

Tamkang University Academic Year 102, 2nd Semester Course Syllabus

Course Title	PAVEMENT DESIGN	Instructor	LIU MING-JEN
Course Class	TECAB3P DEPARTMENT OF CIVIL ENGINEERING-DIVISION OF INFRASTRUCTURE, 3P	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

- I . Develop students' ability and knowledge of civil engineering to meet the requirements of employability and further education.
- II. Enable students to have management knowledge and literacy to meet challenges of workplace.
- III. Equip students with the information technology skills to strengthen their competitiveness.
- 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.

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

- A. Each student should have the professional knowledge of engineering and be able to solve related problems with the logics of mathematics and mechanics.
- B. Each student should have civil engineering design and analysis capabilities.
- C. Each student should be able to operate measuring instrument and engineering materials experiments, and be able to analyze the data.
- D. Each student should be able to solve engineering problems with basic information technology.
- E. Each student should have practical knowledge of construction, understand the importance of teamwork; and have respect for professional ethics and understand the code and responsibility of morality.
- F. Each student should understand the interaction of engineering and environment, social interaction, and proceed lifelong learning.
- G. Each student should have the training and experience of Interdisciplinary knowledge and understand the importance of integration of technology to modernization and future development of engineering.
- H. Each student should understand the international trends, and be capable to continually improve foreign language skills.

Course Introduction	This course is designed for students to understand basic pavement types and properties, pavement materials, methods of analysis, and design procedures of pavement. Pavement construction, performance evaluation, as well as pavement management systems are also introduced.
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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-Charaterizing, 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	1. Students will be able to understand the basic knowledge of pavement types, structures, traffic loadings and environmental factors. 2. Students will be able to learn the properties of pavement materials, and methods of pavement analysis and design. 3. Students will be able to understand the process of pavement construction, performance evaluation and pavement management system.	C4	ABCDEFGH

Teaching Objectives, Teaching Methods and Assessment

No.	Teaching Objectives	Teaching Methods	Assessment

1	<p>1. Students will be able to understand the basic knowledge of pavement types, structures, traffic loadings and environmental factors.</p> <p>2. Students will be able to learn the properties of pavement materials, and methods of pavement analysis and design.</p> <p>3. Students will be able to understand the process of pavement construction, performance evaluation and pavement management system.</p>	Lecture, Discussion	Written test
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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	103/02/17 ~ 103/02/23	Historical Review and Pavement types	
2	103/02/24 ~ 103/03/02	Flexible Pavement Basics	
3	103/03/03 ~ 103/03/09	Rigid Pavement Basics	
4	103/03/10 ~ 103/03/16	Flexible Pavement Analysis (I)	
5	103/03/17 ~ 103/03/23	Flexible Pavement Analysis (II)	

6	103/03/24 ~ 103/03/30	KENLAYER Software Application	
7	103/03/31 ~ 103/04/06	(Spring Break)	
8	103/04/07 ~ 103/04/13	Rigid Pavement Analysis (I)	
9	103/04/14 ~ 103/04/20	Rigid Pavement Analysis (II)	
10	103/04/21 ~ 103/04/27	Midterm Exam Week	
11	103/04/28 ~ 103/05/04	KENSLAB Software Application	
12	103/05/05 ~ 103/05/11	Equivalent Axle Loads Analysis and Pavement Serviceability Concept	
13	103/05/12 ~ 103/05/18	Traffic Loading Data Analysis	
14	103/05/19 ~ 103/05/25	Flexible Pavement Design Method (Asphalt Institute)	
15	103/05/26 ~ 103/06/01	Flexible Pavement Design Method (AASHTO)	
16	103/06/02 ~ 103/06/08	Rigid Pavement Design Method (PCA)	
17	103/06/09 ~ 103/06/15	Rigid Pavement Design Method (AASHTO)	
18	103/06/16 ~ 103/06/22	Final Exam Week	
Requirement	Attending each class with your textbook. Textbook is a must for this course. Photocopying the whole textbook is illegal.		
Teaching Facility	Computer, Projector		
Textbook(s)	Huang, Y. H., Pavement Analysis and Design, Pearson/Prentice Hall, 2nd Ed., 2004.		
Reference(s)	Yoder & Witczak, Principle of Pavement Design, John Wiley & Sons, 2nd Ed., 1975.		
Number of Assignment(s)	(Filled in by assignment instructor only)		
Grading Policy	◆ Attendance : 10.0 % ◆ Mark of Usual : % ◆ Midterm Exam : 35.0 % ◆ Final Exam : 45.0 % ◆ Other 〈 Homework Assignments 〉 : 10.0 %		
Note	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 . ※ Unauthorized photocopying is illegal. Using original textbooks is advised. It is a crime to improperly photocopy others' publications.		