

[Title]			[Instructor]		
Fundamental Management in Civil Engineering			Takeyasu Suzuki et. al.		
[Code]	[Credits]	[Program]	[Semester]	[Hours]	[Language of instruction]
GTC501	2	Civil and Environmental Engineering	1st Semester	Mon./II	Japanese
[Outline and purpose]					
<p>Environment, region, project, etc., civil and environmental engineers are required to manage various objects. Students learn about the objects and their characteristics required as construction engineers in management techniques spanning the fields of economic management, human resource management, information management, safety management and social environmental management. In addition, by inviting external lecturers who are familiar with this field in practice and receiving explanations such as how management methods are applied to actual problems, students can acquire knowledge that can use management methods more practically. This is a lecture specialized for students who intend to find employment in the field of civil engineering and environmental and will be held only in Japanese</p>					
[Objectives]					
<ol style="list-style-type: none"> <li>1. Students can explain basic matters of civil management.</li> <li>2. Student can understand the operation in practical affairs of civil management and can express their opinion.</li> </ol>					
[Requirements]					
Must acquire civil and environmental engineering					
[Evaluation]					
<p>Confirm the mastery of basic knowledge of civil management by examination: 20%  Confirm the level of comprehension of each lecture by each lecturer: 80%</p>					
[Textbooks]					
Nothing special					
[References]					
Nothing special					
[Schedule]					
<ol style="list-style-type: none"> <li>1. What is the civil management (Prof. Takeyasu Suzuki)</li> <li>2. Comprehensive technical management (economic management, human resource management, information management, safety management, social environmental management) (Prof. Takeyasu Suzuki)</li> <li>3. Civil Management at the construction site (project management) (Mr. Tomohiko Yazaki)</li> <li>4. Construction site (concrete example of comprehensive technical supervision) (Mr. Tomohiko Yazaki)</li> <li>5. Civil Management at the construction site (management as director) (Mr. Tomohiko Yazaki)</li> <li>6. Construction consultant's civil management (project management) (Mr. Ken Nakazawa)</li> <li>7. Construction consultant (concrete example of comprehensive technical supervision) (Mr. Ken Nakazawa)</li> <li>8. Construction consultant (management as president) (Mr. Senior Nakazawa)</li> <li>9. Civil management of the Ministry of Land, Infrastructure, Transport and Tourism (Project Management) (Director of Kofu River National Highway Office)</li> <li>10. Civil management of the Ministry of Land, Infrastructure, Transport and Tourism (a concrete example of comprehensive technical supervision) (Director of Kofu River National Highway Office)</li> <li>11. Civil management of the Ministry of Land, Infrastructure, Transport and Tourism (Management as the Office Director) (Director of Kofu River National Highway Office)</li> <li>12. International Project (Project Management) (Mr. Hidehito Nakano)</li> <li>13. Overseas project (concrete example of comprehensive technical supervision) (Mr. Hidetoshi Nakano)</li> <li>14. Overseas project (Overseas project management) (Mr. Hidehito Nakano)</li> <li>15. Evaluation and summary (Prof. Takeyasu Suzuki)</li> </ol> <p>The 3rd through the 14th are intensive lectures by part-time lecturers. Adjust the convenience of part-time lecturers and students, each lecturer will give three lectures for one day.</p>					

[Title]			[Instructor]		
Social Practice of Civil Management and Engineering			each academic supervisor		
[Code]	[Credits]	[Program]	[Semester]	[Hours]	[Language of instruction]
GTC502	2	Civil and Environmental Engineering	2nd Semester	Wed./V	Japanese
[Outline and purpose]					
Practical training to enhance the experience to work with the workers/people who are engaging social/local project.					
[Objectives]					
To learn the practical aspect of civil/environmental management and communication.					
[Requirements]					
Nothing special					
[Evaluation]					
Report (50%), Evaluation by the Counterpart (Project Manager)(50%)					
[Textbooks]					
To be designated by each instructor, if necessary.					
[References]					
Nothing special					
[Schedule]					
<ol style="list-style-type: none"> <li>1. Basic survey on the project</li> <li>2. To learn about present situation of the project</li> <li>3. Analysis of present situation of the project</li> <li>4. Clarification of the problem of the project</li> <li>5. Survey required to solve the problem of the project</li> <li>6. Listing up of solutions of the project problem</li> <li>7. Selection of effective solution methods</li> <li>8. Join the project(1) Understanding of present situation</li> <li>9. Join the project(2) Explanation of pre-survey</li> <li>10. Join the project(3) Clarification of problem</li> <li>11. Join the project(4) Discussion</li> <li>12. Join the project(5) Presentation of solution</li> <li>13. Join the project(6) Scenario making</li> <li>14. Join the project(7) Final decision</li> <li>15. Presentation</li> </ol>					

[Title]			[Instructor]		
Disaster Management and Engineering			Takeyasu Suzuki / Tadashi Suetsugi / Yasunori Hada / Satoshi Goto		
[Code]	[Credits]	[Program]	[Semester]	[Hours]	[Language of instruction]
GTC503	2	Civil and Environmental Engineering	1st Semester	Fri./II	Japanese
[Outline and purpose]					
Regarding countermeasures against natural disasters, lectures are given not only from the hardware aspects but also the soft aspects such as legal system and regional disaster management plan. Students can learn the system as disaster management and engineering, the role of various stakeholders, and how construction engineers can contribute to disaster prevention and damage reduction.					
[Objectives]					
To explain the system of disaster management and engineering, the role of various stakeholders, and how construction engineers can contribute to disaster management and damage reduction.					
[Requirements]					
Basics of Soil Mechanics, Hydraulics and Disaster Engineering 1 are required. Comprehensive River Engineering and Disaster Engineering 2 are desirable.					
[Evaluation]					
Report on the contents of the lesson : 70% Attitude in the class and presentation and discussion: 30%					
[Textbooks]					
Nothing special					
[References]					
Tadashi Suetsugi, Damage Reduction Manual, Gihodo-Shuppan Press. (in Japanese)					
[Schedule]					
1.Introduction - What is Disaster Management and Engineering (Prof. Takeyasu Suzuki) 2.Earthquake damage and disaster management (Prof. Takeyasu Suzuki) 3.Damage due to heavy rainfall and disaster management (Prof. Takeyasu Suzuki) 4.Role of ICT as a countermeasure (Prf. Takeyasu Suzuki) 5.Community disaster management (Prof. Takeyasu Suzuki) 6. Present status of flood and flooding disaster (Prof. Tadashi Suetsugi) 7. Mechanism of flood disaster (Prof. Tadashi Suetsugi) 8. Prevention and mitigation measures against flood disaster Prof. (Tadashi Suetsugi) 9. Case study (1) (Prof. Tadashi Suetsugi) 10.Case study (2) (Prof. Tadashi Suetsugi) 11.Disaster Reduction Measures in Lifeline Utilities (Electric Power and Gas) (Assoc. Prof. Yasunori Hada) 12.Disaster Reduction Measures in Lifeline Utilities (Water Works,Telecommunication and Transportation) (Assoc. Prof. Yasunori Hada) 13.Disaster Reduction Measures in Urban City (Assoc. Prof. Yasunori Hada) 14.Volcano Disaster Reduction Measures (Assoc. Prof. Yasunori Hada) 15.Group Presentation on Serious Event in Future Mega Disasters (Assoc. Prof. Yasunori Hada)					

[Title]			[Instructor]		
Continuum Mechanics of Solids for Civil Engineers			Junji Yoshida/ Shigehiko Saito/ Satoshi Goto		
[Code]	[Credits]	[Program]	[Semester]	[Hours]	[Language of instruction]
GTC505	2	Civil and Environmental Engineering	1st Semester	Mon./I	Japanese
[Outline and purpose]					
We will study continuum mechanics of solids for civil engineers to use for design and development of civil structures. This course provides fundamentals as follows: continuum mechanics (definition of stress and strain, equilibrium equations, and linear elastic solids), theory of plasticity (elasto-plastic constitutive equations, failure criteria, and stress invariants), dynamic soil properties (equivalent linear analysis, nonlinear model for soil, earthquake response analysis).					
[Objectives]					
<ul style="list-style-type: none"> <li>- to understand the definition of stress and strain</li> <li>- to explain stress and strain tensors</li> <li>- to understand fracture of material based on the elasto-plastic mechanics of materials</li> <li>- to understand dynamic properties of soil and earthquake response analysis.</li> </ul>					
[Requirements]					
Fundamental knowledge of material mechanics given in undergraduate courses.					
[Evaluation]					
Report on the contents of the lesson: 30%					
Term examination : 70%					
[Textbooks]					
[References]					
[Schedule]					
<ol style="list-style-type: none"> <li>1. Introduction of continuum mechanics (Assoc. Prof. Yoshida)</li> <li>2. Stress and its properties (Assoc. Prof. Yoshida)</li> <li>3. Definition of strain and its physical meanings (Assoc. Prof. Yoshida)</li> <li>4. Linear elastic solids (Assoc. Prof. Yoshida)</li> <li>5. Linear elastic solids and boundary value problems (Assoc. Prof. Yoshida)</li> <li>6. Basic concept of elasto-plastic constitutive equations (Prof. Saito)</li> <li>7. Stress invariants and failure of materials (Prof. Saito)</li> <li>8. Failure criteria (Prof. Saito)</li> <li>9. Strain hardening and perfect plasticity (Prof. Saito)</li> <li>10. Structural analysis using elasto-plasticity (Prof. Saito)</li> <li>11. Outline of static behavior of soil (Assoc. Prof. Goto)</li> <li>12. Outline of dynamic behavior of soils (Assoc. Prof. Goto)</li> <li>13. Modeling the static behavior of soils (Assoc. Prof. Goto)</li> <li>14. Modeling dynamic behavior of soils (Assoc. Prof. Goto)</li> <li>15. Summary of static and dynamic behavior of soils, Summary (Assoc. Prof. Goto)</li> </ol>					

[Title]			[Instructor]		
Infrastructure Maintenance Engineering			Satoshi Goto / Shigehiko Saito / Junji Yoshida / Tadashi Suetsugi		
[Code]	[Credits]	[Program]	[Semester]	[Hours]	[Language of instruction]
GTC506	2	Civil and Environmental Engineering	2nd Semester	Mon./II	Japanese
[Outline and purpose]					
Civil infrastructure is a public material that supports life and economic activities, and it is important to continuously maintain and manage these at the minimum burden. In this lecture, we will learn fundamental knowledge on maintaining and managing and life expectancy for civil infrastructure such as concrete structures, road bridges, geotechnical structures and river administrative facilities. Specifically, we will learn about the characteristics of deterioration / transformation of civil infrastructure and the inspection method. In addition, we will also learn about performance evaluation and long life plan that are used in practice.					
[Objectives]					
It is possible to understand the inspection / performance evaluation method for each facility, judge the health of the facility by using the inspection / performance evaluation method, and propose the measures for prolonging the life.					
[Requirements]					
Before lecture it is desirable to look at books etc. concerning maintenance of civil infrastructure					
[Evaluation]					
Report on the contents of the lesson: 75% Attitude in the class and presentation and discussion: 25%					
[Textbooks]					
Nothing special					
[References]					
末次忠司編著：河川構造物維持管理の実際、鹿島出版会、2009（ISBN：978-4-306-02411-3）					
[Schedule]					
<ol style="list-style-type: none"> <li>1. Introduction - Maintenance of infrastructure facilities (Prof. Saito)</li> <li>2. Deterioration and Inspection Method of Concrete Structure (Prof. Saito)</li> <li>3. Performance Evaluation Method of Concrete Structure (Prof. Saito)</li> <li>4. Maintenance of road bridge (steel bridge) (Assoc. Prof. Yoshida)</li> <li>5. Maintenance of bridge attachments (Assoc. Prof. Yoshida)</li> <li>6. Maintenance of paved road surface (Assoc. Prof. Yoshida)</li> <li>7. Maintenance of geotechnical structure (outline) (Assoc. Prof. Goto)</li> <li>8. Maintenance of geotechnical structure (slope structure) (Assoc. Prof. Goto)</li> <li>9. Maintenance of geotechnical structure (embankment structure) (Assoc. Prof. Goto)</li> <li>10. Maintenance problem of river administrative facility (Prof. Suetsugi)</li> <li>11. Maintenance plan of river administrative facility (Prof. Suetsugi)</li> <li>12. Inspection of river administrative facility and viewpoint of deterioration (Prof. Suetsugi)</li> <li>13. Exercises on Performance Evaluation and Longevity Improvement of Road Bridge (Prof. Saito)</li> <li>14. Volcano Disaster Reduction Measures (Assoc. Prof. Yoshida)</li> <li>15. Practice on evaluating the performance of geotechnical structure and prolonging the life, Overall evaluation / summary (all members) (Assoc. Prof. Goto)</li> </ol> <p>* Preview: Keep track of related books and information etc. * Review: organize the contents learned in the lecture, especially important items</p>					

[Title]			[Instructor]		
Practical Urban Planning			Kuniaki Sasaki /Nobuyuki Ishii/ Shinichi Muto		
[Code]	[Credits]	[Program]	[Semester]	[Hours]	[Language of instruction]
GTC507	2	Civil and Environmental Engineering	1st Semester	Fri./I	Japanese
[Outline and purpose]					
Students will learn basic ways of thinking and concrete plans about community building and urban planning as activities of area improvement. Through the case studies with concrete themes, such as landscape urban planning, traffic urban planning and sightseeing urban planning in particular, students will acquire the knowledge of their expected roles and practical methods.					
[Objectives]					
Students are expected to learn details of various community building and urban planning methods, to understand the reasons for either their success or failure, and to present important points and improvement ideas indicating specific numerical values and so on.					
[Requirements]					
[Evaluation]					
By the presentation and proposal of group and individual work					
[Textbooks]					
[References]					
[Schedule]					
1 <sup>st</sup> Introduction 2 <sup>nd</sup> survey method for transportation oriented planning 3 <sup>rd</sup> The survey method for investigating the transportation planning 4 <sup>th</sup> Practical data analysis and estimation method 5 <sup>th</sup> Policy analysis using the estimated models 6 <sup>th</sup> Presentation of the policy analysis 7 <sup>th</sup> Landscape and urban planning and design 8 <sup>th</sup> Landscape law suit 9 <sup>th</sup> Limitation of the Landscape Act 10 <sup>th</sup> Research of methods of landscape urban planning and design 11 <sup>th</sup> Proposal of methods of landscape urban planning and design 12 <sup>th</sup> Cost benefit analysis for practical urban planning 13 <sup>th</sup> Estimation of residential and commercial location 14 <sup>th</sup> evaluation of practical urban planning 15 <sup>th</sup> Presentation of simulating results					

[Title]			[Instructor]		
Environmental Preservation Engineering			Hidehiro Kaneko / Kazuhiro Mori		
[Code]	[Credits]	[Program]	[Semester]	[Hours]	[Language of instruction]
GTC508	2	Civil and Environmental Engineering Course	2nd Semester	Wed./I	English/ Japanese
[Outline and purpose]					
This class deals with process and general techniques relating to waste management and water quality control. Specific problems will be solved using skills and knowledge studied in the class.					
[Objectives]					
<ol style="list-style-type: none"> <li>To understand basic concept, technologies and skills to propose a solution on waste management as a base of sustainable and affluent societies.</li> <li>To understand basic concept, technologies and skills to propose a solution on water quality management as a base of sustainable and affluent societies.</li> </ol>					
[Requirements]					
Basic knowledge of chemistry, biology and environmental engineering					
[Evaluation]					
1. Reports and/or short examination; Understanding level of the contents in each part will be evaluated.; 100%					
[Textbooks]					
[References]					
[Schedule]					
Part I: Waste management (Kaneko) <ol style="list-style-type: none"> <li>History of waste management</li> <li>Establishment of recycling-based society</li> <li>Waste management technologies(1):Collection and transport</li> <li>Waste management technologies(2)Incineration techniques</li> <li>Waste management technologies(3)Other processing technology</li> <li>Waste management technologies(4)Final disposal</li> <li>Waste management technologies(5)Measuring analysis</li> <li>Exercise for waste management</li> </ol> Part II: Water quality management and environmental remediation (Mori) <ol style="list-style-type: none"> <li>Basic concept for water quality management</li> <li>Water purification technologies(1):Physicochemical treatment</li> <li>Water purification technologies(2):Biological treatment</li> <li>Basic concept for environmental remediation</li> <li>Enviromental remediation technologies(1):Bioremediation</li> <li>Enviromental remediation technologies(2):Phytoremediation</li> <li>Exercises for water purification and bioremediation</li> </ol>					

[Title]			[Instructor]		
Seminar in Civil and Environmental Engineering IA			all academic supervisors		
[Code]	[Credits]	[Program]	[Semester]	[Hours]	[Language of instruction]
GTC601	1	Civil and Environmental Engineering	1st Semester		Japanese English
[Outline and purpose]					
Training in order to acquire the skills required for clarifying the research/project theme is done under the supervisor group. Seminar will be held periodically and presentation and discussion will be made among supervisors and students. By doing so, skills of analysis and communication are trained, and acquire the practical and international viewpoint.					
[Objectives]					
To acquire the skills required for clarifying the research theme during master course.					
[Requirements]					
Fundamental skills and knowledge of civil and environmental engineering.					
[Evaluation]					
Based on the presentation and discussion in the seminar.					
[Textbooks]					
To be designated by supervisors					
[References]					
Nothing special					
[Schedule]					
<ol style="list-style-type: none"> <li>1. Collection of possible themes</li> <li>2. Classification of themes</li> <li>3. Consideration on the relationship between themes</li> <li>4. Explanation of selected theme</li> <li>5. Consideration on the literature and data collection method</li> <li>6. Literature survey for previous related research/project</li> <li>7. Summary of literature survey</li> <li>8. Consideration of the relationship between literatures</li> <li>9. Explanation of relationship between theme and literature</li> <li>10. Further survey to obtain fundamental understanding of previous research/project</li> <li>11. Summary of fundamental understandings</li> <li>12. Further survey to obtain extended understanding of previous research/project</li> <li>13. Summary of extended understandings</li> <li>14. Setting of concrete theme</li> <li>15. Presentation and discussion</li> </ol>					



[Title]			[Instructor]		
Seminar in Civil and Environmental Engineering IB			all academic supervisors		
[Code]	[Credits]	[Program]	[Semester]	[Hours]	[Language of instruction]
GTC602	1	Civil and Environmental Engineering	2nd Semester		Japanese English
[Outline and purpose]					
Training in order to obtain science communication skill is done under the supervisor group. Skills of summing-up the research/project, oral presentation, composition, and discussion, which are required for engineers, will be trained.					
[Objectives]					
To obtain science/engineering composition technique in Japanese/English by doing preparatory research on the theme chosen in "Seminar in Civil and Environmental Engineering IA".					
[Requirements]					
Fundamental skills and knowledge of civil and environmental engineering.					
[Evaluation]					
Based on the presentation and discussion in the seminar.					
[Textbooks]					
To be designated by supervisors					
[References]					
Nothing special					
[Schedule]					
<ol style="list-style-type: none"> <li>1. Literature survey to write introduction in Japanese</li> <li>2. Composition of introduction in Japanese</li> <li>3. Proposition of solving method</li> <li>4. Preparatory survey based on the method in 3</li> <li>5. Reconsideration of survey method</li> <li>6. Preparatory survey based on the method in 5</li> <li>7. Presentation of the composed article</li> <li>8. Literature survey to write conclusions of the theme</li> <li>9. Composition of conclusions in Japanese</li> <li>10. Literature survey to write the introduction in English</li> <li>11. Classification/filing of literature</li> <li>12. Composition of introduction in English</li> <li>13. Literature survey to write conclusions in English</li> <li>14. Classification/filing of literature</li> <li>15. Composition of conclusions in English</li> </ol>					

[Title]			[Instructor]		
Research Work in Civil and Environmental Engineering IA			all academic supervisors		
[Code]	[Credits]	[Program]	[Semester]	[Hours]	[Language of instruction]
GTC605	2	Civil and Environmental Engineering	1st Semester		Japanese English
[Outline and purpose]					
Goal of this subject is preparation for master thesis. Find suitable research theme under the supervision of several supervisors. By collecting and reading related literatures, obtain fundamental knowledge and skill required for research.					
[Objectives]					
To obtain fundamental research ability required for the research in master course.					
[Requirements]					
Fundamental skills and knowledge of civil and environmental engineering					
[Evaluation]					
Based on the presentation and discussion in the seminar.					
[Textbooks]					
To be designated by supervisors					
[References]					
Nothing special					
[Schedule]					
<ol style="list-style-type: none"> <li>1. How to choose research theme?</li> <li>2. Collection of literature and other information related with research theme</li> <li>3. How to collect literature/information?</li> <li>4. Survey for previous researches in Japanese</li> <li>5. Survey for previous researches in foreign languages</li> <li>6. Survey for previous researches</li> <li>7. Study on fundamental knowledge concerning Engineering</li> <li>8. Study on fundamental knowledge concerning Natural Science</li> <li>9. Study on fundamental knowledge concerning Social Science</li> <li>10. Reading and explaining of collected literatures</li> <li>11. Reading and explaining of collected literatures</li> <li>12. Reading and explaining of collected literatures</li> <li>13. Reading and explaining of collected literatures</li> <li>14. Reading and explaining of collected literatures</li> <li>15. Summarization</li> </ol>					

[Title]			[Instructor]		
Research Work in Civil and Environmental Engineering IB			all academic supervisors		
[Code]	[Credits]	[Program]	[Semester]	[Hours]	[Language of instruction]
GTC606	2	Civil and Environmental Engineering	2nd Semester		Japanese English
[Outline and purpose]					
Goal of this subject is preparation for master thesis. Find suitable research theme under the supervision of several supervisors. By collecting and reading related literatures, obtain fundamental knowledge and skill required for research.					
[Objectives]					
To obtain fundamental research ability required for the research in master course.					
[Requirements]					
Fundamental skills and knowledge of civil and environmental engineering					
[Evaluation]					
Based on the presentation and discussion in the seminar.					
[Textbooks]					
To be designated by supervisors					
[References]					
Nothing special					
[Schedule]					
<ol style="list-style-type: none"> <li>1. How to choose advanced research theme</li> <li>2. Literature collection on previous advanced research</li> <li>3. How to collect literature/relative information</li> <li>4. Literature survey (Japanese papers)</li> <li>5. Literature survey (Foreign papers)</li> <li>6. Literature survey (Others)</li> <li>7. Study on fundamental knowledge concerning Engineering</li> <li>8. Study on fundamental knowledge concerning Natural Science</li> <li>9. Study on fundamental knowledge concerning Social Science</li> <li>10. Reading and explaining of collected literatures</li> <li>11. Reading and explaining of collected literatures</li> <li>12. Reading and explaining of collected literatures</li> <li>13. Reading and explaining of collected literatures</li> <li>14. Reading and explaining of collected literatures</li> <li>15. Summarization</li> </ol>					