

都市環境システムセミナー Seminar: Introduction to Urban Environment Systems

[Instructor] Masaru Miyawaki, Toru Sekiguchi

[Credits] 2

[Semester] 1st year-Spring-Fri 4

[Course code] T1E001001

[Room] Bldg.ENG-17-111

[Course description] Besides providing guidance on erecting a 4-year course plan, all faculty staff will introduce research and specialized domains in an omnibus format.

[Course objectives] Purpose: To grasp the academic fields covering the Department of Urban Environment Systems.

1. Learn about the domains covered by the various education and research domains in urban environment system science. 2. Derive an overall understanding of urban environmental systems. Objective: Understand the relationship between the urban environment system science curriculum and the learning domain and be able to reflect that in the course plan.

[Plans and Contents] The seminars (1) to (13) below will provide an explanation of the research details and education in various education and research domains. Following is the affiliation of faculty members. #additional post, \*guest professor

1. Guidance 1: Career education, Curriculum and Disaster prevention briefing

2. Seminar (1) Urban planning, Environmental energy (Muraki, Wajima)

3. Guidance 2: Introduction to e-learning (Attention: Class will be held in Bldg.ENG-1 5<sup>th</sup> Floor Computer room in Department of Informatics and Imaging Systems)

4. Seminar (3) Living environment planning (Kobayashi, Morinaga, Jung)

5. Urban space design (Tsuge, Miyawaki, Okawa)

6. Seminar (4) Urban disaster prevention (Nakai, Sekiguchi)

7. Seminar (6) Urban infrastructure (Yamazaki, Yoshihisa Maruyama, Liu)

8. Seminar (7) Urban facility structure (Kondo, Tsukagoshi\*)

9. Seminar (8) Environmental management (Ogura, Sato)

10. Seminar (9) Environmental energy (Nakagome, Kimura\*)

11. Seminar (10) Environmental recycling (Otsubo, Hirose)

12. Seminar (11) Urban mathematical system (Sugai, Arai)

13. Seminar (12) Urban information system (Higaki), Information moral education

14. Seminar (13) Urban communication system (Shioda, Yoshimura)

15 Guidance 3: Overall conclusion, report

[Textbooks and Reference Books] Bring along the textbook “Chiba University Faculty of Engineering’s course curriculum for students admitted in 2012” for the first lecture.

[Evaluation] 1) Credits will be awarded only with an attendance of 11 or more lectures. 2) Evaluation to be based on the attendance (50%) and a report (50%). The report shall be submitted on the 15<sup>th</sup> lecture. 3) The topic for the report is selected individually by the students themselves. However, students will be evaluated on their awareness of the issues for the selected topic, and whether future trends and solutions etc. are described logically and linked to their own course plan.

[Remarks] Take note of the notices in the bulletin board as guidance for the course will be conducted in April.

都市環境システムセミナー(3rd year transferred student) Seminar: Introduction to Urban Environment Systems

[Instructor] Hideki Nakagome, Yoshihisa Maruyama

[Credits] 2

[Semester] 3rd year-Spring-Mon 6

[Course code] T1E001002

[Room] Bldg.ENG-17-111

[Course objectives] To grasp the academic fields covering the Department of Urban Environment Systems.

[Plans and Contents] The seminars (1) to (13) below will provide an explanation of the research details and education in various education and research domain. The schedule may change depending on the lecturer's own schedule. Following is the affiliation of faculty members. #additional post, \*guest professor

1. 4/14 Guidance-I: curriculum and menu(form teacher for 3rd year) Disaster prevention briefing (Environmental maintenance Committee)

2. 4/21Seminar (1)Urban planning (Muraki, Kwak)

3.4/28 Seminar(2) Living environment planning (Kobayashi, Morinaga, Jung)

4. 5/12Seminar (3) Urban space design (Tsuge, Miyawaki)

5. 5 /19 Seminar(4) Urban construction planning/ Environmental recycling (Nakatani, Wajima)

6. 5/26 Seminar (5)Urban facility structure(Kondo, Tsukagoshi)

7. 6/ 2 Seminar (6) Urban infrastructure (Yamazaki, Maruyama, Liu)

8. 6/9 Seminar (7) Urban disaster prevention (Nakai, Sekiguchi)

9. 6/16 Seminar (8) Environmental management (Ogura, Sato)

10. 6/23 Seminar (9) Environmental energy (Nakagome, Kimura)

11. 6/30 Seminar (10) Environmental recycling (Otsubo, Hirose)

12. 7/7 Seminar (11) Urban mathematical system (Sugai, Arai)

13. 7/14 Seminar (12) Urban information system (Higaki) Information moral education

14. 7/28 Seminar (13) Urban communication system (Shioda)

15. 7/30 Guidance 2: Overall conclusion, tutorial set-up, guidelines on course design (form teacher for 3rd year)

[Evaluation] Evaluation to be based on attendance and the reports.

[Remarks] Take note of the notices in the bulletin board as guidance for the course will be conducted in April.

## 都市環境基礎演習 I Basic Design of Urban Environment I

[Instructor] Kiharu Tsuge, Hironao Ogura, Miki Muraki, Yoshihisa Maruyama, Tooru Sekiguchi, Yuji Hirose, Masanori Oota, (Yuichiro Hoshi)

[Credits] 2

[Semester] 2nd year-Spring-Thurs3,4

[Course code] T1E003001, T1E003002

[Room] Drawing room-328 at Department of Urban Environment, Bldg. ENG-17-112, Drawing room-328 at Department of Urban Environment

[Course description] Using Makuhari (from the densely built-up areas around the Makuhari Station on the Sobu Line to the new metropolitan areas around the Kaihin Makuhari Station on the Keiyo Line) as a case study, students will first conduct a basic analysis on the urban infrastructure (human movements, energy flow, structural tests etc.), unearth (through field surveys) the attractions (things, events) of the town based on this, re-organize the information (planning concept, planning conditions, design), and then propose and present their ideas (design drawings, models, presentations). In the first half, students will be taught the basics for planning urban buildings through urban analysis, facility tests and structural tests. In the second half, students will walk the streets to capture the scale and structure of the street and discover its charms. The planning conditions will be drawn up next to further develop these into a future vision for Makuhari. For that purpose, students will plan and conceptualize the necessary street software, design various buildings to reconstitute the street, and then present this in an appealing manner.

[Course objectives] Lectures and basic training will be conducted for students to learn how to develop, conceptualize and summarize ideas on urban space, urban foundation, urban environment and urban information for assignments on elementary urban environment

[Plans and Contents]

1. Overall guidance on the tutorials
  2. Local guidance: Local measurements, records, axonometric projection diagrams, mental maps
  3. Making a ground plan of a city and its architecture. Ground plan (masterplan), 1/1000 model creation
  4. Launching a city and its architecture. Production of elevation diagrams (shopping street etc.), and cross-sectional views
  5. Analysis of a city and its architecture: Population analysis, use of GIS
  6. Analysis of a city and its architecture: Movement of people and information, number of building users
  7. A city and its architectural facilities: Basic experiment on the flow of energy (heat, electricity etc.)
  8. A city and its architectural facilities: Basic experiment on the flow of substances (gas, water etc.)
  9. Structural design of buildings: Study the forces acting on a building and the structural response.
  10. Structural design of a building: Production of a skeletal model
  11. Creating and studying a 3D model of a city and its architecture. Create a 1/250 model.
  12. Planning concept of a city and its architecture. Plan creation, planning conditions, sketches
  13. Proposing the design of a city and its architecture. Design drawings, perspective, sketched drawings, layer model, sketches
  14. Presentation. Drawings, models, panels, slides, video.
  15. Announcement and review, report writing
  16. Summary
- [Keywords] construction planning, Urban planning, planning concept, planning conditions Model production design books, GIS
- [Evaluation] Evaluation to be based on the deliverables for each lesson and the final presentation.

都市環境基礎演習 I Basic Design of Urban Environment I

[Instructor] Jiyoung Jung, Toru Sekiguchi, Wen Liu, Yuji Hirose

[Credits] 2

[Semester] 2nd year-Spring-Sat 2

[Course code] T1E003005

[Room] Drawing Room, Department of Urban Environment Systems (Rm. 328)

[Course description] The students receive a fundamental training to study the way of conceiving architecture/urban design or its engineering; establishing its plan; and of setting it up as the environment in a whole system.

[Course objectives] To grasp the fundamental capability needed to the urban and architectural design.

[Plans and Contents] The students learn about the way of making the drawings and models needed to propose a plan in the first half period. The students learn about the way of making the observation and survey to the actual fields assumed to be planned, and of settling it up as a plan, in order to enhance the capability of understanding the themes of urban and architectural design. In the second half period, the students learn about structural mechanics, GIS, and chemical engineering.

1.Guidance

2.Drawing and modelling basics 1 - Creating drawings from an actual model (1)

3. Drawing and modelling basics 2 -Creating drawings from an actual model (2)

4. Drawing and modelling basics 3 - Explanation of assignment and creation of planar views, elevation drawings and cross-sectional drawings (house 1)

5. Drawing and modelling basics 4 -Tracing assignment (house 2)

6. Drawing and modelling basics 5 -Model creation (house 3)

7. Drawing and modelling basics 6 - Tracing assignment (map 1)

8. Drawing and modelling basics 7 -Tracing assignment (map 2)

9. Urban foundation, environment 1 -Explanation of assignment

10. Urban foundation, environment 2 - Study of forces acting on a structure I

11. Urban foundation, environment 3 - Study of forces acting on a structure II

12. Urban foundation, environment 4 - Population analysis, use of GIS I

13. Urban foundation, environment 5 - Population analysis, use of GIS II

14. Urban foundation, environment 6 -Chemical substances and the environment I

15. Urban foundation, environment 7 - Chemical substances and the environment II

16. Summary

[Keywords] architectural planning, urban planning, design books

[Textbooks and Reference Books] Specific textbook will not be used. It will be introduced appropriately.

[Evaluation] Evaluation will be given by submitted assignments.

[Related Subjects] Not particularly

[Course requirements] Not particularly

[Remarks] Not particularly.

プログラミング言語 Computer Programming Languages

[Instructor] Yasuhiko Higaki

[Credits] 2

[Semester] 1st year-Fall-Mon 3

[Course code] T1E004001

[Room] Bldg. ENG-17-213

[Candidate] Students of Department of Urban Environment Systems

[Course description] Outline the concept of programming languages for specifying a series of procedures to exploit the prescribed functions in a computer, use the C language as a specific programming language, and learn about the specifications and syntax.

[Course objectives] Computers have become entrenched in our lives as an indispensable tool. However, in order to equip computers with new functions and expand the functions in an appropriate manner, a program must be written beforehand. Engineering students are expected to be able to carry out programming. This course aims to teach students the C language, which is the most common programming language used, as a means of communication with a computer and by linking the lectures with the tutorials. Specifically, it aims to equip students with the skills to write a basic program without looking at the textbook and to read a rather long program written by someone else.

[Plans and Contents] Learn the entire contents of the specified textbook over the course of the 15 lectures. As the treatment of algorithms is not sufficient in the specified textbook, appropriate reference books will be used separately from the theme of each lecture.

1. Introduction
2. Let's get used to it first
3. Operation and type
4. Branching of program flow
5. Iteration of program flow
6. Array
7. Function
8. Mid-term exam
9. Basic type
10. Let's try making various programs
11. Basics of character string
12. Pointer
13. Character string and pointer
14. Structure
15. File processing
16. End-of-term exam

[Keywords] C language, programming, algorithm

[Textbooks and Reference Books] Textbook: Shin meikai C gengo nyuumon-hen by BohYohShibata, SB Creative (2014), Reference Book: Shin meikai C gengo niyoru Algorithm and Data Structure by BohYohShibata and Ryosuke Tsuji, SB Creative (2011)

[Evaluation] The mid-term exam and end-of-term exam will evaluate students on whether they can write a basic program and whether they can read a rather long program and understand the operations. 10% is awarded for attendance, 20% for the mid-term exam and 70% for the end-of-term exam. Students who miss five or more of the lessons will not be able to sit for the end-of-term exam.

[Related courses] Students have to take Programming Tutorial ( T1E005001) in a pair

[Remarks] Basically, each lecture will cover one chapter. Therefore, students are required to prepare for the lesson beforehand. Specifically, students are to execute and understand the specified program.

## プログラミング演習 Computer Programming Practice

[Instructor] Yasuhiko Higaki

[Credits] 2

[Semester] 1st year-Fall-Mon 4

[Course code] T1E005001

[Room] Bldg. GEN-A 4F Information-Processing Seminar Room2

[Candidate] Students of Department of Urban Environment Systems

[Course description] Although programming languages are artificial languages, like natural languages they cannot be learned unless they are used. Specific tutorial questions will be set from this perspective for students to learn programming together with the syntax and specifications of the C language.

[Course objectives] Computers have become entrenched in our lives as an indispensable tool. However, in order to equip computers with new functions and expand the functions in an appropriate manner, a program must be written beforehand. Engineering students are expected to be able to carry out programming. This course aims to teach students the C language, which is the most common programming language used, as a means of communication with a computer and by linking the lectures with the tutorials. Specifically, it aims to equip students with the skills to write a basic program while referring to the textbook etc and be able to carry out debugging work in practice.

[Plans and Contents] The in-house developed “Programming Tutorial Support System” will be used. Students will grapple with programs given as tutorial questions. Programs are created using the evaluation and comments of the lecturers as reference. Students who have the time may proceed at their own pace while those who get stucked in their programming may post their questions using the bulletin board function and create their programs while taking reference from the evaluation and comments of the lecturers. Tutorial questions may be added or deleted depending on the progress of the lessons.

1. Introduction
2. Let's get used to it first
3. Operation and type
4. Branching of program flow
5. Iteration of program flow
6. Array
7. Function
8. Mid-term exam
9. Basic type
10. Let's try making various programs
11. Basics of character string
12. Pointer
13. Character string and pointer
14. Structure
15. File processing

[Keywords] C Language, practical programming, debugging

[Textbooks and Reference Books] Shin meikai C gengo nyuumon-hen by BohYohShibata, SB Creative (2014)

[Evaluation] Evaluation “score” in the programming tutorial support system to be based on attendance and score of each tutorial question. A grade of “Good” will be given if attendance is 100% and all preparation and mandatory questions are done (“Excellent” for full points). If supplementary questions are answered, this will be revised to “Excellent” or “Outstanding”. Attendance (10%), preparation (20%), compulsory tutorials (50%), supplementary tutorials (20%).

[Related courses] Students must attend (T1E004002) in pairs.

[Course requirements] ID and password for the programming tutorial support system will be issued separately.

Extracurricular studies are mandatory as these can also be expected in the setting of the number of tutorial questions. All tutorial questions will be evaluated and commented on where necessary.

環境社会学 Environmental Sociology

[Instructor] Atsushi Hamamoto

[Credits] 2

[Semester] 2nd year-Fall-Intensive

[Course code] T1E013001

[Room] Bldg.ENG9-206

[Candidate] Students of Faculty of Engineering, other Faculties, and Specially Registered Non-Degree Student

[Course description] The first day is allocated to the theory of environmental sociology, and the second and third days are concentrated on the issues involved in constructing dams. That implies as follows: On the second day, we deal with the issues on the area to be dropped under water, and on the existence of its domestic society. On the third day, the lecturer interprets the current statuses of the sightseeing for the dam after the dam is completed, of the activation of the water source, and of the intercourse between the upper and lower streams. The lessons are carried out by lectures in principle, with some video presentation. The students are requested to be grouped to have discussions.

[Course objectives] To direct the students to basically understand the theoretical framework of the environmental sociology, and its research outline. The approach of environmental sociology, whose importance is focused on the residents, living people, and victims, will be new and interesting to the students who are not specialized by sociology. The objectives of this curriculum are for the students, who are interesting in environmental issues, activation of domestic areas, and settling of urban town, to acquire different thought by contacting with other kinds of people with different specialty. The students participating the meeting will have group discussion deeply with others specialized in environmental sociology on one topic such as issues arising from the dam construction. So, this curriculum enables the students to understand the standpoints of the environment sociology more clearly.

[Plans and Contents]

- 1.What kind of discipline is sociology?
- 2.What kind of discipline is environmental science?
- 3.The social structure of victimization
- 4.The benefit and victimized zone
- 5.Group discussion part 1
- 6.Group discussion part 2
- 7.Group discussion part 2 (consecutively from the 6<sup>th</sup> lesson)
- 8.Dam planning and impact on local communities – Case study: Tokuyama Dam
- 9.Historical changes of the dam issue in Japan
- 10.Policy response towards the dam compensation issue
- 11.The “thereafter” of dam construction – dam tourism, regional vitalization and upstream and downstream exchange
- 12.Case studies: Miyagase dam, Gosho dam, Hiyoshi dam, Miharu dam etc.
13. Current situation and problems of water source revitalization
- 14.Group discussion part 3
15. Summary

[Textbooks and Reference Books] No particular textbook will be used. Reference books will be separately introduced.

[Evaluation] Evaluation to be based on mini-assignments carried out during the lessons (30%) and tests implemented at the end of the lessons (70%).

[Course requirements] None in particular

[Remarks] Lectures will be conducted over 3 days from Feb 12 (Thurs) – Feb 14 (Sat) in 2015. The lecture room is expected to be Room 106 in Block 9 but take note of any changes posted on the bulletin board.

振動工学 Vibration Engineering

[Instructor] Toru Sekiguchi, Shoichi Nakai

[Credits] 2

[Semester] 3rd year-Spring-Mon 4

[Course code] T1E016101

[Room] Bldg. ENG-9-107

[Candidate] Students of Faculty of Engineering, other Faculties, and Specially Registered Non-Degree Student

[Course description] Vibration in the urban areas, ie., Earthquake and traffic vibration, greatly affects the safety and amenity of the urban space. This curriculum studies the methodology of evaluating the effects of vibrations on the urban environment, throughout the study of its fundamental theory to understand the phenomena of vibration, since the vibration in the urban areas greatly affect the safety and comfortable nature of the urban space.

[Course objectives] To understand the issues of vibration in structure and ground, throughout this curriculum. In addition, to study the methodology used to evaluate the effects of vibration on the urban environment. Practically to understand the theory of vibration in the system of particles, theory of wave propagation in continuous media, and basic concept of soil-structure interaction. Note that the faculty member checks whether the students have understood the contents of the lectures, through simple exercises.

[Plans and Contents] The lectures are made up of 3 parts. Part 1 is on vibration problems (1<sup>st</sup> and 2<sup>nd</sup> lectures), Part 2 covers the basics of vibration theory (3<sup>rd</sup> -12<sup>th</sup> lecture) and Part 3 covers the application of vibration theory (13<sup>th</sup> and 14<sup>th</sup> lecture).

1. Outline of lectures, vibration issues in an urban environment

2. Earthquakes, seismic motions, environmental vibrations

3. Equation of motion

4. Vibration of 1-DOF (1) Free vibration

5. Vibration of 1-DOF (2) Attenuation

6. Vibration of 1-DOF (3) Forced vibration

7. Vibration of multi-DOF and eigenvalue analysis

8. Mid-term summary

9. Fourier spectrum

10. Frequency response analysis

11. Response spectrum

12. Ground vibration

13. Earthquake-resistant design

14. Base isolation and vibration control

15. End-of-term exam

[Keywords] Earthquake, Ambient Vibration, Theory of Vibration, Wave Propagation, Soil-Structure Interaction, Earthquake-resistant design

[Textbooks and Reference Books] Original textbooks will be used in general. Reference books include: Yuji Miyamoto: Kenchikushindou wo manabu, Rikoh Tosho, 2014

[Evaluation] Evaluation based on attendance, tutorials, mid-term exam and end-of-term exam. ( mid-term end-of-term exam 80%, attendance 20%).

[Course requirements] Students preferably have a good knowledge of Mechanics and Mechanics of Materials.



振動工学 Vibration Engineering

[Instructor] Toru Sekiguchi, Shoichi Nakai

[Credits] 2

[Semester] 3rd year-Spring-Mon 7

[Course code] T1E016102

[Room] Bldg. ENG-9-107

[Candidate] Students of Faculty of Engineering, other Faculties, and Specially Registered Non-Degree Student

[Course description] Vibration in the urban areas, ie., Earthquake and traffic vibration, greatly affects the safety and amenity of the urban space. This curriculum studies the methodology of evaluating the effects of vibrations on the urban environment, throughout the study of its fundamental theory to understand the phenomena of vibration, since the vibration in the urban areas greatly affect the safety and comfortable nature of the urban space.

[Course objectives] To understand the issues of vibration in structure and ground, throughout this curriculum. In addition, to study the methodology used to evaluate the effects of vibration on the urban environment. Practically to understand the theory of vibration in the system of particles, theory of wave propagation in continuous media, and basic concept of soil-structure interaction. Note that the faculty member checks whether the students have understood the contents of the lectures, through simple exercises.

[Plans and Contents] The lectures are made up of 3 parts. Part 1 is on vibration problems (1<sup>st</sup> and 2<sup>nd</sup> lectures), Part 2 covers the basics of vibration theory (3<sup>rd</sup> – 12<sup>th</sup> lecture) and Part 3 covers the application of vibration theory (13<sup>th</sup> and 14<sup>th</sup> lecture).

1. Outline of lectures, vibration issues in an urban environment

2. Earthquakes, seismic motions, environmental vibrations

3. Equation of motion

4. Vibration of 1-DOF (1) Free vibration

5. Vibration of 1-DOF (2) Attenuation

6. Vibration of 1-DOF (3) Forced vibration

7. Vibration of multi-DOF and eigenvalue analysis

8. Mid-term summary

9. Fourier spectrum

10. Frequency response analysis

11. Response spectrum

12. Ground vibration

13. Earthquake-resistant design

14. Base isolation and vibration control

15. End-of-term exam

[Keywords] Earthquake, Ambient Vibration, Theory of Vibration, Wave Propagation, Soil-Structure Interaction, Earthquake-resistant design

[Textbooks and Reference Books] Original textbooks will be used in general. Reference books include: Yuji Miyamoto: Kenchikushindou wo manabu, Rikoh Tosho, 2014

[Evaluation] Evaluation based on attendance, tutorials, mid-term exam and end-of-term exam. ( mid-term end-of-term exam 80%, attendance 20%).

[Course requirements] Students preferably have a good knowledge of Mechanics and Mechanics of Materials.

環境経済学 Environmental and Ecological Economics

[Instructor] Hidefumi Kurasaka

[Credits] 2

[Semester] 3rd grade-Spring-Tues 2

[Course code] T1E017001

[Room] Lecture Room 203

\*Lecture Room 203 is the lecture room belongs to Building of Faculty of Letters.

[Candidate] Students of Faculty of Engineering, other Faculties, and Specially Registered Non-Degree Student

[Course description] The faculty member has a series of lectures on the ecological economics.

[Course objectives] Issues arising from global environment indicate the economical activities by human being are arriving at the global limit of finite environment. Are we able to suppress the entire environmental loads generated by economical activities to within the environmental limit, while keeping the market free in the competitive economical systems? To study the tradeoff between the environment and economy, while conceiving the awareness on the issues of environmental loads.

[Plans and Contents]

1. What is ecological economics?
2. Our position in economic history
3. Historical background of ecological economics
4. Basic concept – 4 types of funds and sustainability
5. Production I (pure service production)
6. Consumption I (pure service consumption)
7. Production II (general service production)
8. Consumption II (general service consumption)
9. Price determination I (world of pure services)
10. Price determination II (world of general services)
11. Policy target determination I (new classical economics)
12. Policy target determination II (ecological economics)
13. Policy target realization I (price adjustment)
14. Policy target realization II (volume adjustment)
15. Summary

[Keywords] environmental economics, limit of the environment, ecological economics

[Textbooks and Reference Books] Refer to the following reference books in addition to the distributed resumes. Hidefumi Kurasaka eds. The environment- sustainable economic systems-(Keiso Shobo) (in Japanese), Hidefumi Kurasaka Rethinking on the Environment and Economy (Nakanishiya Shupan) (in Japanese), Hidefumi Kurasaka *Economy Develops as We Conserve the Environment* (Asahi Sensho) (in Japanese)

[Evaluation] Evaluation to be based on the number of mini-reports submitted and end-of-term exam. Credits will not be awarded if the number of mini-reports submitted is less than 70% of the total.

[Related courses] Environmental laws and Policies

[Remarks] Refer to the related information : <http://www.hh.ij4u.or.jp/~kurasaka>.

[Instructor] Shigeo Shioda

[Credits] 2

[Semester] 3rd year-Spring-Mon 3

[Course code] T1E020101

[Room] Bldg. ENG-17-214

[Candidate] Students of Faculty of Engineering, other Faculties, and Specially Registered Non-Degree Student

[Course description] The instructor outlines computer networks (like the Internet) with related digital technologies, which are important infrastructures supporting our social and industrial activities.

[Course objectives] To understand elemental technologies constituting computer networks as well as to overview the whole computer networks. [Goals]: (1). To overview the whole computer networks. (2). To understand elemental technologies constituting computer networks (digital technologies, Internet technology, cryptograph, authentication, etc.)

[Plans and Contents] No preparatory knowledge required. To better understand each lesson, the instructor assigns simple exercises in the respective lessons. The students are permitted to receive the auxiliary materials including some exercises for the review to the lessons.

1. Outline
2. Data encoding (music, voice)
3. Data encoding (image)
4. Network architecture
5. Communication protocol
6. Physical layer, data link layer (1)
7. Data link layer (2)
8. Network layer: internet protocol (1)
9. Network layer: Internet protocol (2)
10. Network layer: Internet protocol (3)
11. Transport layer (1)
12. Transport layer (2)
13. DNS
14. Cryptograph, authentication technology
15. Exam

[Keywords] Computer Networks, Internet, TCP/IP, Data encoding, Cryptograph, Authentication

[Textbooks and Reference Books] Textbook [ Internet Protocol] hiro Sakata, et al. (Ohmsya), Reference books [Computer Networking] James F. Kurose and Keith W. Ross(Pearson Education), [Computer Networks] Andrew S. Tanenbaum and David J. Wetherall (Pearson Education)

[Evaluation]The final exam checks how the respective students are attainable. Scores include 75 points for the exam, another 25 points for the exercises and attendance. The total score of 60 or more will be acceptable.

[Remarks] Lectures Note will be opened on the website.

[Instructor] Shigeo Shioda

[Credits] 2

[Semester] 3rd year-Spring-Wed 7

[Course code] T1E020101

[Room] Bldg. ENG-17-214

[Candidate] Students of Faculty of Engineering, other Faculties, and Specially Registered Non-Degree Student

[Course description] The instructor outlines computer networks (like the Internet) with related digital technologies, which are important infrastructures supporting our social and industrial activities.

[Course objectives] To understand elemental technologies constituting computer networks as well as to overview the whole computer networks. [Goals]: (1). To overview the whole computer networks. (2). To understand elemental technologies constituting computer networks (digital technologies, Internet technology, cryptograph, authentication, etc..)

[Plans and Contents] No preparatory knowledge required. To better understand each lesson, the instructor assigns simple exercises in the respective lessons. The students are permitted to receive the auxiliary materials including some exercises for the review to the lessons.

1. Outline
2. Data encoding (music, voice)
3. Data encoding (image)
4. Network architecture
5. Communication protocol
6. Physical layer, data link layer (1)
7. Data link layer (2)
8. Network layer: internet protocol (1)
9. Network layer: Internet protocol (2)
10. Network layer: Internet protocol (3)
11. Transport layer (1)
12. Transport layer (2)
13. DNS
14. Cryptograph, authentication technology
15. Exam

[Keywords] Computer Networks, Internet, TCP/IP, Data encoding, Cryptograph, Authentication

[Textbooks and Reference Books] Textbook[Internet Protocol] Shiro Sakata, et al. (Ohmsya), Reference books [Computer Networking] James F. Kurose and Keith W. Ross (Pearson Education) , [Computer Networks] Andrew S. Tanenbaum and David J. Wetherall (Pearson Education)

[Evaluation] The final exam checks how the respective students are attainable. Scores include 75 points for the exam, another 25 points for the exercises and attendance. The total score of 60 or more will be acceptable.

[Remarks] Lectures Note will be opened on the website.

専門英語 I English for Urban Environment Systems I

[Instructor] Jing Li

[Credits] 2

[Semester] 2nd grade-Spring-Intensive

[Course code] T1E021001

[Room]

[Course description] The students are to be involved in presentation and discussion on the topics of English resources related to urban environment, enjoyable due to unique nature of the lectures whose importance is focused on the respective students' interest and personality.

[Course objectives] The objectives of the curriculum are to provide the capability of the students to convey "what about thinking of" to the listener, by letting them to familiarize the English. The milestone for each student is to convey something on the topics chosen along with the current theme, and the final goal is for the students to have "presentation" in English.

[Plans and Contents] Group discussion and presentation of the theme given will be conducted in English to learn the importance of "reading", "writing" and "speaking".

1. "Self Introduction" ...Explanation of lesson objective and contents and simple self introduction (in English and Japanese)
2. "Me and My environment" ...Presentation on living environment closeby e.g. personal room etc. - Explanation- Briefing practice. Example: My room, home etc.
3. "My route"...Explanation of journey until university using photos and sketches -Conjunction- Explanation of key scenes, buildings etc. in sequence.
4. "Something you care" ...Things seen and observed in the neighborhood. Things thought to be strange- Reasons -Example: Signboards, signs, slogans, ornaments, photos and sketches to be brought along
5. "The place you want to visit" ...History of buildings and places you would like to see or famous places that left an impression in you, explanation of their origins etc. - Explanation of facts -Example: Geoglyph of Nazca, dams, bridges, Eiffel Tower, etc.
6. "The place you want to visit" ...History of buildings and places you would like to see or famous places that left an impression in you, explanation of their origins etc. -Explanation of facts -Example: Geoglyph of Nazca, dams, bridges, Eiffel Tower, etc.
7. "Taboo Game" ...Momentary ad lib experience while playing the Taboo Game often played at American parties.
8. "Sound and environment" ...Considering the impact on the environment caused by sounds, noises, music - Relatives - Example: In your own room? By time? When doing something?
9. "The comfortable space" ...Considering the environment and space that you feel comfortable in personally and the reasons -Comparison - Example: Art galleries, in a busy street, bring along photos and sketches
- 10.— Art that you like personally and the reasons for liking them - Adjectives
- 11."Japanese manners" ...Manners that you first knew through personal experience- Reasons- Breach of etiquette, desired manners etc. Example: Smoking, eating and drinking manners, manners on subway trains
12. "Relationship with~" ...What can you do yourself now? -Reasons- Example: Towards people, towards the environment
13. "Japanese society now" ...Considering the good and bad points that you feel about Japanese society now -Proposal- Cite examples and propose improvements
14. Final presentation ... Your ideal environment and local development 1. Preparation of briefing materials; handwritten notes, photos, sketches, Powerpoint slides etc. are all acceptable 2. Presentation and role allocation in pairs 3. Presentation time: About 10 minutes per person.
15. Final presentation...Your ideal environment and local development. Same as above

[Evaluation] 。 Overall evaluation to be based on the attendance (at least 12 attendances are required), homework (30%), presentation (30%) and end-of-term presentation (40%).

[Remarks] Assignments shall be submitted before the next lesson.

都市環境システム実習 Practice in Urban Environment Systems

[Instructor] Yasufumi Otsubo, Toshihisa Maruyama

[Credits] 2

[Semester] 3rd year Spring-Fall Intensive

[Course code] T1E024001

[Room]

[Course description] Internship subject

[Course objectives] Internship will be carried out for a fixed period (at least 2 weeks) for students to gain actual work experience. The lessons learned shall be compiled into a report and presented.

[Plans and Contents] Students can register for the course at the point when the internship location is decided. Therefore, there is no need to register in advance for this course alone.

[Evaluation]

[Remarks] Follow the procedure described in the following URL to apply, run and report on the internship.

<http://www.eng.chiba-u.ac.jp/to-student.html> [Internship]

環境制度論      Environmental laws and Policies

[Instructor] Hidefumi Kurasaka

[Credits] 2

[Semester] 2nd year-Fall-Thurs 2

[Course code] T1E028001

[Room] Lecture room 106

※Lecture room 106 is the lecture room belongs to Building of Faculty of Law and Economics.

[Candidate] Students of Faculty of Engineering, other Faculties, and Specially Registered Non-Degree Student

[Course description] This curriculum studies the history, fundamentals (organic law, objectives, principles), and approaches of the environmental policy, aimed at to propose an environmental policy by one self.

[Course objectives] The issues of the environmental policy are to prepare the system to minimize the environmental issues, avoiding them as far as possible. The environmental policy has a short history and the systems allied to the environment are on the way. The objectives of this curriculum are for the students to enhance the capability of proposing the environmental policy, throughout the way of interpreting the history of environment policy including

[Plans and Contents]

1. What is environmental policy theory?
2. History of environmental policy (part 1) – Edo – 1950s
3. History of environmental policy (part 2) –1960s – Present
4. History of urban planning and national land development policy
5. Basic Environment Law
6. Objective of environmental policy (objective provision, environmental rights, sustainable development)
7. Rules concerning the policy implementation stage (prevention, protection, source countermeasures, IPPC)
8. Rules concerning the policy implementation stage (part 1: Polluter Pays Principle, extended producer responsibility)
9. Rules concerning the policy implementation stage (part 2: designer responsibility, public burden)
10. Rules concerning the policy implementation stage (complementary rules, collaboration rules)
11. Enactment of plans and setting of objectives
12. Policy implementation techniques (part 1: planning means, regulatory means)
13. Policy implementation means (part 2: information means, promotion means)
14. Other means (business means, adjustment means), selection of environmental policy means
15. Summary

[Keywords] Environmental Policy

[Textbooks and Reference Books] Hidefumi Kurasaka Environmental Policy (Shinzan-sha) (in Japanese)

[Evaluation] Evaluation to be based on number of mini-reports submitted and end-of-term exam. Credits will not be awarded if the number of mini-reports submitted is less than 70%.

[Related courses] Environmental and Ecological Economics

[Course requirements] None in particular

[Remarks] Refer to <http://www.hh.ij4u.or.jp/~kurasaka> for related information.

基礎地盤工学 Geotechnical Engineering

[Instructor] Toru Sekiguchi, Shoichi Nakai

[Credits] 2

[Semester] 3rd garde-Fall-Wed 6

[Course code] T1E029501

[Room] Bldg. ENG-9-107

[Candidate] Students of Faculty of Engineering, other Faculties, and Specially Registered Non-Degree Student

[Course description] Soil is a very important factor affecting natural disasters and environment issues, in relation to buildings and urban area. This curriculum studies the fundamental theory of how to establish the counter-plan for the disasters and environmental issues, throughout the study on the properties of soil in terms of physics, mechanics, and hydraulics. This study includes simple exercises as well as lectures.

[Course objectives] To firstly study characteristics of soil and topography. To secondly study the theory of the soil behavior, its interaction to water, and its interaction to structures. To finally understand background and issues of the disasters and environment issues in relation to soil.

[Plans and Contents] Lessons are made up of two parts. Part I (1<sup>st</sup> – 12<sup>th</sup> lesson) deals with the basics of geotechnical engineering while Part II (13<sup>th</sup> – 15<sup>th</sup> lesson) provides an overview of geotechnical disasters.

1. Lecture outline, topography, ground and natural disaster
2. Basic properties of soil
3. Soil investigation
4. Soil stress and strain (1) Effective stress and Mohr's stress circle
5. Soil stress and strain (2) Stress, strain and elasticity theory
6. Soil water flow (1) Seepage phenomenon
7. Soil water flow (2) Seepage flow
8. Mid-term summary
9. Consolidation of clay (1) Consolidation phenomenon
10. Consolidation of clay (2) Consolidation theory and consolidation settlement
11. Soil shear (1) Failure criterion and shear test
12. Soil shear (2) Shear strength of sand and clay
13. Liquefaction
14. Groun settlement
15. Slope failure
16. End-of-term exam

[Keywords] Soil, Soil Mechanics, Elasto-plasticity, Geotechnical Disaster, Liquefaction

[Textbooks and Reference Books] Fumio Kuwabara: Jiban kougaku, Morikita Publishing, 2002

[Evaluation] Evaluation based on attendance, tutorial, mid-term exam and end-of-term exam.

[Course requirements] Students should preferably have taken material mechanics.



数值解析 (旧名称「環境基礎解析 I」) : Numerical Analysis

[Instructor] (Takeo Shiojima)

[Credits] 2

[Semester] 3rd year-Fall-Fri 6

[Course code] T1E030101

[Room] Bldg. ENG-17-113

[Candidate] Students of Faculty of Engineering, other Faculties, and Specially Registered Non-Degree Student

[Course description] Lectures will be conducted on the basics of numerical calculation using MS Windows Excel or VBA and the processing of the results (creation of charts and diagrams etc.)

[Course objectives] Learn about numerical calculation methods of various mathematical models and use them to solve real problems.

[Plans and Contents] Lectures will be conducted on how to perform numerical calculations using a computer to solve mathematical models obtained from modelling natural phenomena. Students will learn how to use familiar Excel functions and Excel BVA in the numerical calculations for easy application and analysis. Students will also learn how to use software developed using the Fortran language that has been built into the computer-based numerical analysis in the Excel BVA. Mathematical models in the fields of chemical engineering, thermodynamics, mechanics etc. will be used for the exercises.

1. EXcell, EXcellVBANumerical analysis (issues peculiar to numerical calculation)
2. How to use Excel functions, VBA language
3. Solution of simultaneous linear equations (direct method)
4. Solution of simultaneous linear equations (iteration method – SOR method, biconjugate gradient method etc.)
5. Solution of non-linear simultaneous equations (1)
6. Solution of non-linear simultaneous equations (2)
7. Tutorial assignments
8. Interpolation and function approximation (1)
9. Interpolation and function approximation (2)
10. Numerical integration, numerical differentiation
11. Solution of differential equations (1)
12. Solution of differential equations (2)
13. Parameter estimation (1)
14. Tutorial assignments
15. How to use fortran dll from VBA

[Keywords] Numerical calculation,Excel ,VBA

[Textbooks and Reference Books] Introduce of reference books and distribution of auxiliary materials

[Evaluation] Evaluation to be based on assignment reports.

[Remarks] Bring along a notebook which allows the use of MS Windows Excel 2007.

システム性能評価（旧名称「システム評価」） Performance Evaluation

[Instructor] Shigeo Shioda

[Credits] 2

[Semester] 2nd year-Fall-Mon 3

[Course code] T1E031101

[Room] Bldg.ENG-17-215

[Candidate] Students of Faculty of Engineering, other Faculties, and Specially Registered Non-Degree Student

[Course description] Evaluate the performance of various systems such as computer networks and telecommunication systems, and learn about the basic mathematical tools (mathematical programming, probability theory, operations research) for performance evaluation of these systems.

[Course objectives] Purpose: Acquire basic performance evaluation skills required in system design and operations.

Objectives: 1. Know what is system performance evaluation. 2. Learn the basic mathematical tools for system performance evaluation (mathematical programming, probability theory). 3. Touch on specific application examples.

[Plans and Contents] An outline of the OR concept, linear programming model, non-linear programming model, Markov model and queue model will be explained in sequence. Two tutorials have been planned for students to gain a deeper understanding of the lesson contents. Lecture materials will be distributed and students are required to revise the lessons adequately while referring to the tutorial contents. While there are no lessons which need to be taken in advance, elementary knowledge of calculus and linear algebra is preferred.

1. Outline
2. Linear planning model (1)
3. Linear planning model (2)
4. Linear planning model (3)
5. Non-linear planning model (1)
6. Non-linear planning model (2)
7. Tutorial through actual examples (1)
8. Basics of probability theory (1)
9. Basics of probability theory (2)
10. Stochastic Processes
11. Queue model (1)
12. Tutorial through actual examples (2)
13. Queue model (2)
14. Queue model (3)
15. Exam

[Keywords] Computer Networks, Operations Research, Probability, Queuing Theory, Performance Evaluation

[Textbooks and Reference Books] Textbooks: K. Kawashima et al. "Foundations of Queueing Theory and Its Applications," Kyoritsu Syuppan.

[Evaluation] Overall evaluation to be based on attendance, tutorials and exam result (attendance, tutorials: 30%, exam: 70%). A score of 60 points or more is required for a pass.

[Related courses] Statistics B1 /B2, Telecommunication Engineering I

[Remarks] Lecture notes are planned to be published on the Internet.

システム性能評価 (旧名称「システム評価」) : Performance Evaluation

[Instructor] Shigeo Shioda

[Credits] 2

[Semester] 2nd year-Fall-Thurs 7

[Course code] T1E031102

[Room] Bldg.ENG-17-214

[Candidate] Students of Faculty of Engineering, other Faculties, and Specially Registered Non-Degree Student

[Course description] Evaluate the performance of various systems such as computer networks and telecommunication systems, and learn about the basic mathematical tools (mathematical programming, probability theory, operations research) for performance evaluation of these systems.

[Course objectives] Purpose: Acquire basic performance evaluation skills required in system design and operations.

Objectives: 1. Know what is system performance evaluation. 2. Learn the basic mathematical tools for system performance evaluation (mathematical programming, probability theory). 3. Touch on specific application examples.

[Plans and Contents] An outline of the OR concept, linear programming model, non-linear programming model, Markov model and queue model will be explained in sequence. Two tutorials have been planned for students to gain a deeper understanding of the lesson contents. Lecture materials will be distributed and students are required to revise the lessons adequately while referring to the tutorial contents. While there are no lessons which need to be taken in advance, elementary knowledge of calculus and linear algebra is preferred.

1. Outline
2. Linear planning model (1)
3. Linear planning model (2)
4. Linear planning model (3)
5. Non-linear planning model (1)
6. Non-linear planning model (2)
7. Tutorial through actual examples (1)
8. Basics of probability theory (1)
9. Basics of probability theory (2)
10. Stochastic Processes
11. Queue model (1)
12. Tutorial through actual examples (2)
13. Queue model (2)
14. Queue model (3)
15. Exam

[Keywords] Computer Networks, Operations Research, Probability, Queuing Theory, Performance Evaluation

[Textbooks and Reference Books] Textbooks: K. Kawashima et al. "Foundations of Queueing Theory and Its Applications," Kyoritsu Syuppan.

[Evaluation] Overall evaluation to be based on attendance, tutorials and exam result (attendance, tutorials: 30%, exam: 70%). A score of 60 points or more is required for a pass.

[Related courses] Statistics B1 / B2, Telecommunication Engineering I

[Remarks] Lecture notes are planned to be published on the Internet.

専門英語 II : English for Urban Environment Systems II

[Instructor] (John Leaver)

[Credits] 2

[Semester] 2nd year-Fall-Tues 5

[Course code] T1E034001

[Room] Bldg-ENG-17-112

[Candidate] Students of Faculty of Engineering, other Faculties, and Specially Registered Non-Degree Student

[Course objectives] The basic goal of this class is discussion and communication in English about subjects that are relevant to Environmental Design.

[Plans and Contents] The class will cover two areas one major theme is about the environment and the other Architectural Design.

1. Class Introduction- The goals, methods and content of the class
2. Guanajuato, Mexico- The cityscape, planning, and Order of building in the City of Guanajuato, Mexico
3. Environment- The nature of the Environment
4. Environment is bound by Organization and Laws- Natural Principles inherent in the Environment
5. Mankind's role?- A question of Man's role in relationship to the Environment
6. Responsibilities of Mankind- Mankind's Responsibility to the Environment
7. Protection of the Environment- Principle ways of protecting the Environment
8. The question of Fit- The concept of Fit as applied to the Design of the Environment
9. The question of Fit-continued- The concept of Fit as applied to the Design of the Environment, continued
10. Origins- The concept of origin in Creation Process
11. Creative Process- The Creative Process revolving around the concepts of Form, Order and Design
12. Creative Process- The Creative Process revolving around the concepts of Form, Order and Design, continued
13. The Essential- The concept of Essential in the Creative Process
14. Mozuna- The ideas, themes, and issues in the architectural work of Japanese Architect, Kikkoo Mozuna
15. Computer Graphics- The basis of computer graphics, it's purpose and usage

[Evaluation] Your grade will be based on your attendance, participation in class and your homework assignments.

[Remarks] IMPORTANT: 1. Please hand in your work at the specified time or they will suffer the consequences of the grade being automatically lowered. 2. Please don't be late to class, if more than 10 minutes late you will receive a half absent for that day. 3. Attendance is required for this class. If you miss more than 5 classes you will fail this class. If you have some extenuating circumstances please tell me and we will adjust your record.

専門英語 II English for Urban Environment Systems II

[Instructor] (John Leaver)

[Credits] 2

[Semester] 2nd year-Fall-Tues 7

[Course code] T1E034002

[Room] Bldg-ENG-17-112

[Candidate] Students of Faculty of Engineering, other Faculties, and Specially Registered Non-Degree Student

[Course objectives] The basic goal of this class is discussion and communication in English about subjects that are relevant to Environmental Design.

[Plans and Contents] The class will cover two areas one major theme is about the environment and the other Architectural Design.

1. Class Introduction- The goals, methods and content of the class
2. Guanajuato, Mexico- The cityscape, planning, and Order of building in the City of Guanajuato, Mexico
3. Environment- The nature of the Environment
4. Environment is bound by Organization and Laws- Natural Principles inherent in the Environment
5. Mankind's role?- A question of Man's role in relationship to the Environment
6. Responsibilities of Mankind- Mankind's Responsibility to the Environment
7. Protection of the Environment- Principle ways of protecting the Environment
8. The question of Fit- The concept of Fit as applied to the Design of the Environment
9. The question of Fit-continued- The concept of Fit as applied to the Design of the Environment, continued
10. Origins- The concept of origin in Creation Process
11. Creative Process- The Creative Process revolving around the concepts of Form, Order and Design
12. Creative Process- The Creative Process revolving around the concepts of Form, Order and Design, continued
13. The Essential- The concept of Essential in the Creative Process
14. Mozuna- The ideas, themes, and issues in the architectural work of Japanese Architect, Kikkoo Mozuna
15. Computer Graphics- The basis of computer graphics, it's purpose and usage

[Evaluation] Your grade will be based on your attendance, participation in class and your homework assignments.

[Remarks] IMPORTANT: 1. Please hand in your work at the specified time or they will suffer the consequences of the grade being automatically lowered. 2. Please don't be late to class, if more than 10 minutes late you will receive a half absent for that day. 3. Attendance is required for this class. If you miss more than 5 classes you will fail this class. If you have some extenuating circumstances please tell me and we will adjust your record.

環境ビジネス Environmental Business

[Instructor] Satoshi Kimura

[Credits] 2

[Semester] 3rd year-Fall-Wed 3,4 alternate week 2,4

[Course code] T1E038101, T1E038102

[Room] Bldg.ENG-17-212

[Class Enrollment] About 80 within the limits of Lecture room

[Candidate] Students of Faculty of Engineering, other Faculties, and Specially Registered Non-Degree Student

Including other department, the class is offered to a wide student can take. This lecture recruits the students who can build environmental business by oneself under a big purpose to build a sustainable society. It is leaved to other lectures having high specialty and self study about the technical detailed exposition. The attendance of the student who can talk with domain crossing-like understanding only by Dep of Urban Environmant Systems is desirable.

[Course description] A series of lessons focusing on the environmental business as a sustainable and feasible means of building a sustainable society will be conducted. Based mainly on workshops, the course emphasizes mutual exchange between students and lecturers, and among the students themselves. As the field of environmental engineering is advancing rapidly, rather than an itemized discussion, concrete organization methods and ways of thinking are built based on actual practice. At the individual level, students will conduct framework thinking and SWOT analysis, and sort out the existing business framework. At the group level, lessons will be conducted in combination with practical workshops that are indispensable to activities such as community businesses and social businesses. Lectures will be conducted over 2 consecutive periods every other week.

[Course objectives] [Purposes] Be able to draw a picture of a sustainable society and draft a proposal using feasible techniques on your own. [Objective] 1. Be able to understand the background debate on the global environment and civilization, and articulate your own vision and mission after organizing the needs and seeds of the times. 2. Be able to re-construct, systemize and correlate fields of interest and specialty fields using framework and SWOT analysis. 3. Understand the state of various business techniques including social businesses, community businesses, BOP businesses etc. and learn how to combine management resources that include the motivation of people. 4. Be capable of learning workshop skills and visualization skills required when involving a wide range of other people.

[Plans and Contents] The lectures are divided into 3 sections. The first section is the introduction; the second section covers the workshops for sorting out the learning contents, raising awareness on knowledge application and improving business awareness; and the third section looks back on the mutual skill checks including those conducted by fellow students. In order to master workshop skills, practical explanations, performances and observations, and mutual evaluation will also be carried out. In order to raise the skill level of each student, individual themes will be selected for the mid-term and final presentations, and this shall be supplemented by extracurricular studies. For the final test, a mini-thesis or presentation on a environmental business theme selected by the students themselves is scheduled.

1. Guidance (10/2 1 period)
2. "Global environment and sustainable civilization outline" (10/9 2 periods)
3. "Environmental technology outline" and framework practice (10/30 expected 2 periods)
4. "Resource and global environment outline" and SWOT analysis practice (11/6 expected 2 periods)
5. "Introduction and reading of various business techniques" (11/27 expected 2 periods)
6. "Human motivation and social innovation" (2 periods)
7. "Environmental business group work"(2 periods)
8. Individual presentation, mutual exchange of opinions, review (2 periods)

[Keywords] social innovation, social design, social business, community business, environmental business, sustainable

[Textbooks and Reference Books] Reference Book, review Journal『Environmental Business』, 『A community is inquired』, 『Community Design 』, 『Social Design』 To be introduced as occasion calls. Powerpoint materials used in the lectures are expected to be published.

[Evaluation] Workshop: 20% (Group submissions during lessons and participation attitude. \*Instead of the speech count alone, scores will be awarded according to the role played, be it as a facilitator for the discussions, as an active participant to thrash out the issues, or as a contributor towards the visualization of the problem etc.). Attendance: 30%. Mid-term and final presentation: 50%. (Scoring criteria for each presentation will be made public e.g. principle, feasibility, true visualization, understanding etc. In order to disseminate the scoring criteria and raise the interest of the students, reference examples will be extracted from the mid-term presentations and a debate will be conducted among the participants together with the announcement of the scores. Additional points will be awarded based on the submission of related reports during the lessons with the attendance score serving as an upper limit for those who missed the lessons. For the mid-term and final presentations, a re-evaluation will be carried out based on the same scoring criteria if a revised report is submitted within 2 weeks of the presentation.

### 都市環境マネジメント III Urban Environment Management III

[Instructor] (Takeo Shiojima)

[Credits] 2

[Semester] 4th year-Spring-Thurs 7

[Course code] T1E038201

[Room] Bldg.ENG-5-204

[Course description] The faculty member has a series of lectures on the interrelation between the oil resource energy and environmental issues from the viewpoint of environment management.

[Course objectives] To study the methods of conversion and utilization from the oil resources needed to our current life to the energy and fundamental chemical products, and to think about the environmental issues arising from the conversion process. To study on the activities of chemical product development, harmonized with new energy and environment, of how the government and commercial companies are making counter-plans to a variety of issues.

[Plans and Contents] Petroleum as a source of energy in our daily lives and new petroleum energy, material sources

1. Types of energy, energy consumption and the environment
2. Overview of petroleum resources, energy consumption and environment
3. Petroleum refining process for making petroleum products from crude oil. Petroleum product standards and the environment
4. Necessity of energy conservation, energy conservation technologies and economy
5. Energy conservation example
6. Petroleum product standards and outline of anti-pollution measures
7. Car emission gases countermeasures and environmental conservation
8. Replacement energy for petroleum, new energy using the latest energy-saving thermoelectric
9. Petroleum resources as chemical raw materials
10. Polymeric chemical products (five major resins for generic use)
11. Polymeric chemical products (engineering plastics)
12. Polymeric molding process
13. Polymers and environmental problems
14. Environment and corporate activities (environmental destruction due to accidents, corporate ethics)
15. Discussion and preparation for tutorial

[Keywords] Petroleum, Energy, Environment

[Evaluation] Written exam

[Course requirements] None in particular.

卒業研究 Graduation Research

[Instructor] Yasufumi Otsubo

[Credits] 6

[Semester] 4th year Spring-FallIntensive

[Course code] T1E040101

[Room] Each Laboratory

[Candidate] 4th year of Department of Urban Environment Systems A course

[Course objectives] To provide the capability of enhancing the activities in general, including the research and planning, on the specified themes of the research allied to the urban environment systems for the respective students, because the faculty members advise the respective students to have the accomplishments suitable for their personality and ability through the experience and understanding sufficient enough to the respective students.

[Plans and Contents] The students are requested to belong to the respective advisors' laboratories to have advice from the respective faculty members as advisors. To execute the main theme on the research and planning, continuing from Graduation Seminar. The respective accomplishments will finally be evaluated at the meeting of graduation research presentation.

[Evaluation]

[Course requirements] Refer to the course curriculum distributed at the time of enrolment.

[Remarks] Replacement subject for "Special Research" that used to be offered until 2001.



都市環境デザイン Urban Environment Design

[Instructor] (Ikutaroh Saitoh), Dongyun Kwak

[Credits] 2

[Semester] 2nd year-Fall-Wed 6

[Course code] T1E042501

[Room] Bldg.ENG-17-113

[Class Enrollment] No limit

[Candidate] Specially Registered Non-Degree Student may take this class. This class will be based on an assumption that the students understand the basics and ability of expression of Urban Space, thus attendance is preferable to over 2nd year.

[Course description] This class has a series of lectures on how to understand urban space, and basic approaches related to the urban design and planning.

[Course objectives] (1) Understanding the interrelation between a variety of characteristics in the urban environment and the society. (2) Analyzing the relation among the human being, human life, and public space in the city. (3) Discussing urban environment in view of humanity. And (4) Designing to the process of improve urban environment with people.

[Plans and Contents]

1. Lesson guidance
2. Urban form in the city
3. Individual survey 1: Let's check out the living space
4. Living forms in the city
5. Case study: Rebuilding communities
6. Squares and streets 1 (traditions and restoration of squares)
7. Squares and streets 2 (culture of streets and human places)
8. Group discussion 1: Understanding of lively place
9. A city and streets 1 (framework of a city and its substance)
10. A city and streets 2 (framework of a city and living, streets that make a place)
11. Case study: Designing of a living space
12. Group discussion 2: Planning the use of public space
13. Behavioral space and visual space 1 (topographic principle and geometric principle, relationship of urban space)
14. Behavioral space and visual space 2 (livable spaces and designing of relations)
15. Individual survey 2: the memories of a town

[Keywords] Urban space, Townscape, Public space, Street, Square, Community

[Textbooks and Reference Books]

- 1) Steen E. Rasmussen: Towns and buildings, TOKYO University press.
- 2) G. Cullen: Townscape, KAJIMA press.
- 3) Jan Gehl: Outdoor open space, KAJIMA press.
- 4) Individuality of City and Life –IWANAMI series 3, IWANAMI press

[Evaluation] Evaluation will be carried out mainly attendance evaluation and assignment evaluation (weightage 30:70).

Attendance evaluation: Submission of question slip for each lesson. Attendance is required for this class. If you miss more than 5 lessons you will fail this class. Assignment evaluation: Individual survey and group discussion will be carried out. individual survey 1: understanding urban environments and living space; individual survey 2: discovering and verifying of memories of a town; group discussion 1: understanding of lively places; group discussion 2: Planning the use of public space.

[Course requirements] Attendance should preferably be taking basic subjects related to understanding of space such as “Descriptive Geometry”, “Seminar in Urban Space Engineering I” etc.

[Remarks] [Office Hours] Mon – Fri (Arrange for appointments via email in advance).

都市空間計画 (旧名称「都市建築デザイン」) Urban Design

[Instructor] Kiharu Tsuge

[Credits] 2

[Semester] 3rd year-Fall-Fri 6

[Course code] T1E043101

[Room] Bldg.ENG-17-214

[Candidate] Students of Faculty of Engineering, other Faculties, and Specially Registered Non-Degree Student

[Course description] The faculty member has a series of lectures on the planning and design of the urban space, on which people's life and activities are focused, in the development of commercial complex facilities and reconstruction of city areas. The faculty member is involved into the practical themes in the actual planning.

[Course objectives] To study the graph theory as the basis for networks.

[Plans and Contents] Learn about land use in urban design, facility application programs, industry development, product development including development of software such as living services, actual creative work like VMD, space production, scenic designs, and the planning of various urban spaces while maintaining an overview of design techniques for urban spaces in general that is focused on emotions, sensitivities and stories, and observations of domains related to lateral urban spaces that transcend fields such as theatre, movies, theme parks, museums etc. 1. Urban information and space communication, 2. Between the objects, place making and sharing of locations, 3. Experiential Design, from object to event design, 4. Urban redevelopment project, regional development, 5. Trends in the development of commercial establishments, 6. Urban cohesion and critical mass, 7. Contents design and business development, 8. Theming and districting, 9. Changes in industrial structure and entertainment design, 10. Environmental planning and visual merchandising, 11. Mixed use and synergy, 12. Learning from different fields (theatre, movies etc.), 13. Landscape design and layer, 14. Sustainable design and changes in social environment 15. Producer and collaboration system, 16. Summary 1. Students sketches progress of the design competition every time.

[Evaluation] Overall evaluation to be based on lecture reports and participation in design competitions held outside the campus.

[Remarks] Replacement subject for "Urban architectural design".

ネットワーク基礎 (旧名称「グラフ理論」) Network Fundamentals

[Instructor] Yasuo Sugai

[Credits] 2

[Semester] 2nd year-Spring-Mon 2

[Course code] T1E046101

[Room] Bldg.ENG-17-112

[Class Enrollment] About 80

[Candidate] Students of Faculty of Engineering, other Faculties, and Specially Registered Non-Degree Student

[Course description] The faculty member interprets the definition of graph, plane graph, shortest path problem, maximum flow problem, linear programming problem, and combinatorial problem, together with some examples.

[Course objectives] To study the graph theory as the basis for networks.

[Plans and Contents]

1. Graph and graph theory: What is a graph?, examples of graphs, origin of graph theory, applications of graph theory, terminology of graph theory (vertex and edge, trivial graph, finite graph, multiple edge, self-loop, simple graph)
2. Terminology of graph theory (continued): Degree of a graph, isolated vertex, end vertex, relationship between degree of a graph and number of edges, What is graphic sequence of non negative integers?
3. Terminology of graph theory (continued): Directed graph, positive or negative degree of vertex in a directed graph, isomorphism, sub-graph, vertex and edge operations (elimination of vertex, deletion of edge, contraction of edge)
4. Terminology of graph theory (continued): Multigraph, labelled graph and unlabelled graph, section graph (vertex section graph, edge section graph)
5. Path, connected graph, circuit, cutset: Simple path, elementary path, tie-set, directed path, bridge
6. Connected components and tree: Rank of graph, tree and cotree, distance between trees, elementary tree transformation, root, directed tree (rooted tree) (parent, siblings, ancestor, descendants, leaf, level, height)
7. Binary tree, fundamental circuit (fundamental tie-set) and fundamental cutset, non-separable components
8. Non-separable graph and separable graph, articulation set (articulation vertex), connectivity and edge-connectivity, strongly connected component, graph with special structure (complete graph, clique, maximal clique and maximum clique, bipartite graph, complete bipartite graph, k- partite graph, complete k- partite graph, k-chromatic)
9. Regular graph, Euler graph, Hamilton graph, planar graph and dual graph: Euler circuit, Euler path, Hamilton circuit, Hamilton path, homeomorphic graph, planar graph conditions, dual graph definition
10. Window and base of a graph, how to draw dual graph, complement graph, matrix of a graph (adjacency matrix, incidence matrix)
11. Circuit matrix and cutset matrix: Reduced incidence matrix, reference vertex, number of trees, circuit matrix, fundamental circuit matrix, relationship between circuit matrix and adjacency matrix, cutset matrix, fundamental cutset matrix
12. Circuit matrix and cutset matrix (continued): Rank of reduced incidence matrix, circuit matrix and cutset matrix, relationship between circuit matrix and cutset matrix, relationship between reduced incidence matrix and cutset matrix
13. Basic network problems: Maximum flow problem and its solution, relationship between minimum cut and maximum flow
14. Basic network problems (continued) : Shortest path problem and its solution, overall tutorial
15. Final summary

[Keywords] graph, network, maximum flow, shortest path, integer programming

[Textbooks and Reference Books] None

[Evaluation] Students must attend at least  $\frac{3}{4}$  of the lectures in order to qualify for the end-of-term exam and evaluation shall be based on the results of the end-of-term exam. Points may also be added to the end-of-exam score for those who answer the tutorial questions.

[Related courses] Mathematical Programming

ネットワーク基礎 (旧名称「グラフ理論」) Network Fundamentals

[Instructor] Yasuo Sugai

[Credits] 2

[Semester] 2nd year-Spring-Mon 7

[Course code] T1E046102

[Room] Bldg.ENG-17-112

[Class Enrollment] About 80

[Candidate] Students of Faculty of Engineering, other Faculties, and Specially Registered Non-Degree Student

[Course description] The faculty member interprets the definition of graph, plane graph, shortest path problem, maximum flow problem, linear programming problem, and combinatorial problem, together with some examples.

[Course objectives] To study the graph theory as the basis for networks.

[Plans and Contents]

1. Graph and graph theory: What is a graph?, examples of graphs, origin of graph theory, applications of graph theory, terminology of graph theory (vertex and edge, trivial graph, finite graph, multiple edge, self-loop, simple graph)
2. Terminology of graph theory (continued): Degree of a graph, isolated vertex, end vertex, relationship between degree of a graph and number of edges, What is graphic sequence of non negative integers?
3. Terminology of graph theory (continued): Directed graph, positive or negative degree of vertex in a directed graph, isomorphism, sub-graph, vertex and edge operations (elimination of vertex, deletion of edge, contraction of edge)
4. Terminology of graph theory (continued): Multigraph, labelled graph and unlabelled graph, section graph (vertex section graph, edge section graph)
5. Path, connected graph, circuit, cutset: Simple path, elementary path, tie-set, directed path, bridge
6. Connected components and tree: Rank of graph, tree and cotree, distance between trees, elementary tree transformation, root, directed tree (rooted tree) (parent, siblings, ancestor, descendants, leaf, level, height)
7. Binary tree, fundamental circuit (fundamental tie-set) and fundamental cutset, non-separable components
8. Non-separable graph and separable graph, articulation set (articulation vertex), connectivity and edge-connectivity, strongly connected component, graph with special structure (complete graph, clique, maximal clique and maximum clique, bipartite graph, complete bipartite graph, k- partite graph, complete k- partite graph, k-chromatic)
9. Regular graph, Euler graph, Hamilton graph, planar graph and dual graph: Euler circuit, Euler path, Hamilton circuit, Hamilton path, homeomorphic graph, planar graph conditions, dual graph definition
10. Window and base of a graph, how to draw dual graph, complement graph, matrix of a graph (adjacency matrix, incidence matrix)
11. Circuit matrix and cutset matrix: Reduced incidence matrix, reference vertex, number of trees, circuit matrix, fundamental circuit matrix, relationship between circuit matrix and adjacency matrix, cutset matrix, fundamental cutset matrix
12. Circuit matrix and cutset matrix (continued): Rank of reduced incidence matrix, circuit matrix and cutset matrix, relationship between circuit matrix and cutset matrix, relationship between reduced incidence matrix and cutset matrix
13. Basic network problems: Maximum flow problem and its solution, relationship between minimum cut and maximum flow
14. Basic network problems (continued) : Shortest path problem and its solution, overall tutorial
15. Final summary

[Keywords] graph, network, maximum flow, shortest path, integer programming

[Textbooks and Reference Books] None

[Evaluation] Students must attend at least  $\frac{3}{4}$  of the lectures in order to qualify for the end-of-term exam and evaluation shall be based on the results of the end-of-term exam. Points may also be added to the end-of-exam score for those who answer the tutorial questions.

[Related courses] Mathematical Programming

都市環境プロデュース (旧名称「都市環境プロデュース I」) Urban Environment Produce

[Instructor] Kiharu Tsuge

[Credits] 2

[Semester] 2nd year-Spring-Thurs 6

[Course code] T1E047101

[Room] Bldg.ENG-17-112

[Candidate] Students of Faculty of Engineering, other Faculties, and Specially Registered Non-Degree Student

[Course objectives] We are spending their own life, selectively perceiving a variety of events and stimuli encountered in the urban environment. The faculty member interprets how to grasp information in the safe, comfortable urban life environment, and their design approaches, together with some practical examples.

[Plans and Contents]

1. What is urban information?
2. Experiencing a city
3. Sensing a city (see, smell, taste, hear, touch)
4. Remembering a city
5. Observing a city
6. Surveying a city
7. Expressing a city
8. Finding the value of a city
9. Overflowing city
10. Show and hide using a city
11. Perform using a city
12. Moving a city
13. Enjoying a city
14. Producing a city
15. Presentation, mini-thesis
16. Summary

[Evaluation] Overall evaluation to be based on the lecture report for each lesson and participation in design competition organized outside the campus.

[Remarks] Replacement course for “Urban Information Planning I” which was offered until 2003 and “Urban Environment Production” which was offered until 2008.

情報工学基礎 (旧名称「情報理論」) An Introduction to Information Technology

[Instructor] Sachiyo Arai

[Credits] 2

[Semester] 2nd year-Fall-Tues 3

[Course code] T1E048101

[Room] Bldg.ENG-2-202, 17-215

\*[Attention!!] Bldg.ENG-2 cannot be used during 2014 fall semester.

[Class Enrollment] About 80 (within the limits of Lecture Room)

[Candidate] Students of Faculty of Engineering, other Faculties, and Specially Registered Non-Degree Student

[Course description] The term “information” implies “the act of reconnoitering” in Japanese. The skills to correctly understand the meaning of information, evaluate it, and utilize it are indispensable to realize smart devices and systems, for instance, smart city, smart grid, etc. The faculty member interprets the fundamental techniques to construct the making decision system for the intellectual will that the human being has, by use of quantitatively-defined information although the term “information” is normally use qualitatively. Based on the concept of information generated from information theory, recent optimization and intelligent technologies will be introduced.

[Course objectives] [Objectives](From the faculty): To let the students to deeply understand both the quantitative evaluation method and the function of realizing the information processing, part of which will be realized by computer although it has been realized by the human being, whereas nonsensical words “overflow of information,” or “explosion of information” could have been heard everywhere. [Attainable goal](To the students): There are three attainable goals. (1). To understand the definition of entropy. (2). To understand the demonstration of statuses and method of searching for information on the information processing model for the human being. (3). To understand the non-cooperative games in the game theory used for the method of making decision in the human society.

[Plans and Contents] The students learn about the information theory of C.E.Shannon, as the basis of the information and communications; the approach of data mining, an example of application for dealing with information in quantity, which could be used for realizing the intelligence on the computer; and the game theory which could be used to understand the genetic algorithms for modeling the group of human being.

1. How to read information and information source, e.g.; weather forecast
2. Properties of entropy (1), e.g.; Let's evaluate quantitatively the saying "A picture is worth a thousand words". Calculate the self-information value of "seeing", "hearing" and "reading".
3. Properties of entropy (2), e.g.; Shares - is the Nikkei Average affected by the Dow Jones Average and the yen-dollar exchange rate?
4. Model and type of information sources and mathematical basics: Bayes theorem, Markov process
5. Transmitting information efficiently - information source encoding – Kraft's inequality
6. The more pattern characteristics there are, the better it is?
7. Usages of entropy: (engineering applications)
8. From data to information: Analysis using data mining, decision tree, other techniques
9. Predicting from data relationships. (1) Mathematical technique, (2) Learning-based method
10. Basic information for decision-making/majority decision: Rational fools
11. Decision-making under uncertain information
12. Social dilemma game (1): Prisoner's dilemma, Chicken game, and Hawk dove game
13. Social dilemma game (2): CO2 emission rights, non-payment of school lunch fee (free rider problem), common tragedy
14. Is there really value in cooperation? / Is opposition really bad?
15. Uses of game theory: (Social applications)

[Keywords] Self-information, Entropy, Data mining, Decision Theory, Social dilemma

[Textbooks and Reference Books] Textbook : Hironori Hirata (Author) : The Essence of Information Theory. Ohmsha.,

[Evaluation] Evaluated by mid term, final exam, and exercise in the class. Score of the Quiz in the class is also evaluated as appropriate. Mid term and final exams (80%), Quiz and attendance (20%)

[Related courses] Reliability Engineering, Performance Evaluation, Statistics B1, Network Fundamentals, Mathematical Programming.

[Course requirements] None

[Remarks] Replacement subject for “Information System I” which was offered until 2003 and “Information Theory” which was offered until 2008.

情報工学基礎（旧名称「情報理論」） An Introduction to Information Technology

[Instructor] Sachiyo Arai

[Credits] 2

[Semester] 2nd year-Fall-Tues 7

[Course code] T1E048102

[Room] Bldg.ENG-2-202, 17-215

\*[Attention!!] Bldg.ENG-2 cannot be used during 2014 fall semester.

[Class Enrollment] About 80 (within the limits of Lecture Room)

[Candidate] Students of Faculty of Engineering, other Faculties, and Specially Registered Non-Degree Student

[Course description] The term “information” implies “the act of reconnoitering” in Japanese. The skills to correctly understand the meaning of information, evaluate it, and utilize it are indispensable to realize smart devices and systems, for instance, smart city, smart grid, etc. The faculty member interprets the fundamental techniques to construct the making decision system for the intellectual will that the human being has, by use of quantitatively-defined information although the term “information” is normally use qualitatively. Based on the concept of information generated from information theory, recent optimization and intelligent technologies will be introduced.

[Course objectives] [Objectives](From the faculty): To let the students to deeply understand both the quantitative evaluation method and the function of realizing the information processing, part of which will be realized by computer although it has been realized by the human being, whereas nonsensical words “overflow of information,” or “explosion of information” could have been heard everywhere. [Attainable goal](To the students): There are three attainable goals. (1). To understand the definition of entropy. (2). To understand the demonstration of statuses and method of searching for information on the information processing model for the human being. (3). To understand the non-cooperative games in the game theory used for the method of making decision in the human society.

[Plans and Contents] The students learn about the information theory of C.E.Shannon, as the basis of the information and communications; the approach of data mining, an example of application for dealing with information in quantity, which could be used for realizing the intelligence on the computer; and the game theory which could be used to understand the genetic algorithms for modeling the group of human being.

1. How to read information and information source, e.g.; weather forecast
2. Properties of entropy (1), e.g.; Let's evaluate quantitatively the saying "A picture is worth a thousand words". Calculate the self-information value of "seeing", "hearing" and "reading".
3. Properties of entropy (2), e.g.:: Shares - is the Nikkei Average affected by the Dow Jones Average and the yen-dollar exchange rate?
4. Model and type of information sources and mathematical basics: Bayes theorem, Markov process
5. Transmitting information efficiently - information source encoding – Kraft's inequality
6. The more pattern characteristics there are, the better it is?
7. Usages of entropy: (engineering applications)
8. From data to information: Analysis using data mining, decision tree, other techniques
9. Predicting from data relationships. (1) Mathematical technique, (2) Learning-based method
10. Basic information for decision-making/majority decision: Rational fools
11. Decision-making under uncertain information
12. Social dilemma game (1): Prisoner's dilemma, Chicken game, and Hawk dove game
13. Social dilemma game (2): CO2 emission rights, non-payment of school lunch fee (free rider problem), common tragedy
14. Is there really value in cooperation? / Is opposition really bad?
15. Uses of game theory: (Social applications)

[Keywords] Self-information, Entropy, Data mining, Decision Theory, Social dilemma

[Textbooks and Reference Books] Textbook: Hironori Hirata (Author) :The Essence of Information Theory. Ohmsha.,

[Evaluation] Evaluated by mid term, final exam, and exercise in the class. Score of the Quiz in the class is also evaluated as appropriate. Mid term and final exams (80%), Quiz and attendance (20%)

[Related courses] Reliability Engineering, Performance Evaluation, Statistics B1, Network Fundamentals, Mathematical Programming.

[Course requirements] None

[Remarks] Replacement subject for “Information System I” which was offered until 2003 and “Information Theory” which was offered until 2008.

信頼性工学 Reliability Engineering

[Instructor] Fumio Yamazaki

[Credits] 2

[Semester] 2nd year-Fall-Tues 6

[Course code] T1E049001

[Room] Bldg.ENG-17-212

[Candidate] Students of Faculty of Engineering, other Faculties, and Specially Registered Non-Degree Student

[Course description] The faculty member has a series of lectures on the fundamental theory of quantitatively evaluating the characteristics (reliability), of whether the complicated system could normally function in the urban structures and lifelines, and its applications. The students are able to understand completely if they have the knowledge of fundamental mathematics. The faculty member has a series of lectures according to the text book.

[Course objectives] To direct the students to acquire the theory and approaches to normally operate a variety of systems, which have been designed and fabricated, with safety for the specified period of time. Objectives to be attained include understanding the meaning of reliability analysis, and being able to compute a normal distribution and use basic reliability analysis techniques.

[Plans and Contents]

1. Reliability and reliability engineering (introduction)
2. Basic theory of reliability analysis 1 (basics of probability theory)
3. Basic theory of reliability analysis 2 (standard volume of reliability)
4. Basic theory of reliability analysis 3 (failure rate and its probability distribution)
5. Statistical analysis of reliability data 1 (processing of statistical data)
6. Statistical analysis of reliability data 2 (allotment and probability paper of probability distribution)
7. Mid-term summary
8. System reliability 1 (series and parallel systems)
9. System reliability 2 (general systems and reliability design)
10. Identification of failure modes (FMEA, FTA, ETA)
11. Reliability engineering of structures 1 (probability of failure and reliability indicator)
12. Reliability engineering of structures 1 (reliability analysis model)
13. Monte Carlo simulation
14. Stochastic process and reliability analysis
15. End-of-term summary

[Keywords] failure, safety, reliability, maintainability, system, probability distribution, Monte Carlo simulation, failure mode

[Textbooks and Reference Books] Lecture note on the web

[Evaluation] Evaluation to be based on exams (80%) and attendance (20%)

[Related courses] Disaster mitigation engineering

[Course requirements] Nothing in particular but students should preferably have taken courses on basic probability and statistics.

[Remarks] Lecture notes will be published on the website at by the day before the lecture. Students are to attend the lectures with the notes printed out.



地域環境計画 Regional Planning

[Instructor] (Maiko Umemoto)

[Credits] 2

[Semester] 3rd year-Fall-Thurs 7

[Course code] T1E053001

[Room] Bldg.ENG-17-113

[Class Enrollment] No limit

[Candidate] Students of Faculty of Engineering, other Faculties, and Specially Registered Non-Degree Student

[Course description] The faculty member introduces the domestic environment in the suburban areas, together with actual cases from the viewpoint of , climate, co-existence with the culture, dwelling space human activity, and society problem, and has a series of lectures on the knowledge to establish a schematic diagram of this thesis from the fundamentals to the practices.

[Course objectives] To direct to acquire the fundamental knowledge and awareness of issues, needed to the specialists for settling the domestic environment in a variety of fields.

[Plans and Contents]

1. Introduction: Perspective and extent of theme
2. Vernacular housing
3. Livelihood and housing
4. Locality and diversity of housing
5. Modern family and housing
6. Problems in a society with a shrinking population
7. Reduction type city planning in depopulating society
8. Suburbs planning
9. Management of living environment
10. Renovation system of vacant land and house
11. Community-help 1: Local crime prevention / Mobility-impaired persons
12. Community-help 2: Forming the place for regional community using / Homesharing
13. Diverse ideas 1: Ecological design and practices / Rural living
14. Diverse ideas 2: Linking the inside and outside of a city / Developing mixed-used facilities
15. Summary: Revisiting the perspective and extent of theme

[Keywords] Shrinking society, Sustainability, Vernacular, Settlement, Environmental coexistence, Suburbanization, Compact city, New urbanism, Rural living, Management of living environment, HOA, Regional community, Community-help

[Textbooks and Reference Books] To be introduced where appropriate

[Evaluation] Evaluation to be based on 2 reports / no routine exams

[Course requirements] None in particular

[Remarks] Contents and sequence of lesson plan subject to partial changes.

地域環境計画 Regional Planning

[Instructor] (Maiko Umemoto)

[Credits] 2

[Semester] 3rd year-Fall-Tues 3

[Course code] T1E053001

[Room] Bldg.ENG-15-109

[Class Enrollment] No limit

[Candidate] Students of Faculty of Engineering, other Faculties, and Specially Registered Non-Degree Student

[Course description] The faculty member introduces the domestic environment in the suburban areas, together with actual cases from the viewpoint of, climate, co-existence with the culture, dwelling space human activity, and society problem, and has a series of lectures on the knowledge to establish a schematic diagram of this thesis from the fundamentals to the practices.

[Course objectives] To direct to acquire the fundamental knowledge and awareness of issues, needed to the specialists for settling the domestic environment in a variety of fields.

[Plans and Contents]

1. Introduction: Perspective and extent of theme
2. Vernacular housing
3. Livelihood and housing
4. Locality and diversity of housing
5. Modern family and housing
6. Problems in a society with a shrinking population
7. Reduction type city planning in depopulating society
8. Suburbs planning
9. Management of living environment
10. Renovation system of vacant land and house
11. Community-help 1: Local crime prevention / Mobility-impaired persons
12. Community-help 2: Forming the place for regional community using / Homesharing
13. Diverse ideas 1: Ecological design and practices / Rural living
14. Diverse ideas 2: Linking the inside and outside of a city / Developing mixed-used facilities
15. Summary: Revisiting the perspective and extent of theme

[Keywords] Shrinking society, Sustainability, Vernacular, Settlement, Environmental coexistence, Suburbanization, Compact city, New urbanism, Rural living, Management of living environment, HOA, Regional community, Community-help

[Textbooks and Reference Books] To be introduced where appropriate

[Evaluation] Evaluation to be based on 2 reports / no routine exams

[Course requirements] None in particular

[Remarks] Contents and sequence of lesson plan subject to partial changes.

都市環境共生 Eco-compatible Engineering

[Instructor] (Mitsuru Sese)

[Credits] 2

[Semester] 3rd year-Fall-Intensive

[Course code] T1E056001

[Room] Bldg.ENG-17-213

Intensive course in August. Please keep in mind that more information will be post at a later date.

[Course description] Any engineers allied to the urban issues have to know the fundamentals of environmental issues including the social systems. In addition, urban issues are closely related to global environment issues. This curriculum deals with the urban environment issues from the viewpoint of environmental management. So, the faculty member will have a series of lectures on the urban environment issues, global environment issues (temperature rise), theory of resource and energy, and theory of industries and petrochemical complex, which are indispensable to the lectures.

[Course objectives] Co-existence of urban and environment, which implies the urban area with lower energy consumption and lower environment load, recognized as the background for the urban planning, would not be dissected from global environment issues (Temperature rise in the urban area). On the other-hand, co-existence of urban area and industry is to be taken into account because the environment and economy are harmonized in the sustainable city. So, this curriculum deals with the co-existence of urban and environment issues, related to the co-existence of global temperature rise and industrialization, from the engineer's point of view. This curriculum deals with the environment in relation to energy and recycling of materials, referring to the environmental issues on the Bay of Tokyo, especially on the industrialization of seaside area in Chiba Prefecture. The faculty member intends to have a series of lectures on the scientific view, international agreement, and national policy of the global temperature rises, using the reference materials describing the latest information, since some of them are changeable in nature.

[Plans and Contents]

1. Eco-compatible engineering and global environmental problems (global warming) (outline of lectures)
2. Perspective of environmental urban planning (concept of eco-compatibility and perspective of environmental problem resolution)
3. Urban planning that is eco-compatible with the environment (environmental problems in the city)
4. Material recycling and human activity (urban and material recycling, industrial activities and resource recycling)
5. Sustainable society (sustainable development and social system)
6. Resource, energy issues (oil, coal, natural gas, nuclear energy, renewable energy and others)
7. Scientific basis of global warming
8. International framework for countermeasures against global warming
9. Policies to combat global warming in Japan (including energy conservation)
10. Technologies to prevent global warming in Japan and overseas
11. Environmental management and eco-business
12. Environmental problems in the Tokyo Bay and industrialization of the coastal areas in Chiba Prefecture (industrialization and the environment)
13. Current urban environment situation (environmental problems in Japan)
14. Global environment crisis (is global warming the only global environmental problem?)
15. Role of an engineer in solving environmental problems and end-of-term exam

[Keywords] Eco-compatible engineering, Urban planning, Global warming, Theory of resource and energy, Material recycling, Combinat, Industrialization, Environmental management

[Evaluation] Evaluation to be based on the results of the written exams with points added for attending the lectures.

[Remarks] Replacement subject for "Eco-compatible Engineering II" which was offered until 2003.

建築計画 I (旧名称「建築計画」) Architectural Planning I

[Instructor] Hideki Kobayashi

[Credits] 2

[Semester] 3rd year-Spring-Fri 6

[Course code] T1E057101

[Room] Bldg.ENG-15-110

[Candidate] Students of Faculty of Engineering, other Faculties, and Specially Registered Non-Degree Student

[Course description] Students learn the knowledge of creating a system for proposing the building architecture and its design plan, in view of taking the architecture and urban space as the human motion and its life, respectively. Compulsory subject for the urban space engineering course required to sit for the First Class Architect Exam. Learn a wide range of basic skills in urban planning as well.

[Course objectives] Especially to provide the capability of understanding the fundamentals of architecture projects planning in its proposal and design, acquiring the fundamental knowledge and awareness of problems, which will be required for the specialists in a variety of fields allied to the architecture and urban space.

[Plans and Contents] Besides teaching students how to read and understand the latest examples of architectural planning and design, lecture themes on the basic theory of factual investigation; architectural conditions harmonized with the environment, culture and city; desirable design as seen from a behavioral and living point of view; new design theory and methods incorporating marketing means will be also taught from multiple angles.

1. What is an architectural planning? Importance of architectural projects in town creation
2. Theory of architectural planning and design – Development law and usage survey
3. Same-day planning tutorial – Using the campus plan as a subject
4. Survey and marketing theory
5. Environmental problems and architectural planning I (environmentally-friendly construction)
6. Environmental problems and architectural planning II (sustainability and SI construction)
7. Urban problems and architectural planning I (urban and architectural restoration)
8. Urban problems and architectural planning II (environmental assessment and construction projects)
9. Housing problems and architectural planning I (design of territory and living space)
10. Housing problems and architectural planning II (housing standards and density issues)
11. Basic knowledge of architectural planning (business planning, PFI, real estate and architecture)
12. Basic knowledge of design planning (human engineering, user participation etc.)
13. Architectural planning in future (latest practices – conservation and restoration and skeleton periodical leasehold housing)
14. Basic knowledge of an architect
15. Summary

[Keywords] City and architecture, architectural proposal, survey theory, marketing, user needs, space design

[Textbooks and Reference Books] To be introduced where appropriate in the lecture.

[Evaluation] Evaluation to be based on 5-6 mini-reports to be submitted at the end of the lessons.

[Course requirements] None in particular

[Remarks] Replacement subject for “Architectural Planning” which was offered until 2008.

建築一般構造 I (旧名称「建築一般構造」)    Structural Engineering I

[Instructor] Hideo Tsukagoshi

[Credits] 2

[Semester] 2nd year-Fall-Thurs 6

[Course code] T1E059101

[Room] Bldg.ENG-17-213

[Course description] The terms used in construction structures, especially the 3 main forms of structures (reinforced concrete construction, steel construction, wooden construction) , will be explained for students to acquire basic knowledge on these.

[Course objectives] Understand and learn the basic technical terms of construction structures. Enable a sense of professionalism to be ingrained based on the technical terms learned.

[Plans and Contents] Programming details are as follows. Students have to use the technical terms used in other lessons and the knowledge acquired in the lessons.

1. Introduction
2. Reinforced concrete structure (1)
3. Reinforced concrete structure (2)
4. Reinforced concrete structure (3)
5. Reinforced concrete structure (4)
6. Reinforced concrete structure (5)
7. Steel structure (1)
8. Steel structure (2)
9. Steel structure (3)
10. Steel structure (4)
11. Steel structure (5)
12. Timber and wooden structure (1)
13. Timber and wooden structure (2)
14. Timber and wooden structure (3)
15. Summary

[Textbooks and Reference Books] Textbook:Edit of a building construction study group, 「The encyclopedia for studying building construction」 This book is out of print and thus it will be uploaded for use on the website, it is the use.

[Evaluation] Evaluation to be based on tests conducted during the lessons. Students must attend the first lesson as details will be given during the introduction on the first lesson.

数理計画法 (旧名称「情報システム」)    Mathematical Programming

[Instructor] Yasuo Sugai

[Credits] 2

[Semester] 3rd year-Spring-Wed 6

[Course code] T1E061101

[Room] Bldg.ENG-17-213

[Class Enrollment] About 80

[Candidate] Students of Faculty of Engineering, other Faculties, and Specially Registered Non-Degree Student

[Course description] The faculty member has a series of lectures on the conditions for the optimization, duality theory, and algorithms to obtain the optimal solution, which are concentrated on the linear programming, following the formulation of the problem of optimization, which has frequently appeared in a variety of actual applications. The simplex method adapted to the linear programming will be described in detail.

[Course objectives] The mathematical programming provides a solution in the operations research, and system engineering. The objectives of this curriculum are to learn about a variety of problems on the mathematical programming, and methods to solve them.

[Plans and Contents]

1. What is mathematical programming (optimization concept, classification of optimization problem)
2. Direct search method (rule of thirds, golden section search)
3. What are the linear programming problems?
4. Formularization of various problems into linear programming problems
5. Standard form of a linear programming problem
6. Concept of the simplex method
7. Algorithm of the improved simplex method
8. Dual problems and duality theorem
9. Non-linear programming Part 1
10. Non-linear programming Part 2
11. Non-linear programming Part 3
12. Urban mathematical programming Part 1
13. Urban mathematical programming Part 2
14. Urban mathematical programming Part 3
15. Final summary

[Keywords] mathematical programming, linear programming, optimization problem, simplex method, duality, computational complexity

[Textbooks and Reference Books] Reference book: Kenji Amaya: Introduction to optimization methods for engineering, Suurikougaku-Sha (Book to supplement areas that could be not explained during the lessons)

[Evaluation] Students have to attend at least  $\frac{3}{4}$  of the lessons to qualify for the end-of-term exam and evaluation shall be based on the results of the end-of-term exam. Additional points may be added to the score of the end-of-term exam for those who answer the tutorials.

[Related courses] Network Fundamentals

[Remarks] “Mathematical Programming” is substitution of “Information Systems” which has been offered to the B-course students until 2009, though the contents are quite different.

都市施設生産 Construction for Urban Facilities

[Instructor] Yusuke Yamazaki

[Credits] 2

[Semester] 3rd year-Fall-Tues 6

[Course code] T1E063001

[Room] Bldg.ENG-2-201, Bld.ENG-5-105

\*[Attention!!] Bldg.ENG-2 cannot be used during 2014 fall semester.

[Candidate] Students of Faculty of Engineering, other Faculties, and Specially Registered Non-Degree Student

[Course description] The lectures will provide an introduction to building construction system and cover the 3 general classifications of construction for urban facilities, namely process-based production management technologies, facility-based production system and production rationalization technologies. In the lecture on the introduction to building construction system, basic matters and knowledge of building construction systems and building projects will be taught. In the lecture on the introduction to process-based production management, basic knowledge of construction technologies and work-based control technologies will be taught. In the lecture on facility-based production systems and production rationalization technologies, advanced examples of production systems in various facility construction projects and rationalization techniques for industrialized, automated and information production systems will be taught. Assignments will also be given to verify the level of understanding in the respective fields.

[Course objectives] Understand the following items and acquire the knowledge to make use of these to gain more in-depth professional knowledge and skills related to urban facilities. 1) Be able to understand the building construction process and technologies involved and the social framework for realizing this from a general perspective. 2) Understand basic technologies and knowledge on the facility production process and production management technologies together with basic knowledge of facility production systems and facility construction projects and be able to make use of these. 3) Through actual examples of facility-based production systems, be able to understand basic knowledge on the management of facility construction projects and production rationalization techniques.

[Plans and Contents] Production system and project management in construction for urban development

1. The world of building construction and environment surrounding building construction
2. Introduction to building construction (1): Composition of building construction system
3. Introduction to building construction (2): Building construction process (1) Planning and design stages
4. Introduction to building construction (3): Building construction process (1) Procurement and construction stages
5. Introduction to building construction (4): Management of construction projects / Assignment for mini-report (1)
6. Production management technologies by production process (1): Management items and management technologies in building construction
7. Production management technologies by production process (2): Reinforcement placing works, formworks
8. Production management technologies by production process (3): Concrete works
9. Production management technologies by production process (4): Steel frame works, exterior works
10. Production management technologies by production process (5): Finishing works / assignment for mini-report (2)
11. Production management technologies by production process (6): Preparatory works, temporary works, underground works
12. Production system by facility and production rationalization technology (1): Housing complex construction project and industrialized and hybrid building/construction systems/ assignment for final report
13. Production system by facility and production rationalization technology (2) Large office building construction project and mechanized and automated construction system
14. Production system by facility and production rationalization technology (3) Large-scale complex shape facility construction project and production information management system
15. Production system by facility and production rationalization technology (4) Urban facility, environment restoration project and environmentally-friendly production system

[Keywords] building construction, production management, production system, project management

[Textbooks and Reference Books] Reference Books : Building Construction, Furusaka, S., et al, Riko Tosyo, 2009. Building Construction Handbook, Furusaka, S., et al, Asakura Publishing Co., Ltd., 2007.

Textbooks: No textbooks will be used but printouts of the lecture materials will be distributed.

[Evaluation] Overall evaluation to be based on lesson attendance record (about 20% of the evaluation score), mini-assignment report for (twice, about 20% of the evaluation score each), and final assignment report (about 40% of the evaluation score).

[Instructor] (Kiyoshi Yamamori)

[Credits] 2

[Semester] 3rd year-Fall-Mon 6

[Course code] T1E064001

[Room] Bldg.ENG-15-110

[Course description] Architecture-related regulations focusing on the Building Standards Act will be broadly explained.

[Course objectives] (General goal): To understand the fundamental configuration and contrivance of the “Building Standards Act,” and to allow the respective students to read the text by themselves. (Attainable goal): To allow the respective students to obtain the correct answer to the respective standard problems in the construction law on the exam (in the past) for the registered architects since the construction law occupies a greater percentage of weight in the academic subjects on the exam for the registered architects of the first and second classes.

[Plans and Contents]

1. Roles of related laws in architecture and town creation, basic knowledge for studying architectural regulations, outline of Building Standards Act, objectives of the laws
2. Building Standards Act: Definition of terms
3. Building Standards Act: Calculation of areas, height etc, system provisions
4. Building Standards Act: Standalone provision 1 General structure, architectural facility
5. Building Standards Act: Standalone provision 2 Structural relationship provisions
6. Building Standards Act: Standalone provision 3 Fire prevention provisions (1)
7. Building Standards Act: Standalone provision 4 Fire prevention provisions (2)
8. Building Standards Act: Standalone provision 5 Evacuation provisions
9. Act on Architects and Building Engineers (mid-term test: up to the 8th lesson) \*Reporting assignment will be given
10. Building Standards Act: Group provision 1 Roads and land plots, land use zone and construction restrictions
11. Building Standards Act: Group provision 2 Plot ratio, building-to-land ratio etc.
12. Building Standards Act: Group provision 3 Height limits, setback-line limits, sun shadow regulation
13. Building Standards Act: Group provision 4 Provisions related to town creation, fire prevention district system
14. Other provisions in the Building Standards Act \* Submission of assignment report
15. End-of-term test (Building Standards Act, Act on Architects and Building Engineers)
16. City Planning Law, Fire Services Act, New Barrier-Free Law, Law on promotion of renovation for earthquake-resistant structures and others

[Keywords] Building Standards Act

[Evaluation] Assignment report (implemented in the second half, constitute about 20% of the evaluation score), mid-term mini-test (conducted at the end of the first half, constitute about 15% of the evaluation score, end-of-term test (constitute about 45% of the evaluation score), attendance record etc. The tests shall be based on past questions of the First Class Architect Exam.



景観計画 Landscape Plan

[Instructor] Masaru Miyawaki

[Credits] 2

[Semester] 3rd year-Spring-Wed 4

[Course code] T1E065101

[Room] Bldg.ENG-17-211

[Class Enrollment] About 80 (No limit)

[Candidate] 3rd year students

[Course description] This curriculum starts with the problem of how to create an urban area as well as the urban planning, featuring the landscapes, responding to the concurrent needs and those from students, and tends to find out solutions to a number of issues, characterizing to deal with issues arising from the current urban planning, landscapes, and architectural design.

[Course objectives] To firstly learn about the institutions of urban planning, and then to learn about landscape planning. The goals are as follows: (1). Issues arising from tradeoff between urban development and landscape to be kept natural; (2). Issues arising from the historical point of view to keep landscape natural; (3). Issues specific to the areas around the railway stations, (4). Issues of tradeoff between planning residence areas and landscape to be kept natural; And, (5). Issues of tradeoff between declines in urban central areas and development of suburban areas along the main streets. (Attainable Goal): To interpret the scope of landscape as well as to suitably interrupt the terms; institution, methods of planning, and cases.

[Plans and Contents] The lectures include the fundamentals of the landscape planning; and the concept of landscape; terms, method of planning, case study in each area. For the preview and review of the lessons, the students need to study by purchasing the textbooks.

1. What is "Landscape"? (guidance)
2. "Water" and "Landscape" (townscape and waterscape)
3. "Food" and "Landscape" (slow food and slow city)
4. "Transport" and "Landscape"
5. Characters and perception of landscapes
6. Territorial landscape planning in a wide area (landscape plan)
7. Urban landscape planning in a city (urban landscape plan)
8. Urban design (public spaces)
9. Urban design (city center)
10. Urban design (industrial areas)
11. Urban design (residential areas)
12. Landscape regulation (conservation)
13. Landscaping regulation (creation)
14. Landscape management
15. Exam

[Keywords] landscape, cultural landscape, townscape, urban design, city planning

[Textbooks and Reference Books] Students need to purchase textbook: Masaru Miyawaki, Landscape and Urban Design, Asakura Publishing Co., Ltd, 2013, in co-op store.

[Evaluation] A related assignment will be given and a report is to be submitted for each lesson. Evaluation will be carried out to see whether the objective is attained in the final report.

[Related courses] Seminar in Urban Space Engineering I

[Remarks] Attendance is a pre-requisite for credits to be awarded

景観計画 Landscape Plan

[Instructor] Masaru Miyawaki

[Credits] 2

[Semester] 3rd year-Spring-Wed 7

[Course code] T1E065102

[Room] Bldg.ENG-17-211

[Class Enrollment] About 80 (No limit)

[Candidate] 3rd year students

[Course description] This curriculum starts with the problem of how to create an urban area as well as the urban planning, featuring the landscapes, responding to the concurrent needs and those from students, and tends to find out solutions to a number of issues, characterizing to deal with issues arising from the current urban planning, landscapes, and architectural design.

[Course objectives] To firstly learn about the institutions of urban planning, and then to learn about landscape planning. The goals are as follows: (1). Issues arising from tradeoff between urban development and landscape to be kept natural; (2). Issues arising from the historical point of view to keep landscape natural; (3). Issues specific to the areas around the railway stations, (4). Issues of tradeoff between planning residence areas and landscape to be kept natural; And, (5). Issues of tradeoff between declines in urban central areas and development of suburban areas along the main streets. (Attainable Goal): To interpret the scope of landscape as well as to suitably interrupt the terms; institution, methods of planning, and cases.

[Plans and Contents] The lectures include the fundamentals of the landscape planning; and the concept of landscape; terms, method of planning, case study in each area. For the preview and review of the lessons, the students need to study by purchasing the textbooks.

1. What is "Landscape"? (guidance)
2. "Water" and "Landscape" (townscape and waterscape)
3. "Food" and "Landscape" (slow food and slow city)
4. "Transport" and "Landscape"
5. Characters and perception of landscapes
6. Territorial landscape planning in a wide area (landscape plan)
7. Urban landscape planning in a city (urban landscape plan)
8. Urban design (public spaces)
9. Urban design (city center)
10. Urban design (industrial areas)
11. Urban design (residential areas)
12. Landscape legislation (conservation)
13. Landscaping legislation (creation)
14. Landscape management
15. Exam

[Keywords] landscape, cultural landscape, townscape, urban design, city planning

[Textbooks and Reference Books] Students need to purchase textbook: Masaru Miyawaki, Landscape and Urban Design, Asakura Publishing Co., Ltd, 2013, in co-op store.

[Evaluation] A related assignment will be given and a report is to be submitted for each lesson. Evaluation will be carried out to see whether the objective is attained in the final report.

[Related courses] Seminar in Urban Space Engineering I

[Remarks] Attendance is a pre-requisite for credits to be awarded.

防災工学 (旧名称「コミュニティエンジニアリングⅡ」) Disaster Mitigation Engineering

[Instructor] Fumio Yamazaki and Yoshihisa Maruyama

[Credits] 2

[Semester] 3rd year-Fall-Mon 4

[Course code] T1E066101

[Room] Bldg.ENG-17-212

[Candidate] Students of Faculty of Engineering, other Faculties, and Specially Registered Non-Degree Student

[Course description] Faculty members give lectures about the mechanism of generating natural disaster, and its effect on the structural materials and human society, and to explain countermeasures to reduce the damage caused by natural disasters.

Also give lectures to acquire the knowledge with scopes in a wide range of disasters, mainly aimed at earthquake as the natural disaster, including the mechanism of generating the earthquake, tsunami, vibration of the earth, vibration of the ground, earthquake engineering dedicated to lifelines, and of preventing disaster in the urban area.

[Course objectives] To direct the students to completely study the theories and practices of the countermeasures for disasters, based on the fundamental geophysics, including the mechanisms of earthquake and tsunami; analysis of the earth vibration; and forecast, evaluation, and reduction of disaster in urban areas.

The objective to be attained is to understand the basic theory and meaning of the terms and be able to roughly evaluate the quantitative indicators related to disaster prevention engineering.

[Plans and Contents]

1. Global natural disasters and disaster prevention
2. Generation mechanism of earthquakes
3. Earthquake magnitude and generation model
4. Seismic waves and their propagation, seismic intensity
5. Principle of a seismograph and seismic observation
6. Tsunami
7. Observing disasters: Introduction to remote sensing
8. Mid-term summary
9. Sway of buildings
10. Seismic response spectral
11. Analysis of seismic records
12. Earthquake round motion
13. Lifeline disaster prevention
14. Urban disaster prevention planning
15. End-of-term summary

[Keywords] Natural disaster, earthquake, tsunami, hydro-meteorological disaster, earthquake ground motion, urban disaster mitigation, lifeline, remote sensing, disaster mitigation plan

[Textbooks and Reference Books] None in particular

[Evaluation] Evaluation to be based on the exam (80%) and attendance (20%)

[Related courses] Vibration engineering, Reliability engineering

[Remarks] Lecture notes will be posted on the website at <http://ares.tu.chiba-u.jp/note.htm> by the day before the lecture.

Students are to attend the lectures with a print out of the notes.

防災工学 (旧名称「コミュニティエンジニアリングⅡ」) Disaster Mitigation Engineering

[Instructor] Fumio Yamazaki and Yoshihisa Maruyama

[Credits] 2

[Semester] 3rd year-Fall-Mon 7

[Course code] T1E066102

[Room] Engineering Research Building 4th Floor North meetingroom

[Candidate] Students of Faculty of Engineering, other Faculties, and Specially Registered Non-Degree Student

[Course description] Faculty members give lectures about the mechanism of generating natural disaster, and its effect on the structural materials and human society, and to explain countermeasures to reduce the damage caused by natural disasters. Also give lectures to acquire the knowledge with scopes in a wide range of disasters, mainly aimed at earthquake as the natural disaster, including the mechanism of generating the earthquake, tsunami, vibration of the earth, vibration of the ground, earthquake engineering dedicated to lifelines, and of preventing disaster in the urban area.

[Course objectives] To direct the students to completely study the theories and practices of the countermeasures for disasters, based on the fundamental geophysics, including the mechanisms of earthquake and tsunami; analysis of the earth vibration; and forecast, evaluation, and reduction of disaster in urban areas.

The objective to be attained is to understand the basic theory and meaning of the terms and be able to roughly evaluate the quantitative indicators related to disaster prevention engineering.

[Plans and Contents]

1. Global natural disasters and disaster prevention
2. Generation mechanism of earthquakes
3. Earthquake magnitude and generation model
4. Seismic waves and their propagation, seismic intensity
5. Principle of a seismograph and seismic observation
6. Tsunami
7. Observing disasters: Introduction to remote sensing
8. Mid-term summary
9. Sway of buildings
10. Seismic response spectral
11. Analysis of seismic records
12. Earthquake round motion
13. Lifeline disaster prevention
14. Urban disaster prevention planning
15. End-of-term summary

[Keywords] Natural disaster, earthquake, tsunami, hydro-meteorological disaster, earthquake ground motion, urban disaster mitigation, lifeline, remote sensing, disaster mitigation plan

[Textbooks and Reference Books] None in particular

[Evaluation] Evaluation to be based on the exam (80%) and attendance (20%)

[Related courses] Vibration engineering, Reliability engineering

[Remarks] Lecture notes will be posted on the website at <http://ares.tu.chiba-u.jp/note.htm> by the day before the lecture.

Students are to attend the lectures with a print out of the notes.

都市環境エネルギー概論 (旧名称「都市環境エネルギー論Ⅱ」) Urban Environment Energetics

[Instructor] Kenkichi Sato

[Credits] 2

[Semester] 2nd year-Fall-Wed 5

[Course code] T1E067101

[Room] Bldg.ENG-17-213

[Class Enrollment] About 50

[Candidate] Students of Faculty of Engineering, other Faculties, and Specially Registered Non-Degree Student

[Course description] The faculty member has a series of lectures on the energy and environment (status), with subtitle “Studies on Energy Issues in Urban Areas,” focused on their current status and future trends in our life. The faculty member will have a special talk on the utilization of energy, studied from the accident of nuclear power plants, so that the students could have their own thought on this issue.

[Course objectives] To understand the energy and environment, covering the entire fields of natural and social sciences in relation to the environment issues, so that the students could have interest in this issue, and could be involved in these fields. The current goal is for the students to find out the gateway to this problem. The final goal is for them to have their own ideas on this problem.

[Plans and Contents] The faculty member grasps the urban area as a domestic area, while grasping the energy as the energy source and energy utilization, and interprets the energy issues in relation to the human life and industry, from the viewpoints of theory and practice. Discussion on this problem is welcome.

1. Discovery of energy-related issues (report on self-given assignment)
2. Nuclear power generation and alternatives
3. Energy policy and energy technologies (ET)
4. Natural energy (1)
5. Natural energy (2)
6. Natural energy (3)
7. Fundamental energy theory (1) (exercise report)
8. Fundamental energy theory (2) (exercise report)
9. Energy conservation and energy storage technologies
10. Waste treatment in Chiba City
11. Modal shift
12. Movie “Otsunami” (report)
13. Presentation of assignment
14. Presentation of assignment
15. Summary

[Keywords] Energy, alternatives, Natural energy, Energy policy

[Evaluation] Attendance is conditional but this will not be included in the results. Evaluation to be based on the comments for each lecture (30%), mini-thesis (30%), presentation of assignment (40%).

[Course requirements] None in particular

[Remarks] Assignment is to be submitted in the next lesson.

都市環境エネルギー概論 (旧名称「都市環境エネルギー論Ⅱ」)Urban Environment Energetics

[Instructor] Kenkichi Sato

[Credits] 2

[Semester] 2nd year-Fall-Thurs 7

[Course code] T1E067102

[Room] Bldg.ENG-17-213

[Class Enrollment] About 50

[Candidate] Students of Faculty of Engineering, other Faculties, and Specially Registered Non-Degree Student

[Course description] The faculty member has a series of lectures on the energy and environment (status), with subtitle “Studies on Energy Issues in Urban Areas,” focused on their current status and future trends in our life. The faculty member will have a special talk on the utilization of energy, studied from the accident of nuclear power plants, so that the students could have their own thought on this issue.

[Course objectives] To understand the energy and environment, covering the entire fields of natural and social sciences in relation to the environment issues, so that the students could have interest in this issue, and could be involved in these fields. The current goal is for the students to find out the gateway to this problem. The final goal is for them to have their own talks on this problem.

[Plans and Contents] The faculty member grasps the urban area as a domestic area, while grasping the energy as the energy source and energy utilization, and interprets the energy issues in relation to the human life and industry, from the viewpoints of theory and practice. Discussion on this problem is welcome.

1. Discovery of energy-related issues (report on self-given assignment)
2. Nuclear power generation and alternatives
3. Energy policy and energy technologies (ET)
4. Natural energy (1)
5. Natural energy (2)
6. Natural energy (3)
7. Fundamental energy theory (1) (exercise report)
8. Fundamental energy theory (2) (exercise report)
9. Energy conservation and energy storage technologies
10. Waste treatment in Chiba City
11. Modal shift
12. Movie “Otsunami” (report)
13. Presentation of assignment
14. Presentation of assignment
15. Summary

[Keywords] Energy, alternatives, Natural energy, Energy policy

[Evaluation] Attendance is conditional but this will not be included in the results. Evaluation to be based on the comments for each lecture (30%), mini-thesis (30%), presentation of assignment (40%).

[Course requirements] None in particular

[Remarks] Assignment is to be submitted in the next lesson.

通信工学概論Ⅱ(旧名称「通信環境システムⅡ」) Introduction to Communication Engineering II

[Instructor] Hiroyuki Yoshimura

[Credits] 2

[Semester] 3rd year-Fall-Fri 4

[Course code] T1E068101

[Room] Bldg.ENG-17-214

[Candidate] Students of Faculty of Engineering

[Course description] The faculty member outlines, on a series of lectures, the electromagnetic wave for supporting information communications, antennas used for wireless communications, cables used for wire communications, and information security.

[Course objectives] General Goal: To understand the importance of the safety in information, and of the reliability, as well as to understand the variety of hardware elements allied to information communications. Attainable Goal: To have the capability of interpreting outlines of the hardware for use in information communications, and of pointing out the current issues of the communications in security and reliability.

[Plans and Contents] The faculty member has a series of lectures on the following subjects to accomplish the above goals: The students are requested to do preparation to the lectures through the reference books and internet, and also to review the contents on the printed materials and keywords on the blackboard, which were used as supports for the lectures.

1. Introduction and questionnaire survey on information communication
2. Classification of electromagnetic waves and applications in communications
3. Mathematical representation of electromagnetic waves
4. Substance and propagation constant
5. Various antennas - Part 1 -
6. Various antennas - Part 2 -
7. Friis transmission equation
8. Summary of first half
9. Various cables
10. Circuit concept of cables
11. Input impedance characteristics of cables
12. Smith chart - Part 1 -
13. Smith chart - Part 2 -
14. Outline of information security
15. Common key encryption and public key encryption
16. Exam

[Keywords] wireless communication, wire communication, information security, electromagnetic wave, antenna, cable, cryptographic technology

[Textbooks and Reference Books] Textbook: NIL. Handouts summarizing the key points will be distributed as required.

Reference books: Microwave Engineering (Gakkensha) by Fumiaki Okada, New Antennas Engineering (Sougou Denshi Publisher) by Hiroyuki Arai, Information Security (Ohmsha) by Atsuko Miyaji and Hiroaki Kikuchi.

[Evaluation] Scores include 60 points for the exam, another 20 points for the report, and other 20 points for the attendance. The exam checks whether a student provides the capability of interpreting outlines of hardware used for current information communications. The report evaluates whether a student provides the capability of pointing out the issues of current information in security and reliability.

[Related courses] Physics C Introduction to Electromagnetism, Introduction to Communication Engineering I

[Course requirements] Students should preferably be taking Physics C Introduction to Electromagnetism, Introduction to Communication Engineering I.

[Remarks] Replacement subject for "Communication Environment System II which was offered until 2009."

通信工学概論Ⅱ(旧名称「通信環境システムⅡ」) Introduction to Communication Engineering II

[Instructor] Hiroyuki Yoshimura

[Credits] 2

[Semester] 3rd year-Fall-Fri 7

[Course code] T1E068102

[Room] Bldg.ENG-17-112

[Candidate] Students of Faculty of Engineering

[Course description] The faculty member outlines, on a series of lectures, the electromagnetic wave for supporting information communications, antennas used for wireless communications, cables used for wire communications, and information security.

[Course objectives] General Goal: To understand the importance of the safety in information, and of the reliability, as well as to understand the variety of hardware elements allied to information communications. Attainable Goal: To have the capability of interpreting outlines of the hardware for use in information communications, and of pointing out the current issues of the communications in security and reliability.

[Plans and Contents] The faculty member has a series of lectures on the following subjects to accomplish the above goals: The students are requested to do preparation to the lectures through the reference books and internet, and also to review the contents on the printed materials and keywords on the blackboard, which were used as supports for the lectures.

1. Introduction and questionnaire survey on information communication
2. Classification of electromagnetic waves and applications in communications
3. Mathematical representation of electromagnetic waves
4. Substance and propagation constant
5. Various antennas - Part 1 -
6. Various antennas - Part 2 -
7. Friis transmission equation
8. Summary of first half
9. Various cables
10. Circuit concept of cables
11. Input impedance characteristics of cables
12. Smith chart - Part 1 -
13. Smith chart - Part 2 -
14. Outline of information security
15. Common key encryption and public key encryption
16. Exam

[Keywords] wireless communication, wire communication, information security, electromagnetic wave, antenna, cable, cryptographic technology

[Textbooks and Reference Books] Textbook: NIL. Handouts summarizing the key points will be distributed as required.

Reference books: Microwave Engineering (Gakkensha) by Fumiaki Okada, New Antennas Engineering (Sougou Denshi Publisher) by Hiroyuki Arai, Information Security (Ohmsha) by Atsuko Miyaji and Hiroaki Kikuchi.

[Evaluation] Scores include 60 points for the exam, another 20 points for the report, and other 20 points for the attendance. The exam checks whether a student provides the capability of interpreting outlines of hardware used for current information communications. The report evaluates whether a student provides the capability of pointing out the issues of current information in security and reliability.

[Related courses] Physics C Introduction to Electromagnetism, Introduction to Communication Engineering I

[Course requirements] Students should preferably be taking Physics C Introduction to Electromagnetism, Introduction to Communication Engineering I.



環境工学 I Environmental Science I

[Instructor] Hironori Kimura

[Credits] 2

[Semester] 4th year-Fall-Fri 6

[Course code] T1E069001

[Room] Bldg.-ENG-15-110

[Course description] Learn the role and importance of architectural facilities in an architectural, urban environment. First, students will gain a deeper understanding of air conditioning load in buildings and then understand the use of natural energy and the state of architecture and systems for that purpose. Next, students will learn the concept and configuration of the water supply and drainage, ventilation facilities and electric facilities required to ensure the quality of the indoor environment. Lastly, they will learn about the latest architectural facilities and design techniques for architectural plans from a comprehensive perspective that takes into account energy conservation and Low Carbon Urban Planning ,and Then global environmental considerations.

[Course objectives] The architectural facilities are not to be of the techniques which enable us to make arbitrary architectural design, but its plan needs to be made from the viewpoint of whole system construction. Based on the architectural facilities plan, this curriculum is intended to study the followings: (1). To conceive the fundamental interrelation between the architecture - urban environment and architectural facilities: (2). To understand the concept of architectural facilities to create comfortable, stable, architectural environment, and the way of constructing systems: And, (3). To learn about the method of planning environment, looking into the effective, natural energy utilization in the future. (4). To learn about the method of Low Carbon Urban Planning. The lectures are to describe the possibility of natural energy utilization to the architectural facilities, throughout practical exercises. The final goal is to learn about their contents until the students could completely understand them.

[Plans and Contents]

1. Architectural, urban environment and architectural facilities
2. Architectural, urban environment and architectural facilities
3. Design and environmental architectural facilities
4. Passive architectural design and energy conservation (air flow, ventilation)
5. Passive architectural design and energy conservation (solar radiation control)
6. Passive architectural design and energy conservation (insulation, heat storage)
7. Passive architectural design and energy conservation (human-centric ventilation design)
8. Passive architectural design and energy conservation (air conditioner load calculation)
9. Introduction to air conditioning plan and energy conservation
10. Water environment and architectural facilities , mini-test
11. Light environment and energy conservation in architectural facilities
12. Introduction to architectural and electrical equipment
13. Global environmental problems and green construction
14. Introduction to Low Carbon Urban Planning
15. Introduction of environmental evaluation techniques
16. Test

[Keywords] Architecture,Urban environment and Architectural Equipment,Psychrometric chart,Airconditioning System.Energy Transportation,Water Supply ・ Hot Water Supply,Water Drain ・ Vent Pipe System,Global environment.

[Textbooks and Reference Books] Txtbook:Environmental Design & Building System The Second Edition(Ichigaya edition),Exercise,Reference Book:Toward the Architecture for a Global Environment(Architectual Institute of Japan editing) Environment Text Book Equipment Edition(Architectual Institute of Japan editing),Air Conditiong design Practice Text Book(Ohmsha ,Ltd.) ,Plumbing System design Practice Text Book(Ohmsha ,Ltd.),Architectural Electricity Equipment (Shokokusha Publishing Co., Ltd.)

[Evaluation] Scores include 30 points for the attendance, another 30 points for the themes, and other 40 points for the exam. The themes include exercises and simple papers, totally counting for 6 times. Problems on the exam include important points on the respective lectures. Considerations are taken for any students who have been devoted to the lessons might have higher scores.

[Remarks] Calculator and scale to be brought along for each lecture. Replacement subject for “Architectural Facilities” which was offered until 2001.

環境工学 II Environmental Science II

[Instructor] Hironori Kimura

[Credits] 2

[Semester] 2nd year-Fall-Fri 6

[Course code] T1E069101

[Room] Bldg.ENG-.9-106 Bldg.ENG-.15-110

[Course description] Learn the role and importance of architectural facilities in an architectural, urban environment. First, students will gain a deeper understanding of air conditioning load in buildings and then understand the use of natural energy and the state of architecture and systems for that purpose. Next, students will learn the concept and configuration of the water supply and drainage, ventilation facilities and electric facilities required to ensure the quality of the indoor environment. Lastly, they will learn about the latest architectural facilities and design techniques for architectural plans from a comprehensive perspective that takes into account energy conservation and Low Carbon Urban Planning, and Then global environmental considerations.

[Course objectives] The architectural facilities are not to be of the techniques which enable us to make arbitrary architectural design, but its plan needs to be made from the viewpoint of whole system construction. Based on the architectural facilities plan, this curriculum is intended to study the followings: (1). To conceive the fundamental interrelation between the architecture - urban environment and architectural facilities: (2). To understand the concept of architectural facilities to create comfortable, stable, architectural environment, and the way of constructing systems: And, (3). To learn about the method of planning environment, looking into the effective, natural energy utilization in the future. (4). To learn about the method of Low Carbon Urban Planning. The lectures are to describe the possibility of natural energy utilization to the architectural facilities, throughout practical exercises. The final goal is to learn about their contents until the students could completely understand them.

[Plans and Contents]

1. Architectural, urban environment and architectural facilities
2. Architectural, urban environment and architectural facilities
3. Design and environmental architectural facilities
4. Passive architectural design and energy conservation (air flow, ventilation)
5. Passive architectural design and energy conservation (solar radiation control)
6. Passive architectural design and energy conservation (insulation, heat storage)
7. Passive architectural design and energy conservation (human-centric ventilation design)
8. Passive architectural design and energy conservation (air conditioner load calculation)
9. Introduction to air conditioning plan and energy conservation
10. Water environment and architectural facilities, mini-test
11. Light environment and energy conservation in architectural facilities
12. Introduction to architectural and electrical equipment
13. Global environmental problems and green construction
14. Introduction to Low Carbon Urban Planning
15. Introduction of environmental evaluation techniques
16. Test

[Keywords] Architecture, Urban environment and Architectural Equipment, Psychrometric chart, Air conditioning System, Energy Transportation, Water Supply • Hot Water Supply, Water Drain • Vent Pipe System, Global environment.

[Textbooks and Reference Books] Textbook: Environmental Design & Building System The Second Edition (Ichigaya edition), Exercise, Reference Book: Toward the Architecture for a Global Environment (Architectural Institute of Japan editing) Environment Text Book Equipment Edition (Architectural Institute of Japan editing), Air Conditioning design Practice Text Book (Ohmsha, Ltd.), Plumbing System design Practice Text Book (Ohmsha, Ltd.), Architectural Electricity Equipment (Shokokusha Publishing Co., Ltd.)

[Evaluation] Scores include 30 points for the attendance, another 30 points for the themes, and other 40 points for the exam. The themes include exercises and simple papers, totally counting for 6 times. Problems on the exam include important points on the respective lectures. Considerations are taken for any students who have been devoted to the lessons might have higher scores.

[Remarks] Calculator and scale to be brought along for each lecture. Replacement subject for "Architectural Facilities" which was offered until 2001.

## 環境工学 II Environmental Engineering II

[Instructor] (Takuro Kikuchi)

[Credits] 2

[Semester] 4th year-Spring-Mon 6

[Course code] T1E070001

[Room] Bldg.ENG-15-110

[Course description] The faculty member outlines fundamentals of heat, air environment, light environment, and sound environment. In addition, the faculty member outlines the architectural techniques necessary for establishing heat, air environment, light environment, and sound environment.

[Course objectives] To understand the elemental techniques for establishing the environment within the architecture, and to study the fundamentals of their application to the architectural techniques. To grasp the physical phenomena related to establish environment from outside to within the architecture, and to direct to learn about the fundamental formulas, graphs, and tables, and their usage. To acquire the fundamental knowledge of the psychological, physiological influence of environment within architecture on the residents. To direct to acquire outlines of the design techniques to supply environment comfortable for residents, based on the psychological and physiological influences.

[Plans and Contents] The faculty member has a series of lectures using Power Point. A mini-test will be carried out each time to check if the contents talked on the lectures could practically be used in field because of its importance. The faculty member interprets the answer to the mini-test done last time before the start of the next lecture. Note that review to the fundamental lessons of physics and math is important to completely understand the phenomena in the environment.

1. Outline “What is environmental engineering”
2. Heat “Basics of thermal environment”
3. Heat “Room temperature and heat load”
4. Heat “Humidity and thermal comfort”
5. Light and heat “Sunlight and solar radiation (1)”
6. Light and heat “Sunlight and solar radiation (2)”
7. Light “Lighting and daylighting (1)”
8. Light “Lighting and daylighting (2)”
9. Light “Color and color planning”
10. Air “Basics of ventilation and air flow”
11. Air “Dynamics of ventilation and air flow”
12. Air “Ventilation and air quality”
13. Sound “Basics of acoustic environment”
14. Sound “Acoustic planning”
15. End-of-term test

[Keywords] thermal and air quality environment, light environment, sound environment, load reduction design techniques

[Evaluation] Evaluation to be based on overall results of attendance, mini-tests and end-of-term test.

[Remarks] Replacement subject for “Environmental Engineering” which was offered until 2001.

環境工学 I Environmental Engineering I

[Instructor] (Takuro Kikuchi)

[Credits] 2

[Semester] 2nd year-Spring-Mon 6

[Course code] T1E070101

[Room] Bldg.ENG-15-110

[Course description] The faculty member outlines fundamentals of heat, air environment, light environment, and sound environment. In addition, the faculty member outlines the architectural techniques necessary for establishing heat, air environment, light environment, and sound environment.

[Course objectives] To understand the elemental techniques for establishing the environment within the architecture, and to study the fundamentals of their application to the architectural techniques. To grasp the physical phenomena related to establish environment from outside to within the architecture, and to direct to learn about the fundamental formulas, graphs, and tables, and their usage. To acquire the fundamental knowledge of the psychological, physiological influence of environment within architecture on the residents. To direct to acquire outlines of the design techniques to supply environment comfortable for residents, based on the psychological and physiological influences.

[Plans and Contents] The faculty member has a series of lectures using Power Point. A mini-test will be carried out each time to check if the contents talked on the lectures could practically be used in field because of its importance. The faculty member interprets the answer to the mini-test done last time before the start of the next lecture. Note that review to the fundamental lessons of physics and math is important to completely understand the phenomena in the environment.

1. Outline “What is environmental engineering”
2. Heat “Basics of thermal environment”
3. Heat “Room temperature and heat load”
4. Heat “Humidity and thermal comfort”
5. Light and heat “Sunlight and solar radiation (1)”
6. Light and heat “Sunlight and solar radiation (2)”
7. Light “Lighting and daylighting (1)”
8. Light “Lighting and daylighting (2)”
9. Light “Color and color planning”
10. Air “Basics of ventilation and air flow”
11. Air “Dynamics of ventilation and air flow”
12. Air “Ventilation and air quality”
13. Sound “Basics of acoustic environment”
14. Sound “Acoustic planning”
15. End-of-term test

[Keywords] thermal and air quality environment, light environment, sound environment, load reduction design techniques

[Evaluation] Evaluation to be based on overall results of attendance, mini-tests and end-of-term test.

[Remarks] Replacement subject for “Environmental Engineering” which was offered until 2001.

環境リサイクル化学 (旧名称「環境材料化学」) Environmental Chemistry and Recycle Engineering

[Instructor] Yasufumi Otsubo, Yuji Hirose

[Credits] 2

[Semester] 3rd year-Spring-Thurs 6

[Course code] T1E073101

[Room] Bldg.ENG-15-204

[Candidate] Students of Faculty of Engineering, other Faculties, and Specially Registered Non-Degree Student

[Course description] There are two flows of materials in the urban recycling systems and global material flow systems; of which one is the flow of resources and materials having values effective to the human activities, and other of scraps and pollution materials recognized as the environmental load. The faculty member has a series of lectures on the material flow in the urban areas from the viewpoints of recycling and re-use of materials.

[Course objectives] [General Goal]: It is indispensable to recognize the awareness of direct concern to these issues by oneself, and to practically provide the solution to these issues. This curriculum lets the students to acquire the fundamentals of utilizing the environment recycling chemistry in their daily life. [Attainable Goal]: It is necessarily important to understand the basic principle of chemistry. To let the students to interpret the environmental issues on the basis of chemistry, and to apply these knowledge to the solutions.

[Plans and Contents]

1. Outline: Problem of resources and energy running dry, global environment and the flow of substances, dioxins, fluorocarbon, acid rain, global warming
2. Process engineering basics (1): Basics of thermodynamics, mass transfer, diffusion and molecular motion
3. Process engineering basics (2): Chemical kinetics, liquid-phase reactions, solid-phase reactions
4. Process engineering basics (3): Unit operation (extraction, evaporation, absorption, adsorption etc.)
5. Chemical substances and laws: Hazardous materials, toxic materials, radioactive substances etc.
6. Petrochemistry, plastics (1): Basics of polymers (nomenclature, composition)
7. Petrochemistry, plastics (2): Physical properties of polymers
8. Petrochemistry, plastics (3): About petroleum
9. Petrochemistry, plastics (4): Various plastics (biocompatibility, composite materials etc.)
10. Petrochemistry, plastics (5): Recycling of plastics
11. Petrochemistry, plastics (6): Chiba Prefecture and petroleum, iodine, natural gas
12. Detailed discussion on recycling engineering (1): Recycling of metals and ceramics
13. Detailed discussion on recycling engineering (2): Processing of acids and alkalis, combustion engineering
14. Detailed discussion on recycling engineering (3): Recycling of wood and paper, High Moisture Organic Waste(raw garbage), Relations with agriculture
15. End-of-term exam

[Keywords] Recycle, Sustainable, Material recycle, Waste management, Environmental load

[Textbooks and Reference Books] Materials will be distributed for each lesson. A factual understanding of environmental problems is important.

[Evaluation] (1). The students who attended 10 times or more of a total number of 14 times are qualified to receive the final exam. (2). The score will be evaluated only by the results of the final exam. (3). The students are prohibited to bring the note or reference books together on the exam. All the problems are descriptive, but not of mathematics, and the evaluation will be done based on how the fundamentals of environmental issues are well understood in a descriptive way.

[Course requirements] Students should preferably be taking Basic Chemistry but this is not mandatory.

[Remarks] Office hours: Thursday 1pm – 5pm (advance notice required).

## 都市環境マネジメント II Urban Environment Management II

[Instructor] Takao Ozaki

[Credits] 2

[Semester] 4th year-Fall-Thurs 6

[Course code] T1E074001

[Room] Bldg.ENG-17-211

[Class Enrollment] About 10-15

[Candidate] Students who are interested in Quantitative financing economic assessment in public projects • Development projec.

[Course description] This series of lectures continues from “Urban Environment Management II” open until last year in principle. The Japanese Government have had a policy of settling the basis for developing society and economy, offered by the public fund, i.e., international support plan for the developing countries, and Japanese support project for the public business fund. However, the theory, application, and execution of the objective, quantitative analysis for selecting and evaluating the independent development support projects and public business have become strongly requested to be done, based on the background of world financial crisis in recent years. This curriculum is requested to study the framework of the analysis and evaluation for the proposals of development (in New Public Management), and the tool for the analysis (in Cost- effectiveness analysis). In addition, exercises with computers will be carried out.

[Course objectives] To acquire the capability of understanding and executing the frameworks for the evaluation of outcome and output, including those in the environment field, as well as the method of analysis (IRR), because we have to support the effective, fair way of settling the infrastructures and social background with tax as one of the international society members and Japanese people. In addition, to cultivate the nature of logical thinking and cooperative discussion for the students participating this curriculum, throughout the personal survey and group discussion. To educate the personnel in charge of evaluation and analysis of development.

[Plans and Contents] Lectures will be conducted on the following topics, with research presentations, discussions and tutorials conducted in groups.

1. Topic: Theoretical framework of project analysis: Cost-benefit analysis (CBA)
2. Topic: Project analysis technique (1) Theory: Internal rate of return (IRR) analysis
3. Topic: Project analysis technique (2) Procedure: Internal rate of return (IRR) analysis
4. Topic: Economic analysis of development and public projects : Economic costs and benefits (1)
5. Topic: Economic analysis of development and public projects : Economic costs and benefits (2)
6. Topic: Non-tradeable assets and services (intangible economic benefits): Estimation of intended payment amount and regression analysis
7. Topic: Non-tradeable assets and services (intangible economic benefits): Estimation of intended payment amount and statistical test
8. Topic: Economic analysis of road building projects (Theory 1): Analysis manual of the World Bank, Ministry of Land, Infrastructure, Transport and Tourism
9. Topic: Economic analysis of road building projects (Theory 2): Analysis manual of the World Bank, Ministry of Land, Infrastructure, Transport and Tourism
10. Topic: Economic analysis of road building projects (Tutorial 1): Overhead crossing construction project in Manila, Philippines
11. Topic: Economic analysis of road building projects (Tutorial 2): Overhead crossing construction project in Manila, Philippines
12. Topical research (1) Re-evaluation of roading building projects: Research and re-evaluation of examples by the Ministry of Land, Infrastructure, Transport and Tourism
13. Topical research (2) Re-evaluation of roading building projects: Research and re-evaluation of examples by the Ministry of Land, Infrastructure, Transport and Tourism
14. Explanation of final assignment: Project evaluation by the students
15. Presentation of research and discussion, overall summary: summary of seminar and research

[Keywords] Developing Countries, Development and Environment, Feasibility

[Evaluation] Presentation by group, submission of reports, exam.

都市計画 Town and Regional Planning

[Instructor] Miki Muraki

[Credits] 2

[Semester] 2nd year-Spring-Wed 6

[Course code] T1E075101

[Room] Bldg.ENG-17-214

[Candidate] Students of Faculty of Engineering, other Faculties, and Specially Registered Non-Degree Student

[Course description] The faculty member outlines the mechanism of urban planning system and its business. The lectures practically describe the rules for settling preferable towns.

[Course objectives] General Objectives is to understand the mechanism of urban planning systems. Attainment Objects is to understand the relation with society and the urban planning.

[Plans and Contents] Lectures will be conducted on urban planning in general.

1. Introduction
2. Development control methods
3. Urban planning in Tokyo
4. development control (1)
5. development control (2)
6. Urban planning and land
7. Development permission
8. Urban planning survey
9. National land planning
10. Local Plan
11. District Plan
12. District plan (1)
13. District plan (2) and building arrangement area
14. Overseas urban planning
15. Summary

[Keywords] town and regional planning, land use, development control

[Evaluation] Evaluation to be based on exams and reports, with a passing score of 60 points or more.

[Related courses] urban development, transportation planning

[Remarks] Replacement subject for “Urban Space Planning” which was offered until 2003 and “Urban Planning III” which was offered until 2006. Lesson materials are to be downloaded from the website of the Kimura Research Lab.

## 構造力学 I Structural Mechanics I

[Instructor] Hideo Tsukagoshi

[Credits] 2

[Semester] 2nd year-Spring-Fri 6

[Course code] T1E077001

[Room] Bldg.ENG-2-102

[Class Enrollment] About 80

[Candidate] Students of Faculty of Engineering, and Specially Registered Non-Degree Student

[Course description] The structural frameworks keep safe the civil and architectural structures recognized as the urban constructive elements. Structures consisting of assemblies of bars are frequently used among others. The faculty member interprets the stress applied to the bars and the deformation of bar, as an example, the most popular fundamental structures (static structures). The structural mechanic starts with this topic:

[Course objectives] To understand the balance of forces, stable structure, stress generated within the bar, and deformation of a bar. To provide the capability of correctly drawing the stresses applied to beams and arch-shaped frames, respectively. To provide the capability of calculating the deformation of beams.

[Plans and Contents] The lecture plan is as follows: Review the lectures, as another study to be done out of regular lessons, by executing exercises according to the problems which have appeared in the text book, which will be forwarded corresponding to the lectures, and exercises which have appeared in “Structural Mechanics I.”

1. Introduction, various structures, external loads, modelling of a structure
2. Properties of forces (3 elements), composition, moment and couple, equilibrium of forces
3. Structural stability, instability; statically determinate, statically indeterminate; fulcrum reaction
4. Determination of stresses in a statically determinate structure
5. Stress diagram of a statically determinate beam
6. Stress diagram of a statically determinate Rahmen
7. Stress of a statically determinate truss
8. Summary on stress
9. Mechanical properties, stress level and strain of structural materials
10. Properties of cross-sections
11. Stress and strain in a beam
12. Stress and strain in a beam, bending deformation in a beam
13. Bending deformation in a beam
14. Buckling of a compression member
15. Summary on deformation

[Textbooks and Reference Books] Textbook : Taturou Sakimoto, 「Structural Mechanics [second edition] – determinate structure –」, Morikita Publishing Co. Ltd.

[Evaluation] 2 tests will be conducted, one during the lessons and another at the end of the term. Equal weightage shall be given to both tests. Attendance will be also evaluated.

[Related courses] Exercise of Structural Mechanics I (T1E078001)

[Course requirements] Students are to take this course together with Seminar on Structural Mechanics I. This will be considered as an extracurricular course and lessons will be conducted on the assumption that students are taking this course as well.



構造力学演習Ⅰ Seminar on Structural Mechanics I

[Instructor] Toru Sekiguchi

[Credits] 2

[Semester] 2nd year-Spring-Fri 7

[Course code] T1E078001

[Room] Bldg.ENG-2-102

[Candidate] Students of Faculty of Engineering

[Course description] Students will gain a deeper understanding of the things learned in “Structural Mechanics I” through solving the tutorial questions.

[Course objectives] Structures that compose urban are subjected to a variety of external forces such as laden weights and loads imposed by earthquakes and winds as well as own weight. Students will learn the basics of mechanics for creating safe structures that can withstand these external forces. The aim is to teach students how to determine the forces and deformation occurring in basic rod materials and statically determinate structures made up of such rods.

[Plans and Contents] The Seminar accorded with Structural Mechanics I

[Textbooks and Reference Books] Tatsuro Sakimoto: Structural Mechanics, Morikita Publishing, 1991

[Evaluation] Evaluated by mid-term exam and end-of-term exam in Structural Mechanics I, and attendance.(exam 50% attendance 50%)

[Related courses] Refer to Structural Mechanics I regarding lecture contents.

[Course requirements] Students who have taken or be taking Structural Mechanics I.

国土・交通計画（旧名称「交通計画」） National land and transportation planning

[Instructor] Yoshihisa Maruyama

[Credits] 2

[Semester] 3rd year-Spring-Fri 5

[Course code] T1E084101

[Room] Bldg.ENG-17-213

[Candidate] Students of Faculty of Engineering, other Faculties, and Specially Registered Non-Degree Student

[Course description] In considering transport problems, there is a need to adequately address the relationship with urban planning and land use. These lectures provide an easy-to-understand explanation of the basic issues in transport planning and engineering based on the national land planning.

[Course objectives] Be able to understand the issues concerning transport planning (software) such as transport demand forecast, cost-benefit analysis etc, as well as the issues concerning transport engineering (hardware) such as road traffic flow theory, transport environment and safety etc., and be able to explain the relationship between a city and its transportation.

[Plans and Contents]

1. Guidance, national land transition and transport (1)
2. National land transition and transport (2)
3. Transport survey
4. Transport demand forecast (1)
5. Transport demand forecast (2)
6. Evaluation of urban transport projects
7. Urban transportation plan, transport and town creation
8. Mid-term summary
9. Road transport
10. Road traffic flow (cars, pedestrians)
11. Traffic flow theory
12. Traffic capacity and service level
13. Road traffic environment and safety (1)
14. Road traffic environment and safety (2)
15. End-of-term summary

[Keywords] National land planning, transportation planning, transportation engineering

[Textbooks and Reference Books] Lecture materials will be posted on the website.

[Evaluation] Exam (80%), assignment reports (to be submitted during the end-of-term exam 20%)

[Related courses] Urban planning, Urban Development

都市開発 Urban Development

[Instructor] Miki Muraki

[Credits] 2

[Semester] 2nd year-Fall-Wed 4

[Course code] T1E090001

[Room] Bldg.ENG-17-112

[Candidate] Students of Faculty of Engineering, other Faculties, and Specially Registered Non-Degree Student

[Course description] An outline on urban planning and the urban project system in particular will be given. The type of framework required for good urban development will also be explained.

[Course objectives] The general purpose of the course is to derive an understanding of urban planning and the urban development system in particular. Based on this, students must be able to correlate urban planning and urban development and consider their relationships with the market.

[Plans and Contents] An outline on mainly the urban development and its relationship with projects will be taught.

1. Introduction
2. Incentive zoning
3. Public contribution to urban development (1)
4. Public contribution to urban development (2)
5. Land re-adjustment project and urban re-development project
6. Urban infrastructure
7. Creation of a low-carbon city (1)
8. Creation of a low-carbon city (2)
9. Development of a densely built-up area and disaster prevention plan
10. 3 laws of urban development and revitalization of city center
11. Relationship between the city center and transportation
12. Urban development regulations
13. PFI and public projects
14. Cost Benefit Analysis
15. Summary

[Keywords] urban development, town and regional planning

[Evaluation] A total of 60 points or more for the exam and reports is required for a pass.

[Related courses] town and regional planning and transportation planning

[Course requirements] Students have to take Urban Planning.

[Remarks] Materials are to be downloaded from the website of the Muraki Research Lab.

## 建築計画 II Architectural Planning II

[Instructor] (Nobuyuki Okawa)

[Credits] 2

[Semester] 3rd 4th year -Spring-Fri 3

[Course code] T1E091001

[Room] Bldg.ENG-17-112

[Candidate] Students of Faculty of Engineering, other Faculties, and Specially Registered Non-Degree Student

[Course description] Besides covering the technical aspects of planning techniques in architectural planning, specific examples that take into consideration the inhabitants and users in addition to the social environment and city will also be cited during the lectures for students to acquire the knowledge required for the construction of planning techniques.

[Course objectives] Purpose: Acquire the basics for the self-realization of the social role and architectural space composition capability that is expected of an expert engineer in architectural planning. Besides acting as a crucible for a variety of living activities, students will understand that architecture is one of the components that make up a city and also a component that make up a scenery and environment. Objective: Besides understanding a variety of techniques for analysing and studying numerous examples, students have to acquire the knowledge to read and understand the thinking and intent incorporated into the plan and to reflect these in future architectural plans.

[Plans and Contents] Follow the respective theme in each lesson and adopt a specific architecture or architect as an example to verify its historical positioning while reading and resolving the modern social significance and intent encompassed in the architecture. Besides the theory, a real experience of space is also important in architecture. For that reason, a list of important architecture that ought to be studied will be distributed for students to preferably visit on their own. Submission of reports will also be required where appropriate.

1. Introduction to architectural planning (basic knowledge required in architectural planning)
2. Outline of modern architecture (Establishment process and background of modernism architecture)
3. Urban and public facilities i (library – changing functions and roles)
4. Urban and public facilities ii (art galleries, museums – from exhibition facilities to information dissemination media)
5. Urban and office buildings (changes in social situation and transition of prototype)
6. Educational facilities (school construction – Changes in the education system and relationship with society, local environment)
7. Medical facilities (changes in hospital functions, systemization of medicine, environmental consideration towards medical practitioners)
8. Social facilities (based on the differences between barrier-free and universal design)
9. Urban and residential facilities (housing facility planning focusing on overseas examples)
10. Renovation and conversion (use of existing stock and re-verification of historical value)
11. Competition and proposal (designer selection method)
12. Considerations of architectural planning (introduction of various planning processes – using Tadao Ando, Toyo Ito, Riken Yamamoto, Shin Takamatsu etc. as examples)
13. Architecture planning practice (assignment design)
14. Review of assignment
15. Summary
16. Spare day

[Keywords] architectural planning, city and architecture, modern architectural history, architectural design, theory of space, functionality and rationality, symbolism on city and architecture

[Textbooks and Reference Books] No textbooks. Reference books will be introduced where appropriate during the lessons.

[Evaluation] Evaluation to be based on the number of attendance days, reports during lessons and contents of the assignment reports (powers of observation, thinking, imagination etc.). Submission deadlines for reports must be strictly followed.

Penalties (point deduction) may be imposed for late submissions. Scoring shall basically be 1/3 for each.

[Related courses] Architectural Planning I (T1E057101), Urban Housing (T1E015001), History of Architecture and Urbanism (T1E102001),

[Course requirements] None in particular

[Remarks] Contact for enquiries : nakatani@tu.chiba-u.ac.jp ohkawa@tu.chiba-u.ac.jp

建築一般構造 II Structural Engineering II

[Instructor] Hideo Tsukagoshi

[Credits] 2

[Semester] 3rd year-Spring-Thurs 6

[Course code] T1E092001

[Room] Bldg.ENG-17-213

[Course description] A briefing for the study of basic knowledge and technical terms used in architectural structures will be given. Besides technical terms on structural design methods, structural provisions on architecture will also be explained.

[Course objectives] Understand and learn basic technical terms used in architectural structures. Enable students to ingrain themselves with a sense of professionalism based on this. Acquire basic knowledge on structural design methods.

[Plans and Contents] The lesson plan is as follows. Students have to make use of knowledge learned in the lessons for technical terms used in other lessons as well.

1. Introduction, changes in structural provisions and earthquake resistance reinforcements
2. Loads and external forces
3. Mechanics(1)
4. Mechanics(2)
5. Large space structure
6. Structural design methods (1)
7. Structural design methods (2)
8. Structural design methods (3)
9. Structural design methods (4)
10. Basic structures (1)
11. Basic structures (2)
12. Steel framed reinforced concrete structure • Pre-stressed concrete structure.
13. Reinforced concrete block structure • Cement and concrete (1)
14. Cement and concrete and others (2)
15. Summary

[Textbooks and Reference Books] Textbook : Edit of a building construction study group 「The encyclopedia for studying building construction」 . This book is out of print and thus it will be uploaded for use on the website. And 「The structure relation technical standard explanatory of a buildings in 2007」 . These textbooks will be uploaded for use on the website, these are the use.

[Evaluation] Evaluation to be based on tests conducted during the lessons. Students must attend the first lesson as details will be given during the introduction on the first lesson.

[Related courses] Structural Engineering I (T1E059101)

[Remarks] The contents and conduct of the lessons is subject to change so students must attend the first lesson to check this.

測量演習    Surveying Seminar

[Instructor] Masaki Ohki, Nobuhiro Onizuka

[Credits] 2

[Semester] 4th year-Spring-Sat 2

[Course code] T1E093001

[Room] Bldg.ENG-17-211

[Class Enrollment] 15

[Course description] Understand the knowledge that ought to be acquired through the surveying seminar e.g. those on the meaning of the surveying seminar, mental preparation and attitude towards the surveying seminar, team work and so on.

[Course objectives] Next, following the lecture plan on the science of surveying, this course will let students experience the use of basic tools used in surveying, especially the level gauge, transit, and flat plate. It also aims to teach students computation techniques (for multi-angle survey) in addition to verifying and assessing the individual measurement results.

[Plans and Contents]

1. Orientation: What is measurement, things to note during practice, group division
2. Field survey, reconnaissance: Measurement plan; field survey, reconnaissance practice
3. Explanation and practice of distance measurement: Distance measurement, tape inspection, distance measurement practice
4. Explanation of levelling: Levelling instrument, levelling rod, explanation of reading and adjustment methods
5. Levelling practice: reading of instrument, adjustment method, notebook record
6. Levelling practice: Implementation of observation, calculation of levelling
7. Explanation of transit: Reading a vernier scale, notebook recording method, calculation of angles
8. Explanation of horizontal angle observation: Observation procedure, creation of indicator, horizontal angle observation practice
9. Horizontal angle observation practice
10. Explanation and practice of polygonal survey coordinates calculation: Calculation of average
11. Explanation of plane-table survey
12. Practice of plane-table survey
13. Summary

[Keywords] leveling, horizontal angle, plane-table survey

[Textbooks and Reference Books] Lecture materials will be posted on the website.

[Evaluation] Overall evaluation to be based in attendance record, attitude and report score.

図学演習 Descriptive Geometry

[Instructor] Dongyun Kwak, (Toyomi Aoki)

[Credits] 2

[Semester] 1st year-Fall-Tues 2

[Course code] T1E094001

[Room] Bldg.ENG-17-212

[Class Enrollment] About 50

[Course description] This class starts with the explanation of how to use the drawing tools including the lecture on the descriptive geometry, and understanding and training of the basic descriptive geometry for use in two- three dimensional space demonstration.

[Course objectives] To deeply understanding descriptive geometry knowledge and methods of drawing, and to acquire the technique of drawing as the communication means to demonstrate ones' own ideas to the others on a sheet of paper.

[Plans and Contents] Practice on drawing lines and characters, planar geometry, 3D geometry, orthogonal projection, isometric drawing, shade drawing, in-depth understanding of two-point perspective drawing, study and practice of basic graphics theory

1. Guidance, what is a “drawing”?
2. How to use drawing tools, explanation of drawing roles and “Practice on drawing lines and characters”
3. Planar geometry
4. 3D geometry (1)
5. 3D geometry (2)
6. Reading, drafting a drawing (1)
7. Reading, drafting a drawing (2)
8. Model production
9. Production of intersecting body model (1)
10. Production of intersecting body model (2)
11. Shade drawing and axonometric projection drawing
12. Drawing a housing using the axonometric projections of an isometric drawing
13. Single-point perspective drawing
14. Two-point perspective drawing
15. Overall review

[Keywords] Descriptive geometry, Urban space, Architecture space

[Textbooks and Reference Books]

- 1) Descriptive geometry science for architecture and design, BAIFUKAN press.

[Evaluation] Evaluation to be based on the assignment works and attendance score. Attendance is required for this class. If you miss more than 5 classes you will fail this class.

[Course requirements] Drawing tools are required. (Details will be given during the guidance on the first lesson)

[Remarks] Past fiscal year student need to consult with the faculty.

図学演習 Descriptive Geometry

[Instructor] Dongyun Kwak

[Credits] 2

[Semester] 3rd year-Spring-Sat1

[Course code] T1E094002

[Room]

[Class Enrollment] About 10

[Course description] This class starts with the explanation of how to use the drawing tools including the lecture on the descriptive geometry, and understanding and training of the basic descriptive geometry for use in two- three dimensional space demonstration.

[Course objectives] To deeply understanding descriptive geometry knowledge and methods of drawing, and to acquire the technique of drawing as the communication means to demonstrate ones' own ideas to the others on a sheet of paper.

[Plans and Contents] Practice on drawing lines and characters, planar geometry, 3D geometry, orthogonal projection, isometric drawing, shade drawing, in-depth understanding of two-point perspective drawing, study and practice of basic graphics theory

1. Guidance, what is a “drawing”?

2. How to use drawing tools, explanation of drawing roles and “Practice on drawing lines and characters”

3. Planar geometry

4. 3D geometry (1)

5. 3D geometry (2)

6. Reading, drafting a drawing (1)

7. Reading, drafting a drawing (2)

8. Model production

9. Production of intersecting body model (1)

10. Production of intersecting body model (2)

11. Shade drawing and axonometric projection drawing

12. Drawing a housing using the axonometric projections of an isometric drawing

13. Single-point perspective drawing

14. Two-point perspective drawing

15. Overall review

[Keywords] Descriptive geometry, Urban space, Architecture space

[Textbooks and Reference Books]

1) Descriptive geometry science for architecture and design, BAIFUKAN press.

[Evaluation] Evaluation to be based on the assignment works and attendance score. Attendance is required for this class. If you miss more than 5 classes you will fail this class.

[Course requirements] Drawing tools are required. (Details will be given during the guidance on the first lesson)

[Remarks] Past fiscal year student need to consult with the faculty.



都市空間工学演習 I (旧名称「都市環境システム演習 II AE1・AE2」) Seminar in Urban Space Engineering I  
[Instructor] Masaru Miyawaki, (Ayako Yamauchi), Toru Sekiguchi, (Norihito Ejiri)

[Credits] 3

[Semester] 3rd year-Spring-Thurs 3, 4

[Course code] T1E096001 T1E096002

[Room] Drawing room-328 at Department of Urban Environment

[Course description] In this course, the urban design and the architecture are proposed from an overall perspective through the research, planning and design of public facilities that aim for the restoration of cities encompassing complex issues. Specifically, in areas where revitalization is desired, a planning proposal focusing on school facilities or community facilities that have a reality that is considered from both a hardware and software perspectives will be carried out. Specifically, special buildings such as elementary or junior high schools or facilities such as assembly areas, exhibition halls, markets, etc., that promote exchange among local residents and visitors will be designed.

[Course objectives] As a general objective, students will explore themes based on their own awareness of issues faced by cities. As an objective to be attained, students will practice a series of processes in proposing a solution through the analysis and observation of phenomena discovered from their awareness of the issues involved. The course aims to teach students professional basic knowledge and skills for the production of design drawings and models.

[Plans and Contents] 1) Perform field work in the assigned target district to capture specific urban problems. 2) Perform analysis and observation while referring to leading examples and technologies for drawing out solutions. 3) Raise questions and solutions specifically through repeated discussions and sketches. 4) Propose designs using drawings and models. 5) Set up presentation and review opportunities as occasion calls to develop skills for communicating your own proposals.

1. Start of survey analysis, explanation of tutorial assignments, self-analysis sheet (to be submitted the following week)  
2. Commentary on urban design, group work / survey analysis work: Preliminary report, set up the policy of the survey analysis.

3. Field research

4. Survey, research, field research, presentation

5. Start masterplan, group work: Think of masterplan ideas / brainstorming: Space study model

6. Group work: Presentation / proposal of masterplan: Exchange of views, brainstorming

7. Masterplan: Proposal competition format, model photos, drawings, sketch collection, commentaries etc.

8. Start individual design, individual work: Landscaping and architectural design

9. Individual work: Landscaping and architectural design, individual supervision, sketch

10. Individual work: Landscaping and architectural design, space planning, architectural design, presentation + review

11. Check of architectural structure, presentation + review

12. Feedback to the Masterplan, group work for masterplan

13. Individual work: Landscaping and architectural design, reflect the adjustments in the masterplan spatially in the individual proposal and individual area.

14. Individual work: Refine the story composition of the presentation, individual supervision

15. Final presentation

[Keywords] Public Facilities, Special building, Architectural planning, City planning

[Evaluation] Evaluation to be based on the deliverables of each lesson and final presentation.

都市空間工学演習 I (旧名称「都市環境システム演習 II AE1AE2」) Seminar in Urban Space Engineering I

[Instructor] (Masato Nakatani), (Nobyuki Ohkawa)

[Credits] 3

[Semester] 3rd year-Spring-Sat 3, 4

[Course code] T1E096003, T1E096004

[Room] Drawing room-328 at Dep. of Urban Environment System

[Candidate] Students of Faculty of Engineering, other Faculties, and Specially Registered Non-Degree Student

[Course description] The site is Yotsukaido, Chiba Prefecture. First of all, Site survey and analysis based on the talks by the local people. Next attendance will establish a basic plan concept of Yotsukaido City of the future in the group. Thereafter, each attendance wills proposal “Yotsukaido Machizukuri 2014” based on the basic concept of each group.

[Course objectives] To training and learning about the methods of survey and analysis, urban design and planning skills, and the methods of presentation and collaboration working.

[Plans and Contents] Attendance is requested to design and plan in a predetermined field to enhance the capability of understanding the issues of urban environment and architecture now days. The faculty members will advise and discuss how to create the plan and design.

1. Design studio guidance
2. Town walking and On-site briefing: Listen to history, culture, environment, activity etc. of local area.
3. Site survey: The Attendance is required site survey, based on the knowledge and experience of the past.
4. Survey Report: to prepare a report of the results of site survey and plan concept - on a sheet of A1 size paper.
5. Site survey: Site survey based on the awareness of issues caused by the attendance in the group.
6. Site analysis presentation
7. Esquisse (group)
8. Basic concept presentation (group) - on 2 board of A1 size
9. Esquisse (individual)
10. Esquisse (individual)
11. Esquisse (individual)
12. Esquisse (individual)
13. Final presentation (individual)
14. Final presentation (for Overall review& Local presentation)
15. Overall review (expected)
16. Local presentation: Present results to local peoples and local gorvernment etc.

[Keywords] Fieldwork, Partnership, Living environment, Machizukuri

[Textbooks and Reference Books]

- 1) Method of Machizukuri –Machizukuri textbooks serie 1, Architectural Institute of Japan, MARUZEN press,
- 2) City in the life –IWANAMI serie 3, IWANAMI press
- 3) Survey of Method in the town – survey beginner books of regional planning, ASAKURA press.

※Reference texts and materials will be introduced where appropriate.

[Evaluation] Evaluation will be carried out mainly attendance, team assignments (first half) and individual assignments (second half). Attendace is required for this class. If you miss more than 5 lessones you will fail this class.

[Remarks] This studio will be held at the drawing room on the third floor of Block 15.

都市環境情報演習 I Seminar in Urban Environment and Information Technology I

[Instructor] Sachiyo Arai, Yoshihisa Maruyama, Kuniharu Arai, Hideki Kobayashi, Yasuhiko Higaki, Hironao Ogura, and Hiroyuki Yoshimura

[Credits] 3

[Semester] 3rd year-Spring-Tue. 4, 5

[Course code] T1E097001 T1E097002

[Room] Bldg.ENG -17-113

[Course description] The problems that Department of Urban Environment Systems covers a wide range from architecture, design, urban planning, energy, transportation, disaster prevention, communication, and to information. This exercises are constructed in two stages of Basic program, and the Advanced program for the purpose of learning technology elements of each region which are in these common, and utilize skills acquisition. Basic program will be followed for a total of 5 weeks, and all participant may take it. The theme of this program is "the basis for data analysis" essential in advancing the research architecture, civil engineering, environmental engineering, communication and information engineering. The Advanced program, is a program of three consisting of five weekly, "Numerical Analysis", "Environmental Chemistry" and "optimization and search". Students to attend by selecting two from this.

[Course objectives] [Purpose]

■To cultivate the elemental technologies for leading to resolution capturing various problems of urban, environmental from both qualitative and quantitative point of view.

■To acquire the sense of the tying organically each element technology, and operating properly, making full use of the characteristics as international department.

[Plans and Contents]

●Basic program 1-5:Everyone to attend Program ●The following indicate the contents of 6-10 is Advanced program 1, 11-15 is Advanced program2, 16-20 is Advanced program 3. Select two of the Program1 ~ 3 Advanced program, and to attend the exercises in all 15 times.●In addition, Tuesday for Basic, and Advanced 2, Thursday for Advanced1,3. For more information be sure to attend the guidance.

1. Basic program (4/15,22,5/13,20,27):4/15(Tues) by Higaki:Introduction of R Programming for Handling of Data.
2. 4/22(Tues) by S. Arai: Estimation, Conditional Probability Analysis of variance
3. 5/13(Tues) by Maruyama: Simple linear regression, Multiple regression, Logistic regression
4. 5/20(Tues) by Kobayashi:Principal component analysis, Factor analysis
5. 5/27(Tues) by S.Arai:Quantification 1-3 class, Multidimensional scaling
6. Advanced I ( 5/22, 29, 6/5. 12, 19 ):5/22(Thurs) by Higaki: (Cluster analysis)
7. 5/29(Thurs) by Yoshimura: Fourier transform, Analysis
8. 6/5(Thurs) by Maruyama:Time data analysis
9. 6/12 (Thurs) by Sugai: Linear programming
10. 6/19(Thurs) by K. Arai: Linear discriminant analysis Non-linear discriminant analysis
11. Advanced II ( 6/3, 10, 17, 24, 7/1 ): 6/ 3(Tues) by Ogura: Chemical heat storage, Heat transfer in the heat pump
12. 6/10 (Tues) by K. Arai: Process control
13. 6/17(Tues) by Wajima: The separation operation in recyclingSolving linear planning problems
14. 6/24(Tues) by Kimura: Pyrolysis and combustion
15. 7/ 1(Tues) by Hirose: Rheology
16. Advanced III (/26, 7/3, 10, 17, 24): 6/26(Thurs) by K. Arai: Nonlinear Systems I, Neural Networks
17. 7/3(Thurs)by K. Arai: Nonlinear Systems II
18. 7/10(Thurs) by S. Arai: A\* Algorithm
19. 7/17(Thurs) by K. Arai: Genetic Algorithm(GA)
20. 7/24(Thurs) by K. Arai:, Meta-heuristics Particle Swarm Optimization (PSO)

[Keywords] Numerical Analysis, Data Analysis, Mathematical Programming

[Textbooks and Reference Books] 【Reference Book】 A Handbook of Statistical Analyses Using R, Second Edition CRC Press

[Evaluation] 1) Overall evaluation to be based on reports written for each lesson. 2) Lesson is completed upon submission of report (non-submission of report will be treated as non-attendance). 3) Deadline for submission of report shall be within a week unless otherwise instructed.

[Related subjects]Seminar in Urban Space Engineering I, All other subjects of DUES.

[Remarks] Programming technology is unnecessary. Notebook PC required

都市環境情報演習 I (旧名称「都市環境システム演習 II AE3」)

Seminar in Urban Environment and Information Technology I

[Instructor] (Takeo Shiojima) Yasufumi Otsubo

[Credits] 3

[Semester] 3rd year-Spring-Sat 3, 4

[Course code] T1E097003, T1E097004

[Room] Bldg.ENG-17-214, Bldg.ENG-17-215, Bldg.ENG-17-214, Bldg.ENG-17-215

[Course description] The faculty member has lectures and exercises on the motion phenomena analysis needed to the design of the urban environment and systems, which implies the methodology of demonstrating the motion of the momentum, energy, and materials with a single theory. However, the faculty member mainly describes the methods of motion phenomena analysis in the current status, with the methods of calculation remaining outlined.

[Course objectives] [Objectives]: To let the students to understand the methodology of formulating the motion phenomena encountered in the urban environment and systems with differential equations, and then calculating these equations with computers. [Attainable Goal]: To provide the capability of formulating the basic motion phenomena, and finding solutions to these formulas with computers. To provide the capability of interpreting these formulas.

[Plans and Contents] The followings describe outlines of the lessons, since the mathematical supplement, if any, takes a series of additional lectures and times. There are a total number of 15 lectures with exercises in series.

1. Migration phenomenon analysis and numerical calculation
2. Governing equation and visualization of flow field
3. Non-dissipative flow (Bernoulli)
4. Navier-Stokes equations
5. Turbulence theory
6. Non-compressed heat flux motion (thermo-siphon and buoyancy)
7. Reactive flow
8. Mixed layer flow
9. Flow under electromagnetic forces
10. Flow under electromagnetic forces

[Keywords] Analysis of Migration phenomenon, Numerical Analysis, Viscous fluid, Electromagnetic fluid, Electrically - charged fluid, Visualization

[Textbooks and Reference Books] Materials will be prepared for each lesson.

[Evaluation] Scores include 50 points for the attendance and another 50 points for the reports. The deadlines for the respective reports will be announced depending on the themes of the reports.

[Course requirements] (Prof. Shiojima)

Knowledge of vector analysis and tensor analysis is preferred but appropriate mathematical supplementary explanations will be provided according to the level of the students.

都市空間工学演習 II Seminar in Urban Space Engineering II

[Instructor] Hideki Kobayashi, Norihiro Ejiri, Masashi Hino

[Credits] 3

[Semester] 3rd year-Fall-Thurs 3, 4

[Course code] T1E098001, T1E098002

[Room] Drawing room-328 at Department of Urban Environment

[Class Enrollment] This is an intensive course for small groups with a total enrollment of about 30 students.

[Course description] In this course, students will propose a residential area that is full of appeal from a comprehensive point of view by preparing a masterplan for urban planning and proposing, planning and designing dense living spaces with the aim of resolving the problems faced by modern urban living. For the latter, students will draft a proposal focusing on a housing complex (medium and high-rise housing) that has a reality that is considered from both a hardware and software perspective in the residential suburbs where ageing and depopulation problems are striking.

[Course objectives] Students will explore themes based on their own awareness of issues faced by cities and practice a series of processes in proposing a solution through the analysis and observation of phenomena discovered from their awareness of the issues involved. The course aims to teach students professional basic knowledge and skills for the production of design drawings and models.

[Plans and Contents] 1) Perform field work in the assigned target district to capture specific urban problems. 2) Perform analysis and observation while referring to leading examples and technologies for drawing out solutions. 3) Raise questions and solutions specifically through repeated discussions and sketches. 4) Propose designs using drawings and models. 5) Set up presentation and review opportunities as occasion calls to develop skills for communicating your own proposals.

1. Explanation of tutorial assignments, conduct of lectures
2. Material survey, explanation of project role allocation
3. Concept of dense living space, sketch
4. Explanation of presentation target areas for dense living space. And group division
5. Local survey, analysis of current situation
6. Sketch of urban planning concept
7. Presentation of urban planning concept
8. Selection of target site for the architectural proposal, conduct of architectural design
9. Concept, sketch of architectural proposal, conduct of structural design
10. Concept, sketch of architectural proposal, conduct of real estate planning
11. Concept presentation
12. Architectural design, sketch
13. Architectural design, sketch
14. Presentation of results

[Keywords] Urban Living, Multi-family housing, housing estate, architectural proposal, urban planning, real estate planning

[Evaluation] Evaluation to be based on the deliverables of each lesson and final presentation.

[Course requirements] Students must take Seminar on Urban Space Engineering 1.

[Remarks] Required subject of Urban Space Engineering course

都市空間工学演習 II Seminar in Urban Space Engineering II

[Instructor] Hidetaka ujitani, JiYoung Jung

[Credits] 3

[Semester] 3rd year-Fall-Sat2, 3

[Course code] T1E098003, T1E098004

[Room] Drawing room-328 at Department of Urban Environment

[Class Enrollment] About 10~20

[Candidate] Students of Faculty of Engineering, other Faculties, and Specially Registered Non-Degree Student

[Course description] This course is made up of a basic tutorial assignment (first half assignment) and planning assignment (second half assignment). After studying the significance of a housing complex for “dense housing” in the basic tutorial assignment, students will attempt to capture the current situation of existing cluster housing in the city and propose a cluster housing solution in the planning assignment. The lesson format will involve mainly personal coaching but presentation and review opportunities will be set up where appropriate. The course also aims to improve the communication skills of students through group collaboration.

[Course objectives] Develop the students’ abilities to understand problems from the nature, space, livelihood and history etc. of the surrounding areas as a means to correlate these problems to a city and its architecture. Propose, plan and design a solution from a comprehensive point of view after drawing a future picture of the urban space as a means to resolve these problems. Furthermore, learn also the necessary drawing representation and presentation techniques after preparing the final deliverables.

[Plans and Contents]

1. Overall guidance on tutorials
2. Basic tutorial assignment (first half assignment), lecture on local survey techniques
3. Basic tutorial assignments (first half assignment), lecture on sketching techniques
4. Basic tutorial assignment (first half assignment), lecture on sketching and drawing representation
5. Basic tutorial assignment (first half assignment) lecture, planning assignment (second half assignment)
6. Planning assignment (second half assignment) District analysis, detailed site survey
7. Planning assignment (second half assignment) District planning policy, zoning
8. Planning assignment (second half assignment) Presentation of district survey and planning policy
9. Planning assignment (second half assignment) Sketch, lecture on architectural planning
10. Planning assignment (second half assignment) Architectural planning, lecture on structures and facilities
11. Planning assignment (second half assignment) Architectural design, lecture on architectural laws
12. Mid-term presentation
13. Presentation techniques, model
14. Presentation of results
15. Tutorial supervision: Presentation rehearsal, editing
16. Overall review

[Keywords] Urban Living, Multi-family housing, district analysis, urban design, architectural proposal

[Textbooks and Reference Books] To be introduced during the lectures.

[Evaluation] Evaluation to be based on the deliverables of each lesson, mid-term results presentation and final presentation.

[Remarks] Attention to the Lecture room

都市環境情報演習 II Seminar in Urban Environment and Information Technology II

[Instructor] Miki Muraki, Yoshihisa Maruyama, Yasuhiko Higaki, Takamasa Wajima, Yuji Hirose

[Credits] 3

[Semester] 3rd year-Fall-Thurs4,5

[Course code] T1E099001, T1E099002

[Room] Bldg.ENG-17-213,

[Course description] In this exercise, you learn an approach for solving the urban issues, and the structure of the problem of "think about the urban environment of 2050."

[Course objectives] Learn techniques for structuring the urban issues, and how to approach towards the resolution from there. Also learn the resolutions provided, and practice it. Students will learn prepare by selecting the two of 6 problem solving unit in the first half and second half, with structuring of the problem to solve the relationship between the various problems of the urban environment of 2050, and to capitalize on elemental technologies learned from the previous exercises how to resolve to it, after structured the urban problems by KJ method.

[Plans and Contents]

There are many issues, such as Global warming, aging population, innovation of technology and so on. Scenario of the society towards the 2050 can be considered, however, what issues occur there, what is considered for its resolution, the following reveal from the methods of the two. The first half, KJ method reveals the structure of the problems in considering the urban environment of 2050. Here, in that they include all of the space in the urban environment system, constitute a group in list order to attempt a structure of urban issues among students with different interests. The second half, faculty side presented the program and assignments in considering the urban environment of 2050. The program, a total of six (6 units) in the first half and second half, students select the two of them and do exercises. (It is not possible to select two exercises in the same region). Give a presentation as an exercise outcome of each five times the points you have learned.

1. Introduction – Explanation and practice of the KJ method

2. Practice of KJ method

3. Program announcement for problem solving and achievement by KJ method

4. Exercises on a unit-by-unit basis (the first 4-8 weeks)

5. Presentation (9<sup>th</sup> week)

6. Exercises on a unit-by-unit basis (the first 10-14 weeks)

7. Presentation (15th week)

[Evaluation] Scored by exercises outcome (2 sessions KJ method).

都市環境情報演習 II (旧名称「都市環境システム演習 III AE3・AE4」)

Seminar in Urban Environment and Information Technology II

[Instructor] (Takeo Shiojima), (Toshihisa Sugiura)

[Credits] 2

[Semester] 3rd year-Fall-Sat 3 4 5

[Course code] T1E099003, T1E099004, T1E099005

[Room] Bldg.ENG-17-214

[Course description] Students may select and attend the tutorials conducted by either the part-time lecturers Takeshi Shiojima or Toshihisa Sugiura. The tutorials and the lesson dates and venues by the respective lecturer will be explained during the guidance (10/6 Sat). Students must attend the lesson on this day as they will be divided into groups on that day.

[Course objectives] Purpose (Shiojima) Tutorials on chemical reactions and energy that will serve as basic elements for the understanding of important energy systems in a modern urban environment will be conducted. This course aims to let students acquire basic technologies and application technologies related to the construction of websites as a means of disseminating information. [Objective] (Shiojima) Be able to explain the energy problems based on basic chemistry. Be able to use basic technologies related to website construction as application technologies (Sugiura)

[Plans and Contents] (Shiojima)

Material changes and energy flow in the city will be captured as chemical systems and tutorial questions on basic physical chemistry for the understanding of these will be carried out. Material state and changes (equation of state of a gas, phase change and latent heat), chemical reaction and heat (heat of reaction, specific heat, equilibrium constant), work and energy (energy conversion, free energy), reaction speed (reaction order, reaction speed and temperature), chemical changes and ions (hydrogen ion concentration, acid dissociation constant, electrochemistry), surface chemistry (surface tension, capillary phenomenon) (Sugiura) 1 lesson will be conducted over 2 periods on a Saturday according to the following schedule.

However, this may be subject to change due to work reasons. Lesson 1 & 2: Oct 12, Lesson 3 & 4: Oct 26, Lesson 5 & 6: Nov 9, Lesson 7 & 8: Dec 7, Lesson 9 & 10: Dec 14, Lesson 11 & 12: Jan 11, Lesson 13 & 14: Jan 25.

1. (Sugiura) Basics of network technology(1) 10/12
2. (Sugiura) Basics of network technology(2)( 10/12)
3. (Sugiura) HTML basics (10/26)
4. (Sugiura) Design and creation of web pages (1) (10/26)
5. (Sugiura) Design and creation of web pages (2) (11/9)
6. (Sugiura) Design and creation of web pages using CSS (1)(11/9)
7. (Sugiura) Design and creation of web pages using CSS (2)(12/7)
8. (Sugiura) Design and creation of web pages using CSS (3)(12/7)
9. (Sugiura) Basics of object oriented programming (JAVA) (1)(12/14)
10. (Sugiura) Basics of object oriented programming (JAVA) (2)(12/14)
11. (Sugiura) Basics of object oriented programming (JAVA) (3)(1/11)
12. (Sugiura) Basics of object oriented programming (JAVA) (4)(1/11)
13. (Sugiura) Future network trends and complex networks (1/25)
14. (Sugiura) Final summary (1/25)

[Keywords] (Shiojima) Analysis of transport phenomena, Numerical Analysis, Viscous fluids, Magnetic fluids, Electrohydrodynamics, Visualization, (Sugiura) Network technology,HTML,CSS, Object oriented programming, JAVA

[Textbooks and Reference Books] (Shiojima) Lessons will be conducted using distributed materials. (Sugiura) All lessons will be conducted in Powerpoint without using textbooks. Powerpoint materials will be available for download on the website.

[Evaluation] (Shiojima) Evaluation to be based on attendance and results of reports etc. (Sugiura) Attendances of tutorials and results of assignments will also be used for evaluation. Deadline for submission of reports varies depending on the assignment and will be advised on each occasion.

[Course requirements] (Sugiura) Those who own notebook computers (OS must be Windows XP or higher)



都市環境工学基礎 Fundamentals of Urban Environment Engineering

[Instructor] Yasufumi Otsubo

[Credits] 2

[Semester] 3rd year-Spring-Sat 5

[Course code] T1E100001

[Room] Bldg.ENG-17-211

[Class Enrollment] A few students

[Candidate] The student that there is little number of the authorization units of the specialized basic subject among students admitted into Dept of Urban Environment System in a member of society frame.

[Course description] Lectures and tutorials on basic mathematics, physics and chemistry required as an engineering undergraduate will be conducted.

[Course objectives] “General objective”: Acquire basic knowledge on mathematics, physics and chemistry required to understand specialist subjects offered by the Department of Urban Environmental Systems. “Objective to be attained”: Be able to explain the contents of specialist subjects based on basic science and use this as a means for understanding.

[Plans and Contents] Award of credits for certified courses depend on the learning status of the student. As each student may differ in the basic knowledge that they lack, the required lecture contents will be discussed and handled individually with the students.

[Keywords] Mathematics, Physics, Chemistry

[Evaluation] Students must attend at least  $\frac{2}{3}$  of the lectures and score at least 60 points in the end-of-term exam to pass the course.

環境エネルギー化学工学（（旧名称「エネルギー化学工学」） Environmental Chemical Energy Engineering

[Instructor] Hironao Ogura

[Credits] 2

[Semester] 3rd year-Fall-Thurs 6

[Course code] T1E101001

[Room] Engineering Research Building5-1

[Candidate] Students of Faculty of Engineering, other Faculties, and Specially Registered Non-Degree Student

[Course description] The faculty member has a series of lectures on the fundamentals needed to design the systems for effectively utilizing the environmental energy, from the viewpoints of issues on the resources and energy, as well as on the environment, and, also latest status of the accomplishments on the research into these issues. The faculty member especially interprets the thermo-dynamics in physical chemistry, and the theory of transport phenomena in chemical engineering; and the fundamentals of the chemical engineering needed to design the energy-saving systems on the basis of unit operations, and their applications to the society.

[Course objectives] [General Goal]: To understand the fundamentals needed to design the systems for effectively utilizing the environmental energy, and their latest status of the accomplishments on the research into these issues. [Attainable Goal]: To understand that many environmental issues such as global warming due to CO<sub>2</sub> and acidic rain due to NO<sub>x</sub> and SO<sub>x</sub> are caused by the energy consumption, but not by the direct materials. To be aware of the importance of the effective utilization of energy, and to understand the fundamentals of physical chemistry and chemical engineering, needed to saving energy, energy conversion and recycling of energy. In addition, to understand the realization of the society where energy could be effectively utilized by recycling energy, according to the new technology for effectively utilizing energy in the next generation.

[Plans and Contents]

1. Global environment, resources, energy recycling as chemical systems,
2. Basics of physical chemistry I: Gas, the first law of thermodynamics and enthalpy, the second law and entropy, free energy, heat engine, heat pump
3. Basics of physical chemistry II: Phase diagram, phase change, reaction, chemical heat pump
4. Basics of chemical energy engineering I: Heat transfer - conduction, convection, radiation
5. Basics of chemical energy engineering II: Mass transfer - diffusion and molecular motion, mass flow, conservation of energy and momentum
6. Basics of chemical energy engineering III: Reaction kinetics, reactor
7. Unit operation I: Insulation, heat exchange
8. Unit operation II: Drying, humidification, evaporation, condensation, distillation
9. Unit operation III: Absorption, adsorption, filtration, dust collection
10. Technologies for effective energy use I: Heat storage, heat exchange
11. Technologies for effective energy use technology II: Heat pump and pipe, energy conversion and transportation
12. Latest technologies for effective energy use
13. Next-generation technologies for effective energy use
14. Energy and resource recycling society
15. Summary of lectures, exams

[Keywords] Energy resources, Physical chemistry, Chemical Engineering, Environmental Engineering, Recycle, Heat pump, Energy systems

[Textbooks and Reference Books] "Chemical Engineering", Kyoritsu Publishing (2012), Other textbooks related to Physical chemistry, Chemical engineering, Energy engineering.

[Evaluation] Evaluation to be based on attendance (40%), report (30%) and end-of-term exam (30%), with a passing score of 60 or more points.

[Related courses] Environmental cyclic chemistry, Environmental process engineering, etc.

[Remarks] Replacement subject for "Environmental Chemical Energy" which was offered until 2009 and "Chemical Energy Engineering" which was offered until 2011,

都市・建築史 History of Architecture and Urbanism

[Instructor] (Dario-Paolucci Matteo)

[Credits] 2

[Semester] 2nd year-Spring-Tues 6

[Course code] T1E102001

[Room] Bldg.ENG-17-211

Class period is September 16th, 17, and 18th(Intensive course, 3days 1-5periods)

[Candidate] This is the class for exclusive use of Depof UrbanEnviroment System second grade student of the existing system.

[Course description] Follow the architectural and urban planning development process by citing specific examples that are common in Europe, Asia and Japan. Consider also the skills development process as an expert in architectural and urban planning and the issue of preserving architecture and scenery. Through visual teaching materials and interaction with the faculty staff, students will learn not only the form and functions of a city and its architecture but also the establishment principle and background thinking. The lectures will be conducted in English. Questions may be raised in Japanese as well.

[Course objectives] Besides acquiring knowledge on architectural and urban history that is required in the entrance exam for the graduate school and First Class Architect Exam, understand how man created architecture and cities and also the methods, processes and principles supporting these, and learn the foundation for creative architectural and urban design. Gain a more in-depth understanding of how cultures in architecture and cities are inherited, and how architecture and cities are related to people and the environment. Through the skills development process, consider also the professional ethics expected of an expert in the actual creation of architecture and cities.

[Plans and Contents]The series of lessons is composed of the following themes. Among these, “History of Japanese Architecture”, “History of Western Architecture” and “Urban History” will be not taught individually but handled as a whole through mutual cross-referencing and comparison.

1. Is the history of city and architecture necessary?
2. Ancient architecture and cities 1
3. Ancient architecture and cities 2
4. Medieval architecture and cities 1
5. Medieval architecture and cities 2
6. Medieval architecture and cities 3
7. Contemporary architecture and cities 1
8. Contemporary architecture and cities 2
9. Contemporary architecture and cities 3
10. Contemporary and modern architecture and cities 1
11. Contemporary and modern architecture and cities 2
12. Contemporary and modern architecture and cities 3
13. The relationship between inheritance and creativity in architecture and cities?
14. How professional as an expert to build the architecture and urban is generated and occure.
15. Exam

[Keywords] Architectural Design, City Planning, Urban Design, History of Architecture, History of City, Landscape, Culture, Architect, authenticity, Conservation

[Textbooks and Reference Books] History of Architecture, Syokokusya, ¥3000+tax, ISBN978-4-395-00876-6 C3052◇

sudents attending the course have to purchase the books beforehand. These are available at the Chiba University’s cooperative bookstore.

[Evaluation] Evaluation will be given by results of the final exam.

[Remarks] English lecture

地球環境化学(旧名称「地球環境システム論」「大気環境化学」) Global Environmental Chemistry

[Instructor] (not decided)

[Credits] 2

[Semester] 2nd year-Spring-Intensive

[Course code] T1E104001

[Room] Engineering Research Building3F North Meeting Room

[Course objectives]

[Plans and Contents]

[Evaluation]

環境マテリアル工学(旧名称「環境・エネルギー材料」) Environmental Material Engineering

[Instructor] Takaaki Wajima

[Credits] 2

[Semester] 3rd year-Fall-Mon 5

[Course code] T1E106001

[Room] Bldg.ENG-17-211

[Candidate] Students of Faculty of Engineering, other Faculties, and Specially Registered Non-Degree Student

[Course description] The faculty member has a lecture for the problem for resource, environment and energy from the view points of three theme global environmental problem and material development, material manufacturing process and resource and energy, and environmental purification and material utilization.

[Course objectives] [general goal] It is important to understand the relationship between the problems for resource, environment and energy, and material development.

[Attainable goal] This curriculum lets the student to understand the characteristics for mineral resources, which can produce various materials, and material manufacturing process, and to acquire the properties of materials applied to various environmental problems.

[Plans and Contents]

1. Resource, environment, energy and materials
2. Global environment and materials -1
3. Global environment and materials -2
4. Global environment and materials -3
5. Material manufacturing process -1
6. Material manufacturing process -2
7. Material manufacturing process -3
8. Rare metals and materials
9. Material utilization for environment -1
10. Material utilization for environment -2
11. Material utilization for environment -3
12. Material utilization for environment -4
13. Material utilization for environment -5
14. Material development for environment and energy-1
15. Material development for environment and energy-1
16. End-of-term examination

[Keywords] Resource development, Environmental protection, Material manufacturing process, Environmental purification, Resource effective utilization, Material design

[Evaluation] Attendance (30 %), Report (30 %), Term examination (40 %)

材料の力学と設計(旧名称「材料力学」) Mechanics of Materials and Design

[Instructor] Kenkichi Sato

[Credits] 2

[Semester] 2nd year-Spring-Wed 2

[Course code] T1E107001

[Room] Bldg.ENG-17-211

[Candidate] Students of Faculty of Engineering, other Faculties, and Specially Registered Non-Degree Student

[Course description] In order to reliable design and maintain man-made structures in the practical society, students will firstly learn the concept of stress and strain and then learn the about the basic concept of deformation and strength in the thinking in “mechanics of materials”.

[Course objectives] The course aims to equip students with the ability to make observations about the strength and deformation of materials and structures as well as the relationship between stress and strain so as to create safe and secure man-made structures. The course also aims to let students acquire sufficient knowledge of the basic concepts and establish the ability to correctly resolve sample questions.

[Plans and Contents]

1. What is mechanics of materials? What is design? (sample report)
2. Equilibrium of forces and moments (exercise report)
3. Load and stress (tutorial report)
4. Stress and strain, material deformation (tutorial report)
5. Axial force, tension and compression (tutorial report)
6. Heat deformation and stress strain (tutorial report)
7. Torsion and shear deformation (tutorial report)
8. Load distribution diagram and moment distribution diagram (tutorial report)
9. Beam transformation and representation formula (tutorial report)
10. Moment of inertia of area (tutorial report)
11. Modulus of section and stress (tutorial report)
12. Deformation of beams loaded and design (tutorial report)
13. Torsional load and design (tutorial report)
14. Strain energy (tutorial report)
15. Exam and summary for strength of materials and design

[Keywords] Design,safety, stress, strain deformation moments Moment of inertia of area Modulus of section, safety factor, fatigue

[Evaluation] Attendance is compulsory but will not be included in the evaluation results. Evaluation to be based on reports (50%) and end-of-term exams (50%).

[Course requirements] math ( differential calculus ) and Mechanics, Materials

[Remarks] Reports are to be submitted in the following week.

環境エネルギー工学 Environmental and Energy Engineering

[Instructor] Hideki Nakagome

[Credits] 2

[Semester] 3rd year-Spring-Fri 4

[Course code] T1E108001

[Room] Bldg.ENG-17-213

[Candidate] Students of Faculty of Engineering, other Faculties, and Specially Registered Non-Degree Student. This course is for 3rd year, though 2nd and first grade students who are interested in energy and environmental problem will be welcomed

[Course description] The students learn about the technological contents allied to energy and global environment issues.

[Course objectives] [Objectives] To acquire the methods of effectively utilizing the re-usable energy because chemical fuels, such as oil and natural gas, will be deficient in 2030 or later according to the global energy forecast. [Goal]: To acquire the fundamental knowledge of how to evaluate the energy generated from the unused materials, used as another energy source, the garbage processing systems, the fundamental techniques needed to design the facilities, and the fundamental knowledge of energy sources in the future, ie., superconductors and hydrogen cells.

[Plans and Contents] The faculty member lets the students to acquire the fundamental knowledge of the issues of energy and environment, and to think about the issues of energy and environment in the future in Japan. The faculty member has a plan to ask for some first-class researchers and engineers to come to the classroom to let them to have talks on the current issues on the energy. The faculty member intends to let the students to join the talks, if any.

1. What is waste?
2. Waste treatment technology 1
3. Waste treatment technology 2
4. Regional environmental energy problem 1
5. Regional environmental energy problem 2
6. Global environmental problem 1
7. Global environmental problem 2
8. New energy technology 1
9. New energy technology 2
10. Energy conservation technology 1
11. Energy conservation technology 2
12. Future energy policy of Japan 1
13. Future energy policy of Japan 2
14. Integrated engineering approach (from seeds orientation to needs orientation 1
15. Integrated engineering approach (from seeds orientation to needs orientation 2
16. Exam

[Keywords] energy problems, global environment problems, waste, new energy, energy saving, plastic, biomass, heat pump, magnetic refrigeration, environmental hormone, dioxin

[Textbooks and Reference Books] Materials will be distributed on the day of the lesson.

[Evaluation] Evaluation to be based on attendance, mini-reports, exams or reports with equal weightage to each of them

[Related courses] ( T1E018101)

[Course requirements] Basic Design of Urban Environment I (T1E003001)

[Remarks] contact number(043-290-3466), e-mail (nakagome@tu.chiba-u.ac.jp) Office hour (Mon-Fri 13:00-17:00)

環境エネルギー工学 Environmental and Energy Engineering

[Instructor] Hideki Nakagome

[Credits] 2

[Semester] 3rd year-Spring-Fri 7

[Course code] T1E108002

[Room] Bldg.ENG-17-213

[Class enrollment] If the number of participants is small, lecture is performed in the laboratory NAKAGOMI (Bld.ENG-16-305).

[Candidate] Students of Faculty of Engineering, other Faculties, and Specially Registered Non-Degree Student

This course is for 3rd year, though 2nd and first grade students who are interested in energy and environmental problem will be welcomed

[Course description] The students learn about the technological contents allied to energy and global environment issues.

[Course objectives] [Objectives] To acquire the methods of effectively utilizing the re-usable energy because chemical fuels, such as oil and natural gas, will be deficient in 2030 or later according to the global energy forecast. [Goal]: To acquire the fundamental knowledge of how to evaluate the energy generated from the unused materials, used as another energy source, the garbage processing systems, the fundamental techniques needed to design the facilities, and the fundamental knowledge of energy sources in the future, ie., superconductors and hydrogen cells.

[Plans and Contents] The faculty member lets the students to acquire the fundamental knowledge of the issues of energy and environment, and to think about the issues of energy and environment in the future in Japan. The faculty member has a plan to ask for some first-class researchers and engineers to come to the classroom to let them to have talks on the current issues on the energy. The faculty member intends to let the students to join the talks, if any.

1. What is waste?
2. Waste treatment technology 1
3. Waste treatment technology 2
4. Regional environmental energy problem 1
5. Regional environmental energy problem 2
6. Global environmental problem 1
7. Global environmental problem 2
8. New energy technology 1
9. New energy technology 2
10. Energy conservation technology 1
11. Energy conservation technology 2
12. Future energy policy of Japan 1
13. Future energy policy of Japan 2
14. Integrated engineering approach (from seeds orientation to needs orientation 1
15. Integrated engineering approach (from seeds orientation to needs orientation 2
16. Exam

[Keywords] energy problems, global environment problems, waste, new energy, energy saving, plastic, biomass, heat pump, magnetic refrigeration, environmental hormone, dioxin

[Textbooks and Reference Books] Materials will be distributed on the day of the lesson.

[Evaluation] Evaluation to be based on attendance, mini-reports, exams or reports with equal weightage to each of them

[Related courses] ( T1E018101)

[Course requirements] Basic Design of Urban Environment I (T1E003001)

[Remarks] contact number(043-290-3466), e-mail(nakagome@tu.chiba-u.ac.jp) Office hour (Mon-Fri 13:00-17:00)



造形演習 Design Aesthetics(Lab.)

[Instructor] Akira Ueda

[Credits] 2

[Semester] 1st year-Spring-Tues 5

[Course code] T1Y016001

[Room] Bldg. ENG-2-201

[Course description] Engineering is manufacturing, and manufacturing is a formative activity. The Design Aesthetics (Lab.) course aims to evoke students' interest in Engineering = manufacturing through several formative design projects and to awaken the individual talents in formative arts.

[Course objectives] Specific objectives of this course are as follows: (1) to cultivate the attitude to learn; (2) to develop multilateral observation skills; (3) to recognize the existence of various solutions; (4) to enhance presentation skills. In the Design Aesthetics (Lab.) course, students are required to challenge each of these 4 assignments, and continue until they achieve satisfaction. Students will learn to associate their brain and hands, and "move their hands, work up a sweat, let imagination loose, and create."

[Plans and Contents]

1. Overall guidance.
2. Assignment 1: Precision drawing using a pencil.
3. Assignment 1: Seminar.
4. Assignment 1: Criticism.
5. Assignment 2: Drawing of a solid object based on the elevation drawing.
6. Assignment 2: Seminar.
7. Assignment 2: Criticism.
8. Interim presentation
9. Assignment 3: Production of a tabletop lamp shade.
10. Assignment 3: Seminar.
11. Assignment 3: Criticism.
12. Assignment 4: Modeling of flying object.
13. Assignment 4: Seminar.
14. Assignment 4: Criticism.
15. Exhibition, summary, and criticism.

[Keywords] Observation, Thinking, Design, move their hands, work up a sweat, let imagination loose, and create, Presentation

[Textbooks and Reference Books] Not particularly.

[Evaluation] Evaluation is given by attendance works, and presentation.

[Related courses] Not particularly

[Course requirements] Not particularly

[Remarks] Not particularly

造形演習 Design Aesthetics(Lab.)

[Instructor] Takatoshi Tauchi

[Credits] 2

[Semester] 1st year-Spring-Tues 5

[Course code] T1Y016002

[Room] Innovation Plaza, Faculty of Engineering

[Course objectives] When awareness towards an issue leads to some form of result by an engineering means, making something with a better organized form in mind and making something without such cognition will produce very different results. Through exercise, students will learn what better organized forms are. In specific, students will be given assignments for each item shown in the course plan based on the specialized areas of the faculty member.

[Plans and Contents]

1. Overall guidance.
2. Assignment 1: Pencil sketch of a hand.
3. Assignment 1: Seminar.
4. Assignment 1: Seminar • Criticism.
5. Assignment 2 : :Sketch of a solid object based on the three orthographic views.
6. Assignment 2: Seminar • Criticism
7. Assignment 3 : Production of elastic band driven car.
8. Assignment 3: Seminar: Presentation of work based on the research findings.
9. Assignment 3: Production
10. Assignment 3: Presentation.
11. Assignment4: Production of a paper sandal.
12. Assignment4: Presentation of work based on the research findings.
13. Assignment4: Production
14. Assignment 4: Presentation.
15. Exhibition and criticism.

[Evaluation] Evaluation is comprehensively given by attendance, works, and the quality of presentation.

[Remarks] Wearing sandals and high-heeled shoes are strictly prohibited in Innovation Plaza, Faculty of Engineering

造形演習 Design Aesthetics(Lab.)

[Instructor] Yoichi Tamagaki, Yoshihiro Shimomura

[Credits] 2

[Semester] 1st year-Spring-Tues 5

[Course code] T1Y016003

[Room] Bldg. ENG-2-atelier (2-601 )

[Course objectives] When awareness towards an issue leads to some form of result by an engineering means, making something with a better organized form in mind and making something without such cognition will produce very different results. Through exercise, students will learn what better organized forms are. In specific, students will be given assignments for each item shown in the course plan based on the specialized areas of the faculty member.

[Plans and Contents]

[Evaluation]

造形演習 Design Aesthetics(Lab.)

[Instructor] Yosuke Yoshioka

[Credits] 2

[Semester] 1st year-Spring-Tues 5

[Course code] T1Y016004

[Room] Bldg. ENG-1- 110

[Course objectives] When awareness towards an issue leads to some form of result by an engineering means, making something with a better organized form in mind and making something without such cognition will produce very different results. Through exercise, students will learn what better organized forms are. In specific, students will be given assignments for each item shown in the course plan based on the specialized areas of the faculty member.

[Plans and Contents]

[Evaluation]

造形演習 Design Aesthetics(Lab.)

[Instructor] Ueda Edilson Shindi

[Credits] 2

[Semester] 1st year-Spring-Tues 5

[Course code] T1Y016005

[Room] Bldg. ENG-2-102

[Class Enrollment] 60

[Candidate] Students of Faculty of Engineering, other Faculties, and Specially Registered Non-Degree Student

[Course description] Engineering is manufacturing, and manufacturing is a formative activity. The Design Aesthetics (Lab.) course aims to evoke students' interest in Engineering = manufacturing through several formative design projects and to awaken the individual talents in formative arts.

[Course objectives] When awareness towards an issue leads to some form of result by an engineering means, making something with a better organized form in mind and making something without such cognition will produce very different results. Through exercise, students will learn what better organized forms are. In specific, students will be given assignments for each item shown in the course plan based on the specialized areas of the faculty member.

[Plans and Contents]

1. Overall guidance.
2. Assignment 1: Precision drawing using a pencil.
3. Assignment 1: Seminar.
4. Assignment 1: Criticism.
5. Assignment 2: Drawing of a solid object based on the elevation drawing.
6. Assignment 2: Seminar.
7. Assignment 2: Criticism.
8. Interim presentation
9. Assessment 3: Select a theme from water, fire, soil, or wind, and freely create a form
10. Assignment 3: Seminar.
11. Assignment 3: Criticism.
13. Assignment 4: Seminar.
14. Assignment 4: Criticism.
15. Exhibition

[Keywords] Observation, Thinking, Design, move their hands, work up a sweat, let imagination loose, and create ,Presentation

[Textbooks and Reference Books] Not particularly

[Evaluation] Evaluation is given by attendance, works and quality of presentation. Attendance 40%, Presentation 60%.

[Related courses] Not particularly

[Course requirements] Not particularly

[Remarks] Not particularly

工学倫理 Engineering Ethics

[Instructor] Kenta Ono

[Credits] 2

[Semester] 3rd year-Fall-Mon 5

[Course code] T1Z051001

[Room] Large Lecture Room

※Large Lecture Room is located in 2nd Building of Faculty of Educations,

[Candidate] 2nd to 4th year of Faculty of Engineering (Direction is given by each Department)

[Course description] Engineering is a practical area of learning that utilizes various scientific and technological achievements to enhance our lives and living environment. However, if used in an inappropriate manner, it will create major social dislocations and loss which may even jeopardize our personal lives. This course discusses the missions, norms, roles, rights and responsibilities of engineers in relation to the society from a broad perspective.

[Course objectives] The objective of this course is to acquire the basic concepts and knowledge for engineers to promote the advancement of technology and contribute to society based on sound ethics.

[Plans and Contents] \* The schedule and contents are subject to alteration.

1. Introduction to ethics (Kyuichiro Takahashi, Center of General Education, Chiba University)
2. Characteristics of engineering ethics (Keizo Kutsuna, the Center for General Education, Chiba University)
3. Compliance and general principles of ethics (Moriyoshi Konami, professional engineer)
4. Product liability (Moriyoshi Konami, professional engineer)
5. Whistleblowing (Moriyoshi Konami, professional engineer)
6. Resolving ethical problems (Moriyoshi Konami, professional engineer)
7. Preparedness as an engineer and professional (Moriyoshi Konami, professional engineer)
9. Information technology and copyright: Private sound recording and the Copyright Levy Framework for audiovisual recordings (Heitoh Zen, Institute of Media and Information Technology, Chiba University)
10. Proprietary rights including intellectual property rights (1) (Masayoshi Takahashi, patent attorney)
10. Proprietary rights including intellectual property rights (2) (Masayoshi Takahashi, patent attorney)
11. Proprietary rights including intellectual property rights (3) (Masayoshi Takahashi, patent attorney)
12. Natural resource consumption and environmental ethics (Motoi Machida, Safety and Health Organization, Chiba University)
13. Safety and risks (1) (Yukinobu Shinoda, Industrial Safety Consultant)
14. Safety and risks (2) (Yukinobu Shinoda, Industrial Safety Consultant)
15. Group Discussion (Education committee member of each department)

[Keywords] Mission of engineers, morals, obligations, discipline, and engineering ethics.

[Textbooks and Reference Books] 1) Norifumi Saitoh et al., HAJIMETE NO KOUGAKU RINRI (Introduction of Engineering Ethics) second edition, Showado, (2005), 1400 yen + Tax, 2) Taiji Sugimoto et al, GIJYUTUSHA NO RINRI NYUMON (Introduction of ethics for engineer) fourth edition, Maruzen Publishing Co., Ltd., (2008), 1700 yen + Tax

[Evaluation] Students will be assessed by results of mini-tests at the end of each lecture. Students must attend a minimum of 12 lectures for accreditation. The yes or no entry to Moodle is treated as attendance. Students need to answer it during every review time.

[Course requirements] Refer to syllabus available online for subject categories of each faculty. Consult a faculty member of Board of Education when the information is not available.

[Remarks] Lecture schedule and contents are subject to alteration depending on availability of lecturers. Students are required to attend the guidance session to be held on the first class.

知的財産権セミナー Seminar: Intellectual Property Rights

[Instructor] (Satoru Asakura)

[Credits] 2

[Semester] Spring Intensive /June-July, Tue 4, 5

[Course code] T1Z052001

[Room] Bldg.ENG-2-101

[Class Enrollment] 32

[Candidate] Students of Faculty of Engineering, and Specially Registered Non-Degree Student

[Course description] Rights to intellectual property that are created through unique intellectually creative activities are protected by law, and effective utilization of these intellectual property rights leads to creation of new intellectual property. Promoting such intellectual creation cycle is lately recognized as an important national strategy. The objective of this course is to acquire the basic knowledge and practical approach to intellectual property rights, mainly focusing on industrial property rights as represented by patents.

[Course objectives] The goals for this course are as follows: 1) to be able to explain the concepts such as intellectual property and intellectual property rights; 2) to be able to understand the requirements for patentability of inventions; and 3) to be able to conduct patent search using the Industrial Property Digital Library.

[Plans and Contents]

Lectures mainly covered patent systems for protecting inventions, and explained other related legislation and recent trends. The lecture contents were subject to change depending on student interests and requests.

1. Outline of patent system.
2. Industrially applicable invention.
3. Potential of industrial use
4. Novelty and inventiveness.
5. Patent categories and prior art search.
6. Using Industrial Property Digital Library.
7. Patent claim and patent specification.
8. Preparing patent application.
9. Patent examination.
10. Patent appeal.
11. Patent litigation.
12. Economic use of patent rights.
13. Outline of utility model system and design system.
14. Summary and examination.

[Keywords] intellectual property, intellectual property rights, industrial property, industrial property rights, invention, patent

[Textbooks and Reference Books] Students were asked to bring a statute book covering the Patent Act. Printed materials and the following title were handed out as-reference textbooks:

INDUSTRIAL PROPERTY RIGHTS, National Center for Industrial Property Information and Training

[Evaluation] Comprehensive evaluation was conducted by means of reports. Students had to obtain over 60 points to achieve credits.

[Course requirements] Although the course taught basic terms of patent laws, knowledge of the law was not required. Any students interested in the subject were welcome.

[Remarks] In 2014, lectures were held in the 4th and 5th time slots, Tuesday, June 3, 10, 17, 24 and July 1, 8, 15.

## 工業技術概論 Introduction to Industrial Technologies

[Instructor] Yun Lu

[Credits] 2

[Semester] Spring-Mon5

[Course code] T1Z05400

[Room] Bldg.ENG-17-111

[Candidate] Students of Faculty of Engineering, and other Faculties

[Course description] First, the course will discuss the development of global industrial technologies with focus on Japanese technologies, changes of people's lives caused by technologies, environment and energy situations, and the history, current situation and future of industrial technologies. The course will also provide lectures on the necessary mindset as industrial engineers, resource research, how to write technical papers, and how to give research presentation, as well as guidance on studying and report writing techniques for students majoring in science and engineering.

[Course objectives] The objective is to increase the understanding of foreign exchange student majoring in science and engineering towards the development of industrial technologies and changes of people's lives caused by technology development, environment and energy situations, and to teach students the basic abilities that are required as industrial engineers (mindset, resource research, how to write technical papers, and how to give research presentation, etc.) as well as guidance on studying and report writing techniques for students majoring in science and engineering. At the same time, the course is aimed to enable foreign exchange students to gain a better understanding on the industrial technologies of Japan and to acquire the ability to contribute to the development of industries and technologies in their home countries or to work in Japanese companies in the future.

[Plans and Contents] The lectures will be given in 2 parts. Part 1: History, current situation and future of industrial technologies (Classes 1 – 9), and Part 2: Path to becoming a researcher. To ensure a better understanding, lecture resumes will be distributed on the web and lectures will be given using a projector. Achievements will be evaluated by reports and presentation (Classes 10 – 15).

1. Orientation and discussion about course content
2. Advances in industrial technology worldwide
3. Advances in industrial technology in Japan
4. Unique industrial technology
5. Industrial technology and life
6. Industrial technology and energy, the environment
7. 21<sup>st</sup> century industrial technology
8. How to write a report
9. Assignment presentation 1
10. Basic R&D thinking 1
11. Basic R&D thinking 2
12. Resource research
13. How to write a technical paper
14. Research presentations
15. Research presentations 2
16. Research presentations 3

[Textbooks and Reference Books] Textbook is not specified. Handouts will be provided via <http://apei.tu.chiba-u.jp/Luyun-HP.html>. Reference books will be introduced in class time.

[Evaluation] Attendance(30%) and exercises, report (30%) and presentation (40%), the total score 60 accredited.

[Course requirements] Not particularly

[Remarks] Foreign students only, the choice subject (F30 or F36) and no credit for Japanese students(Z99).



## 居住のデザインと生活技術 Dwelling Design and Living Technology

[Instructor] Yun Lu

[Credits] 2

[Semester] Fall-Fri 4

[Course code] T1Z055001

[Room] Bldg.ENG-17-213

[Class Enrollment] about40

[Candidate] Students of Faculty of Engineering, other Faculties, and Specially Registered Non-Degree Student

[Course description] This course will be led by grand fellow Atsushi Maruyama.

[Course objectives] In the life of a person, there are various schemes being repeated in our given environment, the various designs that lead to scales of city or region from around us cannot be done elsewhere. For foreign students aiming to go to form a professional environment, firstly, they need to focus on design and life skills for such residence, then think of the parallel development, also, in the present, they need to understand what is being deployed.

[Plans and Contents] We would like to discuss, in seminar format, examples of native students not only in the case in Japan, regarding the technology and lifestyle design for residential, and deepen the understanding. There are also plans of visits outside the university during the term.

1. October 3 – Orientation: What does “living” mean? How have people designed living spaces thus far?
2. October 10 – What types of houses can be found now in Japanese urban and rural areas?
3. October 17 – What types of houses can be found in Japanese historical rural and fishing areas?
4. October 19 (Sunday) – On-site observation: Boso Hudokinooka Open air Museum. (Bus tour)
5. October 24 – What types of houses can be found in Japanese historical urban areas?
6. November 7 – What trends have been seen in designing dining spaces kitchen and family room?
7. November 14 – What trends have been seen in designing drawing rooms to allow for social relationships?
8. November 21 – What trends have been seen in designing amusement spaces for Noh and Kabuki?
9. November 28 – What trends have been seen in designing amusement spaces in Tokyo Disney land?
10. December 5 – How people have designed tea houses and Sukiya houses facing four seasons and nature?
11. December 12 – How people have designed tea gardens and imperial villa facing four seasons and nature?
12. December 19– How people designed religious spaces in dwelling houses and community during Bon and Shogatsu?
13. January 9 – How people designed religious spaces, Temples and Shrines in community?
14. January 23 – How people designed religious monument such as five storied pagodas ?
15. January 30 – Summary and Overall Discussion

[Keywords] Dwelling house, Design, Living Technology, Mealtime, Relationship, Religious Belief

[Textbooks and Reference Books] Textbook is not specified. Reference books will be introduced with the process of class on appropriate time.

[Evaluation] Evaluation will be given by small questionnaire with attendance sheet, presentation of the report in seminars at each research room, and the final report.

[Course requirements] Not particularly

[Remarks] Foreign students only, subject of choice (F30 or F36) and no credit for Japanese students (Z99)