

Tamkang University Academic Year 106, 1st Semester Course Syllabus

Course Title	JUNIOR STRUCTURAL DYNAMICS	Instructor	LO, YUAN-LUNG
Course Class	TECAB4P DEPARTMENT OF CIVIL ENGINEERING-DIVISION OF INFRASTRUCTURE, 4P	Details	<ul style="list-style-type: none"> ◆ Selective ◆ One Semester ◆ 3 Credits
D e p a r t m e n t a l A i m o f E d u c a t i o n			
<p>I . Develop students' ability and knowledge of civil engineering to meet the requirements of employability and further education.</p> <p>II. Enable students to have management knowledge and literacy to meet challenges of workplace.</p> <p>III. Equip students with the information technology skills to strengthen their competitiveness.</p> <p>IV. Develop students' literacy of Literature, Art, Language, History, Society, Politics, Futurology, International Situation, Religious Law, Nature and such general courses to have the understanding of humanity emotions and to proceed on-going development.</p>			
D e p a r t m e n t a l c o r e c o m p e t e n c e s			
<p>A. Civil Engineering Professional Proficiency.</p> <p>B. Implementation and Information Processing Ability.</p> <p>C. Team collaboration and Knowledge Integration Ability.</p> <p>D. Globalization and Continuous Learning.</p>			
Course Introduction	<p>Introduction to Dynamics of Structures is a bridge course connecting the learning subjects in undergraduate courses and the future subjects in graduate courses.</p> <p>The content is mainly focused on the construction of governing equation of a SDOF system and its four approaches to solve. Basic knowledge will be reviewed and new information will be prepared in CLIL methodology.</p>		

The Relevance among Teaching Objectives, Objective Levels and Departmental core competences

I. Objective Levels (select applicable ones) :

- (i) Cognitive Domain : C1-Remembering, C2-Understanding, C3-Applying,
C4-Analyzing, C5-Evaluating, C6-Creating
- (ii) Psychomotor Domain : P1-Imitation, P2-Mechanism, P3-Independent Operation,
P4-Linked Operation, P5-Automation, P6-Origination
- (iii) Affective Domain : A1-Receiving, A2-Responding, A3-Valuing,
A4-Organizing, A5-Characterizing, A6-Implementing

II. The Relevance among Teaching Objectives, Objective Levels and Departmental core competences :

- (i) Determine the objective level(s) in any one of the three learning domains (cognitive, psychomotor, and affective) corresponding to the teaching objective. Each objective should correspond to the objective level(s) of ONLY ONE of the three domains.
- (ii) If more than one objective levels are applicable for each learning domain, select the highest one only. (For example, if the objective levels for Cognitive Domain include C3, C5, and C6, select C6 only and fill it in the boxes below. The same rule applies to Psychomotor Domain and Affective Domain.)
- (iii) Determine the Departmental core competences that correspond to each teaching objective. Each objective may correspond to one or more Departmental core competences at a time. (For example, if one objective corresponds to three Departmental core competences: A, AD, and BEF, list all of the three in the box.)

No.	Teaching Objectives	Relevance	
		Objective Levels	Departmental core competences
1	This course enables students to review what they' ve learned in the past three years in regard to structural analysis, especial in derivation of ordinary differential equations, routine programming, and static analysis of frames, trusses, and beams and so on.	C3	A

Teaching Objectives, Teaching Methods and Assessment

No.	Teaching Objectives	Teaching Methods	Assessment
1	This course enables students to review what they' ve learned in the past three years in regard to structural analysis, especial in derivation of ordinary differential equations, routine programming, and static analysis of frames, trusses, and beams and so on.	Lecture, Discussion, Practicum	Written test, Practicum, Participation

This course has been designed to cultivate the following essential qualities in TKU students

Essential Qualities of TKU Students	Description
◇ A global perspective	Helping students develop a broader perspective from which to understand international affairs and global development.
◆ Information literacy	Becoming adept at using information technology and learning the proper way to process information.
◇ A vision for the future	Understanding self-growth, social change, and technological development so as to gain the skills necessary to bring about one's future vision.
◇ Moral integrity	Learning how to interact with others, practicing empathy and caring for others, and constructing moral principles with which to solve ethical problems.
◆ Independent thinking	Encouraging students to keenly observe and seek out the source of their problems, and to think logically and critically.
◇ A cheerful attitude and healthy lifestyle	Raising an awareness of the fine balance between one's body and soul and the environment; helping students live a meaningful life.
◇ A spirit of teamwork and dedication	Improving one's ability to communicate and cooperate so as to integrate resources, collaborate with others, and solve problems.
◇ A sense of aesthetic appreciation	Equipping students with the ability to sense and appreciate aesthetic beauty, to express themselves clearly, and to enjoy the creative process.

Course Schedule

Week	Date	Subject/Topics	Note
1	106/09/18 ~ 106/09/24	Derivation and solutions of 2nd order ODEs	
2	106/09/25 ~ 106/10/01	Static analysis of trusses, beams, and frames	
3	106/10/02 ~ 106/10/08	Equation of motion, problem statement, and solution methods	
4	106/10/09 ~ 106/10/15	Free vibration	
5	106/10/16 ~ 106/10/22	Free vibration	
6	106/10/23 ~ 106/10/29	Response to harmonic and periodic excitations	
7	106/10/30 ~ 106/11/05	Response to harmonic and periodic excitations	
8	106/11/06 ~ 106/11/12	Response to arbitrary, step and pulse excitations	
9	106/11/13 ~ 106/11/19	Response to arbitrary, step and pulse excitations	
10	106/11/20 ~ 106/11/26	Midterm Exam Week	
11	106/11/27 ~ 106/12/03	Special issue: Wind turbine development in Taiwan	
12	106/12/04 ~ 106/12/10	Routine programming learning	

13	106/12/11 ~ 106/12/17	Numerical evaluation of dynamic response	
14	106/12/18 ~ 106/12/24	Numerical evaluation of dynamic response	
15	106/12/25 ~ 106/12/31	Numerical evaluation of dynamic response	
16	107/01/01 ~ 107/01/07	Earthquake response of linear system	
17	107/01/08 ~ 107/01/14	Earthquake response of linear system	
18	107/01/15 ~ 107/01/21	Final Exam Week	
Requirement	Students have to fulfill the learning of engineering mathematics (1), structural analysis (1), and Matlab programming skills in advance.		
Teaching Facility	Computer, Projector		
Textbook(s)	Dynamics of Structures – Theory and Applications to Earthquake Engineering 4th ed by Anil K. Chopra		
Reference(s)	Advanced Engineering Mathematics 10th ed by Erwin Kreyszig		
Number of Assignment(s)	8 (Filled in by assignment instructor only)		
Grading Policy	<p>◆ Attendance : 15.0 % ◆ Mark of Usual : 35.0 % ◆ Midterm Exam : 15.0 %</p> <p>◆ Final Exam : 15.0 %</p> <p>◆ Other 〈Usual performance〉 : 20.0 %</p>		
Note	<p>This syllabus may be uploaded at the website of Course Syllabus Management System at http://info.ais.tku.edu.tw/csp or through the link of Course Syllabus Upload posted on the home page of TKU Office of Academic Affairs at http://www.acad.tku.edu.tw/CS/main.php.</p> <p>※ Unauthorized photocopying is illegal. Using original textbooks is advised. It is a crime to improperly photocopy others' publications.</p>		