計算機結構 （Computer Architecture)
EE4039 (901 43200)　Spring 2019

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This course gives a thorough presentation on the design of modern digital computer systems and their hardware and software interfaces. Topics covered in this course are as follows:

1. Computer Abstractions, Technology, and Performance
2. Instructions: Language of the Computer
3. Arithmetic for Computers
4. The Processor and its Enhancement with Pipelining
5. Large and Fast: Exploiting Memory Hierarchy
6. Parallel Processors from Client to Cloud

Senior Under-graduate students are all welcomed to this course.

Grading Rules: Midterm 30%, Exercises 30%, Final 40%.

教科書：D. A. Patterson and J. L. Hennessy,
Computer Organization and Design: The Hardware/Software Interface, 5th Edition, ©2014 Elsevier Inc.

主要參考書：J. L. Hennessy and D. A. Patterson,
Computer Architecture: A Quantitative Approach, 5th Edition, ©2012 Elsevier Inc.

Lec. 1:	Intr. to Computer Architecture	(Ch.1-1)
Lec. 2:	Cost and Performance	(Ch.1-2)
Lec. 3:	Instruction Set Architecture	(Ch.2-1)
Lec. 4:	MIPS Instruction Set Architecture	(Ch.2-2)
Lec. 5:	ALU Design, Add, Subtract	(Ch.3-1, 3-2)
Lec. 6:	ALU Design, Multiply	(Ch.3-3)
Lec. 7:	ALU Design, Divide, Floating-Point	(Ch.3-4)
Lec. 8:	Single Cycle Processor	(Ch.4-1)
Lec. 9:	Single Cycle Controller	(Ch.4-2)
Lec. 10:	Multiple Cycle Processor/Controller	(Ch.4-3)
Lec. 11:	Pipelined Processor	(Ch.4-4)
Lec. 12:	Microprogramming and Exceptions	(Ch.4-5)
Lec. 13:	Hardware Description Language	(Ch.4-6)
Lec. 14:	Memory System Design	(Ch.5-1)
Lec. 15:	Cache System Design	(Ch.5-2)
Lec. 16:	Virtual Memory	(Ch.5-3)
Lec. 17:	I/O Systems	(Ch.5-4)
Lec. 18:	Parallel Processors	(Ch.6-1)
Lec. 19:	Network-on-Chips	(Ch.6-2)
Lec. 20:	Final Review	

上課時間/教室: (四)2, 3, 4/電二 225

學生面談時間: (四)14:00-16:00/電二 417

Browse https://ceiba.ntu.edu.tw/1072EE4039_ for class notes

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SCHEDULE of COMPUTER ARCHITECTURE (Spring 2019)

I.	2/21	Lec. 1 / 2	X. 4/25 Lec. 12
II.	2/28	和平紀念日	XI. 5/2 Lec. 13 HDL (TA)
III.	3/7	Lec. 3 / 4	XII. 5/9 Lec. 14 / 15
IV.	3/14	Lec. 5 / 6	XIII. 5/16 Lec. 16
V.	3/21	Lec. 7 / 8	XIV. 5/23 Lec. 17
VI.	3/28	Lec. 9 / 10	XV. 5/30 Lec. 18
VII.	4/4	兒童節	XVI. 6/6 Lec. 19
VIII.	4/11	Lec. 11	XVII. 6/13 Lec. 20 (Review)
IX.	4/18	***Midterm Exam.***	XVIII. 6/20 ***Final Exam.***

上課時間/教室：(四)2,3,4/電二 225　　學生面談時間：(四)14:00-16:00/電二 417