**Computer Architecture**

**Overview**

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| Level | 1 (Semester 2) |
| Duration | 4 weeks |
| Lectures | 10 times 40-minute lecture per week for 2 weeks |
| Practicals/tutorials | 5 times 2 hours per-week, for 3 weeks |

**Learning Outcomes**

1. Translate from binary to decimal and hex numbering systems.
2. Apply Boolean algebra
3. Design circuit schematics constrained by min and max terms
4. Design finite state machines
5. Construct assembly language applications

**Syllabus**

* Basics: Number Systems, (Decimal Binary Hexadecimal), Binary Addition, Logic Gates, Transistors, Power Consumption, Boolean Algebra, Multiplexer/Decoders/Timing, Latches and Flip-Flops, Finite State Machines.
* Building Blocks: Arithmetic Circuits, Number Systems (Fixed-Point, Floating-Point), Memory Arrays, Logic Arrays.
* Assembly Language, Machine Language, Addressing Modes, Program execution, Heaps and stacks.
* Memory Systems: Caches, Virtual Memory.
* Microarchitecture: Single-Cycle Processor, Multicycle Processor, Pipelined Processor.