

ECEN 4856 Embedded Systems Design

Jason Zapka
Fall 2014



Course Details

Course: ECEN 4856 **CRN:** 42672
Room: 3030 Moser Hall **Time:** T&Th 6:35 - 8:30

Jason Zapka **Office:** Room 3005
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330-941-5293 T & Th 3:30-4:30 or By Appt.

Course Description & Outcomes

Description: Fundamentals of small-scale and medium-scale embedded systems. Design techniques for processors, timers, input device interfacing, interrupt controllers, and drive circuits. Real-time operating system programming tools. Hardware-software co-designs.

Outcomes: After successful completion of this class, the students should be able to design, develop and test practical embedded systems using latest engineering tools, such as Quartus II software.

Course Objectives:

1. Understand basic embedded system architecture
2. Design and model simple embedded system
3. Design sequential circuits with FPGA
4. Understand basic concept of the Middleware and application software
5. Obtain teamwork trainings and be able to function individually and in teams

Tentative Outline

Week	Topic	Week	Topic
1-2	Introduction to Embedded Systems	9-10	Parallel Processing
3	Examples of Embedded Systems	11	Review & Exam II
4	System on a programmable chip	12	Middleware and Application Software
5	Board IOs; Memory (ROM, RAM, Cache)	13-14	Design embedded system
6	Review & Exam I	15	Group Presentation & Review
7-8	Embedded Operating Systems	16	Final Exam: Thursday Dec. 11 th 6-8 pm

Grading

Labs

- 5 Labs each for 20 points
- Total 100 points

Exams

- 2 Exams at 50 points each

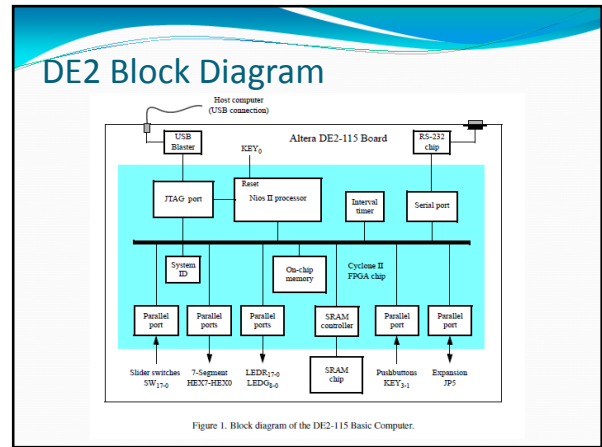
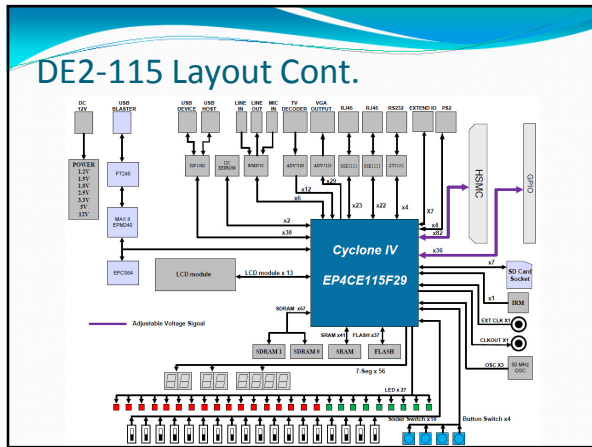
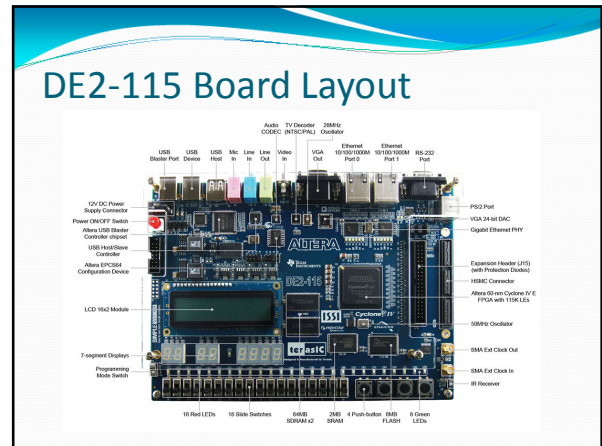
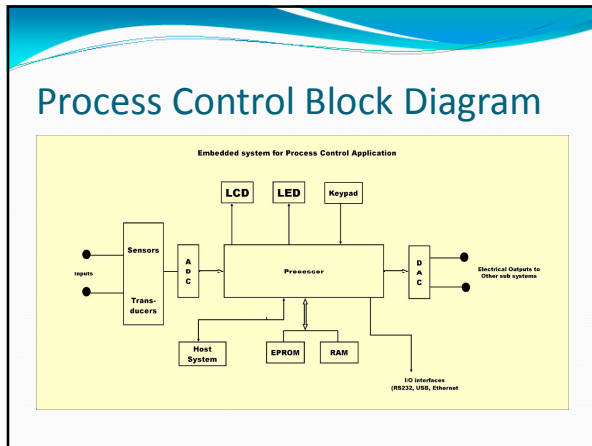
Final

- Final exam worth 100 points

Total Points (300)

$$A \geq 270 \quad 270 > B \geq 240 \quad 240 > C \geq 210$$

$$210 > D \geq 180 \quad F < 180$$



- ### References
- <http://itsallaboutembedded.blogspot.com/2013/03/applications-of-embedded-systems.html>
 - <http://dazzilingece.blogspot.com/2012/10/embedded-systems-automation-of-car.html>
 - <http://www.terasic.com.tw/cgi-bin/page/archive.pl?Language=English&CategoryNo=165&No=502>