

In-class exam



- July 17, here in this room
- A comprehensive written exam, emphasizing fundamentals:
 - Combinational logic design process (truth tables, K-maps, drawing simple circuits)
 - State machine design process (ASM/Classic diagrams, use of both VHDL and transition tables/K-maps)
 - Instrument measurements (using diagrams, not real scopes or analyzers)
 - Simple computer architecture and programming (incl. SCASM)
- Examples are online

In-class Exam: You Should Know ...

- Basic combinational logic
 - K-maps, SOP, minimal SOP, schematics
- Basic circuit building
 - Protoboard usage
 - Switches & pull-ups
- Operation of a device, given its truth table, datasheet, etc.

In-class Exam: You Should Know ...

- Oscilloscope
 - Make measurements from a screen capture given to you
- Logic analyzer
 - Understand what it does
 - Interpret typical logic analyzer screens

In-class Exam: You Should Know ...

- Write/understand VHDL
 - Work with basic VHDL syntax and characteristics
 - Describe the function and/or draw the circuit for a given section of VHDL code
 - Write VHDL code (fill in code fragments or pick from multiple choices) to synthesize a given word description or circuit
 - VHDL coding would be within a template on the closed-book class exam (not “from scratch”)

In Class Exam: You Should Know ...

- **State Machines**

- Understand a given ASM or classic state diagram
- Generate an ASM diagram for a state machine from a word description
- Generate the VHDL CASE statement to synthesize a state machine from an ASM chart
- Recognize bugs in VHDL state machines, when compared with the corresponding state diagram
- Timing calculations

In Class Exam: You Should Know ...

- Simple Computer
 - Architecture
 - Instruction word
 - Implementation of basic instructions
 - Dataflow between registers, memory, ALU
- Assembly language
 - Familiarity with ASM format
 - Usage of SCASM



Interested in being a UTA?

- See http://diglab.ece.gatech.edu/ta_FAQ.html
- **Benefits**
 - 1 hour general credit
 - Looks good on your resume
 - Prerequisite for being a Lead TA (a paid position)
 - Good preparation for being a GTA (if you are considering graduate school)
- **Requirements**
 - A, B, or C in 2031
 - Confidence in your lab skills



Being a TA

- You have a good idea how it works by now
 - Lead TA is often the technical expert in a section
 - GTA is primarily there for writing support
 - New UTAs are valued for their ability to field some questions and direct others to the right person
 - You don't need to have all the answers
- So apply on the web site if you are interested
 - You will receive permission to register if selected
- Meanwhile, note who the names of the best TAs (especially the non-lead UTAs)
 - Your opinions will be taken on the lab final
 - May be a factor in who becomes a Lead TA