Computer Architecture and Embedded Systems Syllabus
Advancement to Candidacy Oral Exam

1. **Computer Architecture**

   - Performance Evaluation
   - Pipelining
   - Instruction Level Parallelism and its Dynamic Exploitation
   - Floating-Point Arithmetic
   - Memory Hierarchy

2. **Design and Synthesis**

   - System Models and Languages
   - HW/SW Codesign - Partitioning, Scheduling, etc.
   - High level synthesis (scheduling, resource allocation, resource sharing)
   - Logic Synthesis (two-level, multi-level optimization)
   - Physical Design (partitioning, floorplanning, placement, routing)

3. **Compiliers**

   - Syntax-directed translation
   - Run-time storage management
   - Flow analysis and code optimization
   - Code generation

Recommended Courses

- CS 250A - Computer Systems Architecture
- CS 244 - Introduction to Embedded Computer Systems
- CS 252 - Introduction to Computer Design

Reference Books

- *Computer Architecture, The Quantitative Approach*, John L. Hennessey, David A. Patterson, Third Edition, Morgan Kaufman Publishers, 2003.
- *Embedded System Design*, Frank Vahid and Tony Givargis, Prentice Hall, 2002.
- *Synthesis and Optimization of Digital Circuits*, G. De Micheli, McGraw-Hill 1994.
- *Algorithms for VLSI Design Automation*, S. H. Gerez, John Wiley & Sons, 1999.
- *Advanced Compiler Design & Implementation*, S. Muchnick, Morgan Kaufmann Publishers, 1997.