朝陽科技大學 099學年度第2學期教學大綱
Computer Architecture 計算機結構

當期課號	7757	Course Number	7757
授課教師	韓端勇	Instructor	HAN,TUAN YUNG
中文課名	計算機結構	Course Name	Computer Architecture
開課單位	資訊工程系碩士在職專班一A	Department	
修習別	選修	Required/Elective	Elective
學分數	3	Credits	3
課程目標	本課程探討計算機系統之基本設計原理並進一步探討設計高效能計算機系統所使用的技術及原理。課程內容包括：Stored program computer設計範例，指令集設計，算術邏輯運算單元設計，硬線及微程式控制單元設計，管線設計，管線障礙及解決方法，RISC及CISC結構之特色及差異，向量處理機，階層式記憶及快取記憶設計，關聯記憶設計，計算機算術演算法，I/O介面，磁碟陣列，多元處理機，快取記憶資料一致性問題及MESI snoopy協定。	Objectives	This course provides an introduction both to the basics of computer architecture and the fundamental design concepts of high-performance computer systems. Topics covered include: design of stored program computers, instruction sets, design of arithmetic and logic units, hardwired control design and microprogrammed design, pipelined computer design, pipeline conflicts, RISC and CISC architectures, vector processing, memory organization, cache mapping, associative memory, computer arithmetic, interfacing input/output units with processors, RAID, multiprocessors ,cache coherence problem and MESI snoopy protocol .
教材	J. L. Hennessy and D. A. Patterson, Computer Architecture: A Quantitative Approach, 4th Edition, Morgan Kaufmann Publishing Co., 2008.	Teaching Materials	J. L. Hennessy and D. A. Patterson, Computer Architecture: A Quantitative Approach, 4th Edition, Morgan Kaufmann Publishing Co., 2008.
成績評量方式	15% Class Participation 25% Homework 30% Mid-term Examination 30% Final Project	Grading	15% Class Participation 25% Homework 30% Mid-term Examination 30% Final Project
教師網頁	_		
教學內容	1. Basics of Computer architecture design: Technology trend, Power & dependability issue, How to measure and summarize performance? 2. Instruction level parallelism: view on pipelining, Compiler techniques for exploiting ILP, Branch prediction, Dynamic instruction scheduling, Speculative execution, Supercalar processors. 3. Multiprocessors and thread-level parallelism: Shared-memory architectures, Synchronization & Consistency, Multi-core architecture. 4. Memory Hierarchy: Review on memory hierarchy, 11 advanced optimizations of cache performance, Virtual memory and virtual machine. 5. Storage system: Advanced Topics, Power-aware 47, Power architecture.	Syllabus	1. Basics of Computer architecture design: Technology trend, Power & dependability issue, How to measure and summarize performance? 2. Instruction level parallelism: view on pipelining, Compiler techniques for exploiting ILP, Branch prediction, Dynamic instruction scheduling, Speculative execution, Supercalar processors. 3. Multiprocessors and thread-level parallelism: Shared-memory architectures, Synchronization & Consistency, Multi-core architecture. 4. Memory Hierarchy: Review on memory hierarchy, 11 advanced optimizations of cache performance, Virtual memory and virtual machine. 5. Storage system: Advanced Topics, Power-aware 47, Power architecture.