

Tamkang University Academic Year 107, 1st Semester Course Syllabus

Course Title	THE WAY SCIENCE WORKS	Instructor	LEE, MING-HSIEN
Course Class	TNUUB0A NATURAL SCIENCES, 0A	Details	<ul style="list-style-type: none"> ◆ Required ◆ One Semester ◆ 2 Credits
Academic Aim of Education			
<p>By exploring natural laws and studying scientific methods, to let students understand the impact of science and technology on human life, and to cultivate in them the ability to think independently, and to discover, analyse and solve problems. Also, throu.</p>			
Schoolwide essential virtues			
<ul style="list-style-type: none"> A. A global perspective. B. Information literacy. C. A vision for the future. D. Moral integrity. E. Independent thinking. F. A cheerful attitude and healthy lifestyle. G. A spirit of teamwork and dedication. H. A sense of aesthetic appreciation. 			
Course Introduction	<p>Using easyto-understand stories and pictures, this course explain to students the science principles and mechanism behind the everyday used technologies and products. This course is most relevant to "How Thing Works" types of knowledges.</p>		

The Relevance among Teaching Objectives, Objective Levels and Schoolwide essential virtues

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 Schoolwide essential virtues :

- (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 Schoolwide essential virtues that correspond to each teaching objective. Each objective may correspond to one or more Schoolwide essential virtues at a time. (For example, if one objective corresponds to three Schoolwide essential virtues: A,AD, and BEF, list all of the three in the box.)

No.	Teaching Objectives	Relevance	
		Objective Levels	Schoolwide essential virtues
1	This course will help students to enjoy the technologies more, and increase their common sense in sciences.	C4	BCH

Teaching Objectives, Teaching Methods and Assessment

No.	Teaching Objectives	Teaching Methods	Assessment
1	This course will help students to enjoy the technologies more, and increase their common sense in sciences.	Lecture, Discussion	Written test, Participation

Course Schedule

Week	Date	Subject/Topics	Note
1	107/09/10~ 107/09/16	城市環境科技運作的原理 (摩天樓、鋼筋水泥)	
2	107/09/17~ 107/09/23	城市環境科技運作的原理 (下水道、橋樑)	
3	107/09/24~ 107/09/30	城市環境科技運作的原理 (污水及垃圾處理、電力配送)	
4	107/10/01~ 107/10/07	家居生活科技運作的原理 (微波爐)	
5	107/10/08~ 107/10/14	家居生活科技運作的原理 (冰箱、除溼機)	
6	107/10/15~ 107/10/21	視聽影音科技運作的原理 (麥克風、放大器、喇叭、數位化與 ECC)	

7	107/10/22 ~ 107/10/28	視聽影音科技運作的原理 (色彩原理、照相機、3D 立體影像、夜視鏡)	
8	107/10/29 ~ 107/11/04	電腦晶片科技運作的原理 (算術、半導體、電晶體、加法器)	
9	107/11/05 ~ 107/11/11	電腦晶片科技運作的原理 (晶圓廠、記憶體)	
10	107/11/12 ~ 107/11/18	Midterm Exam Week	
11	107/11/19 ~ 107/11/25	期中考試題檢討與分數更正	
12	107/11/26 ~ 107/12/02	通訊傳播科技運作的原理 (無線電、收音機)	
13	107/12/03 ~ 107/12/09	通訊傳播科技運作的原理 (電話與手機通訊網路、光纖)	
14	107/12/10 ~ 107/12/16	消費電子科技運作的原理 (數位相機 CCD、液晶與電漿顯示器)	
15	107/12/17 ~ 107/12/23	消費電子科技運作的原理 (光碟機、光碟片、GPS)	
16	107/12/24 ~ 107/12/30	辦公事務科技運作的原理 (雷射印表機、影印機、噴墨印表機)	
17	107/12/31 ~ 108/01/06	辦公事務科技運作的原理 (掃描器、快速彩色印刷)	
18	108/01/07 ~ 108/01/13	Final Exam Week	
Requirement			
Teaching Facility	Computer, Projector		
Textbook(s)	書名 : The Way Science Works, 出版社 : Macmillan, USA : ISBN 0-02-860822-4 書名 : (Scientific American) How Things Work Today, 出版社 : Universal International Pty. Ltd., ISBN: 1-876670-15-0		
Reference(s)	書名 : 機械構造解剖圖鑑 (世茂出版社) 書名 : 機械構造完全解體圖鑑 (世茂出版社) 書名 : 原來如此 : 世界運轉的秘密 (貓頭鷹出版社) 書名 : 二十萬個為什麼 (科學常識百科 : 雪山圖書公司)		
Number of Assignment(s)	(Filled in by assignment instructor only)		
Grading Policy	◆ Attendance : % ◆ Mark of Usual : % ◆ Midterm Exam : 50.0 % ◆ Final Exam : 50.0 % ◆ Other () : %		

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>
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