## Tamkang University Academic Year 109, 1st Semester Course Syllabus

Course Title	ADVANCED COMPUTER ALGORITHMS	Instructor	r LIN HWEI-JEN						
Course Class	TEIBM1A MASTER'S PROGRAM, DEPARTMENT OF COMPUTER SCIENCE AND INFORMATION	Details	<ul> <li>General Course</li> <li>Required</li> <li>One Semester</li> </ul>						
1A Departmental Aim of Education									
I. Cultivate the ability to conduct independent research and problem solving.									
II. Streng	II. Strengthen creativity and research capacity.								
III. Build p	rofound professional knowledge in computer science and infor	mation engine	eering.						
IV. Engage	IV. Engage in self-directed lifelong learning.								
Subject Departmental core competences									
A. Indepen	A. Independent problem solving ability.(ratio:10.00)								
B. Indepen	dent innovative thinking ability.(ratio:10.00)								
D. Researcl	n & development (R&D) ability in information engineering.(ratic	o:80.00)							
	Subject Schoolwide essential virtues								
2. Informa	tion literacy. (ratio:100.00)								
This course teaches techniques for the design and analysis of efficient algorithms, emphasizing methods useful in practice. Topics covered include: asymptotic notation; sorting; search trees, heaps, and hashing; divide-and-conquer; dynamic programming; greedy algorithms; and graph algorithms. Introduction									

The correspondences between the course's instructional objectives and the cognitive, affective, and psychomotor objectives. Differentiate the various objective methods among the cognitive, affective and psychomotor domains of the course's instructional objectives.								
<ul> <li>I. Cognitive : Emphasis upon the study of various kinds of knowledge in the cognition of the course's veracity, conception, procedures, outcomes, etc.</li> <li>II.Affective : Emphasis upon the study of various kinds of knowledge in the course's appeal, morals, attitude, conviction, values, etc.</li> <li>III.Psychomotor: Emphasis upon the study of the course's physical activity and technical manipulation.</li> </ul>								
No.			objective methods					
1	1. Students	will und	erstand the content and	l concept of Algorithms.	Cognitive			
2	2. Students designing and	will lear d analyzi	Cognitive					
3	3. Students common eng	will lear ineering	Cognitive					
	The c	orrespond	lences of teaching objectives	: core competences, essential virtues, teaching me	thods, and assessment			
No.	Core Competences		Essential Virtues	Teaching Methods	Assessment			
1	ABD		2	Lecture	Testing, Study Assignments			
2	AB		2	Lecture	Testing, Study Assignments			
3	AB		2	Lecture	Testing, Study Assignments			
Course Schedule								
Wee	k Date		Cour	rse Contents	Note			
1	109/09/14 ~ 109/09/20	Introdu	uction					
2	109/09/21~ 109/09/27	Insertio	on sort, Running time					
3	109/09/28~ 109/10/04	Growth	Growth of functions					
4	109/10/05 ~ 109/10/11	Divide	and-Conquer					
5	109/10/12~ 109/10/18	Probabilistic Analysis and Randomized Algorithms						
6	109/10/19~ 109/10/25	Heapsort						
7	109/10/26~ 109/11/01	Quicksort						
8	109/11/02~ 109/11/08	<sup>2~</sup> Sorting in Linear Time						

9	109/11/09~ 109/11/15	Review				
10	109/11/16~ 109/11/22	Midterm Exam Week				
11	109/11/23 ~ 109/11/29	Median and Order Statistics				
12	109/11/30~ 109/12/06	Hash Tables				
13	109/12/07 ~ 109/12/13	Binary Search Trees				
14	109/12/14~ 109/12/20	Red-Black Trees				
15	109/12/21 ~ 109/12/27	Augmenting Data Structures				
16	109/12/28 ~ 110/01/03	Dynamic Programming				
17	110/01/04~ 110/01/10	Review				
18	110/01/11~ 110/01/17	Final Exam Week				
Requirement		Cell phones must be turned off in class. Using a notebook in class is not allowed.				
Teaching Facility		Computer, Projector				
Textbooks and Teaching Materials		"Introduction to Algorithms" (3rd.) by Thomas Cormen				
References						
Number of Assignment(s)		8 (Filled in by assignment instructor only)				
Grading Policy		<ul> <li>Attendance: 5.0 % ◆ Mark of Usual: 20.0 % ◆ Midterm Exam: 30.0 %</li> <li>Final Exam: 30.0 %</li> <li>Other ⟨Homework⟩: 15.0 %</li> </ul>				
Note		This syllabus may be uploaded at the website of Course Syllabus Management System at <u>http://info.ais.tku.edu.tw/csp</u> or through the link of Course Syllabus Upload posted on the home page of TKU Office of Academic Affairs at <u>http://www.acad.tku.edu.tw/CS/main.php</u> . <b>※ Unauthorized photocopying is illegal. Using original textbooks is advised. It is a crime</b> to improperly photocopy others' publications.				
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