鋼筋混凝土構材之剪力分析與設計

Shear Analysis and Design of Reinforced Concrete Members

Course Information	
Course title	Shear Analysis and Design of Reinforced Concrete Members
Semester	114-2
Designated for	COLLEGE OF ENGINEERING GRADUATE INSTITUTE OF CIVIL ENGINEERING, STRUCTURAL ENGINEERING DIVISION
Instructor	HWANG,SHYH-JIANN
Curriculum Number	CIE7215
Curriculum Identity Number	521EM1090
Class	
Credits	3.0
Full/Half Yr.	Half
Required/ Elective	Elective
Time	Tuesday 2,3,4(9:10~12:10)
Remarks	Restriction: MA students and beyond The upper limit of the number of students: 30.
Course introduction video	
Table of Core Capabilities and Curriculum Planning	Table of Core Capabilities and Curriculum Planning
Course Syllabus	
Please respect the intellectual property rights of others and do not copy any of the course information without permission	
Course Description	The curriculum content consists of the shear behavior, analysis and design of the reinforced concrete members. Based on the shear transfer mechanism, the softened strut-and-tie model is proposed. The applicability of this analytical model on shear to the reinforced concrete members, such as beam, column, joint, shear wall and slab, is then introduced. Additionally, the related design issues are explained.
Course Objective	The course objective is to enable students to gain a deeper understanding of shear behavior, analysis and design of reinforced concrete members. The primary emphasis will be on the softened strut-and-tie model that is a comprehensive and

	integrated approach and can be widely applied to various members for analysis and design.
Course Requirement	
Student Workload (Expected weekly study hours before and/or after class)	
Office Hours	Note: weekly appointment
Designated reading	
References	Moehle, P. J., “Seismic Design of Reinforced Concrete Buildings,” McGraw-Hill Education, New York, 2015.
Grading	

No.	Item	%	Explanations for the conditions
1.	homework	20%	
2.	Term Project	20%	
3.	Midterm exam	30%	
4.	Final exam	30%	

1. NTU has not set an upper limit on the percentage of A+ grades.
2. NTU uses a letter grade system for assessment. The grade percentage ranges and the single-subject grade conversion table in the NATIONAL TAIWAN UNIVERSITY Regulations Governing Academic Grading are for reference only. Instructors may adjust the percentage ranges according to the grade definitions. For more information, see the Assessment for Learning Section.

Adjustment methods for students

Teaching methods	Assisted by recording, Assisted by video
Assignment submission methods	Extension of the deadline for submitting assignments
Exam methods	
Others	Negotiated by both teachers and students

Progress

Week	Date	Topic

Week 1		Brief of RC technology ; Shear transfer mechanism
Week 2		Peace Remembrance Day
Week 3		Type of concrete strut ; Mechanics of concrete strut ; Strain field of concrete strut
Week 4		Softened strut-and-tie model ; General approach ; Approximate approach
Week 5		Deep beam-singly D-region member ; Beam with DBD regions ; Deep beam with opening
Week 6		Short column-singly D-region member ; Column with DBD regions ; Lateral load-displacement curve
Week 7		Shear strength of beam-column joint ; Role of joint hoop ; Effective joint width and depth
Week 8		Midterm exam
Week 9		Shear strength of wall ; Framed squat wall ; Lateral load-displacement curve
Week 10		Test of coupling beam ; Strength and design of coupling beam ; Coupled wall system
Week 11		Strength of wall with openings ; Design of vertical wall segment ; Lateral load-displacement curves
Week 12		Strength of pile cap ; Test of pile cap ; Strength of beam and slab of raft foundation
Week 13		Strength of flat plate-interior column ; Strength of flat plate-exterior column ; Vertical displacement of flat plate
Week 14		Pivot model-column ; Pivot model-wall ; Application of Pivot model
Week 15		Term project presentation
Week 16		Final exam