期:2 後期:2
Textbook and/or Teaching Materials	Soil Engineering (Akagi Tomoyuki et. al, CORONA PUBLISHING CO., LTD.)		
Instructor	Yoshimura Hiroshi		

Course Objectives

1. Understand the basic properties of soil and be able to calculate the physical quantities of soil.
2. Understand the mechanism of soil compaction and be able to create the compaction curve.
3. Understand the stress of the ground and be able to obtain the effective stress and the pore water pressure.
4. Understand the permeability in the ground and be able to calculate the flow rate in the ground.
5. Understand the consolidation characteristics of soil and be able to calculate the amount of ground settlement and settlement time.
6. Understand the shear strength of soil and be able to calculate the shear strength of soil.

Rubric

	Ideal Level	Standard Level	Minimum Level
Achievement 1	The basic properties of soil can be properly explained, and the physical quantities of soil can be calculated.	The basic properties of soil can be understood, and the physical quantities of soil can be calculated.	The basic properties of soil can be understood.
Achievement 2	The mechanism of soil compaction can be properly explained, and the compaction curve can be created.	The mechanism of soil compaction can be understood, and the compaction curve can be created.	The mechanism of soil compaction can be understood.
Achievement 3	The stress of the ground can be properly explained, and the effective stress and the pore water pressure can be obtained.	The stress of the ground can be understood, and the effective stress and the pore water pressure can be obtained.	The stress of the ground can be understood.
Achievement 4	The permeability in the ground can be properly explained, and the flow rate in the ground can be calculated.	The permeability in the ground can be understood, and the flow rate in the ground can be calculated.	The permeability in the ground can be understood.
Achievement 5	The consolidation characteristics of soil can be properly explained, and the amount of ground settlement and settlement time can be calculated.	The consolidation characteristics of soil can be understood, and the amount of ground settlement and settlement time can be calculated.	The consolidation characteristics of soil can be understood.
Achievement 6	The shear strength of soil can be properly explained, and the shear strength of soil can be calculated.	The shear strength of soil can be understood, and the shear strength of soil can be calculated.	The shear strength of soil can be understood.

Assigned Department Objectives

学習・教育到達度目標 D-1

Teaching Method

Outline	Construction work always involves working with soil. And there are many scenes of work related to soil.Therefore, it is important for the construction engineer to understand the properties of soil and make use of them in design and construction work. The purpose of this class is to understand the engineering properties of soil through examples of its use. In this course, instructor who have been in charge of research and development related to geotechnical engineering at construction company will use their experience to give lectures.
Style	This class will be mainly lecture-style, but you will need to prepare a scientific calculator because you will do exercises as needed. [60 class hours]
Notice	The process of solving the exercises will also promote understanding, so solve the exercises repeatedly. Also, carefully observe the construction work going on around you, and compare the textbook with the real thing as much as possible.

Characteristics of Class / Division in Learning

☐ Active Learning	☐ Aided by ICT	☑ Applicable to Remote Class	☑ Instructor Professionally Experienced

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	Soil generation and the basic properties of soil	Ground generation can be explained.
		2nd	Soil generation and the basic properties of soil	Method of ground survey can be explained.
		3rd	Soil generation and the basic properties of soil	Physical quantities of soil can be calculated.
		4th	Soil generation and the basic properties of soil	Grain size and Grain size distribution can be explained.
		5th	Soil generation and the basic properties of soil	Consistency of soil can be explained.
		6th	Soil compaction characteristics	Compaction curve can be created.
		7th	Soil compaction characteristics	Compaction characteristics of soil can be understood.

		8th	Midterm examination	
	2nd Quarter	9th	Ground stress	Vertical stress and overburden pressure of the ground can be obtained.
		10th	Ground stress	Effective stress and pore water pressure can be calculated.
		11th	Water flow in the ground	Head and water flow can be explained.
		12th	Water flow in the ground	Darcy's Law can be explained.
		13th	Water flow in the ground	Permeability test can be explained.
		14th	Water flow in the ground	Flow net can be explained
		15th	Water flow in the ground	Seepage water pressurecan be calculated.
		16th	Return of the final examination	
2nd Semester	3rd Quarter	1st	Consolidation	Concept of compaction phenomenon of saturated clay can be understood.
		2nd	Consolidation	Compressive properties of soil can be understood.
		3rd	Consolidation	Outline of one-dimensional consolidation theory can be understood.
		4th	Consolidation	Solution of one-dimensional consolidation equations can be understood.
		5th	Consolidation	Degree of consolidation can be understood.
		6th	Consolidation	Consolidation test method can be understood.
		7th	Consolidation	Consolidation settlement and consolidation time can be calculated
		8th	Midterm examination	
	4th Quarter	9th	Shear strength of soil	Outline of destruction and strength of soil can be understood.
		10th	Shear strength of soil	Method of direct shear test can be understood.
		11th	Shear strength of soil	Method of tri-axial compression test can be understood.
		12th	Shear strength of soil	Method of unconfined compression test can be understood.
		13th	Shear strength of soil	Drainage conditions for cohesive soil can be understood.
		14th	Shear strength of soil	Shear properties of sand can be understood.
		15th	Shear strength of soil	Dynamic properties of soil can be understood.
		16th	Return of the final examination	

Evaluation Method and Weight (%)

	Midterm/final exam.	Quiz	Portfolio	Presentation/attitude	Other	Total
Subtotal	70	10	20	0	0	100
Basic Proficiency	0	0	0	0	0	0
Specialized Proficiency	70	10	20	0	0	100
Cross Area Proficiency	0	0	0	0	0	0

Anan College	Year	2024	Course Title	Hydraulics

Course Information

Course Code	1813E01	Course Category	Specialized / Compulsory
Class Format	Lecture	Credits	School Credit: 2
Department	Course of Civil Engineering	Student Grade	3rd
Term	Year-round	Classes per Week	前期:2 後期:2
Textbook and/or Teaching Materials	PEL水理学　実教出版		
Instructor	Osada Kengo		

Course Objectives

1. Able to explain important technical terms in Hydraulics (Laminar flow, Turbulent flow, Subcritical flow, Supercritical flow, and so on).
2. Able to understand and calculate hydrostatic pressure, pressure application point, and buoyancy.
3. Able to understand the continuity equation, Bernoulli equation, and equation of momentum and perform calculations using these equations.
4. Able to understand the Bernoulli equation considering energy loss in the pipeline and calculate pipe flow under various conditions.

Rubric

	Ideal Level	Standard Level	Minimum Level
Course Objective 1	Able to thoroughly explain the important technical terms in Hydraulics (Laminar flow, Turbulent flow, Subcritical flow, Supercritical flow, and so on).	Able to explain the important technical terms in Hydraulics (Laminar flow, Turbulent flow, Subcritical flow, Supercritical flow, and so on).	Able to explain some important technical terms in Hydraulics.
Course Objective 2	Able to thoroughly understand and calculate hydrostatic pressure, pressure application point, and buoyancy.	Able to understand and calculate hydrostatic pressure, pressure application point, and buoyancy.	Able to have some ability to calculate hydrostatic pressure, pressure application point, and buoyancy.
Course Objective 3	Able to thoroughly understand the continuity equation, Bernoulli equation, and equation of momentum and perform calculations using these equations.	Able to understand the continuity equation, Bernoulli equation, and equation of momentum and perform calculations using these equations.	Able to have some ability to calculate using the continuity equation, Bernoulli equation, and equation of momentum.
Course Objective 4	Able to thoroughly understand the Bernoulli equation considering energy loss in the pipeline and calculate pipe flow under various conditions.	Able to understand the Bernoulli equation considering energy loss in the pipeline and calculate pipe flow under various conditions.	Able to slightly understand the Bernoulli equation considering energy loss in the pipeline and calculate pipe flow under various conditions.

Assigned Department Objectives

学習・教育到達度目標 B-2 学習・教育到達度目標 B-3 学習・教育到達度目標 D-1

Teaching Method

Outline	In this class, students learn the basic properties of water, the hydrostatic pressure, the continuity equation, the equation of motion, the theory of pipe flow, and the calculation method of pipe flow under various conditions.
Style	This class conducts many problems to better understand important technical terms and calculation methods in addition to lectures. (The learning time: 60 hours)
Notice	Please bring a calculator each time to conduct computational problem.

Characteristics of Class / Division in Learning

☐ Active Learning	☐ Aided by ICT	☑ Applicable to Remote Class	☐ Instructor Professionally Experienced

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	Units and dimensions	Able to explain units used in hydraulics.
		2nd	Basic properties of water	Able to explain basic properties of water.
		3rd	Hydrostatic pressure Measurement of hydrostatic pressure	Able to explain strength and direction of hydraulics pressure. Able to explain the measurement of hydraulics pressure.
		4th	Measurement of hydrostatic pressure Water hydraulic equipment	Able to explain the measurement of hydraulics pressure. Able to explain the Pascal's principle.
		5th	Hydrostatic pressure that acts on a plane surface	Able to calculate strength and application point of hydraulics pressure that acts on a plane surface.
		6th	Hydrostatic pressure that acts on a curved surface	Able to calculate strength and application point of hydraulics pressure that acts on a curved surface.
		7th	Hydrostatic pressure that acts on a curved surface	Able to calculate strength and application point of hydraulics pressure that acts on a curved surface.
		8th	Midterm examination	
	2nd Quarter	9th	Buoyancy	Able to understand the Archimedes' principle. Able to calculate the buoyancy.
		10th	Stability of floating body	Able to calculate the stability of floating body.
		11th	Stability of floating body	Able to calculate the stability of floating body.

		12th	Basic of flow	Able to understand important words and types of flow.
		13th	Basic of flow Continuity equation	Able to explain laminar and turbulent flows. Able to understand the continuity equation.
		14th	Bernoulli's theorem	Able to understand the Bernoulli's theorem.
		15th	Bernoulli's theorem Euler's momentum equation	Able to understand the Bernoulli's theorem. Able to understand the Euler's momentum equation.
		16th	Return of final examination	
2nd Semester	3rd Quarter	1st	Application of Bernoulli's theorem	Able to calculate using the Bernoulli's theorem.
		2nd	Application of Bernoulli's theorem	Able to calculate using the Bernoulli's theorem.
		3rd	Momentum equation	Able to understand the momentum equation.
		4th	Application of momentum equation	Able to calculate using the momentum equation.
		5th	Application of momentum equation	Able to calculate using the momentum equation.
		6th	Orifice Weir	Able to understand various weirs.
		7th	Orifice Weir	Able to understand various weirs.
		8th	Midterm examination	
	4th Quarter	9th	Shear stress Velocity distribution of laminar flow	Able to understand the velocity distribution of laminar flow.
		10th	Velocity distribution of turbulent flow	Able to understand the velocity distribution of turbulent flow.
		11th	Friction loss of pipeline flow Mean velocity formula	Able to understand friction loss of pipeline flow and Moody chart. Able to understand the mean velocity formulas.
		12th	Form loss of pipeline flow	Able to explain the form loss of pipeline flow.
		13th	Calculation of various pipeline flows	Able to calculate various pipeline flows.
		14th	Calculation of various pipeline flows	Able to calculate various pipeline flows.
		15th	Calculation of various pipeline flows	Able to calculate various pipeline flows.
		16th	Return of final examination	

Evaluation Method and Weight (%)

	Midterm/Final Exam	Quiz	Portfolio	Presentation/Attitude	Other	Total
Subtotal	70	0	30	0	0	100
Basic Proficiency	10	0	10	0	0	20
Specialized Proficiency	60	0	20	0	0	80
Cross Area Proficiency	0	0	0	0	0	0

Anan College	Year	2024	Course Title	Surveying Practice 2

Course Information

Course Code	1813T01	Course Category	Specialized / Compulsory
Class Format	Experiment / Practical training	Credits	School Credit: 3
Department	Course of Civil Engineering	Student Grade	3rd
Term	Year-round	Classes per Week	前期:2 後期:4
Textbook and/or Teaching Materials	Revised Surveying I (Corona Publishing Co., Ltd.), Revised Surveying II (Corona Publishing Co., Ltd.)		
Instructor	Tada Yutaka,Inoue Takafumi		

Course Objectives

1. To be able to perform topographical surveying. 2. To be able to draw contour lines.
2. To be able to draw monocentric curves, easing curves, and longitudinal curves for line surveying.
3. To be able to utilize the results of photogrammetric surveying.
4. To be able to utilize the results of GNSS surveying.

Rubric

	Ideal Level	Standard Level	Unacceptable Level
Achievement 1	Perform topographical surveying accurately at least 80% of the time.	Perform topographical surveying accurately at least 70% of the time.	Perform topographical surveying accurately at least 60% of the time.
Achievement 2	Perform single and relaxation curves and curve installation more than 80% accurately.	Perform single and relaxation curves and curve installation more than 70% accurately.	Perform single and relaxation curves and curve installation more than 60% accurately.
Achievement 3	Utilze photogrammetric surveying results at least 80% of the time.	Utilze photogrammetric surveying results at least 70% of the time.	Utilze photogrammetric surveying results at least 60% of the time.
Achievement 4	Utilize GNSS surveying and GIS results at least 80% of the time.	Utilize GNSS surveying and GIS results at least 70% of the time.	Utilize GNSS surveying and GIS results at least 60% of the time.

Assigned Department Objectives

学習・教育到達度目標 B-2

Teaching Method

Outline	Maps obtained from surveying serve as the basic data for planning and execution of many construction structures that support the foundation of social activities, and the study of surveying is the discipline for creating such maps. This course applies the basic knowledge of surveying and practical surveying acquired in the second year of the course.
Style	Lectures will provide an overview of each survey and basic knowledge and calculation methods. Practical training will include many hands-on exercises to increase understanding of the surveying content.
Notice	Knowledge of Surveying 1 and Surveying Practice 1 from the second year is required. Therefore, students should thoroughly review and understand the subject. Note that mastery of this subject is a prerequisite for the Assistant Professional Surveyor certification.

Characteristics of Class / Division in Learning

☑ Active Learning	☑ Aided by ICT	☐ Applicable to Remote Class	☑ Instructor Professionally Experienced

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	Triangulation	Triangulation Practice
		2nd	Triangulation	Triangulation Practice
		3rd	Triangulation	Triangulation Practice
		4th	Topographical survey	Topographical survey practice
		5th	Topographical survey	Topographical survey practice
		6th	Topographical survey	Topographical survey practice
		7th	Topographical survey	Topographical survey practice
		8th	Midterm examination	
	2nd Quarter	9th	Rourt survey	Rourt survey practice
		10th	Rourt survey	Rourt survey practice
		11th	Rourt survey	Rourt survey practice
		12th	Rourt survey	Rourt survey practice
		13th	Rourt survey	Rourt survey practice
		14th	Rourt survey	Rourt survey practice
		15th	Rourt survey	Rourt survey practice
		16th		
2nd Semester	3rd Quarter	1st	Photographic surveying	Photographic surveying practice
		2nd	Photographic surveying	Photographic surveying practice
		3rd	Photographic surveying	Photographic surveying practice
		4th	Photographic surveying	Photographic surveying practice
		5th	Photographic surveying	Photographic surveying practice
		6th	Photographic surveying	Photographic surveying practice
		7th	Photographic surveying	Photographic surveying practice

		8th	Midterm examination	
	4th Quarter	9th	GNSS surveying	GNSS surveying practice
		10th	GNSS surveying	GNSS surveying practice
		11th	GNSS surveying	GNSS surveying practice
		12th	GNSS surveying	GNSS surveying practice
		13th	GNSS surveying	GNSS surveying practice
		14th	GNSS surveying	GNSS surveying practice
		15th	GNSS surveying	GNSS surveying practice
		16th		

Evaluation Method and Weight (%)

	Examination	Portfolio					Total
Subtotal	40	60	0	0	0	0	100
Basic Proficiency	0	10	0	0	0	0	10
Specialized Proficiency	40	50	0	0	0	0	90
Cross Area Proficiency	0	0	0	0	0	0	0

Anan College	Year	2024	Course Title	Architectural Desing 1

Course Information

Course Code	1893402	Course Category	Specialized / Elective
Class Format	Seminar	Credits	School Credit: 2
Department	Course of Civil Engineering	Student Grade	3rd
Term	Year-round	Classes per Week	前期:2 後期:2
Textbook and/or Teaching Materials	これで完璧!長期優良住宅，最高の「木造」住宅をつくる方法最新版，詳細図解木造住宅のできるまで，ヤマベの木構造新版DVD付		
Instructor	Ebisuno Akio,Moriyama Takuro		

Course Objectives

1．木造住宅の立面図・断面図の意味と描き方を理解している。
2．木造住宅の1/50程度の平面図を描くことができる。
3．木造の軸組・基礎構造・床組・小屋組・壁面詳細等を理解し，図面として表現，計算を行うことができる。
4．設計する行為の意義や責任、面白さを感得する。
5．講評会等やポートフォリオ等において設計した建築物のプレゼンテーションができる.

Rubric

	理想的な到達レベルの目安	標準的な到達レベルの目安	未到達レベルの目安
評価項目1	木造住宅の立面図・断面図の意味と描き方を理解しており、図面を描くことができる。	木造住宅の立面図・断面図の意味と描き方を理解している。	木造住宅の立面図・断面図の意味や描き方を十分には理解できない。
評価項目2	木造住宅の平面図が理解できており、内容の説明も的確で必要な縮尺の平面図を描くことができる。	木造住宅の平面図が理解できており、1/50程度の平面図を描くことができる。	木造住宅の平面図理解できておらず、1/50程度の平面図を十分には描くことができない。
評価項目3	木造の軸組・基礎構造・床組・小屋組・壁面詳細を十分に理解し，説明や必要な詳細図面で表現できる。	木造の軸組・基礎構造・床組・小屋組・壁面詳細を理解し，図面として表現できる。	木造の軸組・基礎構造・床組・小屋組・壁面詳細の理解が不十分で，図面として部分的にしか表現できない。
評価項目4	木材や建築材料を構成して、いい住環境をつくる感性や想像力を持とうとする問題意識を持っている。	設計行為は総合的な知識が問われ、作業量は多いが、創作的な要素が大きくて、面白そうに思える。	何がいい環境であったり、魅力的な住環境なのか、問題意識や興味、感受性を十分にはもてない。
評価項目5	講評会等やプレゼンボードにて設計した建築物のプレゼンテーションが10分以上できる	講評会等やプレゼンボードにて設計した建築物のプレゼンテーションが5分以上できる	講評会等やプレゼンボードにて設計した建築物のプレゼンテーションが1分以上できる

Assigned Department Objectives

学習・教育到達度目標 B-1 学習・教育到達度目標 C-2 学習・教育到達度目標 D-3

Teaching Method

Outline	● 2年科目の建築製図で行った木造住宅の平面図のトレースに引き続き、立面図・断面図を描き、2次元の図面から3次元の空間をイメージできるようにするとともに設計を通して、木造住宅の理解と魅力を育む機会にする。そのために、より詳細を表現する縮尺での平面図を描き、さらに木造住宅の模型づくりや詳細図のトレースを行うことにより、木造建築の壁・天井・床によって隠されている木構造の仕組みを理解する。
Style	●授業時間60時間
Notice	●本科目は建築士試験の受験資格要件として定めた指定科目であり、修得することにより実務経験年数などの受験資格が有利となる。 ● 2年次から5年次まで，「はじめからおわりまで」を繰り返し，繰り返し，「なんどもまなぶ」ことで，年々，自分の手に，技術，学術，芸術の力が備わっていくことを実感することができます。

Characteristics of Class / Division in Learning

☑ Active Learning	☑ Aided by ICT	☑ Applicable to Remote Class	☑ Instructor Professionally Experienced

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	木造住宅の設計	これまでの学習内容を活かしながら、自らが夢を描き、設計、デザインをする能力を育む
		2nd	木造住宅の設計	これまでの学習内容を活かしながら、自らが夢を描き、設計、デザインをする能力を育む
		3rd	木造住宅の設計	これまでの学習内容を活かしながら、自らが夢を描き、設計、デザインをする能力を育む
		4th	木造住宅の設計	これまでの学習内容を活かしながら、自らが夢を描き、設計、デザインをする能力を育む
		5th	木造住宅の設計	これまでの学習内容を活かしながら、自らが夢を描き、設計、デザインをする能力を育む
		6th	木造住宅の設計	これまでの学習内容を活かしながら、自らが夢を描き、設計、デザインをする能力を育む
		7th	木造住宅の設計	これまでの学習内容を活かしながら、自らが夢を描き、設計、デザインをする能力を育む
		8th	中間考査	
	2nd Quarter	9th	木造住宅の設計	これまでの学習内容を活かしながら、自らが夢を描き、設計、デザインをする能力を育む
		10th	木造住宅の設計	これまでの学習内容を活かしながら、自らが夢を描き、設計、デザインをする能力を育む
		11th	木造住宅の設計	これまでの学習内容を活かしながら、自らが夢を描き、設計、デザインをする能力を育む

		12th	木造住宅の設計	これまでの学習内容を活かしながら、自らが夢を描き、設計、デザインをする能力を育む
		13th	木造住宅の設計	これまでの学習内容を活かしながら、自らが夢を描き、設計、デザインをする能力を育む
		14th	プレゼンテーション	自らが設計、デザインした住宅について、プレゼンテーションする能力を育む
		15th	プレゼンテーション	自らが設計、デザインした住宅について、プレゼンテーションする能力を育む
		16th	期末考査返却	
2nd Semester	3rd Quarter	1st	木造住宅の設計	これまでの学習内容を活かしながら、自らが夢を描き、設計、デザインをする能力を育む
		2nd	木造住宅の設計	これまでの学習内容を活かしながら、自らが夢を描き、設計、デザインをする能力を育む
		3rd	木造住宅の設計	これまでの学習内容を活かしながら、自らが夢を描き、設計、デザインをする能力を育む
		4th	木造住宅の設計	これまでの学習内容を活かしながら、自らが夢を描き、設計、デザインをする能力を育む
		5th	木造住宅の設計	これまでの学習内容を活かしながら、自らが夢を描き、設計、デザインをする能力を育む
		6th	木造住宅の設計	これまでの学習内容を活かしながら、自らが夢を描き、設計、デザインをする能力を育む
		7th	木造住宅の設計	これまでの学習内容を活かしながら、自らが夢を描き、設計、デザインをする能力を育む
		8th	中間考査	
	4th Quarter	9th	木造住宅の設計	これまでの学習内容を活かしながら、自らが夢を描き、設計、デザインをする能力を育む
		10th	木造住宅の設計	これまでの学習内容を活かしながら、自らが夢を描き、設計、デザインをする能力を育む
		11th	木造住宅の設計	これまでの学習内容を活かしながら、自らが夢を描き、設計、デザインをする能力を育む
		12th	木造住宅の設計	これまでの学習内容を活かしながら、自らが夢を描き、設計、デザインをする能力を育む
		13th	木造住宅の設計	これまでの学習内容を活かしながら、自らが夢を描き、設計、デザインをする能力を育む
		14th	プレゼンテーション	自らが設計、デザインした住宅について、プレゼンテーションする能力を育む
		15th	プレゼンテーション	自らが設計、デザインした住宅について、プレゼンテーションする能力を育む
		16th	期末考査返却	

Evaluation Method and Weight (%)

	試験	発表	相互評価	態度	ポートフォリオ	その他	Total
Subtotal	0	0	0	0	0	100	100
基礎的能力	0	0	0	0	0	0	0
専門的能力	0	0	0	0	0	80	80
分野横断的能力	0	0	0	0	0	20	20

Anan College	Year	2024	Course Title	Civil Engineering Practice 1

Course Information

Course Code	1893602	Course Category	Specialized / Elective
Class Format	Seminar	Credits	School Credit: 2
Department	Course of Civil Engineering	Student Grade	3rd
Term	Year-round	Classes per Week	前期:2 後期:2
Textbook and/or Teaching Materials	Handout		
Instructor	Yoshimura Hiroshi,Moriyama Takuro		

Course Objectives

1. Able to utilize the basics of mathematics and physics necessary for civil engineering.
2. Able to learn the basics of document preparation methods required in civil engineering.

Rubric

	Ideal Level	Standard Level	Minimum Level
Achievement 1	Able to understand and utilize the basics of mathematics and physics required in civil engineering.	Able toutilize the basics of mathematics and physics required in civil engineering.	Able to understand the basics of mathematics and physics required in civil engineering.
Achievement 2	Able to acquire the basics of document creation methods required in civil engineering and able to use them.	Able to learn the basics of document creation methods required in civil engineering.	Able to understand the basics of document creation methods required in civil engineering.

Assigned Department Objectives

Teaching Method

Outline	By reviewing (exercising) the important items of mathematics and physics that are the basis of civil engineering, students will be able to gain a solid understanding, and by practicing how to write sentences, they will promote their understanding of the content of specialized subjects to be studied in the future.
Style	After solving the distributed practice problems by yourself, give the explanation of the problems. [60 class hours]
Notice	By asking questions about unclear points and solving exercises repeatedly on your own, you will be able to gain a solid understanding.

Characteristics of Class / Division in Learning

☐ Active Learning	☐ Aided by ICT	☐ Applicable to Remote Class	☑ Instructor Professionally Experienced

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	Review of mathematics, physics, etc.	Able to review mathematics and physics required in civil engineering.
		2nd	Review of mathematics, physics, etc.	Able to review mathematics and physics required in civil engineering.
		3rd	Review of mathematics, physics, etc.	Able to review mathematics and physics required in civil engineering.
		4th	Review of mathematics, physics, etc.	Able to review mathematics and physics required in civil engineering.
		5th	Review of mathematics, physics, etc.	Able to review mathematics and physics required in civil engineering.
		6th	Review of mathematics, physics, etc.	Able to review mathematics and physics required in civil engineering.
		7th	Exercises on the basics of engineering	Able to practice on the basics of engineering.
		8th	Exercises on the basics of engineering	Able to practice on the basics of engineering.
	2nd Quarter	9th	Exercises on the basics of engineering	Able to practice on the basics of engineering.
		10th	Exercises on the basics of engineering	Able to practice on the basics of engineering.
		11th	Exercises on the basics of engineering	Able to practice on the basics of engineering.
		12th	Exercises on the basics of engineering	Able to practice on the basics of engineering.
		13th	Japanese composition	Able to create the sentence with predetermined number of characters.
		14th	Japanese composition	Able to create the sentence with predetermined number of characters.
		15th	Japanese composition	Able to create the sentence with predetermined number of characters.
		16th		
2nd Semester	3rd Quarter	1st	Review of mathematics, physics, etc.	Able to review mathematics and physics required in civil engineering.
		2nd	Review of mathematics, physics, etc.	Able to review mathematics and physics required in civil engineering.
		3rd	Review of mathematics, physics, etc.	Able to review mathematics and physics required in civil engineering.
		4th	Review of mathematics, physics, etc.	Able to review mathematics and physics required in civil engineering.

		5th	Review of mathematics, physics, etc.	Able to review mathematics and physics required in civil engineering.
		6th	Review of mathematics, physics, etc.	Able to review mathematics and physics required in civil engineering.
		7th	Exercises on the basics of engineering	Able to practice on the basics of engineering.
		8th	Exercises on the basics of engineering	Able to practice on the basics of engineering.
	4th Quarter	9th	Exercises on the basics of engineering	Able to practice on the basics of engineering.
		10th	Exercises on the basics of engineering	Able to practice on the basics of engineering.
		11th	Exercises on the basics of engineering	Able to practice on the basics of engineering.
		12th	Exercises on the basics of engineering	Able to practice on the basics of engineering.
		13th	Japanese composition	Able to create the sentence with predetermined number of characters.
		14th	Japanese composition	Able to create the sentence with predetermined number of characters.
		15th	Japanese composition	Able to create the sentence with predetermined number of characters.
		16th		

Evaluation Method and Weight (%)

	Midterm/final exam.	Quiz	Portfolio	Presentation/attitude	Other	Total
Subtotal	0	20	80	0	0	100
Basic Proficiency	0	20	60	0	0	80
Specialized Proficiency	0	0	0	0	0	0
Cross Area Proficiency	0	0	20	0	0	20

Anan College	Year	2024	Course Title	Probability and Statistics

Course Information

Course Code	1514A01	Course Category	Specialized / Compulsory
Class Format	Lecture	Credits	Academic Credit: 2
Department	Course of Civil Engineering	Student Grade	4th
Term	First Semester	Classes per Week	前期:2
Textbook and/or Teaching Materials	Shin Kakuritsu-tokei Kaiteiban, Dainihon Tosho		
Instructor	Sugino Ryuzaburo		

Course Objectives

1. We can compute the basic computation of the fundamentals of statistic processes.
2. We can understand basic properties and get the conditional probability and Bay's estimation.
3. We can make a solution of mean value, variance and standard deviation of basic probability distributions.

Rubric

	Ideal Level	Standard Level	Unacceptable Level
Achievement 1	We can compute the basic computation of the fundamentals of statistic processes and apply these for the various problems.	We can compute the basic computation of the fundamentals of statistic processes.	We can compute the basic computation of the elementary statistic processes.
Achievement 2	We can understand basic properties and get the conditional probability and Bay's estimation and apply these for the various problems.	We can understand basic properties and get the conditional probability and Bay's estimation.	We can understand basic properties and get the elementaries of conditional probability and Bay's estimation.
Achievement 3	We can make a solution of mean value, variance and standard deviation of basic probability distributions and apply these for the various problems.	We can make a solution of mean value, variance and standard deviation of basic probability distributions.	We can make a solution of mean value, variance and standard deviation of elementary probability distributions.

Assigned Department Objectives

学習・教育到達度目標 B-2

Teaching Method

Outline	We are to make a concentration for our class and use the knowledges and techniques about undergraduate mathematics to construction of understanding of the probability and statistics.
Style	Our class is construction of the next three phases. 1. Review the important facts from the previous class. 2. Lecture about the new section. 3. Short exercises.
Notice	Please make a good preparation and self-review. You will build up the good style to do homework of the previous class. *Mastery of this course is required to complete the Mathematical and Data Science and AI Education Program (Literacy)

Characteristics of Class / Division in Learning

☐ Active Learning	☐ Aided by ICT	☐ Applicable to Remote Class	☐ Instructor Professionally Experienced

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	Analyzing the data of one-dimensional variable	We can understand and explain of frequency distribution and its measures of center.
		2nd	Analyzing the data of one-dimensional variable	We can understand and explain of its distribution bias and the dispersion.
		3rd	Analyzing the data of one-dimensional variable	We can understand and explain of its distribution bias and the dispersion.
		4th	Analyzing the data of two-dimensional variables	We can understand and explain of its distribution scatter plot bias and the regression line.
		5th	Analyzing the data of two-dimensional variables	We can understand and explain of its distribution co-variance and the correlation coefficient.
		6th	Analyzing the data of two-dimensional variables	We can understand and explain of its distribution co-variance and the correlation coefficient.
		7th	The properties of probability	We can understand and explain of the definition of probability and the number of cases.
		8th	The properties of probability	We can understand and explain of its probability theorems of the addition and multiplication .
	2nd Quarter	9th	The properties of probability	We can understand and explain of its probability theorems of the addition and multiplication .
		10th	Mid-term examination	
		11th	The probability variables and its probability distributions	We can understand and explain of the discrete variables and binomial distribution.
		12th	The probability variables and its probability distributions	We can understand and explain of the continuous variables and normal distribution.

		13th	The probability variables and its probability distributions	We can understand and explain of the continuous variables and normal distribution.
		14th	The fundamentals of statistic	We can understand and explain of the statistics and sampling distribution.
		15th	Final examination	
		16th		

Evaluation Method and Weight (%)

	Examination	Presentation	Mutual Evaluations between students	Behavior	Portfolio	Other	Total
Subtotal	60	0	0	0	40	0	100
Basic Proficiency	30	0	0	0	20	0	50
Specialized Proficiency	20	0	0	0	15	0	35
Cross Area Proficiency	10	0	0	0	5	0	15

Anan College	Year	2024	Course Title	Engineering Mechanics

Course Information

Course Code	1514B01	Course Category	Specialized / Compulsory
Class Format	Lecture	Credits	Academic Credit: 2
Department	Course of Civil Engineering	Student Grade	4th
Term	First Semester	Classes per Week	前期:2
Textbook and/or Teaching Materials	Aoki Hiroshi, Kitani Susumu : Kogyo Rikigaku [Dai 4 Han] (Morikita Shuppan)		
Instructor	Moriyama Takuro		

Course Objectives

1. Able to understand the concepts of balance of forces and balances of moments.
2. Able to understand the concept of the center of gravity of an object.
3. Able to understand the concept of the motion of points.
4. Able to understand the concepts of work and energy.
5. Able to understand the basic theory of vibration.

Rubric

	Ideal Level	Standard Level	Unacceptable Level
Achievement 1	Able to understand the concepts of force balance and moment balance, and to confirmly calculate the problems related to them.	Able to understand the concepts of force balance and moment balance, and to almost calculate the ploblems related to them.	Able to almost understand the concept of balance of forces and balance of moments.
Achievement 2	Able to understand the concept of the center of gravity of an object and to confirmly calculate the problems related to them.	Able to understand the concept of the center of gravity of an object and to almost calculate the problems related to them.	Able to almost understand the concept of the center of gravity of an object.
Achievement 3	Able to understand the concept of the motion of a point and to confirmly calculate the problems related to them.	Able to understand the concept of the motion of a point and to be able to calculate the problems related to them.	Able to almost understand the concept of the motion of a point.
Achievement 4	Able to understand the concepts of work and energy, and to confirmly calculate the law of conservation of energy.	Able to understand the concepts of work and energy, and can almost calculate the law of conservation of energy.	Able to almost understand concepts such as work and energy and the law of conservation of energy.
Achievement 5	Able to understand of the basic theories of vibration, such as period and frequency, and to confirmly calculate the problems related to them.	Able to understand of the basic theories of vibration, such as period and frequency, and to almost calculate the problems related to them.	Able to almost understand of the basic theories of vibration, such as period and frequency.

Assigned Department Objectives

学習・教育到達度目標 B-3

Teaching Method

Outline	Mechanics, which is one of the foundations of engineering, is an important concept that serves as the basis for acquiring knowledge in specialized fields such as structural mechanics, soil mechanics, hydraulics, and concrete structure in the construction field. It is a concept that students who aim to become engineers who will play an active role in the construction field in the future must naturally master. In this lecture, students will deepen their understanding of the concept of basic force, but we will also explain examples of their application to the structural field of construction, especially in the field of construction, such as vibration and earthquakes, as necessary.
Style	In class, we will explain as many examples as possible, and ask students to deepen their understanding by giving them exercises as self-study assignments. If necessary, there will be time for students to solve exercises during class. 【Class time: 30 hours】 Since this course is a learning credit course, reports will be conducted as post-study.
Notice	Since this course is a review and application of physics, physics experiments, and exercises in the second year, it is desirable to thoroughly review the basic knowledge of these subjects. I want you to answer homework and exercises while thinking about it thoroughly with your own mind using paper and pencil and try to understand the content.

Characteristics of Class / Division in Learning

☐ Active Learning	☐ Aided by ICT	☐ Applicable to Remote Class	☐ Instructor Professionally Experienced

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	forces	Able to understand the concept of composition and decomposition of force, and moment.
		2nd	equilibrium of force	Able to understand the concept of equilibrium of force.
		3rd	equilibrium of moment	Able to understand the concept of equilibrium of monent.
		4th	center of gravity	Able to understand the center of gravity and centroid.
		5th	motion of point	Able to understand the concepts of point velocity and acceleration.

		6th	dynamics of rigid body	Able to understand the balance of rigid bodies and the moment of inertia.
		7th	dynamics of rigid body	Able to understand the motion of rigid bodies and the law of conservation of angular momentum.
		8th	【Midterm examination】	
	2nd Quarter	9th	work and energy	Able to understand the concept of work.
		10th	work and energy	Able to understand the concept of energy.
		11th	work and energy	Able to understand the concept of the law of conservation of energy.
		12th	vibration	Able to understand the concept of simple harmonic motion.
		13th	vibration	Able to understand the concept of free vibration.
		14th	vibration	Able to understand the concept of damped vibration.
		15th	vibration	Able to understand the concepts of forced vibration and resonance.
		16th	【Final examination】	

Evaluation Method and Weight (%)

	Examination	Presentation	Mutual Evaluations between students	Behavior	Portfolio	Other	Total
Subtotal	70	0	0	0	30	0	100
Basic Proficiency	35	0	0	0	15	0	50
Specialized Proficiency	35	0	0	0	15	0	50
Cross Area Proficiency	0	0	0	0	0	0	0

Anan College	Year	2024	Course Title	Materials

Course Information

Course Code	1814B03	Course Category	Specialized / Compulsory
Class Format	Lecture	Credits	Academic Credit: 2
Department	Course of Civil Engineering	Student Grade	4th
Term	First Semester	Classes per Week	前期:2
Textbook and/or Teaching Materials	Construction Materials（Gakugei Publisher）		
Instructor	Kadono Takuma		

Course Objectives

1. Able to understand the category, fundamental characteristic and standard of construction materials, and explain them.
2. Able to understand the characteristic and standard of wood, wood material, stone, glass-based material, metal and coating, and explain them.
3. Able to understand the characteristic and standard of concrete, and explain them.
4. Able to understand the properties of fresh concrete and mechanism properties of post-curing concrete, and explain them.
5. Able to understand the durability of concrete and inspection of concrete structures, and explain them.

Rubric

	Idea level of attainment	Standard level of attainment	Minmum level of attainment
Attainment Target 1	Able to understand the category, fundamental characteristic and standard of construction materials, and explain them with accuracy.	Able to understand the category, fundamental characteristic and standard of construction materials, and explain them.	Able to explain the category, fundamental characteristic and standard of construction materials.
Attainment Target 2	Able to understand the characteristic and standard of wood, wood materials, stone, glass-based materials, metals and coatings, and enforce the the problem presentation and proposal for use.	Able to understand the characteristic and standard of wood, wood materials, stone, glass-based materials, metals and coatings, and explain them.	Able to explain the characteristic and standard of wood, wood materials, stone, glass-based materials, metals and coatings.
Attainment Target 3	Able to understand the characteristic and standard of concrete, and enforce the the problem presentation and proposal for use.	Able to understand the characteristic and standard of concrete, and explain them.	Able to explain the characteristic and standard of concrete.
Attainment Target 4	Able to understand the properties of fresh concrete and mechanism properties of post-curing concrete, and enforce the the problem presentation and proposal for use.	Able to understand the properties of fresh concrete and mechanism properties of post-curing concrete, and explain them.	Able to explain the properties of fresh concrete and mechanism properties of post-curing concrete.
Attainment Target 5	Able to understand the durability of concrete and inspection of concrete structures, and enforce the the problem presentation and proposal for use.	Able to understand the durability of concrete and inspection of concrete structures, and explain them.	Able to explain the durability of concrete and inspection of concrete structures.

Assigned Department Objectives

学習・教育到達度目標 D-1

Teaching Method

Outline	Knowledge of various construction materials is important for construction engineers who construct and maintain stuructures with due consideration for the structual stability, usability, durability, functionality, restoration, economy and encironmental friendliness. This course is lecture-based classroom lecture and is designed to acquire specialist basic konwledge on the main materials used in constraction projects, as well as to enhance study habits. In this course, faculty member who was in charge of research, development and inspection of concrete structures at company use its experience to teach this course.
Style	【Cource hours 31hours＋Final Exam＋Self-study hours 60hours】 Reports are required as pre-study and post-study, because this course is an academic credit course.
Notice	This course, which is classified as a JABEE specialism: materials and biotechnology, is a basic construction course that provides knowledge of various construction materials and is directly linked to Construction Engineering Experiment 1, Structural Engineering 3 and other courses in the fourth year onwards. The wide variety of topics covered can be confusing, but it is important not to memorise individual topics in isolation, but to relate them to examples around you and to the topics you have studied so far.

Characteristics of Class / Division in Learning

☐ Active Learning	☐ Aided by ICT	☐ Applicable to Remote Class	☑ Instructor Professionally Experienced

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	Guidance Outline of the construction materials	Able to understand and explain the goal, significance, plan, textbook, note. And able to explain the category, standard, fundamental property of construction materials.
		2nd	Wood and wood material	Able to explain the category, standard and property of wood and wood material.
		3rd	Wood and wood material	Able to explain the category, standard and property of wood and wood material.

		4th	Stone	Able to explain the category, standard and property of stone.
		5th	Glass-based material	Able to explain the category, standard and property of glass-based material.
		6th	Metal and coating	Able to explain the category, standard and property of metal and coating.
		7th	Metal and coating	Able to explain the category, standard and property of metal and coating.
		8th	Midterm exam	
	2nd Quarter	9th	Return of answer Concrete	Able to explain the property and characteristic of cement and aggregate.
		10th	Concrete	Able to explain the property and characteristic of strengths and weaknesses of concrete. And able to explain the water content, density, particle size and solid content of aggregate.
		11th	Concrete	Able to explain the properties of fresh concrete and post-curing concrete.
		12th	Concrete	Able to explain the properties of fresh concrete and post-curing concrete.
		13th	Concrete	Able to explain the deterioration factors related to durability of concrete.
		14th	Concrete	Able to understand the characteristic of concrete structures(RC,PC), and explain the basis on maintenance of concrete.
		15th	Concrete	Able to explain the inspection method using nondestructive inspection equipment, and basis of coutermeasure of concrete structures.
		16th	(Final exam)Return of answer	

Evaluation Method and Weight (%)

	Regular Exam	Short Test	Portfolio	Presentation and Enthusiasm	Others	Total
Subtotal	60	0	40	0	0	100
Basic competence	20	0	10	0	0	30
Profeesional competence	30	0	20	0	0	50
Cross-sectoral competence	10	0	10	0	0	20

Anan College	Year	2024	Course Title	Structural Engineering 1

Course Information

Course Code	1814C02	Course Category	Specialized / Compulsory
Class Format	Lecture	Credits	Academic Credit: 2
Department	Course of Civil Engineering	Student Grade	4th
Term	Second Semester	Classes per Week	後期:2
Textbook and/or Teaching Materials	Isohata Hiroshi : Zukai Nyumon Yokuwakaru Saishin "Hashi" no Kagaku to Gijutsu(Shuwa System)		
Instructor	Moriyama Takuro		

Course Objectives

1. Able to explain the characteristics of major bridges in Japan and overseas.
2. Able to explain the structural form of the bridges and the mechanism of each part.
3. Able to explain the design methods of bridges.
4. Able to explain the various technologies that support bridges.

Rubric

	Ideal Level	Standard Level	Minimum Level
Achievement 1	Able to explain in detail the characteristics of various bridges in Japan and abroad.	Able to explain most of the characteristics of major bridges in Japan and overseas.	Able to explain only the basics of the characteristics of major bridges in Japan and abroad.
Achievement 2	Able to explain in detail the structural form of the bridge and the mechanism of each part.	Able to explain the structural form of the bridge and the mechanism of each part.	Able to explain only the basics of the structural form of the bridge and the mechanism of each part.
Achievement 3	Able to explain the design methods of bridges in detail.	Able to explain most of the design methods of bridges in detail.	Able to explain only the basics of the design methods of bridges.
Achievement 4	Able to explain in detail the various technologies that support bridges.	Able to explain most of the various technologies that support the bridge.	Able to explain only the basics of the technology that supports the bridge.

Assigned Department Objectives

学習・教育到達度目標 D-1

Teaching Method

Outline	Structural engineering is a discipline necessary for designing structures such as bridges and buildings using theories based on structural mechanics, and is an important concept in both civil engineering and architecture. In this lecture, we will explain the basic knowledge of bridges, which are familiar among structures, such as types of structures, design methods, and related technologies. Rather than making detailed calculations of bridge design all of a sudden, we hope that students will be interested in the structure of bridges, so the first half will mainly provide an overview of the various bridge structures with photographs, and the second half will explain the method of bridge design and the related technologies.
Style	This lecture will be based on textbooks using slides, but some contents that are not covered in textbooks will be explained. In that case, additional materials will be distributed. If necessary, special lectures and tours may be included by companies that are actually designing bridges. Since this course is a credit course, you will be given a self-study assignment each time that serves as a review of the class. [30 hours of class time + 60 hours of self-study time]
Notice	In this lecture, we will focus on basic knowledge about the structure of bridges. Self-study assignments must be submitted by the deadline using the prescribed form. As a general rule, assignments are given every time, so if you miss a class, please come to pick up the assignment form as soon as possible. In the case of special absences, the submission deadline will be extended, but if the submission is submitted late for no special reason, it will not be subject to evaluation. I hope that students will have a good understanding of the basics of structure and design methods of bridges and related technologies that they have learned in this course, and that they will further develop their application skills in the next year's lecture on Structural Engineering 2.

Characteristics of Class / Division in Learning

☐ Active Learning	☐ Aided by ICT	☐ Applicable to Remote Class	☐ Instructor Professionally Experienced

Course Plan

			Theme	Goals
2nd Semester	3rd Quarter	1st	1. Abstracts of bridges	Able to explain the abstracts of bridges.
		2nd	2. Types of bridges	Able to explain the types and characteristics of bridges in the prefecture.
		3rd	2. Types of bridges	Able to explain the types and characteristics of bridges in Japan.
		4th	2. Types of bridges	Able to explain the types and characteristics of bridges overseas.
		5th	3. Structural form and the mechanism of the bridges	Able to explain the structural form of the bridges and the mechanism of each part.
		6th	3. Structural form and the mechanism of the bridges	Able to explain the structural form of the bridges and the mechanism of each part.
		7th	3. Structural form and the mechanism of the bridges	Able to explain the structural form of the bridges and the mechanism of each part.
		8th	【Midterm examination】	
	4th Quarter	9th	4. Mechanics of bridges	Able to explain the theory of structural mechanics that support bridges.

		10th	5．Design of bridges	Able to explain the materials used for bridges and the loads to be considered for bridge design.
		11th	5．Design of bridges	Able to explain the design methods of bridges.
		12th	6．Technologies of bridges	Able to explain the techniques required for the construction of bridges, such as joining members.
		13th	6．Technologies of bridges	Able to explain the construction methods for constructing bridges.
		14th	6．Technologies of bridges	Able to explain the basics of earthquake resistance technologies for bridges.
		15th	6．Technologies of bridges	Able to explain the basics of deterioration and maintenance of bridges.
		16th	【Final examination】	

Evaluation Method and Weight (%)

	midterm/final exam	quiz	portfolio	presentation/attitude	other	Total
Subtotal	70	0	30	0	0	100
Basic Proficiency	35	0	15	0	0	50
Specialized Proficiency	35	0	15	0	0	50
Cross Area Proficiency	0	0	0	0	0	0

Anan College	Year	2024	Course Title	StructuralMechanics2

Course Information

Course Code	1814C04	Course Category	Specialized / Compulsory
Class Format	Lecture	Credits	Academic Credit: 2
Department	Course of Civil Engineering	Student Grade	4th
Term	First Semester	Classes per Week	前期:2
Textbook and/or Teaching Materials	Sakimoto Tatsuro : Kouzou Rikigaku [Dai 2 han・Shinsouban] Jou －Seiteihen－ (Morikita Shuppan)		
Instructor	Moriyama Takuro		

Course Objectives

1 The deflection of beam can be calculated by using the method of integrating the differential equation of the deflection.
2 The deflection of beam can be calculated by elastic load method.
3 The stress of short column on which the eccentric load acts can be calculated.

Rubric

	Ideal Level	Standard Level	Unacceptable Level
Achievement 1	The deflection of the beam can be accurately calculated by using the method of integrating the differential equation of the deflection.	The deflection of the beam can be almost calculated by using the method of integrating the differential equation of deflection.	The method for calculating the deflection of the beam by integrating the differential equation of the deflection can be understood.
Achievement 2	The deflection of the beam can be accurately calculated by using elastic load method.	The deflection of the beam can be almost calculated by using elastic load method.	The method for calculating the deflection of the beam by using elastic method can be understood.
Achievement 3	The stress of short column on which the eccentric load acts can be accurately calculated.	The stress of short column on which the eccentric load acts can be almost culculated.	The method for calculating the stress of short column on which the eccentric load acts can be understood.

Assigned Department Objectives

学習・教育到達度目標 B-3

Teaching Method

Outline	This lecture is a sequel to Structural Mechanics 1 in the third year, and students will learn more about the concepts, concepts, and calculation methods of structural mechanics. Considering how structures deform when forces are applied is particularly important when creating structures, whether civil engineering or architecture. The goal of this course is to understand the theories and calculation methods that are particularly important in structural mechanics, such as the calculation method for the deflection of static burrs when a load is applied. In order to deepen their understanding, we plan to conduct exercises during class if there is time.
Style	Classes are mostly based on board writing. When I will explain content that is not included in the textbook, so please write down the contents written on the board properly in a notebook.
Notice	In class, we will explain as many examples as possible, and if necessary, we will give exercises as homework. For examples and homework, please use a piece of paper and pencil to think and think about it thoroughly while answering the questions and try to understand the content. Since the amount of calculation increases in the calculation of deflection, please deform the formula properly and carefully so as not to make a mistake.

Characteristics of Class / Division in Learning

☐ Active Learning	☐ Aided by ICT	☐ Applicable to Remote Class	☐ Instructor Professionally Experienced

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	deflection of static beam	Able tounderstand the outline of elastic deformation of beam.
		2nd	deflection of static beam	Able to calculate the deflection of beam by using the method of integrating the differential equation of the deflection.
		3rd	deflection of static beam	Able to calculate the deflection of beam by using the method of integrating the differential equation of the deflection.
		4th	deflection of static beam	Able to calculate the deflection of beam by using the method of integrating the differential equation of the deflection.
		5th	deflection of static beam	Able to calculate the deflection of beam by using the method of integrating the differential equation of the deflection.
		6th	deflection of static beam	Able to calculate the deflection of beam by using the method of integrating the differential equation of the deflection.
		7th	deflection of static beam	Able to understand the overview of the elastic load method.
		8th	【Midterm examination】	
	2nd Quarter	9th	deflection of static beam	Able to calculate the deflection of beam by using the elastic load method.
		10th	deflection of static beam	Able to calculate the deflection of beam by using the elastic load method.

		11th	deflection of static beam	Able to calculate the deflection of beam by using the elastic load method.
		12th	column	Able to understand the difference between beam and column, and the difference between short column and long column.
		13th	column	Able to calculate the stress of short column on which the eccentric load acts.
		14th	column	Able to calculate the stress of short column on which the eccentric load acts, and able to understand the core of column.
		15th	【Final examination】	
		16th	Return of final examination	

Evaluation Method and Weight (%)

	Examination	Presentation	Mutual Evaluations between students	Behavior	Portfolio	Other	Total
Subtotal	70	0	0	0	30	0	100
Basic Proficiency	35	0	0	0	15	0	50
Specialized Proficiency	35	0	0	0	15	0	50
Cross Area Proficiency	0	0	0	0	0	0	0

Anan College	Year	2024	Course Title	StructuralMechanics3

Course Information

Course Code	1814C05	Course Category	Specialized / Compulsory
Class Format	Lecture	Credits	Academic Credit: 2
Department	Course of Civil Engineering	Student Grade	4th
Term	Second Semester	Classes per Week	後期:2
Textbook and/or Teaching Materials	Kouzourikigaku dai2han・shinnsoubann jyou seiteibann（Morikita syuppann）、Kouzourikigaku dai2han・shinnsoubann ge fuseiteibann（Morikita syuppann）		
Instructor	Inoue Takafumi		

Course Objectives

1 It is possible to obtain the buckling load of a long column
2 Using the energy method, it is possible to obtain the displacement of the truss and the deflection of the static beam. can.
3 Understand the concepts of stability/instability and static/instability of structures.
4 It is possible to obtain the fulcrum stress of a simple statically indeterminate beam with a low statically indeterminate order.

Rubric

	Ideal Level	Standard Level	Unacceptable Level
Achievement 1	The buckling load of the long column can be determined accurately.	The buckling load of the long column can be almost obtained.	Able to understand how to find the buckling load of a long column.
Achievement 2	All of the learned energy methods can accurately determine truss displacements and static beam deflections.	Two of the learned energy methods can be used to determine truss displacement and static beam deflection.	Any one of the learned energy methods can be used to determine truss displacement and static beam deflection.
Achievement 3	Able to accurately explain the difference between the concepts of stable/unstable and static/unstable structures.	The difference between the concepts of stability/instability and static/static indeterminance of structures can be mostly explained.	Basic understanding of the concepts of stability/instability and static/static instability of structures.
Achievement 4	The fulcrum stress of a simple statically indeterminate beam with a low statically indeterminate order can be obtained accurately.	The fulcrum stress of a simple statically indeterminate beam with a low statically indeterminate order can be almost obtained.	Able to understand how to find the fulcrum stress of a simple statically indeterminate beam with a low indeterminate order.

Assigned Department Objectives

Teaching Method

Outline	This lecture is the final part of the class on structural mechanics that I have been studying since my second year. In addition, students will learn the concepts, ideas, and calculation methods of structural mechanics. First, we aim to understand the buckling of long columns and a method called the energy law. In addition to the statically determined beams that we have studied so far, we also aim to understand how to obtain the fulcrum reaction force of statically indeterminate beams.
Style	Classes are basically written on the blackboard. You may need to explain content that is not included in the textbook, so please write down what you have written on the board in your notebook.
Notice	In class, we explain as many example problems as possible, and practice problems are given as homework as necessary. For examples and homework, please use paper and a pencil and try to understand the contents while thinking enough in your head. Especially in the second half, the difficulty increases and the amount of calculations increases, so please be sure to carefully transform the formula so as not to make any mistakes.

Characteristics of Class / Division in Learning

☐ Active Learning	☐ Aided by ICT	☐ Applicable to Remote Class	☐ Instructor Professionally Experienced

Course Plan

			Theme	Goals
2nd Semester	3rd Quarter	1st	column	Understand the outline of Eulerian buckling of a long column.
		2nd	column	Able to understand the effective buckling length, slenderness ratio, intermediate column, etc. of the long column.
		3rd	column	The buckling load of a long column can be determined.
		4th	energy method	Understand the concept of work and energy, and use the law of conservation of energy to determine the displacement and deflection of a truss.
		5th	energy method	Understand the concept of the principle of virtual work.
		6th	energy method	The unit load method can be used to determine truss displacements and deflections.
		7th	energy method	Castigliano's theorem can be used to determine the displacement and deflection of a truss.
		8th	late midterm exam	
	4th Quarter	9th	statically indeterminate structure	Understand the concepts of stability/instability and static/static instability of structures.

		10th	statically indeterminate structure	The fulcrum reaction force of a statically indeterminate structure with a low statically indeterminate order can be obtained by using the method of decomposing into a statically deterministic structure.
		11th	statically indeterminate structure	The principle of least work can be used to obtain the fulcrum reaction force of a statically indeterminate structure with a low statically indeterminate order.
		12th	statically indeterminate structure	The deflection angle method can be used to solve simple statically indeterminate structural problems.
		13th	statically indeterminate structure	The deflection angle method can be used to solve simple statically indeterminate structural problems.
		14th	statically indeterminate structure	The triple moment method can be used to solve simple statically indeterminate structural problems.
		15th	end of year exam	
		16th	Return of answers	

Evaluation Method and Weight (%)

	Examination	Presentation	Mutual Evaluations between students	Behavior	Portfolio	Other	Total
Subtotal	70	0	0	0	30	0	100
Basic Proficiency	35	0	0	0	15	0	50
Specialized Proficiency	35	0	0	0	15	0	50
Cross Area Proficiency	0	0	0	0	0	0	0

Anan College	Year	2024	Course Title	Geotechnical Engineering

Course Information

Course Code	1814D01	Course Category	Specialized / Compulsory
Class Format	Lecture	Credits	Academic Credit: 2
Department	Course of Civil Engineering	Student Grade	4th
Term	First Semester	Classes per Week	前期:2
Textbook and/or Teaching Materials	Soil Engineering (Akagi Tomoyuki et. al, CORONA PUBLISHING CO., LTD.)		
Instructor	Yoshimura Hiroshi		

Course Objectives

1. Understand the earth pressure against at the structure and be able to calculate the earth pressure against at the structure.
2. Understand the bearing capacity of the ground and be able to calculate the bearing capacity of the ground.
3. Understand the slope stability of the ground and be able to calculate the stability analysis.
4. Understand the current situation and principles of ground disasters and ground improvement methods.

Rubric

	Ideal Level	Standard Level	Minimum Level
Achievement 1	The earth pressure against at the strucuture can be properly explained, and the earth pressure against at the structure can be calculated.	The earth pressure against at the strucuture can be explained, and the earth pressure against at the structure can be calculated.	The earth pressure against at the strucuture can be properly understood.
Achievement 2	The bearing capacity of the ground can be properly explained, and bearing capacity of the ground can be calculated.	The bearing capacity of the ground can be explained, and bearing capacity of the ground can be calculated.	The bearing capacity of the ground can be understood.
Achievement 3	The slope stability of the ground can be properly explained, and the stability analysis can be calculated.	The slope stability of the ground can be explained, and the stability analysis can be calculated.	The slope stability of the ground can be understood.
Achievement 4	The current situation and principles of ground disasters and ground improvement methods can be properly explained.	The current situation and principles of ground disasters and ground improvement methods can be properly explained.	The current situation and principles of ground disasters and ground improvement methods can be understood.

Assigned Department Objectives

学習・教育到達度目標 D-1 学習・教育到達度目標 D-2

Teaching Method

Outline	Construction work always involves working with soil. And there are many scenes of work related to soil.Therefore, it is important for the construction engineer to understand the properties of soil and make use of them in design and construction work. The purpose of this class is to understand the engineering properties of soil through examples of its use. In this course, instructor who have been in charge of research and development related to geotechnical engineering at construction company will use their experience to give lectures.
Style	This class will be mainly lecture-style, but you will need to prepare a scientific calculator because you will do exercises as needed. [30 class hours, 60 hours of self-study time]
Notice	The process of solving the exercises will also promote understanding, so solve the exercises repeatedly. Also, carefully observe the construction work going on around you, and compare the textbook with the real thing as much as possible.

Characteristics of Class / Division in Learning

☐ Active Learning	☐ Aided by ICT	☑ Applicable to Remote Class	☑ Instructor Professionally Experienced

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	Earth pressure against at the structure	Types of earth pressure against at the structure can be explained.
		2nd	Earth pressure against at the structure	Rankine's soil pressure theory can be understood.
		3rd	Earth pressure against at the structure	Coulomb's soil pressure theory can be understood.
		4th	Earth pressure against at the structure	Outline of the stability of retaining walls can be explained.
		5th	Bearing capacity of the ground	Form of foundation can be explained.
		6th	Bearing capacity of the ground	Bearing capacity of shallow foundations can be explained.
		7th	Bearing capacity of the ground	Bearing capacity of deep foundations can be explained.
		8th	Midterm examination	
	2nd Quarter	9th	Slope stability of the ground	Safety factor in slope stability can be explained.
		10th	Slope stability of the ground	Stability analysis of semi-infinite slopes can be calculated.
		11th	Slope stability of the ground	Stability analysis of splitting method can be calculated.

		12th	Slope stability of the ground	Critical circle can be explained.
		13th	Ground disasters and ground improvement methods	Ooccurrence and damage situation of ground disasters can be explained.
		14th	Ground disasters and ground improvement methods	Major ground disasters (landslides, debris flows, liquefaction) can be explained.
		15th	Ground disasters and ground improvement methods	Principles of ground improvement can be understood, and Main ground improvement methods can be explained.
		16th	Return of the final examination	

Evaluation Method and Weight (%)

	Midterm/final exam.	Quiz	Portfolio	Presentation/attitude	Other	Total
Subtotal	70	0	30	0	0	100
Basic Proficiency	0	0	0	0	0	0
Specialized Proficiency	70	0	30	0	0	100
Cross Area Proficiency	0	0	0	0	0	0

Anan College	Year	2024	Course Title	Hydraulic Engineering

Course Information

Course Code	1814E01	Course Category	Specialized / Compulsory
Class Format	Lecture	Credits	Academic Credit: 2
Department	Course of Civil Engineering	Student Grade	4th
Term	First Semester	Classes per Week	前期:2
Textbook and/or Teaching Materials	PEL水理学　実教出版		
Instructor	Osada Kengo		

Course Objectives

1. Able to explain basis equation of open channel flow and uniform flow
2. Able to explain basic equation of non-uniform flow and water surface profile
3. Able to explain the hydrological cycle and runoff analysis method
4. Able to explain planning and issues on flood control and water utilization

Rubric

	Ideal Level	Standard Level	Minimum Level
Course Objective 1	Able to thoroughly explain basis equation of open channel flow and uniform flow	Able to explain basis equation of open channel flow and uniform flow	Able to slightly explain basis equation of open channel flow and uniform flow
Course Objective 2	Able to thoroughly explain basic equation of non-uniform flow and water surface profile	Able to explain basic equation of non-uniform flow and water surface profile	Able to slightly explain basic equation of non-uniform flow and water surface profile
Course Objective 3	Able to thoroughly explain hydrological cycle and runoff analysis method	Able to explain hydrological cycle and runoff analysis method	Able to slightly explain hydrological cycle and runoff analysis method
Course Objective 4	Able to thoroughly explain planning and issues on flood control and water utilization	Able to explain planning and issues on flood control and water utilization	Able to slightly explain planning and issues on flood control and water utilization

Assigned Department Objectives

学習・教育到達度目標 D-1

Teaching Method

Outline	Students learn the principles of open channel flow, river engineering, and basic coastal engineering though this class.
Style	This class conducts many problems for better understanding important terms and calculation methods in addition lecture. (The learning time:30 hr, The self-study time: 60 hr)
Notice	Please bring a calculator each time to conduct computational problem.

Characteristics of Class / Division in Learning

☐ Active Learning	☐ Aided by ICT	☑ Applicable to Remote Class	☐ Instructor Professionally Experienced

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	Steady flow in open channel	Able to understand the momentum equation of steady flow. Able to explain specific energy and the Froude number.
		2nd	Steady flow in open channel	Able to explain subcritical flow and supercritical flow. Able to explain critical depth. Able to explain hydraulic jump.
		3rd	Uniform flow in open channel	Able to explain the mean velocity formula. Able to explain the normal depth.
		4th	Uniform flow in open channel	Able to understand the calculation of uniform flow.
		5th	Non-uniform flow in open channel	Able to explain the basic equation of non-uniform flow. Able to explain non-uniform flow in prismatic channel.
		6th	Non-uniform flow in open channel	Able to explain non-uniform flow in uniform channel. Able to explain the classification of water surface profile.
		7th	Non-uniform flow in open channel	Able to explain water surface profile in non-uniform channel.
		8th	Midterm examination	
	2nd Quarter	9th	Fluvial Geomorphology	Able to explain the classification of rivers and watershed area.
		10th	Hydrology	Able to explain the hydrological cycle and mechanism of rainfall. Able to explain the characteristic of rainfall in Japan. Able ton explain the measurement method of rainfall.

		11th	Hydrology	Able to calculate the average depth of rainfall over watershed area. Able to explain runoff analysis methods.
		12th	River planning	Able to explain flood control used river channel and dam. Able to explain flood disaster in urban area and drainage of inner basin.
		13th	River planning and management	Able to explain water resources issue and water utilization planning. Able to explain river management and improvement.
		14th	River structure	Able to explain the roles of river bank. Able to explain the roles of revetment works and spur dikes.
		15th	Coastal engineering	Able to explain the basic characteristics of a wave. Able to explain tsunamis and high tide disasters.
		16th	Return of final examination result	

Evaluation Method and Weight (%)

	Midterm/final Exam	Quiz	Portfolio	Presentation/Attitude	Other	Total
Subtotal	70	0	30	0	0	100
Basic Proficiency	10	0	10	0	0	20
Specialized Proficiency	60	0	20	0	0	80
Cross Area Proficiency	0	0	0	0	0	0

Anan College	Year	2024	Course Title	Environmental Engineering

Course Information

Course Code	1814F02	Course Category	Specialized / Compulsory
Class Format	Lecture	Credits	Academic Credit: 2
Department	Course of Civil Engineering	Student Grade	4th
Term	First Semester	Classes per Week	前期:2
Textbook and/or Teaching Materials	PEL kankyokogaku Distribute documents as appropriate.		
Instructor	Kagemasa Shuka		

Course Objectives

1. Gain knowledge of tap water supply systems.
2. Gain knowledge of wastewater and industrial waste treatment methods.
3. Understand and explain the needs and methods of environmental impact assessment.

Rubric

	Ideal Level	Standard Level	Minimum Level
Achievement 1	Explain the role and basic plan of water supply system. It is also possible to explain the operation of water purification, including the mechanism.	Explain the role and basic plan of water supply system. It is also possible to explain the operation of water purification.	Explain the role and operation of water supply system.
Achievement 2	Gain knowledge of the technologies and the laws for treating wastewater and industrial waste. Explain how wastewater and industrial waste treatment contribute to the establishment of a recycling-oriented society.	Explain the purposes, the technologies, and the laws of treating wastewater and industrial waste.	Explain the purpose and technologies of treating wastewater and industrial waste.
Achievement 3	Understand and explain the purpose, the evaluation indicators, and the process of environmental impact assessment.	Explain the purpose, the evaluation indicators, and the process of environmental impact assessment.	Explain the process of environmental impact assessment.

Assigned Department Objectives

学習・教育到達度目標 A-3 学習・教育到達度目標 D-1

Teaching Method

Outline	The class focuses on water use, waste treatment methods, environmental impact assessment methods, and biodiversity in lecture style. Understand the technologies and institutions of environmental protection and be able to explain the measures for building a sustainable society.
Style	Lecture style. Request submission of reports as appropriate.
Notice	

Characteristics of Class / Division in Learning

☐ Active Learning	☐ Aided by ICT	☐ Applicable to Remote Class	☐ Instructor Professionally Experienced

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	Guidance Water supply system (1)	Explain the role and types of water supply systems.
		2nd	Water supply system (2)	Explain the basic plan of water supply system.
		3rd	Water supply system (3)	Explain water purification operations (flocculation, sedimentation, filtration, and disinfection).
		4th	Water supply system (4)	Explain water purification operations (flocculation, sedimentation, filtration, and disinfection).
		5th	Sewage system (1)	Explain the role and the component facilities of the sewerage system.
		6th	Sewage system (2)	Explain the basic plan of a sewage system. Calculate water quality indicators and the indicators needed for a basic sewage system plan.
		7th	Sewage system (3)	Explain the conventional activated sludge process.
		8th	Industrial waste treatment (1) Midterm examination	Explain the problems and measures of industrial waste treatment.
	2nd Quarter	9th	Midterm examination	
		10th	Industrial waste treatment (2)	Explain the problems and measures of industrial waste treatment.
		11th	Biodiversity	Explain ecosystem conservation policy. Explain the purpose of environmental impact assessment.
		12th	Environmental impact assessment (1)	Explain the purpose of environmental impact assessment.
		13th	Environmental impact assessment (2)	Explain the processes involved in environmental impact assessment.

		14th	Environmental impact assessment (3)	Explain the processes involved in environmental impact assessment.
		15th	Environmental impact assessment (4)	Explain the processes involved in environmental impact assessment.
		16th	Return of examination documents	

Evaluation Method and Weight (%)

	Midterm/Final exam	Quiz	Portfolio	Presentation/Attitude	Other	Total
Subtotal	60	0	40	0	0	100
Basic Proficiency	40	0	30	0	0	70
Specialized Proficiency	20	0	10	0	0	30
Cross Area Proficiency	0	0	0	0	0	0

Anan College	Year	2024	Course Title	City Planning

Course Information

Course Code	1814G01	Course Category	Specialized / Compulsory
Class Format	Lecture	Credits	Academic Credit: 2
Department	Course of Civil Engineering	Student Grade	4th
Term	Second Semester	Classes per Week	後期:2
Textbook and/or Teaching Materials	Understanding city planning		
Instructor	, ,Moriyama Takuro		

Course Objectives

1. Understand the overview of urban planning in Japan and the world.
2. Understand Japanese urban planning and its framework.
3. Understand the roles, functions and research methods of transportation.
4. Understand traffic demand forecast.

Rubric

	Ideal Level	Standard Level	Unacceptable Level
Achievement 1	Understand and explain the outline of urban planning in Japan and the world, and be able to solve appropriate problems.	Understand and explain the outline of urban planning in Japan and the world.	Understand the overview of urban planning in Japan and around the world.
Achievement 2	Understand the outline of the City Planning Act and district divisions, be able to explain, and be able to solve appropriate problems.	Understand and explain the overview of the City Planning Act and district divisions.	Understand the overview of the City Planning Act and area divisions.
Achievement 3	Understand and explain the roles, functions and research methods of transportation, and be able to answer appropriate questions.	Understand and explain the roles, functions and research methods of transportation.	Understand the roles, functions and research methods of transportation.
Achievement 4	Can understand traffic demand forecasting (four-step demand forecasting procedure) and answer appropriate questions.	Understand and explain traffic demand forecasting (four-step demand forecasting procedure).	Understand traffic demand forecasting (four-step demand forecasting procedure).

Assigned Department Objectives

Teaching Method

Outline	Human life can be expressed in four terms: “living”, “working”, “relaxing” and “moving”. traffic. Since urban planning is important to promote good urban activities, we will learn about various problems and their solutions and think about urban development that is easy to live in.
Style	Lecture method [30 hours of class time + 60 hours of self-study time] Since this course is a learning credit course, reports will be conducted as pre-learning and post-learning.
Notice	

Characteristics of Class / Division in Learning

☐ Active Learning	☑ Aided by ICT	☐ Applicable to Remote Class	☐ Instructor Professionally Experienced

Course Plan

			Theme	Goals
2nd Semester	3rd Quarter	1st	Urban planning in the world	Understand the theory of ancient times, Renaissance, baroque, ideal industrial, and garden city.
		2nd	Urban planning in the world	Understand neighborhood theory, Greenbelt, Greater London Plan, and New Town.
		3rd	Japanese urban planning and framework	Understand national land, regions, and comprehensive development plans. Understand comprehensive development plans and master plans.
		4th	Land use plan	Understand area division, regional planning, and district planning.
		5th	Urban facilities and urban area development projects, renewal plans	Understand urban facilities and urban development projects. Understand the development and renewal of new towns.
		6th	Urban disaster prevention･Landscape	Understand urban disaster prevention structures, landscapes and landscape elements.
		7th	Sustainable urban structure	Understand sustainable city models, public transportation and community development.
		8th	Midterm examination	
	4th Quarter	9th	Significance and Purpose of Traffic Engineering	Understand the significance and purpose of traffic engineering. Understand various survey methods and indicators.
		10th	Traffic demand forecasting (four-step demand forecasting procedure)	Understand trip generation volume and trip attraction volume.

		11th	Traffic demand forecasting (four-step demand forecasting procedure)	Trip generation volume and trip attraction volume can be calculated.
		12th	Traffic demand forecasting (four-step demand forecasting procedure)	Understand traffic distribution (Flater method･Gravity model).
		13th	Traffic demand forecasting (four-step demand forecasting procedure)	Traffic distribution (Flater method･Gravity model) can be calculated.
		14th	Traffic demand forecasting (four-step demand forecasting procedure)	Traffic distribution (Flater method･Gravity model) can be calculated.
		15th	Traffic demand forecasting (four-step demand forecasting procedure)	Understand transportation behavior model. Understand assigned traffic volume.
		16th	Final exam return	

Evaluation Method and Weight (%)

	Examination	Presentation	Mutual Evaluations between students	Behavior	Portfolio	Other	Total
Subtotal	60	0	0	0	40	0	100
Basic Proficiency	10	0	0	0	30	0	40
Specialized Proficiency	50	0	0	0	10	0	60
Cross Area Proficiency	0	0	0	0	0	0	0

Anan College	Year	2024	Course Title	Regional Planning

Course Information

Course Code	1814G02	Course Category	Specialized / Compulsory
Class Format	Lecture	Credits	Academic Credit: 2
Department	Course of Civil Engineering	Student Grade	4th
Term	Second Semester	Classes per Week	後期:2
Textbook and/or Teaching Materials	Community development project		
Instructor	Moriyama Takuro		

Course Objectives

1.Understand the significance and process of regional planning and community development.
2.Understand the requirements for community living, and understand the social background and community planning measures that affect community living.
3.Understand regional issues using probability statistics and statistical methods.
4.Understand the current situation of the region and think about problem extraction and problem solving.

Rubric

	Ideal Level	Standard Level	Unacceptable Level
Achievement 1	Understand population decline and aging problems, and be able to answer and explain appropriate problems.	Understand population decline and aging problems, and be able to answer the appropriate questions.	Understand population decline and aging issues.
Achievement 2	Understand the significance and process of regional planning and community development, and be able to answer and explain appropriate problems.	Understand the significance and progress of regional planning and community development, and be able to answer appropriate questions.	Understand regional planning and community development.
Achievement 3	Understand probability statistics and statistical processing, and be able to answer application problems.	Understand probability statistics and statistical processing, and be able to answer appropriate questions.	Understand probability statistics and statistical processing.
Achievement 4	Understand current situation analysis, optimization, and evaluation, and be able to answer application problems.	Understand current situation analysis, optimization, and evaluation, and can answer appropriate questions.	Understand current situation analysis, optimization, and evaluation.

Assigned Department Objectives

Teaching Method

Outline	Understand the significance and progress of regional planning and community development, and think about what is necessary to live in the region. In addition to learning about current problems and their solutions in urban development, we will discuss problems that are happening around us. Learn about probability statistics and statistical processing, and consider the conditions of livable areas and towns.
Style	For each item, proceed with the lesson in a form that incorporates many examples and reports. Since this course is a learning credit course, reports will be conducted as pre-learning and post-learning. We will carry out classes using the creative training technique method.(Depending on the number of students, etc., the technique method will be changed.) Aiming to build a sustainable community, propose actions that you think.
Notice	Regional planning is a dynamic academic field in which diverse stakeholders such as humans, organisms, and societies are interconnected. 1.What kind of area is a wonderful area? 2.What can we do to make the area better? 3.What kind of region is a sustainable region?

Characteristics of Class / Division in Learning

☑ Active Learning	☑ Aided by ICT	☐ Applicable to Remote Class	☐ Instructor Professionally Experienced

Course Plan

			Theme	Goals
2nd Semester	3rd Quarter	1st	Local issues	Explain the relationship between the current situation of declining birthrate and regional planning. Explain the relationship between the current state of aging and regional planning.
		2nd	Regional planning and community development	Understand the structure and examples of community development. Understand the development and maintenance of shopping streets and urban areas.
		3rd	Social background and regional planning	Understand exchange population, related population, and immigration.
		4th	Sustainable regional development	Understand exchange population, related population, and immigration.
		5th	Sustainable regional development	Understand exchange population, related population, and immigration.
		6th	Probability statistics and statistical processing	Understand the binomial distribution, Poisson distribution, normal distribution Gumbel distribution, and joint probability density function.

		7th	Probability statistics and statistical processing	Understand interval estimation.
		8th	Midterm examination	
	4th Quarter	9th	Probability statistics and statistical processing	Understand statistical tests (population mean, population mean difference).
		10th	Probability statistics and statistical processing	Understand statistical tests (population variance, population variance difference, population proportion).
		11th	Phenomenological analysis and multivariate analysis	Understand correlation coefficients. Understand simple regression analysis.
		12th	Multivariate analysis and optimization methods	Understand multiple regression analysis. Understand linear programming (illustration method, simplex method).
		13th	Optimization method･evaluation	Understand linear programming (network programming). Understand cost-benefit analysis.
		14th	Preparation of presentation materials	Students will be able to consider proposals aimed at building sustainable communities and summarize them as sentences.
		15th	Preparation of presentation materials	Students will be able to consider proposals aimed at building sustainable communities and summarize them as sentences.
		16th	Final exam return	

Evaluation Method and Weight (%)

	Examination	Presentation	Mutual Evaluations between students	Behavior	Portfolio	Other	Total
Subtotal	60	0	0	0	0	0	60
Basic Proficiency	60	0	0	0	0	0	60
Specialized Proficiency	0	0	0	0	0	0	0
Cross Area Proficiency	0	0	0	0	0	0	0

Anan College	Year	2024	Course Title	ConstructionWorkControl

Course Information

Course Code	1814H01	Course Category	Specialized / Compulsory
Class Format	Lecture	Credits	Academic Credit: 2
Department	Course of Civil Engineering	Student Grade	4th
Term	Second Semester	Classes per Week	後期:2
Textbook and/or Teaching Materials	Kensetsu Sekoh (Ken-ichi Kaneko, MORIKITA PUBLISHING Co., Ltd.)		
Instructor	Yoshimura Hiroshi		

Course Objectives

1. Understand the basic knowledge of construction management methods.
2. Understand earthwork, concrete work, foundation work, and underground work, which are some of the basic construction techniques.

Rubric

	Ideal Level	Standard Level	Minimum Level
Achievement 1	Basic knowledge of construction management methods can be learned appropriately, and can be explained properly.	Basic knowledge of construction management methods can be learned, and can be explained.	Basic knowledge of construction management methods can be learned.
Achievement 2	Earthwork, concrete work, foundation work, and underground work, which are some of the basic construction techniques, can be understood, and can be explained accurately.	Earthwork, concrete work, foundation work, and underground work, which are some of the basic construction techniques, can be explained.	Earthwork, concrete work, foundation work, and underground work, which are some of the basic construction techniques, can be understood.

Assigned Department Objectives

学習・教育到達度目標 D-1 学習・教育到達度目標 D-2

Teaching Method

Outline	The purpose of this course is to understand the construction techniques that are the basis of construction work, and to acquire the basic knowledge of construction management methods necessary to control a series of construction works. In this course, instructor who have been in charge of research and development related to geotechnical engineering at construction company will use their experience to give lectures.
Style	This course are conducted using projectors, because it is difficult to understand the size of the pictures and diagrams in the text in the classroom only. [30 class hours, 60 hours of self-study time]
Notice	By paying attention to the construction work going on around you and actually seeing it with your own eyes, your understanding will be facilitated.

Characteristics of Class / Division in Learning

☐ Active Learning	☐ Aided by ICT	☑ Applicable to Remote Class	☑ Instructor Professionally Experienced

Course Plan

			Theme	Goals
2nd Semester	3rd Quarter	1st	Construction work	Outline of the construction business and the construction industry can be explained.
		2nd	Construction work	Construction system and construction plan can be explained.
		3rd	Construction work	Ethics of construction engineers can be understood. Major construction-related laws and regulations can be explained.
		4th	Construction management	Schedule control and quality control can be explained.
		5th	Construction management	Cost control, safety and health control, and environmental manegement can be explained.
		6th	Construction machinery	Outline of construction machinery can be explained.
		7th	Construction machinery	Productivity and work efficiency of major construction machinescan be explained.
		8th	Midterm examination	
	4th Quarter	9th	Earth work	the outline of the survey and plan can be explained. Excavation, hauling, and earth-moving equipment can be explained.
		10th	Earth work	Embankment work and compaction management can be explained.
		11th	Concrete work	Outline of concrete work can be explained.
		12th	Concrete work Foundation work	Flow of concrete work can be explained. Outline of construction method in shallow foundation can be explained.
		13th	Foundation work	Outline of construction method in deep foundation can be explained.

		14th	Underground work	Classification of tunnels can be unedstood. Outline of open cut method can be explained.
		15th	Underground work	Outline of shield tunneling method and NATM can be explained.
		16th	Return of the final examination	

Evaluation Method and Weight (%)

	Midterm/final exam.	Quiz	Portfolio	Presentation/attitude	Other	Total
Subtotal	70	0	30	0	0	100
Basic Proficiency	0	0	0	0	0	0
Specialized Proficiency	70	0	30	0	0	100
Cross Area Proficiency	0	0	0	0	0	0

Anan College	Year	2024	Course Title	Civil Engineering Experiment 1

Course Information

Course Code	1814T04	Course Category	Specialized / Compulsory
Class Format	Experiment	Credits	Academic Credit: 2
Department	Course of Civil Engineering	Student Grade	4th
Term	First Semester	Classes per Week	前期:4
Textbook and/or Teaching Materials	Doshitsu Shiken - Kihon & Tebiki - (The Japanese Geotechnical Society, MARUZEN Co., Ltd.)		
Instructor	Yoshimura Hiroshi,Inoue Takafumi		

Course Objectives

1. Understand basic terminology related to soil experiments.
2. Understand the purpose of each soil experiment and learn how to organize the experimental results.
3. Understand how to use constants obtained from soil experiments.

Rubric

	Ideal Level	Standard Level	Minimum Level
Achievement 1	Basic terminology related to soil experiments can be understood, and the terminology can be properly explained.	Basic terminology related to soil experiments can be explained.	Basic terminology related to soil experiments can be understood.
Achievement 2	Purpose of each soil experiment can be properly explained, and how to organize the experimental results can be explained.	Purpose of each soil experiment can be explained, and how to organize the experimental results can be used.	Purpose of each soil experiment can be understood.
Achievement 3	How to use constants obtained from soil experiments can be understood, and can be properly explained.	How to use constants obtained from soil experiments can be explained.	How to use constants obtained from soil experiments can be understood.

Assigned Department Objectives

学習・教育到達度目標 D-2 学習・教育到達度目標 E-2

Teaching Method

Outline	When designing and constructing the foundations of structures, soil experiments are carried out to determine the necessary soil constants. The goal of this course is to conduct soil experiments on your own and learn how to organize the experimenntal results. Furthermore, by considering how to use the obtained soil constants, the connections between soil mechanics/geotechnical engineering will be understood. In this course, one of the instructors who have been in charge of research and development related to geotechnical engineering at construction company will use their experience to give experiments.
Style	Cooperation in groups of several people is important. Reading the relevant experiment items in the textbook previously is requrired. [60 class hours, 30 hours of self-study time]
Notice	Put on wear work clothes and shoes, and bring the textbook and your calculator.

Characteristics of Class / Division in Learning

☐ Active Learning	☐ Aided by ICT	☐ Applicable to Remote Class	☑ Instructor Professionally Experienced

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	Guidance Soil particle density test	Pycnometer can be calibrated. Soil particle density test can be measured.
		2nd	Soil particle density test	Soil particle density can be calculated from the measurement results.
		3rd	Liquid limit test and plastic limit test	Liquid limit test and plastic limit test of fine-grained soil can be performed.
		4th	Liquid limit test and plastic limit test	The liquid limit and plastic limit can be calculated from the measurement results.
		5th	Particle size test of soil	Sedimentation analysis can be performed.
		6th	Particle size test of soil	Sieving test can be performed.
		7th	Particle size test of soil	Gradation can be calculated from the measurement results.
		8th	Minimum and maximum density test of sand	Minimum and maximum density tests of sand can be performed, and minimum and maximum densities can be caluculated.
	2nd Quarter	9th	Soil compaction test	Compaction test of soil by tamping can be performed.
		10th	Soil compaction test	Compaction curve and zero air voids curve can be calculated from the measurement results.
		11th	Constant head permeability test	Constant head permeability test can be performed, and coefficient of permeability can be calculated from the measurement results.
		12th	Unconfined commprssion test	Unconfined commprssion test can be conducted.

		13th	Unconfined commprssion test	Stress-strain curve can be drawn from the measurement results, and the unconfined compression strength can be calculated.
		14th	Box shear test	Box shear test (CD condition) test can be performed.
		15th	Box shear test	Shear strength of CD condition can be calculated from the experimental results.
		16th	Return of the final examination	

Evaluation Method and Weight (%)

	Midterm/final exam.	Quiz	Portfolio	Presentation/attitude	Other	Total
Subtotal	20	0	80	0	0	100
Basic Proficiency	0	0	0	0	0	0
Specialized Proficiency	20	0	80	0	0	100
Cross Area Proficiency	0	0	0	0	0	0

Anan College	Year	2024	Course Title	Civil Engineering Experiment 2

Course Information

Course Code	1814T05	Course Category	Specialized / Compulsory
Class Format	Experiment	Credits	Academic Credit: 2
Department	Course of Civil Engineering	Student Grade	4th
Term	Second Semester	Classes per Week	後期:4
Textbook and/or Teaching Materials	Testing Procedures of Construction Materials（JSMS）, Engineering of Concrete Structure （Morikita Publisher CO. LTD.）		
Instructor	Kadono Takuma		

Course Objectives

1. Able to enforce the standard tests of aggegate, rebar and concrete.
2. Able to organize the results of standard tests and thier consideration, and create thier reports.
3. Able to enforce the mix design and its revision, and explain them.
4. Able to enforce the explaination of outline, predictive calculation, comparison of experinment and calculation, and creating a report, on the structual experiment using RC beam.
5. Able to recognize the communication skill which is important as the engineer and the importance of safty management, and enforce the practice with the cooperativeness.

Rubric

	Ideal Level	Standard Level	Minimum Level
Achievement 1	Able to understand the methods of standard tests of aggregate, rebar and concrete, and enforce them with sufficient accuracy.	Able to understand the methods of standard tests of aggregate, rebar and concrete, and perform them.	Able to perform the methods of standard tests of aggregate, rebar and concrete.
Achievement 2	Able to understand and organize the results and their consideration of the standard tests, and create reports with sufficent accuracy.	Able to understand and organize the results and their consideration of the standard tests, and create reports.	Able to organize the results and their consideration of the standard tests, and create reports.
Achievement 3	Able to understand and enforce the mix design and its revision, and explain their outlines with sufficient accuracy.	Able to understand and enforce the mix design and its revision, and explain their outlines.	Able to enforce the mix design and its revision, and explain their outlines.
Achievement 4	Able to enforce the explanation of outline, predictive calculation, comparison of experiment and calculation, and creating a report, on the structural experiment using RC beam, with sufficient accuracy.	Able to enforce the explanation of outline, predictive calculation, comparison of experiment and calculation, and creating a report, on the structural experiment using RC beam, with accuracy.	Able to enforce the explanation of outline, predictive calculation, comparison of experiment and calculation, and creating a report, on the structural experiment using RC beam.
Achievement 5	Able to understand and explain the communication skill which is important as the engineer and the importance of safety management, and enforce the practice with the cooperativeness with accuracy.	Able to understand and explain the communication skill which is important as the engineer and the importance of safety management, and enforce the practice with the cooperativeness.	Able to explain the communication skill which is important as the engineer and the importance of safety management, and enforce the practice with the cooperativeness.

Assigned Department Objectives

学習・教育到達度目標 D-2 学習・教育到達度目標 E-2

Teaching Method

Outline	This course is enforced the standard test of materials and loading test of structural member, focusing on reinforced concrete structure which is one of mainly structure on the civil engineering field. It improves the plan, enforcement, analysis, consideration, group activity and problem-solving abilities, to aquire the knowledge and skill on material, structure and construction through the experiments. In this course, faculty member who was in charge of research and development of concrete structures at company use its experience to teach this course.
Style	【61 hours of calss time + final exam + self-study time 30hours】
Notice	This course is one of JABBE course, absense should be prohibited because of aquiring the knowledge and skill accoring to the pracitical education by group work. For safety reason, students should wear clothes that are easy to move in and can get a little dirty, and athletic shoes should be worn. This is because during experiments, heavy objects may be handled and dust, oil, water may adhere to clothes. Students are sure to bring textbooks, pens and calculator, and careful to manage valuables. Students don't touch anything that is not related to this course, beause the laboratory contains equipments, samples and materials that are being used for graduation study, special study and other experimental practice.

Characteristics of Class / Division in Learning

☐ Active Learning	☐ Aided by ICT	☐ Applicable to Remote Class	☐ Instructor Professionally Experienced

Course Plan

			Theme	Goals
2nd Semester	3rd Quarter	1st	Guidance Standard tests of the aggregate	Able to explain the object, significance and notes in this course. Able to enforce the method of test for sieve analysis of aggregates, and explain it.
		2nd	Standard tests of the aggregate	Able to enforce the method of test for density and water absorption of fine aggregates, for surface moisuture in fine aggregate and for moisuture content of aggregate and surface moisture in aggregate by drying, and explain it.

		3rd	Standard tests of the aggregate	Able to enforce the method of test for density and water absorption of coarse aggregates and for moisture content of aggregate and surface moisture in aggregate by drying, and explain it.
		4th	Standard tests of the rebar	Able to enforce the tensile testing-method of test at room temperature of rebar, and explain it.
		5th	Mix design of concrete	Able to enforce the mix design of concrete, and explain it.
		6th	Mix design of concrete	Able to enforce the mix design of concrete, and explain it.
		7th	Mixing concrete and standard tests of fresh concrete	Able to mix concrete, and enforce the standard test at the time of fresh concrete(Slump, Air, Chloride content). And able to explain them. In addition, able to make test specimens that are used as the standard test of post-curing concrete.
		8th	Mixing concrete and standard tests of fresh concrete	Able to mix concrete, and enforce the standard test at the time of fresh concrete(Slump, Air, Chloride content). And able to explain them. In addition, able to revise its mix design.
	4th Quarter	9th	Midterm exam	
		10th	Return of answer Standard tests of the post-curing concrete	Able to enforce the standard tests of post-curing concrete(Compressive, Tensile, Non-destructive inspection), and explain them.
		11th	Standard tests of the post-curing concrete	Able to enforce organizational, analysis and consideration of results on the standard tests of post-curing concrete.
		12th	Experiment of RC beam(Explanation of outline, Production)	Able to explain the outline of loading test of RC beam. And able to make RC beam, and explain them.
		13th	Experiment of RC beam (Loading)	Able to enforce the loading test of RC beam, and explain it.
		14th	Experiment on RC beam(Comparison of experiment and calculation)	Able to calculate predictive values of mechanizm behavior on the loading test of RC beam, and enforce the comparison and consideration of calculation and experiment.
		15th	Experiment on RC beam(Comparison of experiment and calculation)	Able to calculate predictive values of mechanizm behavior on the loading test of RC beam, and enforce the comparison and consideration of calculation and experiment.
		16th	Final exam	

Evaluation Method and Weight (%)

	Examination	Presentation	Mutual Evaluations between students	Behavior	Portfolio	Other	Total
Subtotal	20	0	0	20	50	0	90
Basic Proficiency	10	0	0	15	25	0	50
Specialized Proficiency	10	0	0	5	25	0	40
Cross Area Proficiency	0	0	0	0	0	0	0

Anan College	Year	2024	Course Title	CivilEngineeringPractice2

Course Information

Course Code	1894601	Course Category	Specialized / Elective
Class Format	Seminar	Credits	School Credit: 2
Department	Course of Civil Engineering	Student Grade	4th
Term	Second Semester	Classes per Week	後期:4
Textbook and/or Teaching Materials	Teachers distribute worksheets		
Instructor	Yoshimura Hiroshi,Moriyama Takuro,Osada Kengo,Kadono Takuma,Kagemasa Shuka		

Course Objectives

1. A learner can understand important words regarding each civil engineering subject: Structural Mechanics, Materials, Hydraulic Engineering, Soil Mechanics, Surveying, and Environmental Engineering.
2. A learner can solve computational problems regarding each civil engineering subject: Structural Mechanics, Materials, Hydraulic Engineering, Soil Mechanics, Surveying, and Environmental Engineering.

Rubric

	Ideal Level	Standard Level	Minimum Level
Course Objective 1	A learner can understand enough important words regarding each civil engineering subject: Structural Mechanics, Materials, Hydraulic Engineering, Soil Mechanics, Surveying, and Environmental Engineering.	A learner can understand important words regarding each civil engineering subject: Structural Mechanics, Materials, Hydraulic Engineering, Soil Mechanics, Surveying, and Environmental Engineering.	A learner can slightly understand important words regarding each civil engineering subject: Structural Mechanics, Materials, Hydraulic Engineering, Soil Mechanics, Surveying, and Environmental Engineering.
Course Objective 2	A learner can solve enough computational problems regarding each civil engineering subject: Structural Mechanics, Materials, Hydraulic Engineering, Soil Mechanics, Surveying, and Environmental Engineering.	A learner can solve computational problems regarding each civil engineering subject: Structural Mechanics, Materials, Hydraulic Engineering, Soil Mechanics, Surveying, and Environmental Engineering.	A learner can slightly solve computational problems regarding each civil engineering subject: Structural Mechanics, Materials, Hydraulic Engineering, Soil Mechanics, Surveying, and Environmental Engineering.

Assigned Department Objectives

学習・教育到達度目標 A-3 学習・教育到達度目標 B-2 学習・教育到達度目標 B-3 学習・教育到達度目標 D-1

Teaching Method

Outline	A learner conducts many drills regarding each civil engineering subject and checks again important words and calculation methods in this class.
Style	Teachers will distribute assignments (problems) regarding word and calculation at the beginning of each class. A learner needs to solve these problems within the time specified. Students will take a quiz at the end of class. Grades will be evaluated on 50% for assignments and 50% for quizzes. (The learning time: 60 hours)
Notice	Please bring a calculator each time to conduct computational problem.

Characteristics of Class / Division in Learning

☐ Active Learning	☐ Aided by ICT	☐ Applicable to Remote Class	☑ Instructor Professionally Experienced

Course Plan

			Theme	Goals
2nd Semester	3rd Quarter	1st	Orientation Practice problems of Structural Mechanics	A learner can understand important words in Structural Mechanics. A learner can solve computational problems in Structural Mechanics.
		2nd	Practice problems of Structural Mechanics	A learner can understand important words in Structural Mechanics. A learner can solve computational problems in Structural Mechanics.
		3rd	Practice problems of Structural Mechanics	A learner can understand important words in Structural Mechanics. A learner can solve computational problems in Structural Mechanics.
		4th	Practice problems of Surveying	A learner can understand important words in Surveying. A learner can solve computational problems in Surveying.
		5th	Practice problems of Surveying	A learner can understand important words in Surveying. A learner can solve computational problems in Surveying.
		6th	Practice problems of Hydraulics	A learner can understand important words in Hydraulics. A learner can solve computational problems in Hydraulics.
		7th	Practice problems of Hydraulics	A learner can understand important words in Hydraulics. A learner can solve computational problems in Hydraulics.

		8th	Practice problems of Hydraulic Engineering	A learner can understand important words in Hydraulic Engineering. A learner can solve computational problems in Hydraulic Engineering.
	4th Quarter	9th	Practice problems of Soil Mechanics	A learner can understand important words in Soil Mechanics. A learner can solve computational problems in Soil Mechanics.
		10th	Practice problems of Soil Mechanics	A learner can understand important words in Soil Mechanics. A learner can solve computational problems in Soil Mechanics.
		11th	Practice problems of Geotechnical Engineering	A learner can understand important words in Geotechnical Engineering. A learner can solve computational problems in Geotechnical Engineering.
		12th	Practice problems of Environmental Engineering	A learner can understand important words in Environmental Engineering. A learner can solve computational problems in Environmental Engineering.
		13th	Practice problems of Environmental Engineering	A learner can understand important words in Environmental Engineering. A learner can solve computational problems in Environmental Engineering.
		14th	Practice problems of Materials	A learner can understand important words in Materials. A learner can solve computational problems in Materials.
		15th	Practice problems of Materials	A learner can understand important words in Materials. A learner can solve computational problems in Materials.
		16th		

Evaluation Method and Weight (%)

	Midterm/Final Exam	Quiz	Portfolio	Presentation/Attitude	Other	Total
Subtotal	0	50	50	0	0	100
Basic Proficiency	0	10	10	0	0	20
Specialized Proficiency	0	40	40	0	0	80
Cross Area Proficiency	0	0	0	0	0	0

Anan College	Year	2024	Course Title	Civil Engineering Seminar

Course Information

Course Code	1894602	Course Category	Specialized / Elective
Class Format	Seminar	Credits	School Credit: 1
Department	Course of Civil Engineering	Student Grade	4th
Term	Second Semester	Classes per Week	後期:2
Textbook and/or Teaching Materials			
Instructor	Yoshimura Hiroshi,Moriyama Takuro,Osada Kengo,Tada Yutaka,Inoue Takafumi,Kadono Takuma,Kagemasa Shuka		

Course Objectives

1. Able to gather information by reading literature and researching materials in specialized fields.
2. Able to summarize the content of your area of expertise in reports and posters.
3. Able to present the contents of the summary and to answer questions about it.

Rubric

	Ideal Level	Standard Level	Unacceptable Level
Achievement 1	Able to gather sufficiently information by reading literature and researching materials in their specialized fields.	Able to gather information by reading literature and researching materials in their specialized field.	Able to gather by reading literature and researching materials in specialized fields, but not sufficient.
Achievement 2	Able to properly summarize the content of your area of expertise in reports and posters.	Able to summarize the content of their area of expertise in reports and posters.	Able to summarize the content of your area of expertise in a report or poster, but it is not sufficient.
Achievement 3	Able to give a presentation on the summarized contents and to answer questions about it accurately.	Able to give a presentation on the summarized content and to answer questions about it.	Able to give a presentation on what you have summarized and to answer questions about it, but not sufficient.

Assigned Department Objectives

学習・教育到達度目標 B-1 学習・教育到達度目標 C-2 学習・教育到達度目標 D-2

Teaching Method

Outline	Students will acquire knowledge in their specialized field by reading academic literature and researching materials related to the construction field, and will learn how to conduct research through experiments and analysis.
Style	In the first three sessions, each faculty member will introduce their research. At a later date, write and submit a report on it. From the fifth time, they will be assigned to each faculty member. The method of proceeding after that differs from teacher to faculty member, so please follow the instructions of the assigned faculty member.
Notice	In preparation for graduation research in the fifth year, students are expected to acquire knowledge from literature and other sources in specialized fields that are rarely covered in detail in class, and to learn how to collect information and investigate materials, how to conduct experiments and analysis, how to conduct research, and how to summarize and present results under the guidance of each faculty member. We will inform you about the method of the presentation at a later date. Assignment to each faculty member will be determined based on the student's wishes and academic performance.

Characteristics of Class / Division in Learning

☐ Active Learning	☐ Aided by ICT	☐ Applicable to Remote Class	☐ Instructor Professionally Experienced

Course Plan

			Theme	Goals
2nd Semester	3rd Quarter	1st	Research introduction of each faculty member	Able to understand the outline of each faculty member's research.
		2nd	Research introduction of each faculty member	Able to understand the outline of each faculty member's research.
		3rd	Research introduction of each faculty member	Able to understand the outline of each faculty member's research.
		4th	Literature reading, document research, experiments, analysis, etc.	Able to gather information by reading literature and researching materials related to the assigned faculty member's field of expertise. In addition, by conducting experiments and analyses, students can learn how to proceed with research.
		5th	Literature reading, document research, experiments, analysis, etc.	Able to gather information by reading literature and researching materials related to the assigned faculty member's field of expertise. In addition, by conducting experiments and analyses, students can learn how to proceed with research.
		6th	Literature reading, document research, experiments, analysis, etc.	Able to gather information by reading literature and researching materials related to the assigned faculty member's field of expertise. In addition, by conducting experiments and analyses, students can learn how to proceed with research.

		7th	Literature reading, document research, experiments, analysis, etc.	Able to gather information by reading literature and researching materials related to the assigned faculty member's field of expertise. In addition, by conducting experiments and analyses, students can learn how to proceed with research.
		8th	Literature reading, document research, experiments, analysis, etc.	Able to gather information by reading literature and researching materials related to the assigned faculty member's field of expertise. In addition, by conducting experiments and analyses, students can learn how to proceed with research.
	4th Quarter	9th	Literature reading, document research, experiments, analysis, etc.	Able to gather information by reading literature and researching materials related to the assigned faculty member's field of expertise. In addition, by conducting experiments and analyses, students can learn how to proceed with research.
		10th	Literature reading, document research, experiments, analysis, etc.	Able to gather information by reading literature and researching materials related to the assigned faculty member's field of expertise. In addition, by conducting experiments and analyses, students can learn how to proceed with research.
		11th	Literature reading, document research, experiments, analysis, etc.	Able to gather information by reading literature and researching materials related to the assigned faculty member's field of expertise. In addition, by conducting experiments and analyses, students can learn how to proceed with research.
		12th	Literature reading, document research, experiments, analysis, etc.	Able to gather information by reading literature and researching materials related to the assigned faculty member's field of expertise. In addition, by conducting experiments and analyses, students can learn how to proceed with research.
		13th	Literature reading, document research, experiments, analysis, etc.	Able to gather information by reading literature and researching materials related to the assigned faculty member's field of expertise. In addition, by conducting experiments and analyses, students can learn how to proceed with research.
		14th	Literature reading, document research, experiments, analysis, etc.	Able to gather information by reading literature and researching materials related to the assigned faculty member's field of expertise. In addition, by conducting experiments and analyses, students can learn how to proceed with research.
		15th	Organizing results	Able to summarize the content of their area of expertise in reports and posters.
		16th	presentation	Able to give a presentation on the summarized content and answer questions about it.

Evaluation Method and Weight (%)

	Examination	Presentation	Mutual Evaluations between students	Behavior	Portfolio	Other	Total
Subtotal	0	30	0	20	50	0	100
Basic Proficiency	0	10	0	10	30	0	50
Specialized Proficiency	0	20	0	10	20	0	50
Cross Area Proficiency	0	0	0	0	0	0	0

Anan College	Year	2024	Course Title	Architectural Planning 2

Course Information

Course Code	1894D01	Course Category	Specialized / Elective
Class Format	講義・演習	Credits	Academic Credit: 2
Department	Course of Civil Engineering	Student Grade	4th
Term	Second Semester	Classes per Week	後期:2
Textbook and/or Teaching Materials	Compact Edition of Architectural History [Japan and the West], Shokokusha, Inc. Illustrated Easy Architectural Planning, Gakugei Shuppansha Co.		
Instructor	Tada Yutaka		

Course Objectives

1. To be able to explain the planning features of various buildings constructed in cities.
2. To understand traditional Japanese architecture and explain the names of its components.
3. To understand and describe Japanese housing of each period. 4.
4. To be able to name representative buildings of each period in the West, and to understand and explain their background and characteristics.
5. Understand the background and process of modern architecture in the West, and explain representative works.

Rubric

	Ideal Level	Standard Level	Unacceptable Level
Achievement 1	Can describe in detail the planning features of various buildings to be constructed in the city and solve their pertinent problems. Solve the appropriate problems.	Describe the planning features of the various buildings constructed in the city.	The planning features of the various buildings constructed in the city cannot be fully explained.
Achievement 2	Can explain about traditional Japanese architecture using diagrammatic representation.	Understand traditional Japanese architecture and be able to explain component names	I have a poor understanding of traditional Japanese architecture and can only partially explain it.
Achievement 3	To be able to systematically understand and explain the housing of each period in Japan.	Understand and explain the housing of each period in Japan.	I have a poor understanding of Japanese housing of each period and can only partially explain. I am only partially able to explain.
Achievement 4	To be able to name representative architecture of each period in the West, and to understand and explain its background and characteristics in a systematic manner. systematically understand and explain the background and characteristics of the architecture.	To be able to name representative architectural names of each period in the West, and to understand and explain their background and characteristics.	The background and characteristics of each period in the West are poorly understood and only partially explained.
Achievement 5	Understand the background and process of modern architecture in the West and be able to explain several representative works.	Understand the background and process of modern architecture in the West and be able to explain representative works.	The background and process of modern architecture in the West is poorly understood and only partially explained.

Assigned Department Objectives

学習・教育到達度目標 A-3 学習・教育到達度目標 B-1 学習・教育到達度目標 B-3

Teaching Method

Outline	Students will expand on the knowledge learned in Architectural Planning 1 to understand the characteristics of various types of buildings. Students will also learn about typical Japanese and Western architecture of each period and its characteristics.
Style	This course is a credit course, so a report is required as pre- and post-learning. 30 hours of class time + 60 hours of self-study
Notice	This course is a designated subject for the architectural examinations, and students who complete this course will have an advantage in the number of years of work experience and other qualifications to take the examinations. Through repetition and repeated "study from the beginning to the end" from the second year to the fifth year, you will realize that you will have technical, academic, and artistic skills in your hands year by year. Syllabus-designated reference book: Architectural Planning at a Glance

Characteristics of Class / Division in Learning

☑ Active Learning	☑ Aided by ICT	☐ Applicable to Remote Class	☑ Instructor Professionally Experienced

Course Plan

			Theme	Goals
2nd Semester	3rd Quarter	1st	Social education facilities plannnig	Describe the planning features of schools, nurseries and kindergartens, libraries and museums
		2nd	Social education facilities plannnig	Describe the planning features of schools, nurseries and kindergartens, libraries and museums
		3rd	Social education facilities plannnig	Describe the planning features of schools, nurseries and kindergartens, libraries and museums

		4th	Health and social care facilities planning	describe the planning features of healthcare and elderly care facilities
		5th	Health and social care facilities planning	describe the planning features of healthcare and elderly care facilities
		6th	Commercial premises planning	Explain the planning features of theatres, office buildings and shops.
		7th	Commercial premises planning	Explain the planning features of theatres, office buildings and shops.
		8th	midterm examination	
	4th Quarter	9th	Japanese architectural history	Explain Stone Age housing and shrine architecture
		10th	Japanese architectural history	Explain Buddhist architecture and ancient dwellings
		11th	Japanese architectural history	Explain castle and tea house architecture and medieval housing
		12th	Western architectural history	Explain ancient Greek and Roman architecture
		13th	Western architectural history	Explain Byzantine, Romanesque and Gothic architecture
		14th	Western architectural history	Explain Renaissance, Baroque and Rococo architecture
		15th	Western architectural history	Explain the pre-birth of modern architecture
		16th	Return of final examinations	

Evaluation Method and Weight (%)

	Examination	Quiz	Mutual Evaluations between students	Behavior	Portfolio	Other	Total
Subtotal	70	20	0	0	10	0	100
Basic Proficiency	0	0	0	0	0	0	0
Specialized Proficiency	70	20	0	0	10	0	100
Cross Area Proficiency	0	0	0	0	0	0	0

Anan College	Year	2024	Course Title	Internship

Course Information

Course Code	1894R11	Course Category	Specialized / Elective
Class Format	Lecture	Credits	School Credit: 1
Department	Course of Civil Engineering	Student Grade	4th
Term	Year-round	Classes per Week	前期:2 後期:2
Textbook and/or Teaching Materials			
Instructor	Kagemasa Shuka		

Course Objectives

1. Able to understand and explain the preparedness and awareness of engineer.
2. Able to understand contents of the practice and create its report.
3. Able to understand contents of the practice and perfomed its presentation.

Rubric

	Ideal Level	Standard Level	Minimum Level
Achievement 1	Able to understand and explain the preparedness and awareness as the engineer, and aquire them.	Able to understand and explain the preparedness and awareness as the engineer.	Able to explain the preparedness and awareness as the engineer.
Achievement 2	Able to understand contents of the practice, and create its accurate report.	Able to understand contents of the practice, and create its report.	Able to create a report on contents of the practice.
Achievement 3	Able to understand contents of the practice, and performe its accurate prsentation.	Able to understand contents of the practice, and performe its prsentation.	Able to perform a presentation on contents of the practice.

Assigned Department Objectives

学習・教育到達度目標 A-1 学習・教育到達度目標 A-2 学習・教育到達度目標 A-3 学習・教育到達度目標 B-1

Teaching Method

Outline	Students acquire the preparadness and awareness as the engineer to gain various experiences through the practice on a company or university. In addition, students grow as the engineer to broaden their perspective using their experienses on the practice.
Style	An comprehensive evaluation is made with 10% of a report of the practice, 80% of a manuscript and 10% of a presentation.
Notice	Students mandatory attend at the guidance (including a lecture on manners) prior to the practice. Students must care of own health and observe the time and regulations during the practice period. In the practical training site, students should take care not to casue any accidents following the instructions of the person in charge, and maintain dignity and decorum as the student of NIT, Anan college. Students should submit the required submissions(e.g., research report, resume, report of the practice, manuscript, presentation file).

Characteristics of Class / Division in Learning

☐ Active Learning	☐ Aided by ICT	☐ Applicable to Remote Class	☑ Instructor Professionally Experienced

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	Guidance	Able to study the manner on the practice, submissions and notes, prior to the practice of companies or universities.
		2nd	Guidance	Able to study the manner on the practice, submissions and notes, prior to the practice of companies or universities.
		3rd	Guidance	Able to study the manner on the practice, submissions and notes, prior to the practice of companies or universities.
		4th	Guidance	Able to study the manner on the practice, submissions and notes, prior to the practice of companies or universities.
		5th	Practice on companies or universities	Able to enforce the practice of companies or universities for at least approximately five days during the summer break.
		6th	Practice on companies or universities	Able to enforce the practice of companies or universities for at least approximately five days during the summer break.
		7th	Practice on companies or universities	Able to enforce the practice of companies or universities for at least approximately five days during the summer break.
		8th	Practice on companies or universities	Able to enforce the practice of companies or universities for at least approximately five days during the summer break.
	2nd Quarter	9th	Practice on companies or universities	Able to enforce the practice of companies or universities for at least approximately five days during the summer break.
		10th	Practice on companies or universities	Able to enforce the practice of companies or universities for at least approximately five days during the summer break.

		11th	Practice on companies or universities	Able to enforce the practice of companies or universities for at least approximately five days during the summer break.
		12th	Practice on companies or universities	Able to enforce the practice of companies or universities for at least approximately five days during the summer break.
		13th	Practice on companies or universities	Able to enforce the practice of companies or universities for at least approximately five days during the summer break.
		14th	Practice on companies or universities	Able to enforce the practice of companies or universities for at least approximately five days during the summer break.
		15th	Practice on companies or universities	Able to enforce the practice of companies or universities for at least approximately five days during the summer break.
		16th	Practice on companies or universities	Able to enforce the practice of companies or universities for at least approximately five days during the summer break.
2nd Semester	3rd Quarter	1st	Practice on companies or universities	Able to enforce the practice of companies or universities for at least approximately five days during the summer break.
		2nd	Practice on companies or universities	Able to enforce the practice of companies or universities for at least approximately five days during the summer break.
		3rd	Practice on companies or universities	Able to enforce the practice of companies or universities for at least approximately five days during the summer break.
		4th	Practice on companies or universities	Able to enforce the practice of companies or universities for at least approximately five days during the summer break.
		5th	Practice on companies or universities	Able to enforce the practice of companies or universities for at least approximately five days during the summer break.
		6th	Practice on companies or universities	Able to enforce the practice of companies or universities for at least approximately five days during the summer break.
		7th	Practice on companies or universities	Able to enforce the practice of companies or universities for at least approximately five days during the summer break.
		8th	Practice on companies or universities	Able to enforce the practice of companies or universities for at least approximately five days during the summer break.
	4th Quarter	9th	Create a report	Able to create a report of the practice, a manuscript, presentation material.
		10th	Create a report	Able to create a report of the practice, a manuscript, presentation material.
		11th	Create a report	Able to create a report of the practice, a manuscript, presentation material.
		12th	Create a report	Able to create a report of the practice, a manuscript, presentation material.
		13th	Briefing of the practice	Able to enforce a presentation of the practice to the personnel at the practical training site, faculty and classmate.
		14th	Briefing of the practice	Able to enforce a presentation of the practice to the personnel at the practical training site, faculty and classmate.
		15th	Study on companies	To advance own career participating the seminar on companies, by leveraging own experience.
		16th	Study on companies	To advance own career participating the seminar on companies, by leveraging own experience.

Evaluation Method and Weight (%)

	Examination	Presentation	Mutual Evaluations between students	Behavior	Portfolio	Other	Total
Subtotal	0	10	0	0	10	80	100
Basic Proficiency	0	0	0	0	0	0	0
Specialized Proficiency	0	0	0	0	0	0	0
Cross Area Proficiency	0	10	0	0	10	80	100

Anan College	Year	2024	Course Title	Research for Graduation Thesis

Course Information

Course Code	1815000	Course Category	Specialized / Compulsory
Class Format	Seminar	Credits	School Credit: 10
Department	Course of Civil Engineering	Student Grade	5th
Term	Year-round	Classes per Week	10
Textbook and/or Teaching Materials			
Instructor	Yoshimura Hiroshi,Moriyama Takuro,Osada Kengo,Tada Yutaka,Inoue Takafumi,Kadono Takuma,Kagemasa Shuka		

Course Objectives

1. Able to understand the significance of research topics and to conduct experiments, surveys, and analyses necessary to solve problems and problems.
2. Able to summarize the results and considerations of your research in a thesis.
3. Able to present the results of your research using accurate words and diagrams.

Rubric

	Ideal Level	Standard Level	Unacceptable Level
Achievement 1	Able to understand the significance of research topics and to voluntarily conduct experiments, investigations, and analyses to solve problems.	Able to understand the significance of research topics and to conduct experiments, investigations, and analyses to solve problems.	Able to understand the significance of the research topic and conduct experiments, investigations, and analyses to solve problems, but not sufficient.
Achievement 2	Able to summarize the results and considerations of research in the text of a thesis using accurate words.	Able to describe and summarize the results and discussions of research in accordance with the thesis and regulations.	Able to describe the results and discussions of the research as chapters using charts and tables.
Achievement 3	Able to make effective presentations of their research results using accurate words and diagrams, and to have discussions with others outside their expertise.	Able to present research results using appropriate words and diagrams.	Able to give a presentation on research results, but not not sufficient.

Assigned Department Objectives

学習・教育到達度目標 B-1 学習・教育到達度目標 C-1 学習・教育到達度目標 C-2 学習・教育到達度目標 D-2 学習・教育到達度目標 E-3

Teaching Method

Outline	The goal of this course is to apply and utilize all the knowledge and skills acquired so far, to acquire practical skills to solve given problems and problems, and to enhance the qualifications of engineers who can contribute to society.
Style	Students will conduct their research independently with the advice and guidance of their assigned supervisors. The overall grade will be 60% for the supervisor, 10% for the mid-term presentation, and 30% for the presentation (oral presentation and abstract). [Class time: 300 hours]
Notice	Assignment to each supervisor will be determined in consideration of the student's own wishes and academic performance. Students should understand the significance of the research assignment assigned to them by their supervisor, communicate with their supervisors actively, independently, and continuously in order to solve their problems and problems, and carry out their research in accordance with their supervisor's guidance. The content and format of the graduation thesis, the content and method of presentation at the presentation, and the attitude of the presentation will be comprehensively judged by all academic advisors.

Characteristics of Class / Division in Learning

☐ Active Learning	☐ Aided by ICT	☐ Applicable to Remote Class	☐ Instructor Professionally Experienced

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	conduct of research	In accordance with the instructions of the supervisor, students will set a research topic, conduct experiments, surveys, and analyses, and examine and discuss the results, prepare papers, etc., and prepare for presentation.
		2nd	conduct of research	In accordance with the instructions of the supervisor, students will set a research topic, conduct experiments, surveys, and analyses, and examine and discuss the results, prepare papers, etc., and prepare for presentation.
		3rd	conduct of research	In accordance with the instructions of the supervisor, students will set a research topic, conduct experiments, surveys, and analyses, and examine and discuss the results, prepare papers, etc., and prepare for presentation.
		4th	conduct of research	In accordance with the instructions of the supervisor, students will set a research topic, conduct experiments, surveys, and analyses, and examine and discuss the results, prepare papers, etc., and prepare for presentation.

		5th	conduct of research	In accordance with the instructions of the supervisor, students will set a research topic, conduct experiments, surveys, and analyses, and examine and discuss the results, prepare papers, etc., and prepare for presentation.
		6th	conduct of research	In accordance with the instructions of the supervisor, students will set a research topic, conduct experiments, surveys, and analyses, and examine and discuss the results, prepare papers, etc., and prepare for presentation.
		7th	conduct of research	In accordance with the instructions of the supervisor, students will set a research topic, conduct experiments, surveys, and analyses, and examine and discuss the results, prepare papers, etc., and prepare for presentation.
		8th	conduct of research	In accordance with the instructions of the supervisor, students will set a research topic, conduct experiments, surveys, and analyses, and examine and discuss the results, prepare papers, etc., and prepare for presentation.
	2nd Quarter	9th	conduct of research	In accordance with the instructions of the supervisor, students will set a research topic, conduct experiments, surveys, and analyses, and examine and discuss the results, prepare papers, etc., and prepare for presentation.
		10th	conduct of research	In accordance with the instructions of the supervisor, students will set a research topic, conduct experiments, surveys, and analyses, and examine and discuss the results, prepare papers, etc., and prepare for presentation.
		11th	conduct of research	In accordance with the instructions of the supervisor, students will set a research topic, conduct experiments, surveys, and analyses, and examine and discuss the results, prepare papers, etc., and prepare for presentation.
		12th	conduct of research	In accordance with the instructions of the supervisor, students will set a research topic, conduct experiments, surveys, and analyses, and examine and discuss the results, prepare papers, etc., and prepare for presentation.
		13th	conduct of research	In accordance with the instructions of the supervisor, students will set a research topic, conduct experiments, surveys, and analyses, and examine and discuss the results, prepare papers, etc., and prepare for presentation.
		14th	conduct of research	In accordance with the instructions of the supervisor, students will set a research topic, conduct experiments, surveys, and analyses, and examine and discuss the results, prepare papers, etc., and prepare for presentation.
		15th	conduct of research	In accordance with the instructions of the supervisor, students will set a research topic, conduct experiments, surveys, and analyses, and examine and discuss the results, prepare papers, etc., and prepare for presentation.
		16th	conduct of research	In accordance with the instructions of the supervisor, students will set a research topic, conduct experiments, surveys, and analyses, and examine and discuss the results, prepare papers, etc., and prepare for presentation.
2nd Semester	3rd Quarter	1st	conduct of research	In accordance with the instructions of the supervisor, students will set a research topic, conduct experiments, surveys, and analyses, and examine and discuss the results, prepare papers, etc., and prepare for presentation.
		2nd	conduct of research	In accordance with the instructions of the supervisor, students will set a research topic, conduct experiments, surveys, and analyses, and examine and discuss the results, prepare papers, etc., and prepare for presentation.
		3rd	conduct of research	In accordance with the instructions of the supervisor, students will set a research topic, conduct experiments, surveys, and analyses, and examine and discuss the results, prepare papers, etc., and prepare for presentation.
		4th	conduct of research	In accordance with the instructions of the supervisor, students will set a research topic, conduct experiments, surveys, and analyses, and examine and discuss the results, prepare papers, etc., and prepare for presentation.
		5th	conduct of research	In accordance with the instructions of the supervisor, students will set a research topic, conduct experiments, surveys, and analyses, and examine and discuss the results, prepare papers, etc., and prepare for presentation.

		6th	conduct of research	In accordance with the instructions of the supervisor, students will set a research topic, conduct experiments, surveys, and analyses, and examine and discuss the results, prepare papers, etc., and prepare for presentation.
		7th	conduct of research	In accordance with the instructions of the supervisor, students will set a research topic, conduct experiments, surveys, and analyses, and examine and discuss the results, prepare papers, etc., and prepare for presentation.
		8th	conduct of research	In accordance with the instructions of the supervisor, students will set a research topic, conduct experiments, surveys, and analyses, and examine and discuss the results, prepare papers, etc., and prepare for presentation.
	4th Quarter	9th	conduct of research	In accordance with the instructions of the supervisor, students will set a research topic, conduct experiments, surveys, and analyses, and examine and discuss the results, prepare papers, etc., and prepare for presentation.
		10th	conduct of research	In accordance with the instructions of the supervisor, students will set a research topic, conduct experiments, surveys, and analyses, and examine and discuss the results, prepare papers, etc., and prepare for presentation.
		11th	conduct of research	In accordance with the instructions of the supervisor, students will set a research topic, conduct experiments, surveys, and analyses, and examine and discuss the results, prepare papers, etc., and prepare for presentation.
		12th	conduct of research	In accordance with the instructions of the supervisor, students will set a research topic, conduct experiments, surveys, and analyses, and examine and discuss the results, prepare papers, etc., and prepare for presentation.
		13th	conduct of research	In accordance with the instructions of the supervisor, students will set a research topic, conduct experiments, surveys, and analyses, and examine and discuss the results, prepare papers, etc., and prepare for presentation.
		14th	conduct of research	In accordance with the instructions of the supervisor, students will set a research topic, conduct experiments, surveys, and analyses, and examine and discuss the results, prepare papers, etc., and prepare for presentation.
		15th	conduct of research	In accordance with the instructions of the supervisor, students will set a research topic, conduct experiments, surveys, and analyses, and examine and discuss the results, prepare papers, etc., and prepare for presentation.
		16th	presentation	Summarize the results of your research and make presentations using appropriate words and diagrams.

Evaluation Method and Weight (%)

	Examination	Presentation	Mutual Evaluations between students	Behavior	Portfolio	Other	Total
Subtotal	0	40	0	0	0	60	100
Basic Proficiency	0	0	0	0	0	0	0
Specialized Proficiency	0	30	0	0	0	50	80
Cross Area Proficiency	0	10	0	0	0	10	20

Anan College	Year	2024	Course Title	Structural Engineering 3

Course Information

Course Code	1815C03	Course Category	Specialized / Compulsory
Class Format	Lecture	Credits	Academic Credit: 2
Department	Course of Civil Engineering	Student Grade	5th
Term	First Semester	Classes per Week	前期:2
Textbook and/or Teaching Materials	Concrete Structural Engineering（MORIKITA PUBLISHING CO., LTD）		
Instructor	Kadono Takuma		

Course Objectives

1.Able to explain concrete reinforcement methods, types and characteristics of structures, and typical design methods (limit state design method, allowable stress design method).
2.Able to explain the mechanical properties of reinforcing bars and concrete, and calculate the basic cross-sectional dimensions of RC (reinforced concrete).
3.Able to calculate the basic sectional forces of RCs subjected to bending moments, shear forces, or axial forces, and consider the safety of structural members.
4.Able to understand the durability and fatigue of RC, and consider their basic safety.
5.Able to explain the characteristics and classification of PCs, understand and calculate prestress forces and section forces, and examine usability.

Rubric

	Ideal Level	Standard Level	Minimum Level
Achievement 1	Able to understand concrete reinforcement methods, types and characteristics of structures, and typical design methods, and explain them accurately.	Able to understand concrete reinforcement methods, types and characteristics of structures, and typical design methods, and explain them.	Able to explain concrete reinforcement methods, types and characteristics of structures, and typical design methods.
Achievement 2	Able to accurately understand and explain the mechanical properties of reinforcing bars and concrete, and accurately understand and calculate the basic cross-sectional dimensions of RC.	Able to understand and explain the mechanical properties of reinforcing bars and concrete, and understand and calculate basic cross-sectional dimensions of RC.	Able to explain the mechanical properties of reinforcing bars and concrete, and calculate the basic cross-sectional dimensions of RC.
Achievement 3	Able to understand and explain the mechanical properties of reinforcing bars and concrete, and understand and calculate basic cross-sectional dimensions of RC.	Able to understand and calculate the basic sectional forces of RC subjected to bending moments, shear forces, or axial forces, and consider the safety of structural members.	Able to calculate the basic sectional forces of RCs subjected to bending moments, shear forces, or axial forces, and consider the safety of structural members.
Achievement 4	Able to understand the durability and fatigue of RC, and properly consider their safety.	Able to understand the durability and fatigue of RC, and consider their basic safety.	Able to consider the basic safety of RC durability and fatigue.
Achievement 5	Able to properly explain the characteristics and classification of PCs, understand and calculate prestress forces and sectional forces, and examine usability appropriately.	Able to explain the characteristics and classification of PCs, understand and calculate prestress forces and section forces, and examine usability.	Able to explain the characteristics and classification of PC, calculate the prestress force and section force, and examine the usability.

Assigned Department Objectives

学習・教育到達度目標 D-1

Teaching Method

Outline	RC (reinforced concrete) and PC (prestressed concrete) are the basic structural forms of construction structures. The goal of this course is to acquire basic knowledge and skills related to the mechanical properties and design of RC and PC, which are necessary for the design, construction, maintenance, etc. of actual structures.In this course, faculty member who was in charge of research, development and design of concrete structures at company use its experience to teach this course.
Style	【31 class hours + final exam + 60 self-study hours】 Since this course is a credit course, it is necessary to submit assignments for pre- and post-learning.
Notice	This course belongs to JABEE-related dynamics courses. Make sure you bring a calculator with you every time, as you will be doing calculations during the lecture. This class is based on the knowledge of related subjects such as materials, structures, soil properties, etc. in the 2nd to 4th years, so please review these class contents before participating in the class. This course is closely related to the annual structural materials experiment, materials science 1 and 2, etc., so please do not only class but also self-study to understand the contents of the lecture.

Characteristics of Class / Division in Learning

☐ Active Learning	☐ Aided by ICT	☐ Applicable to Remote Class	☑ Instructor Professionally Experienced

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	Outline / Concrete structure design method	Able to explain the goals, significance, plans, and precautions of this course. / Able to explain concrete reinforcement methods, types and characteristics of structures, and typical design methods.
		2nd	Mechanical properties of materials used (reinforced concrete, concrete)	Able to explain the mechanical properties of reinforcing bars and concrete.

		3rd	Basics of RC structural calculation	Able to calculate the basic cross-sectional dimensions of RC.
		4th	Limit state design method for RC members (cross-section failure)	Able to calculate the basic sectional forces of RC subjected to bending moments and shear forces, and consider the safety of structural members.
		5th	Limit state design method for RC members (cross-section failure)	Able to calculate the basic sectional forces of RC subjected to bending moments and shear forces, and consider the safety of structural members.
		6th	RC member limit state design method (cross-section failure and usability)	Able to calculate the basic sectional forces of RC subjected to bending moments and shear forces, and consider the safety of structural members.
		7th	Limit state design method for RC members (usability)	Able to calculate the basic sectional forces of RC subjected to bending moments and shear forces, and consider the safety of structural members.
		8th	Midterm exam	
	2nd Quarter	9th	Return of exam papers / Allowable stress design method for RC members	Able to calculate the basic sectional forces of RC subjected to bending moments and shear forces, and consider the safety of structural members.
		10th	Allowable stress design method for RC members	Able to calculate the basic sectional forces of RC subjected to bending moments and shear forces, and consider the safety of structural members.
		11th	Limit state design method for RC members (bending and axial force)	Able to calculate the basic sectional forces of RC subjected to bending moments and shear forces, and consider the safety of structural members.
		12th	Limit state design method for RC members (durability and fatigue)	Able to do basic safety considerations regarding RC durability and fatigue.
		13th	Limit state design method for RC members (durability and fatigue)	Able to do basic safety considerations regarding RC durability and fatigue.
		14th	PC member design method	Able to explain the characteristics and classification of PC, calculate the prestress force and section force, and examine the usability.
		15th	PC member design method	Able to explain the characteristics and classification of PC, calculate the prestress force and section force, and examine the usability.
		16th	(Final exam) Return of exam papers	

Evaluation Method and Weight (%)

	Examination	Presentation	Mutual Evaluations between students	Behavior	Portfolio	Other	Total
Subtotal	60	0	0	0	40	0	100
Basic Proficiency	20	0	0	0	10	0	30
Specialized Proficiency	30	0	0	0	20	0	50
Cross Area Proficiency	10	0	0	0	10	0	20

Anan College	Year	2024	Course Title	Structural Engineering 2

Course Information

Course Code	1815C04	Course Category	Specialized / Compulsory
Class Format	Lecture	Credits	Academic Credit: 2
Department	Course of Civil Engineering	Student Grade	5th
Term	First Semester	Classes per Week	前期:2
Textbook and/or Teaching Materials	reidaidemanabukyouryoukougaku (KYORITSU SHUPPAN CO., LTD.)		
Instructor	Inoue Takafumi		

Course Objectives

1 Deepen and solidify knowledge of structural engineering (including structural mechanics and materials science).
2 Ability to perform design calculations based on given conditions.

Rubric

	Ideal Level	Standard Level	Minimum Level
Achievement 1	Able to accurately explain and calculate basic matters for designing based on previous knowledge of structural engineering, etc.	Able to explain and calculate basic matters for designing based on previous knowledge of structural engineering, etc.	Able to understand the basics of designing based on their previous knowledge of structural engineering, etc.
Achievement 2	Able to accurately perform design calculations based on given conditions.	Able to perform design calculations based on given conditions.	Able to understand design calculations based on given conditions.
Achievement 3			

Assigned Department Objectives

Teaching Method

Outline	Steel structure design can often be understood by doing your own paper-and-pencil calculations. The goal of this lecture is to deepen your understanding of the design of steel structures such as bridges by solving many example problems and practice problems. In addition, by integrating this knowledge, we will design the main girder of a plate girder bridge in the latter half of this lecture.
Style	The lesson plan is a schedule, and the lesson will proceed flexibly depending on the level of understanding. In class, you will solve many problems, but since this is a comprehensive exercise that includes topics such as structural mechanics, you should not only solve the problems in class, but also many exercises and problems on your own. Assignment submissions must be submitted strictly by the deadline, based on the format and conditions required by the assignment (delays will result in points being deducted). In the second half of the class, we will be assigned a design task for the main girder of a plate girder bridge. [Class time 30 hours]
Notice	Grades will be evaluated 50% on regular exams and 50% on reports and progress. Assignment submissions must be submitted strictly by the deadline, based on the format and conditions required by the assignment (delays will result in points being deducted). Write your report in a way that others can understand.

Characteristics of Class / Division in Learning

☐ Active Learning	☐ Aided by ICT	☐ Applicable to Remote Class	☐ Instructor Professionally Experienced

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	1. Loads acting on steel bridges	Able to explain and calculate 1) main load, 2) secondary load, and 3) others.
		2nd	1. Loads acting on steel bridges	Able to explain and calculate 1) main load, 2) secondary load, and 3) others.
		3rd	2. Mechanical properties of steel	Able to explain and calculate 1) mechanical properties and 2) fatigue strength.
		4th	3. Strength of bar member	Able to explain and calculate 1) tension members, 2) compression members, and 3) others.
		5th	3. Strength of bar member	Able to explain and calculate 1) tension members, 2) compression members, and 3) others.
		6th	4. Steel bridge design method	Able to explain and calculate steel bridge design methods.
		7th	5. Plate element design method and its applications	Able to explain and calculate 1) the design method of plate elements that receive out-of-plane forces, and 2) the design method of plate elements that receive in-plane forces.
		8th	midterm/final exam	
	2nd Quarter	9th	5. Plate element design method and its applications	Able to explain and calculate 1) the design method of plate elements that receive out-of-plane forces, and 2) the design method of plate elements that receive in-plane forces.
		10th	6. Design of members subject to various cross-sectional forces	Able to explain and calculate 1) members subjected to tension and 2) members subjected to compression.
		11th	6. Design of members subject to various cross-sectional forces	Able to explain and calculate 1) members subjected to tension and 2) members subjected to compression.
		12th	7. Plate girder bridge design	Able to explain and calculate the 1) I digit.
		13th	7. Plate girder bridge design	Able to explain and calculate the 1) I digit.

		14th	7. Plate girder bridge design	Able to explain and calculate the 1) I digit.
		15th	7. Plate girder bridge design	Able to explain and calculate 2) others.
		16th	Answer return	

Evaluation Method and Weight (%)

	Examination	Presentation	Mutual Evaluations between students	Behavior	Portfolio	Other	Total
Subtotal	50	0	0	0	50	0	100
Basic Proficiency	30	0	0	0	20	0	50
Specialized Proficiency	20	0	0	0	30	0	50
Cross Area Proficiency	0	0	0	0	0	0	0

Anan College	Year	2024	Course Title	Programming

Course Information

Course Code	1815I01	Course Category	Specialized / Compulsory
Class Format	Lecture	Credits	Academic Credit: 2
Department	Course of Civil Engineering	Student Grade	5th
Term	Second Semester	Classes per Week	後期:2
Textbook and/or Teaching Materials	SuuchikeisannotamenoFortran90/95puroguramingunyumon (Morikita Publishing Co., Ltd.)		
Instructor	Inoue Takafumi		

Course Objectives

1. Able to understand the method of simple regression analysis and be able to create a program.
2. Able to understand numerical integration methods and be able to create programs.
3. Able to understand how to solve nonlinear equations and be able to create programs.
4. Able to understand how to solve simultaneous linear equations and be able to create programs.
5. Able to understand how to calculate inverse matrices and be able to create programs.

Rubric

	Ideal Level	Standard Level	Minimum Level
Achievement 1	Able to understand the method of simple regression analysis and be able to create programs.	Able to understand the method of simple regression analysis and be able to change and modify programs.	Able to understand simple regression analysis methods and programs.
Achievement 2	Able to understand numerical integration methods and be able to create programs.	Able to understand numerical integration methods and be able to change and modify programs.	Able to understand numerical integration methods and their programs.
Achievement 3	Able to understand how to solve nonlinear equations and be able to create programs.	Able to understand how to solve nonlinear equations and be able to change and modify programs.	Able to understand methods of solving nonlinear equations and their programs.
Achievement 4	Able to understand how to solve simultaneous linear equations and be able to create programs.	Able to understand how to solve simultaneous linear equations and be able to change and modify programs.	Able to understand how to solve simultaneous linear equations and its programs.
Achievement 5	Able to understand how to calculate inverse matrices and be able to create programs.	Able to understand how to calculate inverse matrices and be able to change and modify programs.	Able to understand how to calculate inverse matrix and its programs.

Assigned Department Objectives

Teaching Method

Outline	In this class, students will learn basic numerical calculation methods and algorithms, as well as programming using examples and practice problems, and learn the basic knowledge of numerical calculation methods.
Style	This class deals with Fortran, which is one of the programming languages. Learn basic numerical calculation methods and algorithms. In addition to lectures, students will conduct programming exercises (practical training) using computers in the seminar room. The "portfolio" of the evaluation percentage will be evaluated based on the answers to the programming exercise assignments. [30 hours of class time]
Notice	The class itself will be mainly written on the blackboard, but please bring your own textbook as it will be needed to confirm the basic functions of Fortran. Students should actively work on programming by using the practice room on their own after school.

Characteristics of Class / Division in Learning

☐ Active Learning	☐ Aided by ICT	☐ Applicable to Remote Class	☐ Instructor Professionally Experienced

Course Plan

			Theme	Goals
2nd Semester	3rd Quarter	1st	Guidance, programming basics	Able to understand the significance and overview of programming. Able to understand the basics of programming.
		2nd	programming basics	Able to understand the basics of programming.
		3rd	Simple regression analysis	Able to understand and be able to program regression analysis and correlation coefficients using the least squares method.
		4th	Simple regression analysis	Able to understand and be able to program regression analysis and correlation coefficients using the least squares method.
		5th	numerical integration method	Able to understand and be able to program numerical integration methods using the trapezoidal formula.
		6th	numerical integration method	Able to understand and be able to program numerical integration methods using the trapezoidal formula.
		7th	numerical integration method	Able to understand and be able to program numerical integration using Simpson's formula.
		8th	midterm exam	

	4th Quarter	9th	numerical integration method	Able to understand and be able to program numerical integration using Simpson's formula.
		10th	Solving nonlinear equations	Able to understand how to solve linear equations using Newton's method and be able to program.
		11th	Solving nonlinear equations	Able to understand how to solve linear equations using Newton's method and be able to program.
		12th	Solving simultaneous linear equations	Able to understand how to solve simultaneous linear equations using the Gauss-Jordan method and be able to program.
		13th	Solving simultaneous linear equations	Able to understand how to solve simultaneous linear equations using the Gauss-Jordan method and be able to program.
		14th	Matrix inverse calculation	Able to understand and be able to program inverse matrix calculations.
		15th	Matrix inverse calculation	Able to understand and be able to program inverse matrix calculations.
		16th	Answer return	

Evaluation Method and Weight (%)

	Examination	Presentation	Mutual Evaluations between students	Behavior	Portfolio	Other	Total
Subtotal	30	0	0	0	70	0	100
Basic Proficiency	15	0	0	0	35	0	50
Specialized Proficiency	15	0	0	0	35	0	50
Cross Area Proficiency	0	0	0	0	0	0	0

Anan College	Year	2024	Course Title	Civil Engineering Experiment 3

Course Information

Course Code	1815T05	Course Category	Specialized / Compulsory
Class Format		Credits	Academic Credit: 2
Department	Course of Civil Engineering	Student Grade	5th
Term	Year-round	Classes per Week	前期:4 後期:4
Textbook and/or Teaching Materials	The teachers distribute documents.		
Instructor	Osada Kengo,Kagemasa Shuka		

Course Objectives

1. Able to observe a pipeline's laminar and turbulent flow and understand each flow's characteristics. Able to measure a pipeline discharge and calculate the Reynolds number from experimental data.
2. Able to understand measurement methods of discharge in an open channel. Able to measure velocities and water depths using some instruments and estimate discharge using these data.
3. Able to understand each phenomenon of open channel flow: subcritical flow, supercritical flow, and hydraulic jump, and conduct flume experiments.
4. Understand and conduct experiments related to dissolved oxygen (DO) and biochemical oxygen demand (BOD).
5. Understand and conduct experiments related to pH.

Rubric

	Ideal Level	Standard Level	Minimum Level
Course Objective 1	Able to observe a pipeline's laminar and turbulent flow and understand enough each flow's characteristics. Able to measure a pipeline discharge and calculate the Reynolds number from experimental data.	Able to observe a pipeline's laminar and turbulent flow and understand each flow's characteristics. Able to measure a pipeline discharge and calculate the Reynolds number from experimental data.	Able to observe a pipeline's laminar and turbulent flow and understand each flow's characteristics. Able to measure a pipeline discharge and calculate the Reynolds number from experimental data with help from other group members.
Course Objective 2	Able to understand enough measurement methods of discharge in an open channel. Able to measure velocities and water depths using some instruments and estimate discharge using these data.	Able to understand measurement methods of discharge in an open channel. Able to measure velocities and water depths using some instruments and estimate discharge using these data.	Able to understand measurement methods of discharge in an open channel. Able to measure velocities and water depths using some instruments and estimate discharge using these data with help from other group members.
Course Objective 3	Able to understand enough each phenomenon of open channel flow: subcritical flow, supercritical flow, and hydraulic jump, and conduct flume experiments.	Able to understand each phenomenon of open channel flow: subcritical flow, supercritical flow, and hydraulic jump, and conduct flume experiments.	Able to slightly understand each phenomenon of open channel flow: subcritical flow, supercritical flow, and hydraulic jump, and conduct flume experiments.
Course Objective 4	Understand the principles and significance of DO and BOD experiments and perform them.	Understand the principles of DO and BOD experiments and perform them.	Able to perform DO and BOD experiments.
Course Objective 5	Understand the principles and significance of pH experiments and experiment with pH.	Understand the principle of pH experiments and experiment with pH.	Able to perfor pH experiments.

Assigned Department Objectives

学習・教育到達度目標 D-2 学習・教育到達度目標 D-4 学習・教育到達度目標 E-1 学習・教育到達度目標 E-2

Teaching Method

Outline	In the first semester, learners conduct flume experiments using knowledge learned in each Hydraulics and Hydraulic Engineering class. Learners aim to obtain knowledge and techniques of flow patterns, some methods of flow measurement by using instruments, and some calculation methods. In the second semester, learners conduct experiments on water quality using knowledge learned in Environmental Engineering class. Learners will understand deeply techniques that help environmental protection by obtaining knowledge of methods for understanding a water quality environment quantitatively through experiments.
Style	Step 1: The teachers explain the outline of each experiment. Step 2: The teachers give the pre-investigation items. Learners investigate these items and write a report with students of the same group. Learners obtain knowledge and techniques of essential measurement and calculation methods through these tasks before conducting experiments. Step 3: Learners conduct experiments in a group. Step 4: Learners take the final examinations of each semester to confirm the achievement level of the course objectives. (The learning time: 60 hours, The self-study time: 30 hours)
Notice	Wear suitable clothing and shoes for the experiment. Although learners will not handle dangerous things, please be careful during experiments. Moreover, learners have to handle experimental instruments carefully. Please bring a calculator to every class because learners will conduct many calculations to prepare reports. Learners have to observe the deadline for submitting the reports.

Characteristics of Class / Division in Learning

☐ Active Learning	☐ Aided by ICT	☐ Applicable to Remote Class	☐ Instructor Professionally Experienced

Course Plan

			Theme	Goals

1st Semester	1st Quarter	1st	Class guidance. Pre-investigation on the estimation of a discharge coefficient of a triangular weir (investigation of experiment and calculation methods). Pre-investigation on the measurement method of water depth in a complex open channel flow which includes subcritical, supercritical, and hydraulic jump.	Able to investigate measurement and calculation methods for estimating a discharge coefficient of a triangular weir and understand experimental objectives. Able to investigate the measurement of water depth and calculation methods on a complex open channel flow and understand experimental objectives.
		2nd	Pre-investigation on the estimation of a discharge coefficient of a triangular weir (investigation of experiment and calculation methods). Pre-investigation on the measurement method of water depth in a complex open channel flow which includes subcritical, supercritical, and hydraulic jump.	Able to investigate measurement and calculation methods for estimating a discharge coefficient of a triangular weir and understand experimental objectives. Able to investigate the measurement of water depth and calculation methods on a complex open channel flow and understand experimental objectives.
		3rd	Pre-investigation on the estimation of a discharge coefficient of a triangular weir (investigation of experiment and calculation methods). Pre-investigation on the measurement method of water depth in a complex open channel flow which includes subcritical, supercritical, and hydraulic jump.	Able to investigate measurement and calculation methods for estimating a discharge coefficient of a triangular weir and understand experimental objectives. Able to investigate the measurement of water depth and calculation methods on a complex open channel flow and understand experimental objectives.
		4th	Pre-investigation on the estimation of a discharge coefficient of a triangular weir (investigation of experiment and calculation methods). Pre-investigation on the measurement method of water depth in a complex open channel flow which includes subcritical, supercritical, and hydraulic jump.	Able to investigate measurement and calculation methods for estimating a discharge coefficient of a triangular weir and understand experimental objectives. Able to investigate the measurement of water depth and calculation methods on a complex open channel flow and understand experimental objectives.
		5th	Experiment on the estimation of a discharge coefficient of a triangular weir. Experiment on the measurement of the water surface profile in a complex open channel flow.	Able to understand the estimation method of the discharge coefficient of a triangular weir Able to understand each phenomenon of open channel flow: subcritical flow, supercritical flow, and hydraulic jump, and conduct flume experiments.
		6th	Experiment on the estimation of a discharge coefficient of a triangular weir. Experiment on the measurement of the water surface profile in a complex open channel flow.	Able to understand the estimation method of the discharge coefficient of a triangular weir Able to understand each phenomenon of open channel flow: subcritical flow, supercritical flow, and hydraulic jump, and conduct flume experiments.
		7th	Pre-investigation on the measurement and calculation method of discharge of an open channel (investigation of methods used in real rivers). Pre-investigation of pipeline experiment (investigation of measurement and calculation methods).	Able to investigate some methods for estimating a discharge in real rivers and understand experimental objectives. Able to investigate the observation of a pipeline's laminar and turbulent flow and calculation methods of the Reynolds number and friction loss and understand experimental objectives.
		8th	Pre-investigation on the measurement and calculation method of discharge of an open channel (investigation of methods used in real rivers). Pre-investigation of pipeline experiment (investigation of measurement and calculation methods).	Able to investigate some methods for estimating a discharge in real rivers and understand experimental objectives. Able to investigate the observation of a pipeline's laminar and turbulent flow and calculation methods of the Reynolds number and friction loss and understand experimental objectives.
	2nd Quarter	9th	Pre-investigation on the measurement and calculation method of discharge of an open channel (investigation of methods used in real rivers). Pre-investigation of pipeline experiment (investigation of measurement and calculation methods).	Able to investigate some methods for estimating a discharge in real rivers and understand experimental objectives. Able to investigate the observation of a pipeline's laminar and turbulent flow and calculation methods of the Reynolds number and friction loss and understand experimental objectives.
		10th	Pre-investigation on the measurement and calculation method of discharge of an open channel (investigation of methods used in real rivers). Pre-investigation of pipeline experiment (investigation of measurement and calculation methods).	Able to investigate some methods for estimating a discharge in real rivers and understand experimental objectives. Able to investigate the observation of a pipeline's laminar and turbulent flow and calculation methods of the Reynolds number and friction loss and understand experimental objectives.
		11th	Experiment on the estimation of a discharge in an open channel. Experiment on the observation and measurement of a pipeline flow.	Able to understand measurement methods of discharge in an open channel. Able to measure velocities and water depths using some instruments and estimate discharge using these data. Able to observe a pipeline's laminar and turbulent flow and understand each flow's characteristics. Able to measure a pipeline discharge and calculate the Reynolds number and friction loss from experimental data.

		12th	Experiment on the estimation of a discharge in an open channel. Experiment on the observation and measurement of a pipeline flow.	Able to understand measurement methods of discharge in an open channel. Able to measure velocities and water depths using some instruments and estimate discharge using these data. Able to observe a pipeline's laminar and turbulent flow and understand each flow's characteristics. Able to measure a pipeline discharge and calculate the Reynolds number and friction loss from experimental data.
		13th	Experiment on the estimation of a discharge in an open channel. Experiment on the observation and measurement of a pipeline flow.	Able to understand measurement methods of discharge in an open channel. Able to measure velocities and water depths using some instruments and estimate discharge using these data. Able to observe a pipeline's laminar and turbulent flow and understand each flow's characteristics. Able to measure a pipeline discharge and calculate the Reynolds number and friction loss from experimental data.
		14th	Experiment on the estimation of a discharge in an open channel. Experiment on the observation and measurement of a pipeline flow.	Able to understand measurement methods of discharge in an open channel. Able to measure velocities and water depths using some instruments and estimate discharge using these data. Able to observe a pipeline's laminar and turbulent flow and understand each flow's characteristics. Able to measure a pipeline discharge and calculate the Reynolds number and friction loss from experimental data.
		15th	Calculate using experimental data and prepare reports.	Able to calculate using experimental data and prepare reports.
		16th	Calculate using experimental data and prepare reports.	Able to calculate using experimental data and prepare reports.
2nd Semester	3rd Quarter	1st	Guidance Preliminary study of river water quality experiment	Able to study the specified items and understand their purpose concerning river water quality experiments.
		2nd	Preliminary study of river water quality experiment	Able to study the specified items and understand their purpose concerning river water quality experiments.
		3rd	River water quality experiment	Able to experiment with water quality parameters (pH, DO, BOD, etc.).
		4th	River water quality experiment	Able to experiment with water quality parameters (pH, DO, BOD, etc.).
		5th	Organize the experimental data and prepare a report	Able to organize the experimental data and prepare a report based on them.
		6th	Organize the experimental data and prepare a report	Able to organize the experimental data and prepare a report based on them.
		7th	Organize the experimental data and prepare a report	Able to organize the experimental data and prepare a report based on them.
		8th	Organize the experimental data and prepare a report	Able to organize the experimental data and prepare a report based on them.
	4th Quarter	9th	Preliminary study of wastewater treatment experiment	Able to study the specified items and understand their purpose concerning wastewater treatment experiments.
		10th	Preliminary study of wastewater treatment experiment	Able to study the specified items and understand their purpose concerning wastewater treatment experiments.
		11th	Wastewater treatment experiment	Able to reproduce organic matter removal by the activated sludge process at the laboratory level.
		12th	Wastewater treatment experiment	Able to reproduce organic matter removal by the activated sludge process at the laboratory level.
		13th	Organize the experimental data and prepare a report	Able to organize the experimental data and prepare a report based on them.
		14th	Organize the experimental data and prepare a report	Able to organize the experimental data and prepare a report based on them.
		15th	Organize the experimental data and prepare a report	Able to organize the experimental data and prepare a report based on them.
		16th	Organize the experimental data and prepare a report	Able to organize the experimental data and prepare a report based on them.

Evaluation Method and Weight (%)

	Midterm/final Exam	Quiz	Portfolio	Presentation/Attitude	Other	Total
Subtotal	20	0	80	0	0	100
Basic Proficiency	5	0	20	0	0	25
Specialized Proficiency	15	0	60	0	0	75
Cross Area Proficiency	0	0	0	0	0	0

Anan College	Year	2024	Course Title	Design and Drawing 2

Course Information

Course Code	1895402	Course Category	Specialized / Elective
Class Format	Lecture	Credits	Academic Credit: 2
Department	Course of Civil Engineering	Student Grade	5th
Term	Year-round	Classes per Week	前期:2 後期:2
Textbook and/or Teaching Materials	これで完璧!長期優良住宅		
Instructor	Ebisuno Akio,Moriyama Takuro		

Course Objectives

1．鉄筋コンクリート造及び鉄骨構造の大まかな形態的特徴や寸法計画を理解できる。
2．必要な図面情報や記号・寸法等を正確に記入した正確な図面作成や模型作製ができる。
3．空間（3次元のひろがり）を意識して、エスキースや設計図面の表現できる。
4．建築設計の進め方を理解し、説明できる。
5．建築設計行為が、環境に及ぼす影響や環境づくりの担い手に大きな役割を果たすことを認識する。

Rubric

	理想的な到達レベルの目安	標準的な到達レベルの目安	未到達レベルの目安
評価項目1	鉄筋コンクリート造及び鉄骨構造の大まかな形態的特徴や寸法計画を理解でき詳しく正確な説明ができる。	鉄筋コンクリート造及び鉄骨構造の大まかな形態的特徴や寸法計画を理解できており、説明ができる。	鉄筋コンクリート造及び鉄骨構造の大まかな形態的特徴や寸法計画の理解が不十分であり、説明が十分にはできない。
評価項目2	十分必要な図面情報や記号・寸法等を正確に記入した正確な図面作成やこれを反映した模型作製ができる。	最低限必要な図面情報や記号・寸法等を正確に記入した図面作成やこれを反映した模型作製ができる。	必要な図面情報や記号・寸法等を正確に記入した図面作成が十分にはできない。模型作製も十分にはできない。
評価項目3	空間（3次元のひろがり）を意識して、エスキースや設計図面が表現でき、実際的で的確な説明もできる。	空間（3次元のひろがり）を意識して、エスキースや設計図面が表現できる。	エスキースや設計図面が十分に描けない。
評価項目4	総合的な建築設計の進め方や意義を理解し、具体的に詳しい説明ができる。	建築設計の進め方や役割を理解し、説明ができる。	建築設計の進め方の理解が不十分で、説明が部分的にしかできない。
評価項目5	建築設計行為が環境に及ぼす影響や環境づくりの担い手に果たす大きな役割について具体的に説明できる。	建築設計行為が環境に及ぼす影響や環境づくりの担い手に果たす大きな役割を説明できる。	建築設計行為が、環境に及ぼす影響や環境づくりの担い手に大きな役割を果たすことを十分には認識していない。

Assigned Department Objectives

学習・教育到達度目標 B-1 学習・教育到達目標 C-2 学習・教育到達度目標 E-1 学習・教育到達目標 E-2

Teaching Method

Outline	4年科目の建築設計製図１で行った木造住宅の平面図のトレースに引き続き、鉄筋コンクリート造・鉄骨構造も含めて立面図・断面図を描き、2次元の図面から3次元の空間をよりイメージを深め、理解できるようにする。より詳細を表現する縮尺での図面を描き、さらに模型づくりまたはパース作成等，積算，性能表示（構造，温熱，一次エネルギー，高齢者等対策他）に係る計算等を行うことにより、建築構造の仕組みを理解する。 この科目は、実務として建築設計を行ってきた一級建築士の担当教員が、その経験を活かし、授業を行うものである。
Style	【授業時間60時間＋自学自習時間30時間】
Notice	本科目は建築士試験の受験資格要件として定めた指定科目であり、修得することにより実務経験年数などの受験資格が有利となる。

Characteristics of Class / Division in Learning

☐ Active Learning	☐ Aided by ICT	☐ Applicable to Remote Class	☐ Instructor Professionally Experienced

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	小規模な建築物の設計	エスキースや設計図面、模型の作製ができる。 設計課題要求に対して、自らが学習しながら、設計構想がもてる。 空間・環境をつくるために、学習内容を活かして知識を組み立てることができる。
		2nd	小規模な建築物の設計	エスキースや設計図面、模型の作製ができる。 設計課題要求に対して、自らが学習しながら、設計構想がもてる。 空間・環境をつくるために、学習内容を活かして知識を組み立てることができる。
		3rd	小規模な建築物の設計	エスキースや設計図面、模型の作製ができる。 設計課題要求に対して、自らが学習しながら、設計構想がもてる。 空間・環境をつくるために、学習内容を活かして知識を組み立てることができる。
		4th	小規模な建築物の設計	エスキースや設計図面、模型の作製ができる。 設計課題要求に対して、自らが学習しながら、設計構想がもてる。 空間・環境をつくるために、学習内容を活かして知識を組み立てることができる。

		5th	小規模な建築物の設計	エスキースや設計図面、模型の作製ができる。 設計課題要求に対して、自らが学習しながら、設計構想がもてる。 空間・環境をつくるために、学習内容を活かして知識を組み立てることができる。
		6th	小規模な建築物の設計	エスキースや設計図面、模型の作製ができる。 設計課題要求に対して、自らが学習しながら、設計構想がもてる。 空間・環境をつくるために、学習内容を活かして知識を組み立てることができる。
		7th	小規模な建築物の設計	エスキースや設計図面、模型の作製ができる。 設計課題要求に対して、自らが学習しながら、設計構想がもてる。 空間・環境をつくるために、学習内容を活かして知識を組み立てることができる。
		8th	小規模な建築物の設計	エスキースや設計図面、模型の作製ができる。 設計課題要求に対して、自らが学習しながら、設計構想がもてる。 空間・環境をつくるために、学習内容を活かして知識を組み立てることができる。
	2nd Quarter	9th	小規模な建築物の設計	エスキースや設計図面、模型の作製ができる。 設計課題要求に対して、自らが学習しながら、設計構想がもてる。 空間・環境をつくるために、学習内容を活かして知識を組み立てることができる。
		10th	小規模な建築物の設計	エスキースや設計図面、模型の作製ができる。 設計課題要求に対して、自らが学習しながら、設計構想がもてる。 空間・環境をつくるために、学習内容を活かして知識を組み立てることができる。
		11th	小規模な建築物の設計	エスキースや設計図面、模型の作製ができる。 設計課題要求に対して、自らが学習しながら、設計構想がもてる。 空間・環境をつくるために、学習内容を活かして知識を組み立てることができる。
		12th	小規模な建築物の設計	エスキースや設計図面、模型の作製ができる。 設計課題要求に対して、自らが学習しながら、設計構想がもてる。 空間・環境をつくるために、学習内容を活かして知識を組み立てることができる。
		13th	小規模な建築物の設計	エスキースや設計図面、模型の作製ができる。 設計課題要求に対して、自らが学習しながら、設計構想がもてる。 空間・環境をつくるために、学習内容を活かして知識を組み立てることができる。
		14th	小規模な建築物の設計	エスキースや設計図面、模型の作製ができる。 設計課題要求に対して、自らが学習しながら、設計構想がもてる。 空間・環境をつくるために、学習内容を活かして知識を組み立てることができる。
		15th	プレゼンテーション	自らが設計、デザインした建築物について、プレゼンテーションする能力を育む
		16th	プレゼンテーション	自らが設計、デザインした建築物について、プレゼンテーションする能力を育む
2nd Semester	3rd Quarter	1st	小規模な建築物の設計	エスキースや設計図面、模型の作製ができる。 設計課題要求に対して、自らが学習しながら、設計構想がもてる。 空間・環境をつくるために、学習内容を活かして知識を組み立てることができる。
		2nd	小規模な建築物の設計	エスキースや設計図面、模型の作製ができる。 設計課題要求に対して、自らが学習しながら、設計構想がもてる。 空間・環境をつくるために、学習内容を活かして知識を組み立てることができる。
		3rd	小規模な建築物の設計	エスキースや設計図面、模型の作製ができる。 設計課題要求に対して、自らが学習しながら、設計構想がもてる。 空間・環境をつくるために、学習内容を活かして知識を組み立てることができる。
		4th	小規模な建築物の設計	エスキースや設計図面、模型の作製ができる。 設計課題要求に対して、自らが学習しながら、設計構想がもてる。 空間・環境をつくるために、学習内容を活かして知識を組み立てることができる。
		5th	小規模な建築物の設計	エスキースや設計図面、模型の作製ができる。 設計課題要求に対して、自らが学習しながら、設計構想がもてる。 空間・環境をつくるために、学習内容を活かして知識を組み立てることができる。
		6th	小規模な建築物の設計	エスキースや設計図面、模型の作製ができる。 設計課題要求に対して、自らが学習しながら、設計構想がもてる。 空間・環境をつくるために、学習内容を活かして知識を組み立てることができる。

		7th	小規模な建築物の設計	エスキースや設計図面、模型の作製ができる。 設計課題要求に対して、自らが学習しながら、設計構想がもてる。 空間・環境をつくるために、学習内容を活かして知識を組み立てることができる。
		8th	小規模な建築物の設計	エスキースや設計図面、模型の作製ができる。 設計課題要求に対して、自らが学習しながら、設計構想がもてる。 空間・環境をつくるために、学習内容を活かして知識を組み立てることができる。
	4th Quarter	9th	小規模な建築物の設計	エスキースや設計図面、模型の作製ができる。 設計課題要求に対して、自らが学習しながら、設計構想がもてる。 空間・環境をつくるために、学習内容を活かして知識を組み立てることができる。
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		14th	小規模な建築物の設計	エスキースや設計図面、模型の作製ができる。 設計課題要求に対して、自らが学習しながら、設計構想がもてる。 空間・環境をつくるために、学習内容を活かして知識を組み立てることができる。
		15th	プレゼンテーション	自らが設計、デザインした建築物について、プレゼンテーションする能力を育む
		16th	プレゼンテーション	自らが設計、デザインした建築物について、プレゼンテーションする能力を育む

Evaluation Method and Weight (%)

	試験	発表	相互評価	態度	ポートフォリオ	その他	Total
Subtotal	0	0	0	0	0	100	100
基礎的能力	0	0	0	0	0	20	20
専門的能力	0	0	0	0	0	40	40
分野横断的能力	0	0	0	0	0	40	40

Anan College	Year	2024	Course Title	Architectural Planning 3

Course Information

Course Code	1895D01	Course Category	Specialized / Elective
Class Format	Lecture	Credits	Academic Credit: 2
Department	Course of Civil Engineering	Student Grade	5th
Term	First Semester	Classes per Week	前期:2
Textbook and/or Teaching Materials	Building Environmental Engineering with Diagrams and Keywords, Gakugei Publishing Co. Illustration Easy Building Equipment, Gakugei Publishing Co.		
Instructor	Tada Yutaka		

Course Objectives

1. To be able to explain the role of the construction field and construction evaluation indices toward the formation of a recycling-oriented society.
2. To understand the role of building facilities and to be able to explain the indoor environment and environmental performance evaluation.
Understand and evaluate the fundamentals of lighting, illumination, and color. 4.
Understand the fundamentals of thermal conduction, thermal convection, and thermal radiation, and be able to propose a comfortable indoor thermal environment.

Rubric

	Ideal Level	Standard Level	Unacceptable Level
Achievement 1	Understand the role of the construction sector in the formation of a recycling-oriented society, and be able to explain construction evaluation indicators and apply them to actual problems. Construction evaluation indexes can be explained and applied to actual problems.	Understand the role of the construction sector in the formation of a recycling-oriented society, and be able to explain construction evaluation indicators and apply them to actual problems. Construction evaluation indexes can be explained.	Construction Sector for Establishing a Recycling-Oriented Society and can only partially explain the construction evaluation indicators.
Achievement 2	Understand the role of building equipment and Explain indoor environment and environmental performance assessment, and apply them to real-world problems.	Understand the role of building equipment and be able to explain indoor environment and environmental performance assessment.	Understands the role of building equipment and can only partially explain indoor environmental and environmental performance assessment.
Achievement 3	Understand the fundamentals of lighting, illumination, and color and be able to apply them to specific practical problems.	Understand and explain the fundamentals related to lighting, illumination, and color.	Unable to understand and only partially explain basic issues related to lighting, illumination, and color.
Achievement 4	"Understand the fundamentals of thermal conduction, thermal convection, and thermal radiation. Understand the fundamentals of thermal conduction, thermal convection, and thermal radiation, and be able to propose a comfortable indoor thermal environment in practice."	Understand the fundamentals of thermal conduction, thermal convection, and thermal radiation. Understand the fundamentals of thermal conduction, thermal convection, and thermal radiation, and be able to describe a comfortable indoor thermal environment.	"About thermal conduction, thermal convection, and thermal radiation fundamentals and can only partially explain a comfortable indoor thermal environment."

Assigned Department Objectives

学習・教育到達度目標 A-1 学習・教育到達度目標 A-2

Teaching Method

Outline	Students learn about air conditioning, water supply and drainage, sanitation, electrical, and communication facilities for the purpose of understanding the roles and operating principles of facilities in buildings. In addition, the overall building environment is studied by dividing it into four fields: light environment, thermal environment, air quality environment, and sound environment.
Style	This course is a credit course, so a report is required as pre- and post-learning. 30 hours of class time + 60 hours of self-study
Notice	This subject is a designated subject that is stipulated as a requirement for eligibility to sit for the professional architect examination, and acquisition of this subject will give you an advantage in terms of eligibility to sit for the examination, such as years of work experience.

Characteristics of Class / Division in Learning

☑ Active Learning	☑ Aided by ICT	□ Applicable to Remote Class	☑ Instructor Professionally Experienced

Course Plan

			Theme	Goals
1st Semester	1st Quarter	1st	Outline of construction equipment	Understand the role of equipment in buildings and civil engineering structures, life cycles, global environmental issues, international standards, evaluation criteria, etc.
		2nd	Thermal environment, envelope performance	Understand the following items and be able to explain comfortable indoor thermal environment. (1) Conducted heat, convection heat, radiant heat, heat quantity, etc. (2) Thermal conductivity, convective heat transfer coefficient, radiant heat transfer coefficient, etc.

		3rd	Thermal environment, envelope performance	Understand the following items and be able to explain a comfortable indoor thermal environment. (3) Heat storage, thermal insulation, airtightness, etc. (4) Humidity, condensation, enthalpy, etc.
		4th	Indoor Environment and Environmental Performance Assessment	Explain indoor environmental and environmental performance assessment, such as thermal environment index, indoor air quality standards, and energy rating standards.
		5th	light environment	"Understand the following items and be able to explain about comfortable indoor environment and urban landscape. (1) daylight, solar radiation, etc., (2) visual environment, bright visual conditions, etc. (1) daylight, solar radiation, etc., (2) visual environment, bright viewing conditions, etc., (3) illuminance, daylight ratio, etc., (4) color, etc. (3) illuminance, daylight rate, etc., (4) color, etc."
		6th	air conditioning equipment	Understand air conditioning equipment and be able to explain major models, configurations, and methods.
		7th	Ventilation equipment, disaster prevention equipment, fire extinguishing equipment	"To understand and explain natural ventilation, mechanical ventilation, smoke-proof compartments, natural smoke exhaust, mechanical smoke exhaust, etc. for air conditioning equipment. fire alarms, evacuation equipment, emergency equipment, etc. for fire protection equipment, and understand and explain the principles of fire extinguishing and the types and roles of fire extinguishing equipment for fire extinguishing equipment."
		8th	midterm examination	
	2nd Quarter	9th	Water supply facilities, hot water supply facilities, drainage facilities, sanitation facilities, septic tank facilities	Understand and be able to explain the purpose and types of water supply and drainage, as well as water supply and hot water systems.
		10th	Water supply facilities, hot water supply facilities, drainage facilities, sanitation facilities, septic tank facilities	Understand and explain the types of sanitary fixture equipment, traps, septic tanks, underground pipes, and water treatment plants.
		11th	Electrical and communication equipment	Understand and be able to explain the types and roles of power supply equipment and wiring equipment based on an understanding of basic knowledge of electricity.
		12th	Electrical and communication equipment	Understand and be able to explain the types and roles of power supply equipment and wiring equipment based on an understanding of basic knowledge of electricity.
		13th	air quality environment	Understand and explain indoor air quality issues, including the following. (1) permissible concentrations and ventilation requirements, etc.; (2) ventilation planning and ventilation, etc.
		14th	sound environment	Understand the following items and be able to explain the sound environment. (1) Elements of sound and hearing, etc. (2) Physical representation of sound and its units (3) Sound insulation, vibration, noise and evaluation methods (4) Acoustic materials and equipment.
		15th	Solar Heat Utilization / Solar System	Understand the basics of solar heat utilization, daylight utilization, solar water heaters, solar systems, and the role of solar systems, and be able to explain them.
		16th	Return of final examinations	

Evaluation Method and Weight (%)

	Examination	Quiz	Mutual Evaluations between students	Behavior	Portfolio	Other	Total
Subtotal	60	10	0	0	0	0	70
Basic Proficiency	0	0	0	0	0	0	0
Specialized Proficiency	60	10	0	0	0	0	70
Cross Area Proficiency	0	0	0	0	0	0	0

Anan College	Year	2024	Course Title	Low of Construction

Course Information

Course Code	1895H01	Course Category	Specialized / Elective
Class Format		Credits	Academic Credit: 2
Department	Course of Civil Engineering	Student Grade	5th
Term	Second Semester	Classes per Week	後期:2
Textbook and/or Teaching Materials	Easy Building Regulations （Gakugei Shuppansha）		
Instructor	Tada Yutaka		

Course Objectives

1. To understand and explain the names and purposes of building-related regulations and the definitions of terms.
2. To understand and explain the calculation method of area and height.
3. To be able to understand and explain the basics of the Building Standard Law. 4.
4. To understand and explain the basic regulations concerning building restrictions in urban planning areas. 5.
5. To understand and explain district plans, building agreements, and local districts.

Rubric

	Ideal Level	Standard Level	Unacceptable Level
Achievement 1	Be able to plan buildings in accordance with the objectives of building-related regulations.	Understand and explain the names and purposes of building-related regulations and the definitions of terms.	Can only partially explain the names and purposes of building-related regulations and definitions of terms due to a lack of understanding.
Achievement 2	Understand the calculation of area and height and be able to apply it to building plans.	Understand and explain how to calculate area and height.	The method of calculating area and height is not fully understood and only partially explained.
Achievement 3	Be able to plan buildings based on the fundamentals of the Building Standard Law.	Understand and explain basic matters of the Building Standard Law.	Can only partially explain basic building code issues due to insufficient understanding of the subject matter.
Achievement 4	Able to make building plans based on the basic regulations regarding building restrictions within the city planning area.	Understand and explain basic regulations regarding building restrictions in urban planning areas.	Basic provisions regarding building restrictions in urban planning areas are poorly understood and only partially explained.
Achievement 5	Able to plan buildings in accordance with district plans, building agreements, and local districts.	Understand and explain district plans, building agreements, and local districts.	District plans, building agreements, and local districts are only partially explained due to a lack of understanding.

Assigned Department Objectives

学習・教育到達度目標 A-2 学習・教育到達度目標 D-3 学習・教育到達度目標 D-4

Teaching Method

Outline	Architectural practice involves numerous laws. In this course, students will acquire the knowledge essential for building and city planning related practice. First, students will gain an overview of building-related laws and regulations, and then understand the definitions of terms in the Building Standard Law, the contents related to stand-alone regulations, and building restrictions in urban planning areas. In addition, students will learn about procedures such as application for confirmation, and related laws and regulations (e.g., Architect Law, Construction Industry Law, Urban Planning Law, Heart Building Law, Law Concerning the Promotion of Seismic Retrofitting of Buildings, Fire Defense Law, etc.). This course is taught by a first-class architect in charge who has been engaged in architectural design as a practice.
Style	This course is a credit course, so a report will be required as pre- and post-learning. The course is 30 hours of class time + 60 hours of self-study time.
Notice	This course is a designated subject set forth as a requirement for eligibility to sit for the architectural exam, and mastery of this course will give the student an advantage in terms of years of work experience and other qualifications to sit for the exam.

Characteristics of Class / Division in Learning

☑ Active Learning	☑ Aided by ICT	□ Applicable to Remote Class	☑ Instructor Professionally Experienced

Course Plan

			Theme	Goals
2nd Semester	3rd Quarter	1st	Types and overview of building-related regulations	Understand and explain the Building Standard Law, its enforcement ordinances, the Architect Law, and other building-related regulations.
		2nd	Types and overview of building-related regulations	Understand and explain how to read law books
		3rd	Architecture and and Building Standards Low	Understand and explain the definition of terms
		4th	Architecture and and Building Standards Low	Understand and explain the definition of terms
		5th	Architecture and and Building Standards Low	Understand and explain how to formulate (site area, building area, floor area ratio, height, etc.)
		6th	Architecture and and Building Standards Low	Understand and explain general construction, equipment, fire prevention regulations, and evacuation systems
		7th	midterm examination	

		8th	Building Restrictions in Urban Planning Areas	Understand and explain roads and sites
	4th Quarter	9th	Building Restrictions in Urban Planning Areas	Understand and explain floor-area ratio, building-to-land ratio, and height restrictions
		10th	Building Laws and Regulations and Building Administration	Understand and explain building procedures
		11th	Building Laws and Regulations	Understand and explain city planning laws
		12th	Building Laws and Regulations	Understand and explain the Architect Act
		13th	Building Laws and Regulations	Understand and explain the Barrier-Free Law
		14th	Building Laws and Regulations	Understand and explain the Act on the Promotion of Seismic Retrofitting of Buildings
		15th	Building Laws and Regulations	Understand and explain the Fire Service Law
		16th		

Evaluation Method and Weight (%)

	Examination	Presentation	Mutual Evaluations between students	Behavior	Portfolio	Other	Total
Subtotal	60	40	0	0	0	0	100
Basic Proficiency	0	0	0	0	0	0	0
Specialized Proficiency	60	40	0	0	0	0	100
Cross Area Proficiency	0	0	0	0	0	0	0