CS3021/3421 Computer Architecture II

Dr Jeremy Jones

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BACS/MCS and BAI/MAI

students

BACS/MCS YEAR 3 TIMETABLE

School of Computer Science and Statistics
Integrated Computer Science: Year 3 Timetable 2015-16

Time	Monday	Tuesday	Wednesday	Thursday	Friday
09.00 – 10.00			MT: CS3012: Lect LB04		HT: ST3009: Lect: LB01
10.00 – 11.00	HT: CS3031: Lect LB120	MT:CS3071: Lect LB01 HT: CS3031: Lect LB107	MT: CS3011: Lect LB04/LG12 HT: CS3061: Lect LB04	MT: CS3021: Lect: LB08 HT: CS3031: Lect LB01	HT: CS3081: Lect LB01
11.00 – 12.00	MT: CS3021: Lect M20				
12.00 – 13.00	MT: CS3012: Lect Joly	HT: CS3061: Lect LB04	HT: ST3009: Lab: LG12	MT: CS3071: Lect LB01	
13.00 – 14.00	MT: CS3011: Lect LTEE1/LG12	MT: CS3012: Lect LB08 HT: CS3013: Lect M21/LB120 (2hrs)			
14.00 – 15.00	MT: CS3016 Lect LB107/ICT1/2 HT: CS3061 Lect LB107	MT: CS3011: Lect LB08/LG12 HT: CS3013: Lect M21/LB120	MT: CS3041: Lect LB01 HT: CS3081: Lab LG12	MT: CS3016: Lect LB04/ICT1 HT: CS3014: Lect LB04/ICTLab2 (2hrs)	
15.00 – 16.00	HT: ST3009: Lect: LB01		MT: CS3021: Lect M17	HT: CS3014: Lect LB04	MT: CS3016: Lect LB01
16.00 – 17.00		HT: CS3014: Lect LB04	MT:CS3071: Lab ICT Lab1/2	MT:CS3041: Lect LB08	
17.00 – 18.00					

BAI/MAI YEAR 4 TIMETABLE

SENIOR SOPHISTER ENGINEERING, 2015/16 - ELECTRONIC AND COMPUTER ENGINEERING

Date of issue: 22nd September, 2015

DAY		0900 - 1000	1000 - 1100	1100 - 1200	1200 - 1300	1300 - 1400	1400 - 1500	1500 - 1600	1600 - 1700	1700 - 1800
MONDAY	*First semester*	4C4 [M20]	4C1 [LB08]	CS3421 [M20]	4C5 [M20] CS4031 [LB04]		4C4 [M20]	CS4052 [M21]	4C7 [M20]	4E1 [HAM4]
	Second semester	4C3/4B9 [M17]	4C2 [M17]	CS7434 [LB01]	4C15 [M21]		Electronic/Computer Engineering Projects			CS7453 [LB04]
TUESDAY	*First semester*	4C5 [M17]	CS4053 [LB08]	CS4052 [LB1.07 and ICTLAB1]		CS4053 [LB04 and ICTLAB2]		4C8 [M21]	4E1 [HAM4]	
	Second semester		4C2 [M21]	CS4D2B [M21]	4C15 [M21]	4C3/4B9 tutorial [LB04]	4C3/4B9 laboratories [UG LAB/CADLAB]		4C3/4B9 [2037]	
WEDNESDAY	*First semester*	4C8 [CADLAB]		4C1 [M20]	4C5 [M20]	CS4053 [LB01 and ICTLAB1]	CS4D2A [LB01]	CS3421 [M17]	4C8 [M21]	4C4 [M21]
	Second semester	CS4D2B [M20]		4C3/4B9 [2039]	4C15 [M17] CS7434 [LB1.07]	CS7434 [LB01 and ICTLAB2]	CS4D2B [LB01]	CS7453 [HAM1]		
THURSDAY	*First semester*	4C7 [M20]	CS3421 [LB08]	4C1 [CADLAB]	CS4031 [LB04]		4C7 [M17]	4C8 [HAM5]	CS4D2A [LB08]	
	Second semester		4C2 [M17]		4C15 [M21]			4C2 [CLT]	CS4D2B [LB08]	
FRIDAY	*First semester*	Electronics laboratories/projects (C and CD stream) [CADLAB/UG LAB]					4C5 [M20]	4C7 [M21]	4C4 [M21]	
		CS4031 [LB1.20]								
	Second semester	Electronics laboratories/projects (C and CD stream) [CADLAB]								

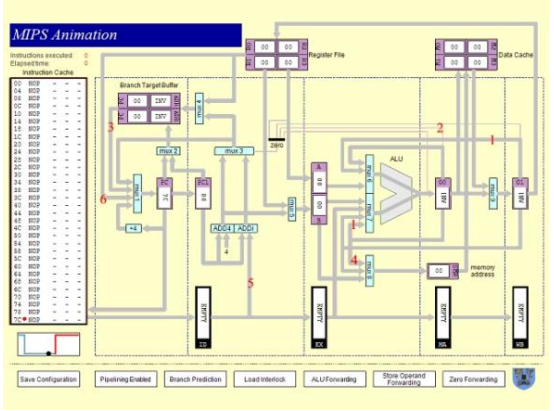
SYLLABUS

- IA32 and x64 assembly language programming
- IA32 and x64 procedure calling conventions

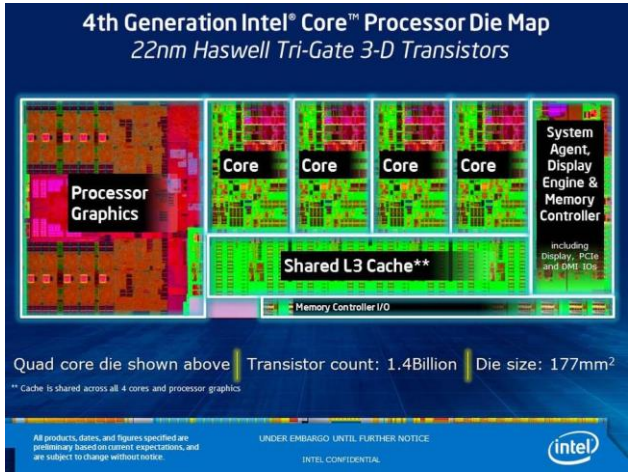
- RISC vs CISC
- RISC-1 design criteria and architecture
- Register windows and delayed jumps

- Instruction level pipelining
- DLX/MIPS pipeline
- Resolving data, load and control hazards

- Virtual Memory
- Memory management units [MMUs]
- Multi-level page tables and TLBs
- MMU integration with an OS



SYLLABUS …



- Cache organisation (L, K and N)
- Cache operation and performance
- The 3 Cs
- Virtual vs physical caches
- Pseudo LRU and LRU replacement policies
- Address trace analysis

- Multiprocessor architectures
- Cache coherency
- Cache coherency protocols [write-through, write-once, Firefly and MESI]

ASSESSMENT

Coursework 20%

- 5 or 6 tutorials + a coursework project

Examination 80%

- answer 3 out of 4 questions in 2 hours

COURSE WEB PAGE

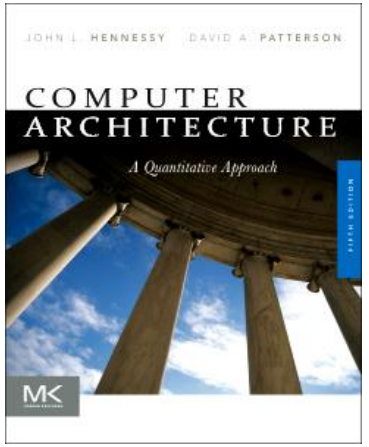
https://www.scss.tcd.ie/Jeremy.Jones/CS3021/CS3021.htm

For

- Lecture notes
- Tutorials (questions, answers and marks)
- Coursework
- Miscellaneous materials

Useful Books

Computer Architecture - a Quantitative Approach
John Hennessey and David Patterson



High Performance Computer Architecture
Harold S. Stone

Get Started on Wednesday @ 3pm M17

See you there!