Chapter 1: Fundamentals of Computer Design (Part 1)

What is computer architecture?
Why study computer architecture?
Common principles
What is Computer Architecture?
Previously, Computer Architecture ~ ISA

Instruction set architectures

Most ISAs today are general-purpose register based
  Operands may be registers or memory locations
  Register-memory vs. load-store

Addressing modes
  Register, immediate, displacement, ...

Operand sizes
  8 bits, 16 bits, 32 bits, 64 bits, SP and DP FP

Operations: Arithmetic, memory, control flow, floating point

Encoding: fixed vs. variable length

Action no longer in ISA
  But not always the case: CISC vs. RISC – what happened?

Our main focus: organization
Goals of the Computer Architect
Why Study Computer Architecture? - Historical Trends
Why Study Computer Architecture?
Relationship to Prerequisites

Prerequisite
  How to design a uniprocessor?

This course
  How to design a uniprocessor WELL?
    Emphasis on Quantitative vs. Qualitative
  How to design a multiprocessor?

Be sure to check the handout for details on the prerequisites