Follow-up Courses
ECE Department

Programs

MS in Electrical Engineering
MS EE

- COMMUNICATIONS & NETWORKING
- SIGNAL PROCESSING
- CONTROL & ROBOTICS
- MICROELECTRONICS/ NANOELECTRONICS
- SYSTEM DESIGN
- BIOENGINEERING

MS in Computer Engineering
MS CpE

- DIGITAL SYSTEMS DESIGN
- MICROPROCESSORS & EMBEDDED SYSTEMS
- COMPUTER NETWORKS
- NETWORK & SYSTEM SECURITY

Specializations
1. ECE 510 Real-Time Concepts
   – P. Pachowicz, project, design of real-time systems

2. ECE 511 Microprocessors
   – J.P. Kaps, project, system based on MSP430 microcontroller

3. ECE 611 Advanced Microprocessors
   – H. Homayoun, A. Sasan, project, computer architecture simulation tools

4. ECE 612 Real-Time Embedded System
   – C. Sabzevari, project, programming distributed real-time systems

5. ECE 641 Computer System Architecture
   – H. Homayoun, project, computer architecture simulation tools

6. ECE 699 Software/Hardware Codesign
   – K. Gaj, homework, SoC design with VHDL and C

7. ECE 699 Parallel and Heterogeneous Computing
   – H. Homayoun, project, computer architecture simulation tools
1. **ECE 545 Digital System Design with VHDL**
   – K. Gaj, project, FPGA design with VHDL,

2. **ECE 645 Computer Arithmetic**
   – K. Gaj, project, FPGA design with VHDL or Verilog

3. **ECE 681 VLSI Design for ASICs**
   – H. Homayoun, project/lab, front-end and back-end ASIC design with Synopsys tools

4. **ECE 586 Digital Integrated Circuits**
   – D. Ioannou, R. Mulpuri, homework

5a. **ECE 682 VLSI Test Concepts**
   – T. Storey, homework

5b. **ECE 699 Digital Signals Processing Hardware Architectures**
   – A. Cohen, project, FPGA design with VHDL and Matlab/Simulink

6. **ECE 699 Software/Hardware Codesign**
   – K. Gaj, homework, SoC design with VHDL and C
ECE 699 Software/Hardware Codesign
Prerequisites

• ECE 511 Microprocessors
• ECE 545 Digital System Design with VHDL

Useful Knowledge

• Basics of computer organization
• High level programming language (preferably C)
• RTL design with VHDL
• FPGA devices and tools
Course web page

ECE web page → Courses → ECE 699

http://ece.gmu.edu/coursewebpages/ECE/ECE699_SW_HW/S15
A Simplified Model of the Zynq Architecture

Source: The Zynq Book
Simplified Hardware Architecture of an Embedded SoC

Source: The Zynq Book
Mapping of an Embedded SoC Hardware Architecture to Zynq

Source: The Zynq Book
Mapping of an Embedded SoC Hardware Architecture to Zynq

Source: Xilinx White Paper: Extensible Processing Platform
The ZYBO Development Board

Source: The Zynq Book