

- **Course Description**

<b>Advisor Counsel</b>			
Yr. :	Sem. :	Course Code	FP0001
In this subject, students are requested to meet with each professor in the personal basis. Advisory counsel for the overall campus lives such as engineering education process, on- and off- campus lives, study, future plan, relationships with other students, and after school lives is conducted in a person-to-person basis.			
<b>Engineering Mechanics</b>			
Yr. : 1	Sem. : 1	Course Code	CK0001
General Physics theory specifically applicable to practical engineering problems, and materials, statics, dynamics and structural dynamics examines the point of view that can be applied to the learning objectives are based on capacity.			
<b>Introduction to Creative Engineering Design</b>			
Yr. : 1	Sem. : 2	Course Code	CK0002
To provide students with the use of problem-solving skills for solving realistic engineering problems using problem-based learning techniques, including definition of problem, creative problem solving, design of experiments, and optimization. To familiarize students with experience working as a member of an engineering work team, with experience using several modern tools and techniques to solve engineering problems.			
<b>Surveying and Practice1</b>			
Yr. : 2	Sem. : 1	Course Code	CK0003
This course deals with introduction of surveying, theory of observations, distance measurement, levelling, angle measurement, traverse surveying and triangulation. The course is composed of lectures and laboratories. At the end of this course, students should have ability to conduct control surveying and detailed surveying and related computation, operate surveying equipments such as a total station.			
<b>CAD Basics in Civil Engineering</b>			
Yr. : 2	Sem. : 1	Course Code	CK0004
Students will learn the basics of technical drawing in Civil engineering and improve their drawing skills for civil engineering structures using the computer aided design (CAD).			

### Fluid Mechanics

Yr. : 2

Sem. : 1

Course Code

CK0005

This course introduces the fundamentals of fluid mechanics for engineers, the basics of fluid statics and fluid motion with application in a variety of engineering fields.

### Material Mechanics1

Yr. : 2

Sem. : 1

Course Code

CK0006

Structural analysis and design courses in the underlying representation as the mechanical behavior of materials, structures, and understanding or interpretation of the elastic behavior and adaptability for the purpose of advancement.

### Civil engineering geology

Sem. : 2

Sem. : 1

Course Code

CK0048

This course is focused on understanding the characteristics of civil engineering geology and developing the ability to present engineering solutions to geotechnical disasters. It deals with geological structure, site investigation, strength theory, analysis and design.

### Water Supply Engineering and Practice

Yr. : 2

Sem. : 2

Course Code

CK0008

Water supply engineering in general will be taught such as water supply master plan, drinking water quality, water treatment, water distribution system, pump facilities, sludge processing, water intake, water driving channel, water purification, water supply, water distribution system. It will be given those variety of problem-solving and solving sample questions from previous tests for civil engineers certificate. Especially purpose of this course is raising the each student as a water supply engineer who can do his/her role in the field of civil engineering.

### Hydraulics and Experiments1

Yr. : 2

Sem. : 2

Course Code

CK0009

This course introduces the fluid properties, hydrostatics and motion, pipe networks, hydraulic machinery, orifices, weir, open channels, hydrodynamics, hydraulic similitude and dimensional analysis, groundwater and sedimentation.

### **Surveying and Practice2**

Yr. : 2

Sem. : 2

Course Code

CK0010

This course provides students the contents on topographic surveying, horizontal curve and vertical curve setting for route planning and design, construction surveys of bridges, tunnels and so forth, GPS surveying, coordinate transformation, area and volume computations. The course is composed of lectures, laboratories and student presentations. At the end of this course, students should have ability to apply to the different types of technical surveyings for design and construction of various structures and facilities and operate equipments such as total station and.GPS surveying instrumnt.

### **Material Mechanics2**

Yr. : 2

Sem. : 2

Course Code

CK0011

Structural analysis and design courses in the underlying representation as the mechanical behavior of materials, structures, and understanding or interpretation of the elastic behavior and adaptability for the purpose of advancement.

### **CAD/GIS for Civil Engineering**

Yr. : 2

Sem. : 2

Course Code

CK0012

This course provides the knowledge about CAD using 3D advanced computer technology, BIM(Building Information Management) and GIS(Geospatial Information System).

The basic themes of this course include using CAD in construction designing and topographical map making and setting up basic coordinate system in CAD and GIS.

### **Soil Mechanics and Experiments1**

Yr. : 3

Sem. : 1

Course Code

CK0013

The purpose of this subject is to convey a fundamental understanding of the mechanical behaviour of soil; the physical properties of soil, esp those properties that affect its ability to bear weight, such as water content, density, strength, etc.

I) covers

- Basic properties & formation, Classification
- Effective stress, Seepage.

### **Reinforced Concrete Analysis and Design and Experiments**

Yr. : 3

Sem. : 1

Course Code

CK0014

This course helps students to concretely understand reinforced concrete analysis, design and experiment. Students can acquire the properties of concrete materials, flexural analysis and design of ultimate strength design method, shear and torsion in beams, development and anchorage of reinforcement.

### **Structural Mechanics and Practice1**

Yr. : 3

Sem. : 1

Course Code

CK0015

Various methods based on mechanical concepts for various structures to determine deflections are dealt in this subject. Especially a basic ability for structural designing is to be cultivated in order to promote structural analysis capability.

### **Highway Design and Maintenance**

Yr. : 3

Sem. : 1

Course Code

CK0016

The objective of the course is to educate the students on the various components of Highway Design. This course provides the students the contents on traffic flow characteristics, highway planning, engineering surveys for highway alignment, design of geometric (plane and vertical) elements of highways and urban roads, earthworks, drainage, intersection design, rigid(cement concrete) and flexible(asphalt concrete) pavements design. The students further learn the desirable properties of highway materials and various practices adopted for construction. This course enables the students to develop skill on evaluation of the pavements and to decide appropriate types of maintenance

### **Hydraulics and Experiments2**

Yr. : 3

Sem. : 1

Course Code

CK0017

This course introduces the fluid properties, hydrostatics and motion, pipe networks, hydraulic machinery, orifices, weir, open channels, hydrodynamics, hydraulic similitude and dimensional analysis, groundwater and sedimentation.

### **Sewer Engineering and Practice**

Yr. : 3

Sem. : 1

Course Code

CK0018

Sewer engineering in general will be dealt with such as sewer master plan, stormwater runoff, water catchment, sewage, drainage, sewerage, pump facilities, sewage and sludge processing, and design of basic environmental facilities. It will be given those variety of problem-solving about sewer engineering and solving sample questions from previous tests for civil engineers certificate. Purpose of this course is raising the each student as a sewer engineer who can do his/her role in the field of civil engineering.

<b>Structural Mechanics and Practice2</b>			
Yr. : 3	Sem. : 2	Course Code	CK0019
<p>Various methods of analyzing statical indeterminate structures are dealt in this subject. Method of consistent deformation, Principle of virtual work, Three moment equation, Slope deflection method and moment distribution method are dealt. It is necessary to solve various exercises to increase ability of structural analysis.</p>			
<b>Construction Management and Process Design</b>			
Yr. : 3	Sem. : 2	Course Code	CK0045
<p>Civil construction is necessary experience and knowledge of the various on-site environmental engineering as a field of representative experience. Thus, it is an inefficient discipline when simply approaching theoretically. civil construction is a step to actualize the design according to the site conditions. It should take into consideration the actual terrain, geology, environment and various conditions. In the end, it is a discipline that needs to satisfy quality, process, safety and cost at the same time by concentrating various technical fields.</p> <p>* Related subjects : Structural Mechanics and Practice 1, 2, Reinforced Concrete Analysis and Design and Experiments, Reinforced Concrete Structure Design, Soil Mechanics and Experiments 1, 2, Hydraulics and Experiments 1, 2, Surveying and Practice 1, 2</p>			
<b>Reinforced Concrete Structure Design</b>			
Yr. : 3	Sem. : 2	Course Code	CK0022
<p>This course is a application of the basic theory of reinforced concrete design method. Based on the load and properties of materials, student can perform the analysis and design method of short column, long column, reinforced concrete slab, foundation, retaining wall of reinforced concrete and can apply these design method to practical reinforced concrete structures.</p>			
<b>Soil Mechanics and Experiments2</b>			
Yr. : 3	Sem. : 2	Course Code	CK0023
<p>The purpose of this subject is to convey a fundamental understanding of the mechanical behaviour of soil;</p> <p>II) covers</p> <ul style="list-style-type: none"> <li>- Consolidation, Shear strength, Earth Pressure</li> <li>- Shallow foundation &amp; deep foundation and slope stability problem.</li> </ul>			
<b>Design of Water supply and Drainage System</b>			
Yr. : 3	Sem. : 2	Course Code	CK0047
<p>For raising students who have abilities of design and management in the field based on what students learned in engineering of water supply and sewer engineering, this course is focused on the abilities of design about</p>			

all kind of facilities such as water supply system consist of water intake, water driving channel, water supply, water purification, water distribution facilities and sewer system consist of wastewater pipe, stormwater pipe, grit chamber, sedimentation basin(settling pond), aeration tank, and sludge treatment facilities.

**Design of Water Resources**

Yr. : 4	Sem. : 1	Course Code	CK0031
his course introduces hydrologic quantity for calculating watershed characteristics, rainfall, effective rainfall, basin response time, the unit deals with analysis of leakage flow to help.			

**Graduation Thesis1 (Capstone Design1)**

Yr. : 4	Sem. : 1	Course Code	CK0025
Students will develop the creative and active problem-solving skills by applying all the theories obtained from their coursework and selecting problems to be solved by themselves. The problems include one of the engineering topics in manufacturing, design, theoretical analysis, experiment, etc.			

**Hydrology**

Yr. : 3	Sem. : 2	Course Code	CK0046
This course covers to present the movement of water through the phases of the hydrologic cycle, modeling of hydrologic systems and an introduction to hydrologic design			

**Foundation Analysis and Design**

Yr. : 4	Sem. : 1	Course Code	CK0026
This class is to encourage the abilities of design and analysis related to geotechnical analysis of various foundation, for example the bearing capacity, geological analysis of foundation soil, designs of shallow foundation and deep foundation for various soil conditions.			

**P.S. Concrete Analysis and Design**

Yr. : 4	Sem. : 1	Course Code	CK0027
The objects of this course is to analyse and design the various prestressed concrete structural members after the understand of properties of prestressed concrete materials and the method of prestressing, anchorage, loss of prestress, design method of prestressed concrete structures.			

**Design and Maintenance of Bridges**

Yr. : 4	Sem. : 1	Course Code	CK0028
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The main contents of this subject are the planning and design of bridges and the maintenance techniques during using bridges. Also, the history of Korea and World bridges, nondestructive testing and safety inspection of bridge are included.

Design details : RC Slab Bridge, RC T-beam Bridge, Plate Girder Bridge.

**Disaster GIS and Practice**

Yr. : 4

Sem. : 1

Course Code

CK0029

This course provides the contents on design and implementation of geospatial information systems, digital mapping, spatial data management focusing on prevention of disasters. Students gain ability to deal with spatial data management, which including concept of information and GIS, spatial data management systems, georeferencing, spatial data modelling, spatial representation, geoprocessing, input/output operations, database management systems and distributed processing, and ability to extract valuable information through spatial analysis or modelling with intend to prevention of disasters.

The course is composed of lectures, laboratories and student presentations.

**Structure Design for Disaster Prevention**

Yr. : 4

Sem. : 1

Course Code

CK0030

The application of the concept of prevention in the design of various civil structures to learn how to apply, and the ability to perform design work to improve the unity of theory and design.

**Graduation Thesis2 (Capstone Design2)**

Yr. : 4

Sem. : 2

Course Code

CK0033

Students will write research papers and provide presentations along with the creative and active solution process for their research topics chosen in the Graduation Thesis 1 course.

**Convergence Capstone Design Project of Civil Engineering**

Yr. : 4

Sem. : 2

Course Code

CK0034

The course offers the opportunity to develop the total system design skill in Civil Engineering through the experience on a Capstone Design project. The project is to be designed under a specific condition and environment with the fusion of the element design knowledge that students have learned from various subjects of their coursework.

**Computer Numerical Analysis**

Yr. : 4

Sem. : 2

Course Code

CK0035

Complex engineering problems easily solved by computer courses as a foster adaptability, C, FORTRAN languages, and applications of the basic, non-linear equations of the correct answer, Simultaneous Equations, interpolation, Linear Regression, Integration, Ordinary and partial differential equations, eigenvalue problems discussed.

<b>Steel Structure Engineering</b>			
Yr. : 4	Sem. : 2	Course Code	CK0036
Based on Strength design method, Allowable stress design method and Load-resistance factor design method, design methods for tensional member, compression member, and flexural member of steel structures are dealt in this subject.			
<b>Computational Method in Structural Analysis</b>			
Yr. : 4	Sem. : 2	Course Code	CK0037
This course helps student to understand the method of analysis and design truss, beam, frame, various bridges by the practical finite element method software which is in use at the engineering company			
<b>River Engineering</b>			
Yr. : 4	Sem. : 2	Course Code	CK0038
This course introduces river hydraulics, sediment transport, river morphology, river survey, river models, and water quality control.			
<b>Rock mechanics</b>			
Yr. : 2	Sem. : 2	Course Code	CK0039
This course deals with the design of rock slopes and underground structures by understanding the mechanical behavior of rocks and discontinuities with strength theory and failure criteria.			
<b>Photogrammetry and Remote Sensing</b>			
Yr. : 4	Sem. : 2	Course Code	CK0040
<p>Photogrammetric products such as digital elevation models (DEMs), orthophotos and 3D map data are important sources of geographical information. Photogrammetry part provides the basics in theory, models and applications of analytical and digital photogrammetry for mapping purpose.</p> <p>Remote Sensing part provides an overview of remote sensing concepts, the ways in which remote sensing systems are used to acquire data, how these data may be analyzed digitally and how the information is used in studies of the natural and human environments.</p> <p>At the end of the course, students should have ability to apply and develop photogrammetry for production of spatial data and for non-topographic applications and ability to plan aerial photogrammetric spatial data production. In addition, students should have a good knowledge of the different types of remote sensing imagery that are available and the digital processing and analysis procedures that are used for environmental applications.</p>			
<b>Introduction to Disaster Prevention</b>			
Yr. : 2	Sem. : 1	Course Code	CK0044

Land Master Plan, urban planning, river improvement planning, water supply master plan, sewer master plan, prior disaster impact assessment, disaster prevention master plan. Disaster prevention, preparation, response, recovery of the overall planning about element technology of natural disasters such as typhoon, floods, heavy rain, landslides, earthquake and man-made disaster such as collapse, explosion, environmental pollution, etc.

**Education for Subject Matter of Department of Civil Engineering**

Yr. : 4	Sem. : 2	Course Code	CK0043
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This course aims to provide a theoretical and historical background of construction and subject matter education, the purpose of subject matter education and the analysis of middle-high school education process.

**Contents Analysis and Teaching Method of Subject Matter of Department of Civil Engineering**

Yr. : 3	Sem. : 2	Course Code	CK0042
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This course makes students learn the practical experience about the subject guidance which contains the characteristic of construction subject, the analysis of textbook of middle-high school, making class items, and a teaching method.

**Education on Logic and Statement Subject Matter of Department of Civil Engineering**

Yr. : 3	Sem. : 1	Course Code	CK0041
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This course aims to analyze the effects among the education and the cultivation of personality and character. And it deals with the newest contents which could contribute to improving the creativity of leader and the state education.