Tamkang University Academic Year 101, 2nd Semester

Course Syllabus

<table>
<tr><td>Course Title</td><td colspan="2">HEAT PIPE SCIENCE AND TECHNOLOGY</td><td>Instructor</td><td>Kang Shung-wen</td></tr>
<tr><td colspan="2">Department/Year/Class</td><td colspan="3">Course Details</td></tr>
<tr><td colspan="2">TEBXD1</td><td>☐Required
■Selective</td><td>■0（One Semester）
☐1（1st Semester）
☐2（2nd Semester）
☐3（3rd Semester）</td><td>Credits 3Credits</td></tr>
<tr><td colspan="2">Aim of Education</td><td colspan="3">Core Competences</td></tr>
<tr><td colspan="2">1. To educate the students to integrate the principles of applied sciences and engineering so as to be capable of being active in the field of mechanical and electromechanical engineering.
2. To incubate the emerging masters who have not only the professional expertise and engineering ethics but also the independent capabilities of research and development.
3. To stimulate the students to fulfill with the state-of-arts necessary to the global competition so as to enjoy in different careers and environmental changes via the lifelong strengthening.</td><td colspan="3">A. Head: Knowledge of mechanical and electromechanical engineering
B. Hand: Skill of hands-on works and practical realization
C. Heart: Attitude toward the active direction
D. Eye: Vision of bright future</td></tr>
<tr><td>Course Introduction (50 to 100 words)</td><td colspan="4">The course includes heat pipe structure, design and construction, basic principle and theory, heat transfer capacity, origins and research in the world, application and limitations.</td></tr>
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The Relevance among Teaching Objectives, Objective Levels and 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 Core Competences：

(I)Determine the objective level(s) in any one of the three learning domains (cognitive, psychomotor, and affective) corresponding to the teaching objectives. 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 core competences that correspond to each teaching objective. Each objective may correspond to one or more core competences at a time. (For example, if one objective corresponds to three core competences: A, AD, and BEF, list all of the three in the box.)

Teaching objectives	Relevance	
	Objective Levels	Core Competences
1 The educational purpose of the course is to develop and rationalize the theory and principles of heat pipe using basic laws, such as mass, momentum conservation, and energy equations.	C6	ABCD
2		
3		
4		
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6		
7		
8		

Teaching Objectives, Teaching Methods and Assessment

Teaching Objectives	Teaching Methods	Assessment
1 The educational purpose of the course is to develop and rationalize the theory and principles of heat pipe using basic laws, such as mass, momentum conservation, and energy equations.	Teaching and duscussion	Attendance rates, reports, discussion, quizzes, midterm, final exam
2		

3		
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This course has been designed to cultivate the following essential qualities in TKU students.

Essential Qualities of TKU Students	Description
■global perspectives	翻譯建構中
■a vision for the future	
■information literacy	
□ethical and moral principles	
■independent thinking	
□an awareness of healthy living	
■effective teamwork	
□an appreciation of the arts	

Course Schedule

Week	Date	Subject/Topics	Note
1		INTRODUCTION	
2		SOLID-LIQUID-VAPOR PHENOMENA	
3		STEADY HYDRODY. AND THERMAL CHARACTERISTICS	
4		HEAT TRANSFER LIMITATIONS	
5		TRANSIENT AND STARUP BEHAVIOR	
6		TWO-PHASE CLOSED THERMOSYPHONS	
7		ROTATING AND REVOLVING HEAT PIPE	
8		VARIABLE ONDUCTANCE HEAT PIPES	
9		CPL AND LHP	
10		Midterm Exam Week	
11		MICRO/MINIATURE HEAT PIPE	
12		HEAT PIPE HEAT EXCHANGER	
13		NONCONVENTIONAL HEAT PIPES	
14		SPECIAL EFFECTS ON HEAT PIPES	
15		HEAT PIPE FABRICATION	
16		CASE STUDY	
17		CASE STUDY	
18		Final Exam Week	
Requirement			

Teaching Facility	■Computer ■Overhead Projector □Other（_____）
Textbook(s)	Heat Pipe Science and Technology, Amir Faghri, Taylor and Francis 1995
Suggested Readings	Papers in related journals
Number of Assignment(s)	(Filled in only for those courses that apply)
Grading Policy	◆ Quiz：30.0 % ◆ Midterm exam：30.0 % ◆ Final exam：30.0 % ◆ Homework：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/index.asp. **※Unauthorized photocopying is illegal. Using original textbooks is advised. It is a crime to improperly photocopy others' publications.**

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