



REINFORCED CONCRETE DESIGN 1
Code: CVE4117

1. **Number of credits:** 3 [2.1.0]
2. **Class hours:** total: 45; in which Theory: 30; Assignments: 15; Experiment: 0; Mini Project: 0; Field trip: 0
3. **Education program for:**
 - **Compulsory:** Civil Engineering specialized in Structural Engineering, Transportation Engineering, Geotechnical Engineering, Hydraulic Engineering, Construction Management, Water Resources Engineering, Infrastructure Engineering.
4. **Assessment method:**

Form	No. of time	Description	Time	Weighted
Assignment	5 times	- No. 1: Chapter 4	- Week 4	2%
		- No. 2: Chapter 5	- Week 7	2%
		- No. 3: Chapter 6	- Week 9	2%
		- No. 4: Chapter 7	- Week 11	2%
		- No. 5: Chapter 8	- Week 15	2%
Exam in classroom	2 times	- 90 mins	- Week 5	20%
		- 2 problems / written	- Week 13	20%
Attendance	15 times	- Call name in lists	- All time	10%
Summation progressive assessment				60%
Final Exam	1	- 90-120 mins - 2-3 problems / written	1-2 weeks after courses finished	40%

5. Prerequisite conditions:

- *Prerequisite class:* Mechanics of materials.
- *Prior class:* Structural mechanics; Construction Materials.
- *Parallel class:* Structural Steel Design 1.

6. Brief content:

This course is intended to provide the engineering student with the basic tools required to design and build reinforced concrete structures. The basic tools include beams, flexure in beams, shear, column design and slabs.

7. Teaching Lecturer:

No	Name	Academic degree	Phone number	Email	Job title
1	Vu Hoang Hung	Assoc. Prof. Dr.	0919162518	hung.kcct@tlu.edu.vn	Senior Lecturer, Head of division
2	Khuc Hong Van	Dr.	0982081680	van.kcct@tlu.edu.vn	Main Lecturer, Vice head of division
3	Ngo Van Thuyet	Dr.	0968092386	thuyet.kcct@tlu.edu.vn	Main Lecturer
4	Pham Nguyen Hoang	Dr.	0979946567	hoang.kcct@tlu.edu.vn	Lecturer
5	Nguyen Thu Nga	Dr.	0983871214	nga.kcct@tlu.edu.vn	Lecturer
6	Hong Tien Thang	MSc.	0912382166	thang.kcct@tlu.edu.vn	Lecturer

8. Text books & Reference books:

Text books:

[1] Edward G. Nawy. 2003. Reinforced Concrete – A Fundamental Approach, 5th Edition Prentice Hall, USA. [ISBN 0-13-008394-1]

[2] American Concrete Institute. 2011. Building Code and Commentary. ACI318-08. ACI, USA.

Reference books:

[1] Phan Quang Minh (Chủ biên), Ngô Thế Phong, Nguyễn Đình Công. 2012. Kết cấu bê tông cốt thép – Phần cấu kiện cơ bản, Nhà xuất bản Khoa học và Kỹ thuật.

9. Detailed content:

Chapter	Content	Teaching and learning activities	Class hours
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			Theo ry	Exerc ise	Fiel d trip
1. 2.3	Chapter 1, 2 and 3: Introduction Introduction to the course and its related issues 1 Concrete structures 2 Construction concrete made 3 Reinforced concrete 3.1 Design specifications 3.2 State limit concept and methods for design 3.3 Problems	* <u>Lecturer</u> : - Lecturing - Query - Use practical images and problems - Self introduction for further communication - Introduction of syllabus, assessment method, course content - Conveying experiences and study methodology - Remind some regulations in classroom * <u>Student</u> : - Answer queries - Problem solving - Question the course (if necessary).	3	0	0
4	Chapter 4: Flexure in Beams 4.1 Equivalent Rectangular block 4.2 Singly Reinforced beam 4.3 Doubly Reinforced Sections 4.4 Nonrectangular Sections, Design and Analysis procedures. 4.5 Problems 4.6 Exam #1	* <u>Lecturer</u> : - Lecturing - Query - Use practical images and problems - Assign homework * <u>Student</u> : - Answer queries - Problem solving - Do homework - Do exam * <u>Lecturer and Student</u> :	8	4	0

		Solve the homework			
5	Chapter 5: Shear and Diagonal Tension in Beams 5.1 Introduction 5.2 Reinforcement Design Requirements 5.3 ACI code provisions for shear reinforcement 5.4 Design for stirrup spacing 5.5 Shear analysis procedure 5.6 Problems	* <u>Lecturer</u> : - Lecturing - Query - Use practical images and problems - Assign homework * <u>Student</u> : - Answer queries - Problem solving - Do homework * <u>Lecturer and Student</u> : Solve the homework	4	2	0
6	Chapter 6: Serviceability of Beams and one-way slabs 6.1 Introduction 6.2 Load- Deflection relation 6.3 Deflections 6.4 Long term deflections 6.5 Procedure to calculate deflection 6.6 Deflection of T- beam 6.7 Crack controls 6.8 Problems	* <u>Lecturer</u> : - Lecturing - Query - Use practical images and problems - Assign homework * <u>Student</u> : - Answer queries - Problem solving - Do homework * <u>Lecturer and Student</u> : Solve the homework	4	2	0
7	Chapter 7: Columns. 7.1 Introduction 7.2 Types of columns 7.3 Centrically loaded columns 7.4 Eccentrically loaded columns	* <u>Lecturer</u> : - Lecturing - Query - Use practical images and problems - Assign homework * <u>Student</u> : - Answer queries	8	4	0

	7.5 Whitney's Approximate Solution 7.6 Interaction Diagrams 7.7 Problems Exam #2	- Problem solving - Do homework - Do exam * <u>Lecturer and Student:</u> Solve the homework			
8	Chapter 8: Design of two-ways slabs and plates 8.1 Introduction 8.2 Analysis and design methods 8.3 Distributed moments and reinforcement 8.4 Design and analysis procedure 8.5 Examples	* <u>Lecturer:</u> - Lecturing - Query - Use practical images and problems - Assign homework * <u>Student:</u> - Answer queries - Problem solving - Do homework * <u>Lecturer and Student:</u> Solve the homework	3	3	0
	Total	45	30	15	0

10. Learning outcomes:

No	Learning outcomes of the course	Learning outcomes of corresponding education program
1	Knowledge: - Understanding and applying the basic knowledge (mathematics, physics, information technology) in calculating, analyzing and synthesizing some problems of reinforced concrete structure - Understanding and applying the basic principles of Mechanics of materials, Structural mechanics, Construction Materials to determine the load and internal force of the structure - Master the methods and procedures for designing, checking bearing capacity, and conditions of use for basic reinforced	2,3,4

	concrete members such as beams, one-way plates, columns and two-way plates.	
2	Skills: - Ability to recognize, establish and solve some basic problems of reinforced concrete structure - Skills in calculating and designing basic members of reinforced concrete structures in civil and industrial buildings, geotechnical and underground works, irrigation works, hydropower works, traffic works, etc - Independence and team work skills.	10,12,14
3	Independent and responsible capability (if any): - Be disciplinary and be responsible for work	14,16
4	Individual ethics for profession, society (if any): - Be moral, be conscience for work - Master and implement the State and Party's policy, design standard codes - Having acquisitiveness, striving to study and upgrade the degree, creativeness in specialisation	14,15,16

11. Contacts

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B. Head of division:

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- Email: hung.kcct@tlu.edu.vn

Hanoi, August 05th 2021

DEAN OF FUCULTY

*(In charge of
specialisation)*

DEAN OF FUCULTY

(In charge of course)

HEAD OF DIVISION



**Assoc. Prof. Dr. Vu
Hoang Hung**