CO224 Computer Architecture

Course Plan - 2020

Timetable								
	Mon	Wed	Fri					
8.55am - 9.50am	Lastura/Discussion	Lab	Lecture/Discussion					
10.10am - 11.05am	Lecture/Discussion	Lab						

Special Notes:

- First set of labs will use ARM assembly for ISA, and second set of labs will use Verilog for computer organization
- Two lecture/discussion hours per week
 Two lab hours per week
 One optional lecture/discussion hour per week
- Labs & Assignments:
 - Use QEMU emulator for ARM, iVerilog for HDL
 - o Students work in groups of two
 - Marks awarded to groups for completion of lab tasks

- 15 minutes quiz (individual) at end
 of every lab, to test understanding
- First 50% of lab (group) marks will be weighted based on individual quiz marks
- Labs + Assignments marks
 component = 40% of the course
 mark
- Assessing labs to be done in the class itself, in a strict manner.

Lecture Lab Tutorial

Week	ξ	Monday 8.55 a.m 11.05 a.m.	L	Wednesday 8.55 a.m 11.05 a.m.	Т	Friday 8.55 a.m 09.50 a.m.	P	Assignments	A
Feb 03 -Feb 07	1	Introduction - Big Picture - Overview - Importance - Abstractions	2	[Tutorial 1] - Introduction to Assembly - Grouping	2	[Tutorial 1] - Continued Introduction to Assembly	1		-
Feb 10 -Feb 14	2	Technology & Performance - Metrics (CPU Time / CPI) - Benchmarks - Limitations - Tradeoffs	2	[Lab 1] - Introduction to Assembly - Quiz 1	2	Cancelled	1	- Self study exercise - Popular architectures and their uses	-
Feb 17 -Feb 21	3	Performance - Continued	2	[Tutorial 2] - Branching & Conditions	2	Public Holiday	-		-
Feb 24 -Feb 28	4	Fundamentals - Instruction types - Addressing modes - Call and return - Decoding, execution - Register file - I/O and interrupts	2	[Lab 2] - Branching & Conditions - Quiz 2	2	Fundamentals - Continued	1		-
Mar 02 -Mar 06	5	CPU Organization - Implementation of the Von Neumann machine - Control, datapath, etc.	2	[Tutorial 3] - Procedure Call & Return	2	CPU Organization - Continued	1		-
Mar 09 -Mar 13	6	Public Holiday	-	[Lab 3] - Procedure Call & Return - Quiz 3	2	CPU Organization - Continued	1		-
Mar 16 -Mar 20	7	Pipelining - ILP - Pipelined datapath	2	[Tutorial 4] - Strings & Input Handling	2	[Optional]	-		-
Mar 23 -Mar 27	8	- Hazards and avoiding	2	[Lab 4] - Strings & Input Handling - Quiz 4	2	[Optional]	-		-
Mar 30 -Apr 03	WIIO Semester Exam								

Apr 06 -Apr 10	9	Pipelining - Continued	2	[Tutorial 5] - Building a Simple Processor	2	[Optional]	-	-	
Apr 13 -Apr 17									
Apr 20 -Apr 24	10	Memory Hierarchy - Storage - Main memory - Caching	2	[Lab 5] - Building a Simple Processor	2	[Optional]	-	-	
Apr 27 -May 01	11	- VM	2	- Quiz 5	2	Public Holiday	-	-	
May 04 -May 08	12		2	[Tutorial 6] - Memory and Caching	2	Public Holiday	-	-	
May 11 -May 15	13	Multiprocessors - Shared-memory - Clusters - Message-passing - Flynn's Taxonomy	2	[Lab 6] - Memory and Caching	2	[Optional]	1	-	
May 18 -May 22	14	Interfacing and Communication - I/O fundamentals - Buses - Interrupt structures - DMA	2	- Quiz 6	2	Arithmetic - Integer arithmetics - Floating point arithmetics - Conversion	_	-	
May 25 -May 29	15	Public Holiday	2	[Optional]	-	[Optional]	1	-	
	Study Break & Final Exam								