

CSE 240A (Section Id: 711219)
Principles of Computer Architecture
TuTh 12:30 - 1:50 PM; WLH 2205

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Course Contents

Fundamentals of Computer Design Technology Trends. Power, Cost, Dependability. Measuring Performance. Quantitative Principles of Computer Design.

Basic Pipeline Concepts Pipeline Hazards. Multicycle Operations in Pipelines. Interrupts, Precise Exceptions in Pipelines. Dynamically Scheduled Pipelines; Scoreboards.

Exploiting Instruction Level Parallelism Instruction Level Parallelism. Dynamic Scheduling. Dynamic Hardware Prediction. Data, Control Dependences. Loop Unrolling. Branch Prediction. Dynamically Scheduled Pipelines; Tomasulo's Approach. Hardware-based Speculation. Multiple Issue Superscalar Processors. Advanced Instruction Delivery Techniques.

Limits on Instruction Level Parallelism Studies on Limitations of ILP. Multithreading.

Memory-Hierarchy Design Basics of Cache Performance. Reducing Cache Miss Penalty, Miss Rate, Hit Time.

Application Specific Processors Cache Customizations. Low-Power Application Specific Communication Techniques.

Multiprocessors Interconnects. Caches. Coherence. Synchronization. Memory Consistency.