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TRƯỜNG ĐẠI HỌC
SƯ PHẠM KỸ THUẬT TP. HỒ CHÍ MINH
KHOA ĐÀO TẠO QUỐC TẾ

UNDERGRADUATE CURRICULUM MANUAL
CONSTRUCTION ENGINEERING TECHNOLOGY
Program Chair: Nguyen The Truong Phong

2021

CONSTRUCTION ENGINEERING TECHNOLOGY

I. CURRICULUM

1st Semester:

No.	Course ID	Course Title	Credits	Prerequisite
1	MATH132401E	Calculus 1	3	-
2	GCHE130603E	General Chemistry for Engineers	3	-
3	LLCT130105E	Philosophy of Marxism and Leninism	3	
4	ICET130117E	Introduction to Construction Engineering Technology	3(2+1)	-
5	PHED110513E	Physical Education 1	0(1)	-
6	EHQT130137E	Academic English 1	3	
7	EHQT230237E	Academic English 2	3	
Total			18	

2nd Semester:

No.	Course ID	Course Title	Credits	Prerequisite
1	MATH132501E	Calculus 2	3	-
2	MATH122101E	Probability with Applications	2	-
3	PHYS130402E	Physics 1	3	-
4	DGED125716E	Descriptive Geometry and Engineering Drawing	2	-
5	ENME141121E	Engineering Mechanics	4	-
6	PHED110613E	Physical Education 2	0(1)	
7	EHQT 230337E	Academic English 3	3	
8	TEEN124017E	Technical English 1	2	-

9	LLCT120205E	Political Economics of Marxism and Leninism	2	-
10	LLCT120405E	Scientific Socialism	2	
Total			23	

3rd Semester:

No.	Course ID	Course Title	Credits	Prerequisite
1	MATH132601E	Calculus 3	3	-
2	NUME120421E	Numerical Methods for Engineers	2	-
3	ARCH230216E	Principles of Architectural Design	3	-
4	ENDP110417E	Engineering Drawings Practice	1	-
5	MEMA241221E	Mechanics of Materials	4	-
6	PHED130715E	Physical education 3 (elective)	0(3)	-
7	TEEN234117E	Technical English 2	3	-
8	GELA220405E	General law	2	
9	LLCT120314E	Ho Chi Minh's Ideology	2	
Total			20	

4th Semester:

No.	Course ID	Course Title	Credits	Prerequisite
1	SOME241218E	Soil Mechanics	4	-
2	SMLA221318E	Soil Mechanics Lab	2	-
3	STAN242617E	Structural Analysis	4	-
4	MELA211321E	Mechanics Lab	1	-
5	DRCS242717E	Design of RC Structures I	4	MEMA241221E
6	COMA232817E	Construction Materials	2+1	-

7	EHQT 230437E	Academic English 4	3	
Total			21	

5th Semester:

No.	Course ID	Course Title	Credits	Prerequisite
1	DYST333317E	Dynamics of Structures	3	-
2	DSST243017E	Design of Steel Structures I	4	MEMA241221E
3	FOAD331418E	Foundation Analysis and Design	3	SOME241118E
4	DRCS342917E	Design of RC Structures II	4	MEMA241221E
5	SSBD413417E	Structural Software for Building Analysis and Design	1	-
6	WSSE233217E	Water Supply & Sewerage Engineering	3	-
7	PCSD213117E	Project of RC Structure Design I	1	
8	LLCT220514E	History of Vietnamese Communist Party	2	
Total			21	

6th Semester:

No.	Course ID	Course Title	Credits	Prerequisite
1	PCSD311817E	Project of Reinforced Concrete Structure Design II	1	
2	SURV231419E	Surveying	2+1	
3	DESS333617E	Design of Steel Structures II	3	MEMA241221E
4	COME340319E	Construction Methods	4	-
5	COPR320519E	Construction Practice	2	-
6	STLA323517E	Structures Lab	2	

7	PFDE311518E	Project of Foundation Design	1	-
8		Social sciences and humanities 1	2	-
9	REPR325517E	Research Project	2	(in 2 semesters)
10	BLIE324019E	Business and Leadership in Engineering (CET)	0 (2)	
Total			20	

7th Semester:

No.	Course ID	Course Title	Credits	Prerequisite
1		Social Sciences and Humanities 2	2	-
2	CMMP310619E	Construction Methods and Management Project	1	-
3	COPM441519E	Construction Project Management	4	-
4	BIMP421619E	Building Information Modelling Practice	2	-
5	INTE444417E	Internship	4	
6	PSSD313717E	Project of Steel Structure Design	1	
7	SCIC424517E	Enterprise-Specialized Seminar (CET)	2	
Choose 2 courses (4 credits)				
	COSU420919E	Construction Supervision	2	-
	MRRB421319E	Maintenance, Repair and Rehabilitation of Buildings	2	-
	GRIM421718E	Ground Improvement	2	-
	FSHS421618E	Foundation Systems for High-Rise Structures	2	
	DPCS423717E	Design of Prestressed Concrete Structures	2	-
	ENEN423817E	Environmental Engineering	2	-

	TRIN323422E	Transportation Infrastructures	2	
	SUCO423917E	Sustainable Construction	2	
	DSCS424417E	Design of Steel-Concrete Composite Structures	2	
Total			20	

8th Semester:

No.	Course ID	Course Title	Credits	Prerequisite
1	CAPR472117E	Capstone Project	7	-
Total			7	

ELECTIVE COURSES

Social Sciences and Humanities (4 credits)

No.	Course ID	Course Title	Credits	Note
1	GEEC220105E	General Economics	2	Select 2 courses
2	INMA220305E	Introduction to Management	2	
3	INLO220405E	Introduction to Logic	2	
4	INSO321005E	Introduction to Sociology	2	
Total			4	

II. COURSE DESCRIPTION

Introduction to Construction Engineering Technology

Credits: 3

Prerequisites: none

Course Description: This course introduces the program of construction engineering technology (CET), including ELOs, specification, structure, and content. The course also provides an exciting introduction to the civil engineering profession, including professional and ethical responsibilities, and provides the necessary soft skills for undergraduate study and professional practice.

Textbook:

- 1) Kosky, Philip, et al. *Exploring Engineering – An Introduction to Engineering and Design*. 2nd ed., 2010.

Numerical Methods for Civil Engineers

Credits: 2

Prerequisites: none

Course Description: This course provides computational methods, especially numerical methods, to solve mathematical problems necessary for civil engineering such as integration, ODE's, PDE's, linear algebra equations, and analysis of experimental data. The course also aims at introducing students to programming and numerical methods within a technical computing environment. MATLAB will be used as the framework for presentation, explanation, discussion and application of numerical methods.

Textbook:

- 1) Chapra, Steven C. *Applied Numerical Methods with MATLAB for Engineers and Scientists*. McGraw Hill, 2008.

Social Sciences and Humanities 1, 2, 3

Credits: 2

Prerequisites:

Course Description: These are three elective courses, 2 credits each, which relate to social sciences and humanities. These courses provide students with social knowledge, attitude, soft skills, and entrepreneurship. Students can choose three of the following courses:

- General Economy (GEEC220105E)
- Introduction to Quality Management (IQMA220205E)
- Introduction to Management (INMA220305E)
- Introduction to Logic (INLO220405E)
- System Thinking (SYTH220505E)
- Plan Skill (PLSK320605E)
- Presentation Skill (PRSK320705E)
- Technical and Scientific Document Presentation Skill (TDTS320805E)
- Introduction to the Vietnamese Culture (IVNC320905E)
- Introduction to Sociology (INSO321005E)
- University Learning Techniques (ULTE121105E)

Descriptive Geometry and Engineering Drawing

Credits: 2

Prerequisites:

Course Description: This course provides students with the fundamental theory of engineering drawing, including the engineering drawing standards, the basic drawing skills and principles, the

methods of representation and orthographic projection. It also cultivates the abilities of writing and reading the engineering drawing.

Textbook:

- 1) Doan Nhu Kim. *Engineering Drawing*. Vietnam Education Publishing, 2003.
- 2) Madsen, David A., and David P. Madsen. *Engineering Drawing and Design*. 6th ed., Cengage Learning, 2016.
- 3) Narayana, K. L., P. Kannaiah, and K. Venkata Reddy. *Machine Drawing*. 3rd ed., New Age International Publishers, 2009

Engineering Drawing Practice

Credits: 1

Prerequisites:

Course Description: This course helps students to develop skills of drawing architectural and structural shop-drawings by using computer-aided design (CAD) software, including procedures to draw basic structural components such as foundations, columns, beams, slabs, staircases, water tanks, trusses, bracing systems, or connections made of reinforced concrete or steel. The course also introduces basic terminologies about construction such as structural components, parts of a building, types of construction drawings, etc.

Textbook:

- 1) Doan Nhu Kim. *Engineering Drawing*. Vietnam Education Publishing, 2003.

Engineering Mechanics

Credits: 4

Prerequisites:

Course Description: This course covers two basic topics, statics and dynamics, which must be understood by students working with structures and materials. Statics deals with the equilibrium of rigid bodies, either at rest or moving with a constant velocity; whereas dynamics is concerned with the accelerated motion of bodies.

Textbook:

- 1) Hibbeler, Russel C. *Engineering Mechanics*. 13th ed., Prentice Hall, 2012.

Mechanics of Materials

Credits: 4

Prerequisites:

Course Description: This course provides knowledge about the internal effects of stress and strain in a solid body that is subjected to external loading. Also, it includes the following contents: elastic behaviour of structural components under tension/compression, torsion, bending, and buckling. The course also introduces statically indeterminate and simply redundant structures; work and strain energy concepts.

Textbook:

1) Hibbeler, Russel C. *Mechanics of Materials*. 9th ed., Prentice Hall, 2013.

Mechanics Practice

Credits: 1

Prerequisites:

Course Description: This course reinforces knowledge about material and structural behaviours that students have gained in mechanical courses. Mechanical experiments provide an opportunity to develop knowledge and skills to conduct and measure the properties of materials.

Textbook:

1) Hibbeler, Russel C. *Mechanics of Materials*. 9th ed., Prentice Hall, 2013.

Structural Analysis

Credits: 4

Prerequisites:

Course Description: This is a fundamental course in basic engineering and it provides knowledge and skills for calculating internal forces and displacements of statically determinate and indeterminate structures. Additionally, the course also introduces the fundamental knowledge about the matrix method to enhance the ability to use structural analysis software (ETABS, SAP 2000, SAFE, etc.).

Textbook:

1) Hibbeler, Russel C. *Structural Analysis*. 8th ed., Prentice Hall, 2012.

Construction Materials

Credits: 3

Prerequisites:

Course Description: This course gives students knowledge about mechanical and physical properties of construction materials and provides students with skills to choose and use suitable materials for different construction purposes in order to achieve economic and technical requirements. Also, the course provides knowledge and skills to conduct experiments related to physical and mechanical properties of basic construction materials such as burnt-clay bricks, sand, stones, cement, and concrete.

Textbook:

1) Ashby, M., and K. John Son. *Materials and Design*. 3rd ed., Elsevier, 2014.

Design of Reinforced Concrete Structures I

Credits: 4

Prerequisites:

Course Description: This course introduces concepts of reinforced concrete materials and methods for designing such reinforced concrete structural components, subjected bending, shearing and tension/compression as girders or columns. In addition, the course also provides fundamental concepts of prestressed concrete structures.

Textbook:

1) Wight, J. *Reinforced Concrete: Mechanics and Design*. 6th ed., Prentice Hall, 2011.

Project of Reinforced Concrete Structure Design

Credits: 1

Prerequisites:

Course Description: This is one of the applied courses belonging to the reinforced concrete structures' course. The project aims to help students become familiar with designing real structural components made of reinforced concrete. The project also reviews professional knowledge and skills related to designing reinforced concrete structures, writing reports and drawings. Besides, the project helps students to improve their skills of analysing and choosing appropriate solutions for structural designs.

Textbook:

1) Nguyen, Dinh Cong, et al. *Reinforced Concrete Structures (Building and Special Members)*. Science and Technical Publishing, 2012.

Design of Steel Structures I

Credits: 4

Prerequisites:

Course Description: This course provides basic knowledge and skills in the field of steel structure design, including detailed design of steel, steel-concrete composite members (trusses, beams, columns, and slabs), and steel connections (welded, bolted, and riveted ones). The course also helps students to strengthen their ability and self-confidence to analyse steel and composite structures.

Textbook:

1) Segui, William T. *Steel Design*. 5th ed., Cengage, 2012.

Water Supply and Sewerage Engineering

Credits: 2

Prerequisites:

Course Description: This course aims to introduce students with basic knowledge of fluid mechanics such as flow, pressure, and flow velocities. Besides, the course also provides principles and solving methods to determine the location, size and relationship between the parts of water supply and a sewerage system in buildings, as well as inside and outside urban constructions. The

course helps students gain the required abilities to design basic water supply and sewerage systems inside and outside buildings.

Textbook:

1) Nguyen, Thong. *Water Supply and Sewerage Engineering*. Construction Publishing, 2007.

Soil Mechanics

Credits: 4

Prerequisites:

Course Description: The objectives of this course are to introduce the basic physical and engineering properties of soil to students so they may effectively work in geotechnical engineering. Students will learn what soils are, how they are derived, and how they are identified and classified for engineering purposes. They will also learn about the principles that govern the flow of water in soils, deformation, and shear strength of soils.

Textbook:

1) Budhu, Muni. *Soil Mechanics and Foundations*. 3rd ed., Wiley, 2011.

Soil Mechanics Practice

Credits: 2

Prerequisites:

Course Description: This course provides the contents relating to laboratory tests to determine soil properties. It also teaches students how to gather and evaluate the testing results for foundation design.

Textbook:

1) Budhu, Muni. *Soil Mechanics and Foundations*. 3rd ed., Wiley, 2011.

Foundation Analysis and Design

Credits: 3

Prerequisites:

Course Description: This course teaches students about methods to design and experiment with different types of bases and foundations. The course puts emphasis on proposing and selecting the appropriate foundation, depending on geological conditions, action loads, and construction technology. The content of the course is closely associated with the standards of foundation design, testing, and construction.

Textbook:

1) Coduto, Donald P. *Foundation Design Principles and Practices*. 2nd ed., Prentice Hall, 2000.

Project of Foundation Design

Credits: 1

Prerequisites:

Course Description: This project helps students to systematize knowledge of previous geotechnical courses such as Engineering Geology, Soil Mechanics, and Foundation Engineering, and helps them to apply this knowledge to designing actual foundations. This project puts emphasis on the designs of two main types of foundations: shallow foundations and pile foundations. The design specifications follow the national regulations in the field of soil mechanics and foundation engineering.

Textbook:

1) Chau Ngoc An. *Foundation Engineering*. HCMC National University Publishing, 2011.

Surveying

Credits: 2+1

Prerequisites:

Course Description: This course provides the following concepts to students: reference surfaces of geoids and ellipsoid of the earth; ground manifestation by the map; geodesic errors in measurement; basic knowledge and tools in geodesic measurements (angle measurement, length measurement, and height measurement); control grid of coordinates and altitude; method of measuring and drawing the detailed maps and its cross-sections, ways of using maps in construction design; and surveying and mapping work in the plans.

Textbook:

1) Pham Van Chuyen. *General Surveying*. Construction Publishing, 2010.

Construction Methods

Credits: 4

Prerequisites:

Course Description: This course provides students with basic knowledge of construction techniques for a construction project, including underground works, above-ground works, finishing works, and erection techniques. The course also introduces students to all kinds of machinery and equipment used for construction, as well as their operating principles.

Textbook:

1) Nunnally, S. W. *Construction Methods and Management*. 7th ed., Pearson, NJ, 2007.

C. Advanced Construction Engineering Courses

Principles of Architectural Design

Credits: 3

Prerequisites:

Course Description: This course introduces fundamental concepts of architecture to civil engineers. The contents of the course put emphasis on principles of architecture and give architectural solutions for many different constraints. The architectural components of a building

from the foundation to the roof are presented. The course also provides regulations and requirements for architectural drawings.

Textbook:

- 1) Ta Xuan Truong. *Principles of Architectural Design*. Construction Publishing, 1999.

Dynamics of Structures

Credits: 3

Prerequisites:

Course Description: Students are introduced to concepts of structural dynamics and analysis methods for the linear response of civil engineering structures subjected to time-varying dynamic loads. Students will learn how to analyze and formulate the equation of motion of Single Degree-of-Freedom (SDOF) and Multi Degree-of-Freedom System (MDOF), and calculate the dynamic characteristics, displacements and internal forces of these systems. Besides, this course helps students to understand the evaluation of the behaviors of building structures under earthquake or ground motions, following Vietnam's Construction Code.

Textbook:

- 1) Chopra, Anil K. *Dynamics of Structures: Theory and Applications to Earthquake Engineering*. 3rd ed., Pearson Prentice Hall, 2007.

Design of Reinforced Concrete Structures II

Credits: 4

Prerequisites:

Course Description: This course provides students with professional knowledge about building engineering, related to modeling and computing building components made of reinforced concrete. The course also provides students with analytical skills for optimal designing of concrete building structures.

Textbook:

- 1) Wight J. *Reinforced Concrete: Mechanics and Design*. 6th ed., Prentice Hall, 2011.

Design of Steel Structures II

Credits: 3

Prerequisites:

Course Description: This course is a natural progression of the Steel Structures course from which the students will broaden their knowledge of the design of simple steel building structures such as single-span steel portal frames, wide-span steel buildings or multi-story steel buildings. Moreover, the students will become familiar with the calculation of load and action from the current Vietnamese standard. This course also helps students gain basic knowledge and skills for carrying out steel structures projects.

Textbook:

1) Segui, William T. *Steel Design*. 5th ed., Cengage, 2012.

Project of Steel Structure Design

Credits: 1

Prerequisites:

Course Description: This course helps students to apply theoretical knowledge gained in the courses Steel Structures and Steel Building Structures, to analyze and design industrial steel buildings having cranes.

Textbook:

1) Segui, William T. *Steel Design*. 5th ed., Cengage, 2012.

Structural Software for Building Analysis and Design

Credits: 1

Prerequisites:

Course Description: This course provides knowledge and basic skills in using specialized design software such as ETABS and SAFE, allowing students to be able to model, analyse, and design civil and industrial buildings.

Textbook:

1) Ngo Minh Duc. *An Introduction to Etabs*. Construction Publishing, 2012.

Structures Practice

Credits: 2

Prerequisites:

Course Description: This course provides students with knowledge and skills to conduct experiments related to structural engineering. Through this course, students will learn how to prepare specimens and use equipment to set up a suitable model for investigation and verification for structural engineering. The course also stresses the importance of strictly following all safety regulations.

Textbook:

1) Vo Van Thao. *Structural Test Methods*. Science and Technics Publishing, 2001.

Design of Prestressed Concrete Structures

Credits: 2

Prerequisites:

Course Description: This course provides students with knowledge about prestressed concrete materials, calculation, and design of the basic prestressed concrete structural components, subjected bending, shearing, and tension/compression. In addition, the course also provides fundamental concepts of construction technology for prestressed concrete structures.

Textbook:

1) Raju, N. Krishna. *Pre-Stressed Concrete*. McGraw-Hill Education, 2006.

Ground Improvement

Credits: 2

Prerequisites:

Course Description: This course provides essential knowledge of weak soils, especially their different types and quality; the principal characteristics of deformation and bearing capacity of soft soils under loadings; the basic soil stabilization methods for improving the strength of the soft soil foundations, particularly in the construction process in reality.

Textbook:

1) Nguyen, Uyen. *Foundation of Buildings on Weak Soils*. Construction Publishing, 2010.

Foundation System for High-Rise Structures

Credits: 2

Prerequisites:

Course Description: This course provides essential knowledge about weak soils, especially their different types and quality; the principal characteristics of deformation and bearing capacity of soft soils under loadings; the basic soil stabilization methods for improving the strength of the soft soil foundations.

Textbooks:

1) Das, Braja M. *Principles of Foundation Engineering*. Cengage Learning, 2010.

2) Nguyen, Uyen. *Foundation of Buildings on Weak Soils*. Construction Publishing, 2010.

Design of Steel-Concrete Composite Structures

Credits: 2

Prerequisites:

Course Description: This course sets out the basic principles of composite construction with reference to beams, slabs, columns, and frames, and their applications to building structures. It deals with the problems likely to arise in the design of composite members in buildings and relates basic theory to the design approach of Eurocodes 2, 3, and 4.

Textbook:

1) Johnson, R. P. *Composite Structures of Steel and Concrete*. Wiley- Blackwell, 2004.

Environmental Engineering

Credits: 2

Prerequisites:

Course Description: This course provides students with an introduction to mass balance modeling of contaminant fate; transport and removal in the environment; commonly used reactor

configurations for water and air quality control; partitioning of contaminant types and sources; and regional and global contemporary environmental issues.

Textbook:

1) Weiner, Ruth F., and Robin A. Matthews. *Environmental Engineering*. 4th ed., Elsevier Science, 2003.

Transportation Infrastructures

Credits: 2

Prerequisites:

Course Description: This course provides students with fundamental knowledge about planning design and operation of highway transportation facilities, driver and vehicle performance characteristics, highway geometric design principles, basics of traffic analysis, and transportation planning.

Textbook:

1) Wright, John. *Transportation Engineering*. ICE Publishing, 2015.

Construction Methods and Management Project

Credits: 1

Prerequisites:

Course Description: This course provides students with knowledge and professional skills related to construction, organization of construction, construction machines and equipment in civil and industrial projects. The course also introduces the work requirements of a civil engineer.

Textbook:

1) Nunnally, S. W. *Construction Methods and Management*. 7th ed, Pearson, 2007.

Construction Practice

Credits: 2

Prerequisites:

Course Description: This course aims to provide students with practical skills in the construction field, such as how to apply construction techniques to conduct works like construction, plastering, painting, formwork, bar steel, etc., on all structural beams, floors, columns, and walls. Students are also guided to operate machines that are often used in construction, such as drilling machines, iron cutter, carve machines, tile cutting machine, etc.

Textbook:

1) Nunnally, S. W. *Construction Methods and Management*. 7th ed, Pearson, NJ, 2007.

Building Information Modelling Practice

Credits: 2

Prerequisites:

Course Description: This course provides practical topics related to economics and construction management. Students practice on schedule and management of construction projects, using MS Project software.

Textbook:

1) Luong Duc Long. *Using MS Project 2007 for Construction Management*. Construction Publishing, 2011.

Construction Project Management

Credits: 4

Prerequisites:

Course Description: This course provides students with knowledge about economics and management in construction, including topics such as planning, implementation, and control of construction projects from the stage of project formulation to project completion. Students learn how to use tools to make decisions and carry out work in the constraints of time, cost, and manpower, as well as the organizational forms of project management, planning methods, progress, project control, distribution of resources, etc.

Textbook:

1) Lester, Albert. *Project Management, Planning and Control*. 6th ed., Elsevier, 2014.

Construction Supervision

Credits: 2

Prerequisites:

Course Description: This course introduces the new requirements for construction quality and supervision, following the ISO 9000 standard for construction firms in Vietnam. The procedures of checking / inspecting the quality of work, from the beginning to the completion, are also presented.

Textbook:

1) MOC. *Quality Control and Supervision for Buildings*. Construction Publishing, 2002.

Maintenance, Repair and Rehabilitation of Buildings

Credits: 2

Prerequisites:

Course Description: This course provides students with the ability to assess the defects and errors in structures, analyse their causes, and recommend solutions to repair or strengthen a structure. This course also helps students to evaluate the load capacity of structures before and after being strengthened.

Textbook:

1) Nguyen, Van Kiem. *Building Prohibition*. HCMC National University Publishing, 2008.

Sustainable Construction

Credits: 2

Prerequisites:

Course Description: This course provides students with an introduction to sustainable engineering systems, environmental laws, regulations, and sustainability issues; financial calculations in sustainable engineering; life cycle assessment; hazard and risk assessment of pollutants.

Textbook:

1) Nazaroff, W. W. *Introduction to Engineering and the Environment*. McGraw-Hill, 2001.

Internship

Credits: 2

Prerequisites:

Course Description: The 4-week internship offers students the invaluable opportunity to work on construction sites or in companies. Students will incorporate knowledge gained in the classroom into a real-world experience set in a professional practice-oriented environment. Students will have the opportunity to demonstrate and develop their professional skills such as teamwork, effective communication, social interaction, and professional networking, as well as an understanding of business procedures, leadership, and critical thinking.

Textbook: None

Research Project

Credits: 2

Prerequisites:

Course Description: In this course, a group of students will do a research project in which they will have to use up-to-date knowledge and applied research in the civil engineering field. Besides, the course will also help students to develop skills related to self-study, self-research, and team-working.

Textbook: None

Capstone Project

Credits: 10

Prerequisites:

Course Description: This course gives students the opportunity to participate in a major design experience in construction engineering. Using knowledge and skills acquired in earlier courses of the CET program, the students are required to design a real-world construction project under the constraints and considerations of constructability, economy, and sustainability. The results of the analysis and design will be presented in a thesis, along with shop-drawings.