THE UNIVERSITY OF DANANG

UNIVERSITY OF SCIENCE AND TECHNOLOGY

FACULTY OF CIVIL ENGINEERING

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PROGRAM SPECIFICATION

(Apply from enrollment year of 2012)

MAJOR: CIVIL ENGINEERING

PROGRAM CODE: 52580201

This programme specification is developed by Faculty of Civil Engineering , The University of Danang – University of Science and Technology

Danang, 2012

CONTENTS

THE UNIVERSITY OF DANANG
UNIVERSITY OF SCIENCE AND TECHNOLOGY
FACULTY OF CIVIL ENGINEERING

SOCIALIST REPUBLIC OF VIETNAM
Independence – Freedom – Happiness

HIGHER EDUCATION PROGRAM

(Issued under Decision No...../QĐ-ĐT Day … Month Year of 2012
by Rector of The University of Danang – University of Science and Technology)

Program Title: **Civil Engineering**
Major: Civil Engineering
Program Code: **52580201**
Program Level: **Undergraduate** **Study mode: Full time**

1. Program objectives and Learning OuCreditsomes

1.1. General program objectives

The University of Danang – University of Science and Technology (DUT) has built an educational philosophy of "thinking, creating, and human cherishing". With regards to this educational philosophy, the objectives of the Faculty of Civil Engineering (FCE) are to educate civil engineers with excellent background knowledge of civil engineering, strong political qualities and ethical characters. Also, undergraduate students from FCE have valuable skills in design and construction procedures of civil engineering projects to meet the development requirements of the Central-Highland and the whole country. The students are expected to develop their ability in life-long learning. They can become problem-solver for new construction problems.

1.2. Specific program objectives

- Knowledge:

Students are trained to have a strong background in different categories including (i) Mathematics and Natural Science, (ii) General Education, (iii) Technical Core, (iv) Civil Engineering Specialisation, (v) Internship and Practical Knowledge, and (vi) Project and Thesis.

- Skills:

Students are expected to be fully developed with different skills, including:

* Consulate and Design: Graduates have strong consulting and designing skills in civil and industrial constructions as well as strong background knowledge of reinforced and steel structures. Besides, students are trained to develop their practical knowledge through subjects' project, graduation internship and graduation project.

***** Construction and Organisation: Graduates have multiple skills in organisation, construction and installation of construction and industrial works. Also, they have strong knowledge of civil engineering such as construction techniques, construction organisation, occupational safety through their internships.

***** Management and Administration: Graduates have strong management skills to operate construction and industrial projects based on the knowledge of construction organisation and construction economics subjects.

* Analysing and processing information: Graduates have skills of searching information, analysing and processing information through civil engineering subjects, civil engineering projects and graduation project.

* Problem-solving: Graduates develop their problem-solving skills through engineering practices and subject projects.

* Teamwork: Graduates have a strong background to work effectively in different roles, such as organising and managing group to develop the teamwork effectiveness despite their interests, living environments and qualifications. Thus, individuals can develop their technical expertise through the professional presentation, internship, subjects' project and graduation project.

- Professional attitude:

Graduates are responsible for their works and toward the community. They also develop their sense of discipline and professional behaviour, complying states' regulations through laws and standards.

1.3. Program Expected Learning OuCreditsomes (PLOs)

After finishing the programme, the graduates are able to:

Nº	**Content**
PLO1	Demonstrate good professional ethics, qualities, and social responsibilities.
PLO2	Apply fundamental knowledge of basic science subjects like Math, Physics, Chemistry and Mechanics in CE.
PLO3	Analyse experimental results applying in quality control of construction works.
PLO4	Design building structures according to specialized standards in civil engineering

PLO5	Design construction methods and construction planning according to specialized standards in civil engineering and labor safety.
PLO6	Identify emerging problems in Civil Engineering.
PLO7	Present ouCreditsomes of the tasks performed.
PLO8	Demonstrate self-learning and life-long learning skills.
PLO9	Work in a team effectively
PLO10	Utilize modern technical tools and methods in the field of civil engineering.
PLO11	Execute specialized software in design, and construction management.
PLO12	Use English effectively in daily conversations, reading professional materials, and writing simple reports.

The relationship between program objectives and program learning ouCreditsomes can be seen in ***Appendix 1***.

1.4. Possible positions for graduates after graduation

After finishing the programme, the graduates can apply for the following jobs:

1. Consulting and designing structure at domestic and foreign companies.
2. Working at different technical positions such as manufacturer and construction companies in civil engineering.
3. Working at states' management agencies related to the construction industry.
4. Training civil engineering subjects at colleges, professional and vocational schools.
5. Doing research in civil engineering topics at research institutes and universities.

1.5. English level

After graduation, graduates have level 3 language proficiency according to the "6-Level of National Language Proficiency" issued by the Ministry of Education and Training.

2. Training duration: 5 years

3. Total Credits

152.5 Credits, excluding 150 hours of the Physical Training Program and 165 hours of the National Defense-Security Program according to the general regulations of the Ministry of Education and Training.

Curriculum structure

Contents	Credits	Compulsory Credits	Optional Credits
General Education	**67**	**67**	0

Professional knowledge	**85.5**	**75.5**	**10**
- Background subjects for Civil Engineering	47.5	43.5	4
- Technical Core	24	18	6
- Additional knowledge	0	0	0
- Internships	4	4	0
- Graduation Project	10	10	0
Total	**152.5 Credits**	**142.5 Credits**	**10 Credits**

4. Admissions

- Part-time of full-time high school students.

- Entry examination of A0 (Maths-Physic-Chemistry) and A1 (Maths-Physic-English) blocks.

5. Training, assessment processes and graduation conditions

The Regulation issued 43/2007/QĐ-BGD&ĐT on 15/08/2007 by Minister of Education and Training is used to organise training courses, evaluate modules and recognise the graduation conditions.

Also, students are required to achieve the university's foreign language output standards, which is equivalent to Level 3 in the 6-Level National Language Proficiency Scale.

The University Rector decides the training-assessment process, and school year.

6. Contents and study program Structure

A complete program is fully developed to reasonably distribute the number of subjects in each semester, thus ensuring the balance between theoretical, practical and internship subjects. Therefore, the study program structures and contents meet the training requirements and objectives.

The study program consists of general background subjects and specialised subjects for civil engineering. This program is regularly reviewed and adjusted to ensure that the ouCreditsome qualities meet the expectation of the industry and social development.

- *The relationship between program contents and the PLOs can be seen in **Appendix 2**.*
- *The relationship between subjects contents and job opportunities can be seen in **Appendix 3**.*

No.	Course code	Course titles	Course structure						Course requirement		Note
			Theoretical	Practical and Labs	Projects	Internships	Total		Pre-requisites	Co-requisite	
1		**General Education**	**65**	**2**	**0**	**0**	**67**				
1.1	3190111	Calculus 1	4				4				
1.2	3190121	Calculus 2	4				4		1.1		
1.3	3190131	Algebra	3				3				
1.4	3190041	Probability and Statistics	3				3		1.1		
1.5	1102090	Numerical method	3				3		1.2; 1.3; 2.10	2.11	
1.6	1102060	Civil Engineering Mathematics	3				3		1.2; 1.3; 2.6	2.10	
1.7	1080011	Descriptive Geometry	2				2				
1.8	3050011	Physics 1	3				3				
1.9	3050641	Physics 2	3				3		1.8		
1.10	3050651	Physics Lab		1			1		1.8	1.9	
1.11	3060303	Chemistry	2				2				
1.12	1020691	General Informatic	2				2				
1.13	1020701	General Informatics Lab		1			1			1.12	
1.14	2090131	Marxism-Leninism Principles 1	2				2				
1.15	2090141	Marxism-Leninism Principles 2	3				3		1.14		
1.16	2090101	Ho Chi Minh's Ideology	2				2				
1.17	2090121	Revolutionary Policies of the Vietnam	3				3				

No.	Course code	Course titles	Course structure						Course requirement		Note
			Theoretical	Practical and Labs	Projects	Internships	Total		Pre-requisites	Co-requisite	
		Communist Party									
1.18	4130241	English A2.1	3				3				
1.19	4130311	English A2.1	4				4		1.18		
1.20	4130310	English for Civil Engineering	2				2		1.19; 2.20; 2.22		
1.21	1180853	Economics in Civil Engineering	2				2		3.1; 3.3; 3.5		
1.22	1170011	Environment	2				2				
1.23	1080401	Technical drawing	2				2		1.7		
1.24	1050931	Electrical Engineering	2				2		1.8		
1.25	1040451	Thermal engineering technology	2				2		1.2; 1.9		
1.26	1102062	Introduction to Civil Engineering	2				2				
1.27	2100010	General law	2				2				
2		**Engineering fundamentals**	**37**	**2.5**	**3**	**1**	**43.5**				
2.1	1080700	Theoretical mechanics	3				3		1.8; 1.1		
2.2	1090382	Construction materials	2				2		1.11	2.6	
2.3	1090980	Construction materials laboratory		1			1		1.9; 1.11	2.2	
2.4	1111272	Hydraulics	2				2		2.1		
2.5	1110023	Hydraulics lab		0.5			0.5		2.1	2.4	
2.6	1080710	Strength of	3				3		2.1		

No.	Course code	Course titles	Course structure						Course requirement		Note
			Theoretical	Practical and Labs	Projects	Internships	Total		Pre-requisites	Co-requisite	
		materials									
2.7	1080451	Strength of materials lab		0.5			0.5		2.1	2.6	
2.8	1090033	Geotechnical Engineering	2				2		1.8		
2.9	1090043	Geotechnical Engineering Practic				0.5	0.5		1.2; 1.11	2.8	
2.10	1100022	Structural Analysis 1	3				3		2.6		
2.11	1102050	Structural Analysis 2	2				2		2.10		
2.12	1090372	Geodesy	2				2		1.2; 1.4		
2.13	1090752	Practice of geodesy				0.5	0.5		1.2; 1.3	2.12	
2.14	1090970	Soil mechanics	2				2		2.6; 2.8		
2.15	1090462	Soil mechanics Lab		0.5			0.5		2.6; 2.8	2.14	
2.16	1090990	Foundation	2				2		2.14	2.20	
2.17	1090093	Foundation Project			1		1		2.14	2.16	
2.18	1210260	Architecture 1	3				3		1.23		
2.19	1210280	Architecture Project			1		1		1.23	2.18	
2.20	1100062	Reinforced Concrete 1	3				3		2.2; 2.10; 2.18	2.11	
2.21	1100313	Reinforced Concrete Project 1			1		1		2.2; 2.10	2.10	
2.22	1100102	Steel structures 1	2				2		2.2; 2.10; 2.18		
2.23	1102080	Construction machines	2				2		1.24;2.16;2.	3.5	

No.	Course code	Course titles	Course structure						Course requirement		Note
			Theoretical	Practical and Labs	Projects	Internships	Total		Pre-requisites	Co-requisite	
									20		
2.24	1170393	Water supply and Drainage	2				2		2.4		
2.25	1100053	Theory of Elasticity	2				2		1.3; 2.1		
3	**Professional Civil Engineering**		**13**	**1**	**14**	**4**	**32**				
3.1	1102180	Reinforced Concrete 2	2				2		2.20		
3.2	1100333	Reinforced Concrete Project 2			1		1		2.20	3.1	
3.3	1102100	Steel structures 2	3				3		2.22		
3.4	1102110	Steel structures project			1		1		2.22	3.4	
3.5	1102120	Construction Technology	3				3		2.12; 2.16; 2.20; 2.22	2.23	
3.6	1100353	Construction Technology Project			1		1		2.16; 2.20; 2.22	3.5	
3.7	1100243	Construction management	3				3		3.5		
3.8	1102130	Construction management project			1		1		3.5	3.7	
3.9	1102153	Construction site safety	1				1		1.24; 3.5		
3.10	1101373	Construction site safety	1				1		1.4; 3.1; 3.3		
3.11	1101753	Practices of Construction site safety		1			1		1.4; 3.1; 3.3	3.10	
3.12	1102070	Worker internship				2	2		2.2		

No.	Course code	Course titles	Course structure						Course requirement		Note
			Theoretical	Practical and Labs	Projects	Internships	Total		Pre-requisites	Co-requisite	
3.13	1102113	Graduation internship				2	2		3.1; 3.3; 3.5; 3.12	3.9; 3.7	
3.14	1100383	Graduation Project			10		10		2.21, 3.4, 3.6		
4		**Selective subjects**	**15.5**	**0.5**	**0**	**0**	**10**			Minimum 6 CREDITS (**)	
4.1	1210293	Urban planning	2				2		2.18		(*)
4.2	1210270	Architecture 2	2				2		2.18		(*)
4.3	1170352	Ventilation	2				2		1.25; 2.18		(*)
4.4	1100213	Special Reinforced Concrete	2				2		2.20		(**)
4.5	1102163	High-rise buildings	2				2		3.1; 3.3		(**)
4.6	1102173	Special Steel structures	2				2		3.3		(**)
4.7	1102183	Modern construction technology	2				2		2.16; 2.20; 2.22	3.5	(**)
4.8	1100253	Applied informatics for civil engineering	1.5	0.5			2		1.5; 2.20; 2.22		(**)
5		**Total**					**152.5**				

7. Curriculum Roadmap

Semester	Total Credits	No.	Course code	Course title	Theoretical	Practical and labs	Projects	Internships		Pre-requisite	Co-requisite
1	**16**	1	3190111	Calculus 1	4						
		2	1080011	Descriptive Geometry	2						
		3	3060303	Chemistry	2						

Semester	Total Credits	No.	Course code	Course title	Theoretical	Practical and labs	Projects	Internships		Pre-requisite	Co-requisite
		4	1020691	General Informatic	2						
		5	1020701	General Informatics Lab		1					General Informatic
		6	2090131	Marxism-Leninism Principles 1	2						
		7	4130241	English	3						
		8		Physical education 1							
2	**18**	1	3190121	Giải tích 2	4					Calculus 1	
		2	3050011	Vật lý 1	3					Calculus 1	
		3	2090141	Marxism-Leninism Principles 2	3					Marxism-Leninism Principles 1	
		4	4130311	English A2.1	4					English	
		5	1170011	Environment	2						
		6	1080401	Technical drawing	2					Descriptive Geometry	
		9		Physical education 2							
3	**15**	1	3190131	Algebra	3						
		2	3190041	Probability and Statistics	3					Calculus 1	
		3	3050641	Physics 2	3					Physics 1	
		4	3050651	Physics Lab		1					Physics 2
		5	1050931	Electrical Engineering	2						
		6	1080700	Theoretical mechanics	3					Physics 1, Calculus 2	
		7		Physical education 3							
4	**15.5**	1	2090121	Revolutionary Policies of the Vietnam Communist Party	3						
		2	4130310	English for Civil Engineering	2					English A2.1	
		3	1102062	Introduction to Civil Engineering	2						
		4	1040451	Thermal engineering technology	2						
		5	1090382	Construction materials laboratory	2						

Semester	Total Credits	No.	Course code	Course title	Theoretical	Practical and labs	Projects	Internships		Pre-requisite	Co-requisite
		6	1090980	Construction materials laboratory		1					Construction materials laboratory
		7	1080710	Strength of materials	3					Theoretical mechanics	
		8	1080710	Strength of materials lab		0.5					Strength of materials
		10		Physical education 4							
5	**15.5**	1	2090101	Ho Chi Minh's Ideology	2					`	
		2	1102060	Civil Engineering Mathematics	3					Calculus 1, Algebra, Probability and Statistics	
		3	1090033	Geotechnical Engineering	2					Theoretical mechanics	
		4	1090043	Geotechnical Engineering Practice				0.5			Geotechnical Engineering
		5	1100022	Structural Mechanics 1	3					Theoretical mechanics	
		6	1090372	Geodesy	2					Calculus 2, Algebra	
		7	1090752	Practice of geodesy				0.5			Trắc địa
		8	1090970	Soil mechanics	2					Geotechnical Engineering	
		9	1090462	Soil mechanics Lab		0.5					Soil mechanics
		10		Physical education 5							
6	**14.5**	1	1102050	Structural Mechanics 2	2					Structural Mechanics 1	
		2	1111272	Hydraulics	2					Theoretical mechanics	
		3	1110023	Hydraulics lab		0.5					Hydraulics
		4	1210260	Architecture 1	3					Technical drawing	

Semester	Total Credits	No.	Course code	Course title	Theoretical	Practical and labs	Projects	Internships		Pre-requisite	Co-requisite
		5	1210280	Architecture Project			1			Technical drawing	Architecture 1
		6	1100062	Reinforced Concrete structures 1	3					Construction materials, Structural Mechanics 2	
		7	1100313	Reinforced Concrete structures Project 1			1			Construction materials, Structural Mechanics 2	Reinforced Concrete structures 1
		8	1102070	Worker internship				2		Construction materials, Reinforced Concrete structures 1	
7	**15**	1	1102090	Numerical method	3					Calculus 2, Algebra	
		2	1090990	Foundation	2					Soil mechanics	Reinforced Concrete structures 1
		3	1090093	Reinforced Concrete structures Project 1			1				Foundation
		4	1100102	Steel structures 1	2					Structural Mechanics 1	
		5	1102080	Construction machines	2					Reinforced Concrete structures 1	
		6	1102180	Reinforced Concrete structures 2	2					Reinforced Concrete structures 1	
		7	1100333	Reinforced Concrete Project 2			1			Reinforced Concrete structures 1	Reinforced Concrete structures 2
		8	1170393	Water supply and Drainage	2					Hydraulics, Geodesy	
8	**16**	1	1100053	Theory of Elasticity	2					Strength of materials	
		2	1102100	Steel structures 2	3					Steel structures 1	

Semester	Total Credits	No.	Course code	Course title	Theoretical	Practical and labs	Projects	Internships		Pre-requisite	Co-requisite
		3	1102110	Steel structures project			1			Steel structures 1	Steel structures 2
		4	1102120	Construction Technology	3					Foundation, Construction machines	
		5	1100353	Construction Technology Project			1			Foundation Project, Construction machines	Construction Technology
			Select 6 Credits among 8 Credits:		**6**						
		6	1210293	Urban planning	2					Architecture 1	
		7	1210270	Architecture 2	2					Architecture 1	
		8	1170352	Ventilation	2					Architecture 1	
		9	1100213	Special Reinforced Concrete	2					Reinforced Concrete structures 1	
9	**15**	1	1180853	Economics in Civil Engineering	2					Introduction to Civil Engineering	
		2	1100243	Construction management	3					Construction Technology	
		3	1102130	Construction management Project			1				Construction management
		4	1102153	Construction site safety	1					Construction Technology	
		5	1101373	Construction experiments	1					Reinforced Concrete structures 2; Steel structures 2	

Semester	Total Credits	No.	Course code	Course title	Theoretical	Practical and labs	Projects	Internships		Pre-requisite	Co-requisite
		6	1101753	Practices of construction experiments		1					Construction experiments
		7	1102113	Graduation internship				2		Construction site safety Construction management, Worker internship	
			Select 4 Credits among 8 Credits:		**4**						
		8	1102163	High-rise buildings	2					Reinforced Concrete structures 2	
		9	1102173	Special Steel structures	2					Steel structures 2	
		10	1102183	Modern Construction Technology	2					Construction Technology	
		11	1100253	Applied informatics for civil engineering	2					Reinforced Concrete structures 1; Steel structures 1	
10	**10**	1		Graduation Project			10			Reinforced Concrete structures Project 1; Steel structures project; Construction Technology Project	

Teaching venues:

- Theory, Exercises, Discussion, Experiment, Self-study Guideline: At University (Lecture, Laboratory, Library).

- Practical and Internship: At industry partners, construction sites, government agencies.

8. Summary of Course Description

8.1. Marxism-Leninism Principles 1 (2CREDITS)

The module provides basic knowledge of Marxism-Leninism: material and consciousness; pairs of categories of materialist dialectics; the role of production and rules of production relations in line with the development level of the productive forces; infrastructure and superstructure; class and class struggle; the people and the creative role of the history of the people.

8.2. Marxism-Leninism Principles 2 (3CREDITS)

The module is equipped with knowledge of the doctrine of Marxism Leninism in commodity economics, the mode of capitalist production in both periods of freedom of competition and the monopoly period. The theory of Leninism on socialism, the study of the economic, political and social issues of the communist model.

8.3. Ho Chi Minh's Ideology (2 Credits)

The module provides the essential contents of Ho Chi Minh's thoughts on Ethnic issues and the revolution of national liberation; on socialism; about the Communist Party of Vietnam; about the great unity; the construction of a new state in Vietnam and the ethics, culture and the construction of new people ... along with the creation of theory and practice directed the democratic national revolution and social Vietnam's Ho Chi Minh.

8.4. Revolutionary Policies of Vietnam Communist Party (3CREDITS)

The module focuses on clarifying the birth of the Communist Party of Vietnam, the policy of fighting for power, national liberation, the reunification of the motherland; the way of industrialisation, the building of a socialist-oriented market economy, the building of the political system, the development of the culture, the settlement of social issues and the foreign policy.

8.5. English 1 (3CREDITS)

This module is designed to integrate four skills: Listening, Speaking, Reading and Writing along with grammar points. Course content is presented in 3 units; Each unit consists of 7 lessons on A. vocabulary and listening comprehension skills; B. grammar skills; C. cultural knowledge; D. grammar skills; E. reading and listening skills; F. skills

in oral communication; G. writing skills in English Each unit of integrated skills will have a unit of study and skill development, to help learners develop their writing skills, prepare them for the 1st and 2nd quizzes. The format of the test consists of Listening / Reading, choosing the correct/wrong / not mentioned in the lesson; Multiple choice exercises; Fill in (Grammar); Picture-based discussions; Roleplaying (speaking); Multiple choice (Reading); Write by topic.

8.6. English 2 (4CREDITS)

This module is designed to integrate the four skills of Listening, Speaking, Reading, and Writing along with grammar points. Course content is presented in 4 units; Each unit consists of 8 lessons: A. vocabulary and listening comprehension skills; B. grammar skills; C. cultural knowledge; D. grammar skills; E. reading and listening skills; F. skills in oral communication; G. writing skills in English.

8.7. English for Civil Engineering (2CREDITS)

English for Civil Engineering course provides students with basic knowledge of English in the field of civil engineering. From there, students are introduced to specialised English terms, more confident in searching and reading specialised English documents and can write and present simple reports by English. Also, the course provides students with practical knowledge through the materials and videos that the lecturers provide throughout the learning process.

8.8. Descriptive Geometry (2CREDITS)

Descriptive geometry is the branch of geometry which allows the representation of three-dimensional objects in two dimensions, by using a specific set of procedures. The resulting techniques are essential for engineering, architecture, design and art. The education in Descriptive Geometry provides training of the students' intellectual capability of space perception. Students should be able to construct conic using their focus properties. Understand and get the basics of projection: coted, Monge`s projection, orthogonal axonometry. They should be able to solve simple 3D problems, display the essential geometric bodies and surfaces in each projection, their section. An orthogonal closed rule right helicoidal surface. They construct a prism, cone, sphere, cylinder, hyperbolic paraboloid and parabolic conoid using specified elements.

8.9. Technical Drawings (2CREDITS)

The module consists of 2 Credits, aiming to equip students with methods of representing objects of space on the plane. It provides the basis for future engineers to practice space-thinking, one of the conditions for technical innovation and the solving of practical problems to apply to the preparation and reading of technical drawings. Equipping Vietnamese and international standards for the establishment of technical drawings is the language of the engineer. This course provides the basis for future engineers to elaborate on style, accuracy. At the same time, solve practical problems to apply to the drawing of technical and technology.

8.10. General Chemistry (2CREDITS)

This course aims to provide students basic knowledge of chemistry that enable them to read and understand materials in chemistry-related science and technology, namely: basic concepts, fundamental laws of chemistry; atomic structure; the periodic table and the periodic laws; chemical bonding and condensed states of matter, mainly on crystals; basic principles of thermodynamic; dynamic chemistry, electrochemistry.

8.11. General Informatics (2CREDITS)

This course aims to provide students with basic knowledge of computing and how to use basic applications on operating systems, MS Word, MS Excel, MS PowerPoint, and services on the internet. The course also presents how to use the C programming language to solve some basic math problems.

8.12. General Information Lab (1CREDITS)

This course aims to provide students with an opportunity to practice computing and how to use basic applications on operating systems, MS Word, MS Excel, MS PowerPoint, and services on the internet. The course also presents how to use the C programming language to solve some basic math problems.

8.13. Calculus 1 (4CREDITS)

This module provides the basics of limits, continuity, differential calculus, integral calculus, and the extreme problem of one variable and multiple functions. The module also mentions some applications of differential geometry.

8.14. Calculus 2 (4CREDITS)

This module introduces concepts, formulas and some applications of integrin (2 layers and 3 layers), line integrals (type 1, type 2), surface integrals (types 1 and 2), string (string, string) and differential equations.

8.15. Algebra (3CREDITS)

The module presents the linear algebra theory as the basis for the specialised applied sciences. The modules include matrix theory, determinants, linear systems, vector space, linear mapping and quadratic form.

8.16. Probability and Statistics (3CREDITS)

The module presents probability theory and statistical methods as the basis for the statistical application modules in the research. The section includes probability theory and mathematical statistics. Probability theory introduces the basic contents of random events, probabilities; Random variables and probability distributions; limit theorems; random vector, conditional expectation, covariance, and correlation coefficient. Statistics include the basic contents of sample theory, descriptive statistics; methods of estimating parameters of random variables; Test the statistical hypothesis, the comparison problem.

8.17. Numerical method (3CREDITS)

This course is an introduction to the numerical methods. The primary objective of the course is to develop a basic understanding of numerical algorithms and skills to implement algorithms to solve mathematical problems on the computer. The finite element methods will be introduced in this course. This helps students to analyse some types of structures. This course is to help students to update the advanced science and technologies in civil engineering.

8.18. Civil Engineering Mathematics (3CREDITS)

The subject introduces practical problems that the linear programming model is often used to solve. This course equips students with general knowledge of linear programming; duality theory; methods and tools to address different levels of use. The focus of this course is on introducing the types and methods of solving practical problems in civil engineering.

8.19. Physics 1 (3CREDITS)

Physics 1 presents knowledge relative to Mechanics, Electricity and Magnetism which includes: (i)

Laws, the theorem of motions of particles, a system of particles, and rigid bodies; (ii) Laws of conservation

of momentum and energy in motion and collisions; (iii) Properties and laws of interactions in electric

field and magnetic field, motions of a charged particle in the field.

8.20. Physics 2 (3CREDITS)

The course includes Thermodynamics, Optics and Modern Physics. Thermodynamics consisting of Molecular physics and Laws of thermodynamics tends to allow students to explore. The motion of gas molecules, the definition of quantities characteristic of thermodynamic systems such as pressure, temperature, volume and the relations among them. The concept of internal energy, the conservation of energy of gases, laws of thermodynamics and their applications. Thermodynamics also addresses real gases, liquid and phase transformations. Optics allows students to study phenomena related to the wave nature of light, such as interference, diffraction, and polarisation. Modern Physics introduces the theories developed since the 20th century, including Quantum Optics, Quantum Mechanics and Atomic Physics. Quantum Optics is about thermal radiation with the ultraviolet catastrophe, Planck's hypothesis, the quantum theory of light and explanation of the particle nature of light through the photoelectric and Compton effects. Quantum Mechanics covers the wave nature and wave function of micro-particles, the Schrodinger equation and its application to problems of a particle in a well of infinite height and tunnelling effect. Atomic Physics is focused on the application of quantum mechanics to the study of the hydrogen atom and single-electron ions with and without magnetic field.

8.21. Physics Lab (1CREDITS)

This course provides two options, which are Experimental Physics A and Experimental Physics B. students have opportunities to conduct experiments about Mechanics, Thermodynamics, Electricity and Magnetism and

Optics.

8.22. Environment (2CREDITS)

This subject is belonging to the general education, providing students with a basic understanding of the environment, resources and ecosystems. The knowledge of pollution in the air, water, soil, solid waste and other types of pollution such as noise, heat and radiation; Because of that, the daily solution for environmental pollution can be implemented. Also, the course helps students understand the concepts, principles and solutions to achieve the environmental harmony and sustainable development as well as some critical contents of Vietnam's environmental law.

8.23. Electrical Engineering (2CREDITS)

The course is designed to supply students with knowledge of fundamental theory about electrical engineering, as a background for other engineering subjects. The basic content of the course consists: (i) The fundamental concepts and laws of energy circuits, sine source electrical circuits, electrical circuits problem-solving methods; (ii) The concepts, structures and operation principles of the electrical machine; show the equations and energy process in the electrical machine and solving methods.

8.24. Thermal Engineering Technology (2CREDITS)

Properties of a pure substance, ideal gas law, work and heat, first and second law, entropy, heat transfer. Some powers and refrigeration cycles.

8.25. Introduction to Civil Engineering (2CREDITS)

Giới thiệu về trường Đại học Bách Khoa - Đại học Đà Nẵng, về ngành kỹ thuật Công trình Xây dựng Dân dụng và Công nghiệp, mục tiêu học tập, các chuẩn cần đạt và định hướng nghề nghiệp cho sinh viên. Bước đầu trau dồi các kiến thức tổng quát về các kỹ năng cần có cũng như thái độ về nghề nghiệp sau này.

8.26. Theory of Mechanics (3CREDITS)

This course equips students with knowledge in mathematics, dynamics and dynamics to solve real-world math problems; provides to students with knowledge of the balance and movement of solids under the influence of external forces and interactions between objects, the basic concepts of knowledge of balance and motion of objects. In three parts of mechanics: statics, dynamics, dynamics. This course particularly requires

students to master the concepts and equations of balance and motion, alignment, mechanical principles. The main contents of the module include the following: basic concepts of mechanical axioms, the theory of force, equilibrium problems - basic motions of solids - Newton's laws, general theorems of dynamics.

8.27. Construction Materials (2CREDITS)

This course provides students with fundamental knowledge of main construction materials. This knowledge is also the basis of next specific courses such as Foundation, Reinforced Concrete Structures, Concrete Technology, Technology of Binding Materials, Technology of Building Ceramics. Furthermore, this course is useful for civil engineers in designing, constructing, consulting, supervising and testing activities.

8.28. Construction Materials Laboratory (1 Credit)

This course provides students with fundamental knowledge about testing methods to determine physicomechanical properties of main construction materials; how to use and operate basic test apparatus and equipment. Such knowledge is the basis for next specific courses such as Foundation, Reinforced Concrete Structures, Concrete Technology, Technology of Binding Materials, Technology of Building Ceramics. Furthermore, what this course provides is also useful for civil engineers working in designing, constructing, consulting, supervising and testing field.

8.29. Hydraulics (2 Credits)

This course provides fundamental knowledge in hydraulics. This course helps students to understand the general laws of fluids in equilibrium and motion and applies them to some of the works in the field; calculate test for general hydrodynamic problems such as hydrostatic pressure on solid walls, flow in pipes, holes in the hose. This course also trains students to be cautious, know how to apply, apply the hydraulic knowledge learned in professional work.

8.30. Hydraulics Laboratory (0.5 Credit)

Based on the theory of the hydrostatic pressure on the pipes and its loss, students will perform the test to understand the theoretical problem better. Also, this course helps students to improve their practical skills.

8.31. Strength of Materials (3 Credits)

The course shows how to analyse and calculate the internal force of bar elements under basic and complex load. Basic experimental methods determine the mechanical properties of the materials as well as the force resistance of the bar structure. Analysing the stress state in the case of complex loading to create the criteria for assessing the durability, stiffness and stability of the components to ensure the safety and economy condition. This course includes concepts of internal force, cross-section method, internal force diagram; stress states analysis, durability theory; the geometric characteristics of cross-sections, the mechanical characteristics of the material; basic and complex force resistance problems; calculating displacement and deformation of bar structures; solving basic problems of durability, stiffness, stability conditions; statically indeterminate structures problem.

8.32. Strength of Materials Laboratory (0,5CREDITS)

Students can be able to conduct experiments related to the strength of materials such as determining a stress-strain relationship, Young's modulus of materials.

8.33. Geotechnical Engineering (2CREDITS)

Geotechnical Engineeringsubject prepares geological knowledge applying for construction work to leaners. The research object is the geological environment, which includes soils & rocks distributed in the upper part of ground; generation, improvement of geological phenomena as the result of geological environment and construction and surrounded environment interaction. The aim of the subject is to assess construction ability of certain area in the viewpoint of Geotechnical Engineeringas well as use suitably natural conditions for construction in order to assure stability of building during the executing process, use as well as protect the geological environment.

8.34. Geotechnical Engineering Practic (0.5 Credit)

The course is part of the basic knowledge of the major, that helps students to apply the knowledge of geodesy in the use of geodetic equipment, plotting map and performing geodetic work in planning, design, construction and management of transport works.

8.35. Structural Analysis 1 (3CREDITS)

This course provides students with the ability to analyse the force resistance of static linear elastic structures; the ability to determine the internal force of static bar structures under static and dynamic load; Determinating displacement and deformation in static bar structures under common loads such as dead loads, thermal loads, forced bearing displacement.

8.36. Structural Analysis 2 (2CREDITS)

This course consists of 2 chapters. Chapter 1 introduces the concept of statically indeterminate structures, how to calculate the internal force and displacement of the statically indeterminate structure by force method, to calculate the internal force of continuous beam by the three-moment equation and the analysis of symmetric structures. Chapter 2 shows the concept of kinematic determinacy and indeterminacy structure, how to calculate the internal force of kinematic indeterminacy structure by the displacement method.

8.37. Geodesy (2 Credits)

The course is part of the basic knowledge of the major, that equips students with knowledge of map and geodetic works in service of the planning, design, construction, and management of transport works. The course includes general knowledge of geodesy, knowledge of maps and knowledge about geodetic works.

8.38. The practice of Geodesy (0.5 Credit)

The course provides students opportunities to enhance practical knowledge of geodesy in the use of geodetic equipment, plotting map and performing geodetic work in planning, design, construction and management of civil engineering projects.

8.39. Soil Mechanics (2 Credits)

This unit provides students with theoretical knowledge of soil physical and mechanical properties, determine the stress and strain in soils under loading and self-weight of soils, estimate the foundation settlement over time, predict the soil bearing capacity, slope stability and earth pressure for retaining walls.

8.40. Soil Mechanics Laboratory (0.5 Credit)

This unit provides students with practical knowledge of soil engineering properties, testing procedures and analysis of the test results in the laboratory. Students have the opportunity to conduct, calculate and analyse the soil parameters introduced in theoretical sections.

8.41. Foundation (2 Credits)

Foundations are one of the important specialised subjects for all civil engineering students. This course provides the concepts, background and principle in designing and building the foundations of the constructions. Therefore, it helps students to be able to recognise, distinguish, select, analyse and evaluate the foundation solutions (shallow foundation and deep foundation) as well as soil improvement methods when building the construction on soft soil ground. This module equips an essential knowledge about foundations so that students can apply and connect their knowledge with other subjects in the civil engineering program.

8.42. Foundation Project (1 Credit)

Foundations Project is a module which applies knowledge of the subject: Foundations, and it is one of the important specialised subjects for all civil engineering students. Based on the knowledge and the supervision of lecturers, students calculate and analyse the input data on geological features, mechanical properties of soil layers, and load to evaluate and propose solutions to the foundation. Then, the student needs to select suitable material such as concrete, reinforced concrete, and steel. It is important to calculate and design for a shallow base on the natural base and a plan of high embedment pile foundation according to the specified limit conditions. The product includes a plot illustration on A4 paper and 01 drawings presenting the design results of the foundation design on A1 paper.

8.43. Architecture 1 (3CREDITS)

This is a fundamental subject of the industry of Civil & Industrial Construction. The module provides indigenous knowledge about housing, public housing, home structures and buildings. This is a reference for students of construction disciplines, construction economics, environment. These are important foundations to help students having the

knowledge and skills so that they can prepare for specialised subjects in the following years, such as graduation project.

8.44. The project of Architecture (1CREDITS)

The subject is an interdisciplinary project of two subjects “Architecture 1” and “Architecture 2”, providing students with the knowledge and skills needed to apply personal knowledge to the design of an actual building (office combined with public housing), helping students to initially form essential skills for engineers such as spatial and geometric thinking development, structure, building surveying.

8.45. Architecture 2 (2CREDITS)

Principles of designing industrial zone planning, factory and other industrial buildings. Detailing of foundations, floor, roof, crane, wall, partition.

8.46. Urban Planning (2 Credits)

This is a fundamental subject of the industry of Civil & Industrial Construction. The course introduces an overview of urban and urban planning work. The module provides knowledge of research and planning of urban and functional areas. This is a reference for students of construction disciplines, construction economics, environment.

8.47. Reinforced Concrete 1 (3 Credits)

This course consists of 10 chapters. Chapter 1 gives students an overview of reinforced concrete materials. Chapter 2 presents the material properties and behaviours, the combination of concrete and steel reinforcement. Chapter 3 introduces the principle of calculation, components, and presentation of reinforced concrete structures. Chapters 4, 5, 6, 7, 8 present load combinations, calculation and design of basic components in reinforced concrete structures. Chapter 9 presents the design of a reinforced concrete structure under the second limit state (normal working conditions). Chapter 10 introduces and calculates pre-stressed reinforced concrete structures.

8.48. Reinforced Concrete Project (1 Credit)

Students design a complete system of reinforced concrete slab including Preliminary selection of components, load determination, internal forces and moments calculation, evaluation of reinforced concrete slab components (floors, primary and secondary beams) as well as presentation in drawing form.

8.49. Steel structures 1 (2 Credits)

This course is designed to introduce the background knowledge of (i) basic elements of steel structures; (ii) Steel material and behaviour; (iii) Limite states and design methods, (iv) Ultimate resistance of steel sections; (v) Design of steel beam; (vi) Design of steel column; (vii) Design of steel truss; (viii) Steel connections; and (ix) Steel labs.

8.50. Construction machines (2 Credits)

This is a compulsory optional knowledge block. The module teaches students to research groups of construction machines such as transporters, lifting machines, earth-working machines, foundation reinforcing machines, and construction materials manufacturing machines. Train students the ability to think when using machines and equipment in construction works, choose and coordinate machines appropriately, and use them effectively.

8.51. Water Supply and Drainage (2 Credits)

Water supply and drainage are one of the technical core subjects. This subject equips fundamental knowledge and skills about designing of water supply and drainage system of civil and industrial buildings.

8.52. Theory of Elasticity (2 Credits)

This course consists of 6 chapters. Chapter 1 helps students to understand the concept of internal force, deformation and displacement of Elastic Theory and gives 15 basic implicit functions. Chapters 2, 3 and 4 respectively consider the balance of an elastic object of any shape under the effect of the load to determine 15 equations corresponding to 15 hidden functions already in Chapter 1. Chapter 5 presented two basic methods to solve the problem of geometrical geometries, namely the solution by displacement and the method of the stress solution. Chapter 6 presents the problems of applying in modern geographic systems such as the problem of the plane of geostructural enterprises in the Cartesian coordinate system.

8.53. Reinforced concrete 2 (2CREDITS)

Assembled reinforced concrete building design. Long span reinforced concrete trusses design. Reinforced concrete high – rise building design (moment frames, shear walls, dual systems, brace frames), principal of calculation and detailing. Special reinforced

concrete structures such as pre-stress concrete, 3D – membrane roof, retaining wall, water tanks (sphere, box shape), silos. Brick and stone structure design.

8.54. Reinforced concrete project (1CREDITS)

Design and detail completely an assembled concrete factory (long-span reinforced concrete truss, 1 – story building, heavy crane). Brace systems...

8.55. Special Reinforced Concrete (2CREDITS)

Students have opportunities to enhance their knowledge of special concrete structures such as pre-stressed concrete, membrane structures, walls, silo or bunker.

8.56. High-rise buildings (2CREDITS)

This course consists of different stages to understand the structural performance of high-rise buildings such as model, load, design principles, vibration, deformation and deflection.

8.57. Steel structures 2 (3CREDITS)

Design and analysis of some types of connections. Composite beams and columns. Analysis of steel buildings (high - rise building, long – span industrial buildings). Code applications...

8.58. Steel structures project (1CREDITS)

Design a 1 – story factory (loads, long-span truss, columns, crane girders, brace system, connections, and detailing).

8.59. Special steel structures (2CREDITS)

This course provides knowledge of special steel structures such as tower, steel slabs.

8.60. Applied informatics for civil engineering and practices (2CREDITS)

Review the concepts and algorithm of the matrix, numerical method, basic concepts of finite element method. Introducing some structural software. Theory and practice on SAP2000 software to modelling and design some specific structures (beams, columns, trusses, 2D frames, 3D frames, shear walls, eCredits.).

8.61. Ventilation (2CREDITS)

Theory of ventilation for designing building and residential area. Methods of reducing the high temperature, the spread of air pollution, and noises inside and outside of buildings...

8.62. Construction Technology (3CREDITS)

This course features the study of building construction technology (precast concrete and site concrete, concrete assembly). Students will know how a building is constructed from the beginning planning to the completion of roof and interior. Earthwork excavation. Formwork design.

8.63. Construction Technology Project (1CREDITS)

Perform a concrete building construction project: a selection of construction methods, formwork design (calculation and detailing), selecting construction machines and planning, pure concrete progress, earthwork excavation.

8.64. Construction Management (3CREDITS)

Contents, procedures, methods, and design of an organisational plan, construction operating of a project. Project scheduling (bar charts, critical path scheduling, durations, logic). Design overall construction plan. Calculate the economic and technical indicators of the organisation plan.

8.65. Construction management project (1CREDITS)

Perform a building construction organisation project include report and drawings (procedure, methods, selections, scheduling, overall construction plan, eCredits.).

8.66. Modern Construction Technology (2CREDITS)

This course updates the current construction technology to students, thus giving them general knowledge of construction technology. Therefore, they can be able adapted to the new development of construction technology after graduation.

8.67. Construction site safety (1CREDITS)

Construction site safety focuses on on-site preparation, planning, and inspection for safe operation. Improve the ability of calculation to ensure safety for workers and equipment in construction sites.

8.68. Economics in Civil Engineering (2CREDITS)

Basis knowledge of cost estimates, bid, contract, government management, and business management in the fields of constructions. Establishment, analysis, and evaluation of investment projects. Methods evaluate economic efficiency.

8.69. Construction site safety (1CREDITS)

Theory of experiment and inspection in building construction. Theory and laboratory practising of three groups of experiment equipment (determine strain, deflection, force). Experiment and inspection reports.

8.70. The practice of Construction site safety (1CREDITS)

This course provides opportunities for students to practices Construction site safety at our laboratory.

8.71. Worker Internship (2CREDITS)

Students practice different construction techniques at our workplaces and at construction sites.

8.72. Graduation Internship (2CREDITS)

Obtain hands-on experience in the field of a typical construction project. Project planning, management, design, construction and oversight. Collection of document, procedures, and specifications for graduation thesis.

8.73. Graduation Project (10CREDITS)

Individual design building projects requiring the application of engineering principles to the formulation of design problem statements and specifications. Students can select 1 of 2 options as following. Option 1: Architecture (10%), structure (60%), and construction (30%). Option 2: Architecture (10%), structure (30%), and construction (60%).

9. Course syllabus

- Details of the syllabi can be seen in **Appendix 4**.
- Relationship between course and course learning oucomes can be seen in **Appendix 2**.
- Relationship between course contents and job opportunities can be seen in **Appendix 3**.

10. Our staff

10.1. Full time lecturers

- **List of part time external lecturers:**

No.	Name	DOB	Highest Degree	Courses
1	University of Economics Lecturers			Politics Subjects
2	University of Education Lecturers (Faculty of Mathematics)			Mathematics
3	University of Education Lecturers (Faculty of Physics)			Physics
4	University of Education Lecturers (Faculty of Chemistry)			General Chemistry
5	University of Foreign Languages (English and Specialised English)			Foreign Languages Course
6	Faculty of Electrical Engineering – DUT			Electrical Technology
8	Faculty of Information Technology – DUT			General Informatics
9	Faculty of Engineering Education – DUT			Descriptive Geometry, Technical Drawings, Theory of Mechanics, Strength of Materials, Strength of Materials Labs
10	Faculty of Water Resources			Hydraulics, Hydraulics Lab

11	Faculty of Road and Bridge Engineering			Soil Mechanics, Soil Mechanics Labs, Foundation, Foundation Project, Construction Materials, Construction Materials lab, Geodesy
12	Faculty of Environment			Environment
13	Faculty of Thermal Engineering			Thermal engineering technology
14	Faculty of Architecture			Architecture 1, Architecture 2, Architecture Project, Urban Planning

- **List of full-time lecturers**

No	Name	DOB	Degrees	Courses	Note
1	Bùi Thiên Lam	1960	Senior Lecturer MSc.	Reinforced Concrete 1 Reinforced Concrete 2 Special Reinforced Concrete Reinforced Concrete Project 1 Reinforced Concrete Project 2 Construction site safety Practical Construction site safety High-rise building Introduction of Civil Engineering	*
2	Trịnh Quang Thịnh	1968	Senior Lecturer MSc.	Reinforced Concrete 1 Reinforced Concrete 2	*

No	Name	DOB	Degrees	Courses	Note
				Special Reinforced Concrete Reinforced Concrete Project 1 Reinforced Concrete Project 2 High-rise Buildings	
3	Trần Quang Hưng	1979	PhD	Steel Structures 1 Steel Structures 2 Special Steel Structures Steel Structures Project Civil Engineering Mathematics	*
4	Lê Vũ An	1985	B.Eng.	Structural Analysis 1 Structural Analysis 2	**
5	Nguyễn Phước Bình	1955	MSc.	Construction Machines	
6	Đặng Hưng Cầu	1963	B.Eng.	Construction Technology Construction Management Construction Technology Project Construction Management Project Construction Site Safety Modern Construction Technology	*
7	Nguyễn Văn Chính	1983	MSc.	Reinforced Concrete 1 Reinforced Concrete 2 Special Reinforced Concrete Reinforced Concrete Project 1 Reinforced Concrete Project 2	*
8	Lê Xuân Dũng	1972	B.ENG.	Practices of Construction site safety	

No	Name	DOB	Degrees	Courses	Note
				Worker Internship	
9	Lê Bá Định	1986	B.ENG.	Steel Structures 1 Steel Structures 2 Special Steel Structures Project Steel Structures 2	**
10	Đỗ Minh Đức	1978	MSc.	Structural Analysis 1 Structural Analysis 2 Theory of Elasticity	**
11	Phan Đình Hào	1970	MSc.	Structural Analysis 1 Structural Analysis 2 Theory of Elasticity	*
12	Bùi Quang Hiếu	1984	B.ENG.	Numerical Methods Applied Informatics for Civil Engineering The practice of Applied Informatics for Civil Engineering English for Civil Engineering Civil Engineering Mathematics	**
13	Nguyễn Tấn Hưng	1966	MSc.	Steel Structures 1 Steel Structures 2 Special Steel Structures Steel Structures Project	*
14	Nguyễn Khánh Linh	1972	MSc.	Construction Machines Worker Internship	
15	Phạm Bá Lộc	1956	MSc.	Steel Structures 1 Steel Structures 2 Special Steel Structures Steel Structures Project	*
16	Lê Xuân Quang	1987	B.ENG.	Numerical Methods	**

No	Name	DOB	Degrees	Courses	Note
				Applied Informatics for Civil Engineering Practices of Applied Informatics for Civil Engineering English for Civil Engineering	
17	Huỳnh Phương Tây	1986	B.ENG.	Reinforced Concrete 1 Reinforced Concrete 2 Reinforced Concrete Project 1 Reinforced Concrete Project 2	**
18	Đinh Thị Như Thảo	1973	MSc.	Structural Analysis1 Structural Analysis2 Theory of Elasticity	**
19	Vương Lê Thắng	1982	MSc.	Reinforced Concrete1 Reinforced Concrete2 Special Reinforced Concrete Reinforced Concrete Project1 Reinforced Concrete Project2	**
20	Trần Anh Thiện	1976	MSc.	Reinforced Concrete 1 Reinforced Concrete 2 Special Reinforced Concrete Special Reinforced Concrete Reinforced Concrete Project 1 Reinforced Concrete Project 2	*
21	Đặng Công Thuật	1981	MSc.	Construction Technology Modern Construction Technology	**

No	Name	DOB	Degrees	Courses	Note
				Construction Management Construction Technology Project Construction Management Project Construction Site Safety	
22	Trần Thị Xuân Thanh	1987	B.ENG.	Construction Technology Construction Management Construction Technology Project Construction Management Project	**
23	Lê Khánh Toàn	1967	PhD	Construction Technology Modern Construction Technology Construction Management Construction Technology Project Construction Management Project Construction Site Safety	*
24	Mai Chánh Trung	1970	MSc.	Construction Technology Modern Construction Technology Construction Management Construction Technology Project Construction Management Project Construction Site Safety	*
25	Lê Cao Tuấn	1984	B.ENG.	Structural Analysis 1 Structural Analysis 2	**
26	Nguyễn Quang Tùng	1985	PhD	Reinforced Concrete 1 Reinforced Concrete 2	**

No	Name	DOB	Degrees	Courses	Note
				Reinforced Concrete Project 1 Reinforced Concrete Project 2	
27	Phan Cẩm Vân	1982	MSc.	Steel Structures 1 Steel Structures 2 Special Steel Structures Steel structures project	*
28	Phan Quang Vinh	1973	MSc.	Construction Technology Modern Construction Technology Construction Management Construction Technology Project Construction Management Project Construction Site Safety	**
29	Nguyễn Thạc Vũ	1972	B.ENG.	Structural Analysis 1 Structural Analysis 2	*

(*): These lecturers will participate in Graduation Internship and Graduation Projects.

(**): These lecturers will participate in Graduation Internship, Graduation Projects and Worker Internship

10.2. List of invited lecturers

No.	Name	DOB	Highest Degree	Courses
1	Nguyễn Thanh Thịnh		Senior Lecturer MSc.	- Reinforced Concrete 1, Reinforced Concrete Project - Reinforced Concrete 2, Reinforced Concrete Project 2 - Graduation Project

11. Laboratories and Equipment

11.1. Laboratories

No.	Laboratories	Objectives	Note
1	**Laboratories of Civil Engineering**		
1.1	Structural Engineering Laboratory	Conduct experiments of reinforced concrete, steel structures	Civil Engineering
1.2	Soil Mechanics Laboratory	Conduct experiments of soil mechanics, foundation and background	Bridge and Road Engineering
1.3	Construction Materials Laboratory	Conduct experiments of construction materials	Bridge and Road Engineering
1.4	Hydraulics Laboratory	Conduct experiments of hydraulics subject	Water Resource Engineering
1.6	Worker Internship Laboratory	Practice worker jobs	Civil Engineering
II	**Computer Lab**	Conduct an information technology program	Information Technology
III	**Strength of Materials Lab**	Conduct tests for strength of materials topics	Engineering Education
IV	**Chemistry Lab**	Conduct an experiment of general chemist	Chemists
V	**Physics Lab**	Conduct an experiment of general physics	University of Education

11.2. Internet

Our university has a modern Internet system that is capable of teaching and learning activities. We have established a strong Internet connection for many years to enhance training and financial management.

Our Internet equipment is shown in the following table:

1	Standard of Internet Connection	
2	Internet Connection Speed	
3	Wifi for Students and Lecturers	Whole University
4	Software for research, teaching and management	Internet Credits, MS

		Office; Autodesk Educational (AutoCad)
5	Our websites	http://dut.udn.vn/ http://daotao.dut.udn.vn/ http://khoaxdddcn.edu.vn/

11.3. Library

We have a library at the Center of Information Materials, which has all the required books and learning materials. Further information can be found at: www.lirc.udn.vn

11.4. Textbooks, lectures, references

The lectures, textbooks and references are stored in the faculty library. The details of references are recorded in each course program.

11.5. Industrial and internship partners

- Industrial partners: Vinaconex 25, Hoa Binh Corp, LightHouse, DINCO, COTECCONS.

- Internship partners: Laboratory of FCE; Headquarters of affiliated companies; Construction Sites.

12. Program implementation guidelines

This program has been applied for the enrolment year of 2012 to educate the full-time undergraduate student in civil engineering. The curriculum is developed to reduce the theoretical hours, thus giving students more time to develop their independent study skills such as doing research, reading materials and completing homework. This program is developed following the instruction by the Ministry of Education and Training to contribute to improving the quality of university learning and training. The amount of knowledge and the ratio between the knowledge sections are consistent with the higher study program requirements for 5 years framework issued by the Minister of Education and Training.

DUT establish and organise the training program based on the developed curriculum, training objectives, enrolled majors and human resource requirement. Regarding the optional course, FCE will advise students on specific options to suit well with the current social needs and the development trends.

The Dean of FCE is responsible for developing the program curriculum to achieve the training targets regarding the university's specific conditions as well as the needs of learners and society. Based on the detailed program, FCE establishes the detailed plan for practice, internship, site inspection and buying equipment used for experiments. The Dean of FCE is responsible for inspection, approval and submission to Rector of University. This program is also applied for part-time study, which requires a longer period of study.

This program is periodically reviewed and adjust to meet the requirement of society and industry. Specifically, the following activities will be conducted, including adjustment of the output standard and adaptation of new modules to output standards. The adjustment should follow a process that focuses on getting feedback from students, alumni, industry partners, and lecturers. The adjustment must be submitted to the University Council for consideration and settlement.

Danang, Date: day…month…year 2012

RECTOR	**DEAN OF FCE**
A/Prof. Dr. Le Kim Hung	**Senior Lecturer, MSc. Bui Thien Lam**