

## Tamkang University Academic Year 102, 1st Semester Course Syllabus

Course Title	COMPUTER ORGANIZATION	Instructor	FU-YI HUNG
Course Class	TPIAB3A DIVISION OF SOFTWARE ENGINEERING, DEPARTMENT OF INNOVATIVE INFORMATION AND TECHNOLOGY, 3A	Details	<ul style="list-style-type: none"> <li>◆ Selective</li> <li>◆ One Semester</li> <li>◆ 3 Credits</li> </ul>
D e p a r t m e n t a l   t e a c h i n g   o b j e c t i v e s			
Cultivate professional talents in software engineering and communication technology.			
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			
<ul style="list-style-type: none"> <li>A. Capability of computer program coding, process planning, and problem solving.</li> <li>B. Capability of applying basic mathematics and information technology related mathematics.</li> <li>C. Capability of applying knowledge of internet structure and protocol in communication system.</li> <li>D. Capability of data collecting and analyzing, and organizing software and hardware.</li> <li>E. Capability of understanding and integrating system structure for problem solving.</li> <li>F. Capability of system analyzing, modeling, and designing.</li> <li>G. Capability of management utilizing information technology system.</li> </ul>			
Course Introduction	<p>The goal of this course is to learn how to design a computer and understand how a system works and why it performs as it does. The focus of this course is on the interaction between hardware and software that includes instruction set architecture, arithmetic for computers, the processor, memory hierarchy and I/O devices.</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	To understand how computers are constructed by a set of functional units	C3	ABDE
2	To understand how computer functional units operate and interact	C4	ABDE
3	To understand how the factors affect computer performance	C5	ABDE
4	To understand how computations are performed at the machine level	C4	ABDE

### Teaching Objectives, Teaching Methods and Assessment

No.	Teaching Objectives	Teaching Methods	Assessment
1	To understand how computers are constructed by a set of functional units	Lecture	Written test
2	To understand how computer functional units operate and interact	Lecture	Written test
3	To understand how the factors affect computer performance	Lecture	Written test
4	To understand how computations are performed at the machine level	Lecture	Written test

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	102/09/16~ 102/09/22	Computer Abstractions and Technology	
2	102/09/23~ 102/09/29	Instructions: Language of the Computer	
3	102/09/30~ 102/10/06	Instructions: Language of the Computer	
4	102/10/07~ 102/10/13	Instructions: Language of the Computer	
5	102/10/14~ 102/10/20	Instructions: Language of the Computer	
6	102/10/21~ 102/10/27	Arithmetic for Computers	
7	102/10/28~ 102/11/03	Arithmetic for Computers	
8	102/11/04~ 102/11/10	The Processor	
9	102/11/11~ 102/11/17	The Processor	
10	102/11/18~ 102/11/24	Midterm Exam Week	
11	102/11/25~ 102/12/01	The Processor	
12	102/12/02~ 102/12/08	The Processor	

13	102/12/09 ~ 102/12/15	The Processor	
14	102/12/16 ~ 102/12/22	Large and Fast: Exploiting Memory Hierarchy	
15	102/12/23 ~ 102/12/29	Large and Fast: Exploiting Memory Hierarchy	
16	102/12/30 ~ 103/01/05	Large and Fast: Exploiting Memory Hierarchy	
17	103/01/06 ~ 103/01/12	Large and Fast: Exploiting Memory Hierarchy	
18	103/01/13 ~ 103/01/19	Final Exam Week	
Requirement			
Teaching Facility	Computer, Projector		
Textbook(s)	Computer Organization and Design: The Hardware/Software Interface, by David Patterson and John Hennessy, Elsevier, 4th Edition, 2009.		
Reference(s)	Computer Organization and Architecture: Designing for Performance, by William Stallings, Prentice Hall, 8th Edition, 2009 計算機組織與設計, David Patterson and John Hennessy 著, 鍾崇斌 譯, 東華書局2010		
Number of Assignment(s)	(Filled in by assignment instructor only)		
Grading Policy	◆ Attendance :           %   ◆ Mark of Usual : 30.0 %   ◆ Midterm Exam : 35.0 % ◆ Final Exam :   35.0 % ◆ Other (    ) :           %		
Note	This syllabus may be uploaded at the website of Course Syllabus Management System at <a href="http://info.ais.tku.edu.tw/csp">http://info.ais.tku.edu.tw/csp</a> or through the link of Course Syllabus Upload posted on the home page of TKU Office of Academic Affairs at <a href="http://www.acad.tku.edu.tw/CS/main.php">http://www.acad.tku.edu.tw/CS/main.php</a> . <b>※ Unauthorized photocopying is illegal. Using original textbooks is advised. It is a crime to improperly photocopy others' publications.</b>		