Welcome Aboard!

Jin-Soo Kim (jinsookim@skku.edu)
Computer Systems Laboratory
Sungkyunkwan University
http://csl.skku.edu
Course Information

- **ICE3028**: Embedded Systems Design (3 credits)
- 15:00 – 16:15 (Mon & Wed)
- Room #400112, Semi. Bldg. (Lectures)
- Room #4002??, Semi. Bldg. (Labs)
- Course homepage: [http://csl.skku.edu/ICE3028S14/](http://csl.skku.edu/ICE3028S14/)
About Me

▪ Jin-Soo Kim (jinsookim@skku.edu)
▪ Professor @ CE & SSE & SW Dept.
▪ Computer Systems Laboratory (http://csl.skku.edu)
▪ Office: Room #85566 (산학협력센터)
▪ Tel: 031-299-4593
▪ The best way to contact me is by email.
Textbook

- Computers as Components: Principles of Embedded Computing System Design
  - By Wayne Wolf
  - Second Edition
References (1)

- Modern Embedded Computing: Designing Connected, Pervasive, Media-Rich Systems
  - By Peter Barry and Patrick Crowley
  - Morgan Kaufmann Publishers, 2012
References (2)

- Embedded System Design: A Unified Hardware/Software Introduction
  - By Frank Vahid and Tony Givargis
References (3)

- Introduction to Embedded Systems: A Cyber-Physical Systems Approach
  - By Edward A. Lee and Sanjit A. Seshia
  - PDF version available at http://LeeSeshia.org
Solid State Drive (SSD)
SSD Internals

INDILINX
Barefoot Controller 175 MHz

- SRAM (96KB) Controller
- ROM Controller
- ARM7TDMI-S Core
- Clock Generator
- APB Bridge
- UART
- GPIO
- Timer
- WDC
- PMU
- ICU
- JTAG

System Bus
- NAND Controller
- Buffer Manager
- SATA Device
- DRAM Controller
- Memory Utility

DRAM Access Bus
- NAND Flash
- SATA Host interface
- DRAM
- JTAG debug port
www.openssd-project.org
Course Plan

- Lectures
- Projects
- Exam
Lectures

- **Embedded Systems**
  - Processors and memory, compilers,
  - Program design and analysis, OS, ...
- **Issues surrounding SSDs**
  - NAND flash memory, SSDs, FTLs
- **Lab sessions**
  - Jasmine OpenSSD platform
- **Invited talks**
Projects

- There will be two or more projects using the Jasmine OpenSSD platform
- These are team projects
- You’ll need a Linux-based PC for projects
- Most of Monday classes will be devoted to Lab sessions led by the TA
Exam

- No midterm exam

- We will have only the final exam at the end of this semester.
Prerequisites

- ICE3003: Computer Architecture (Must!)
- SSE2030: Introduction to Computer Systems
- SSE3044: Operating Systems

- You should be fluent in C programming!
Grading Policy

- Class attendance 10%
- Projects 70%
- Final exam 20%
- Grading policy is subject to change.

- If you miss the final exam, you will fail this course.
Attendance Policy

- Do not be late! You should be present when I take class attendance.
- You can miss the class up to “four” times without any penalty.
  - Applies to excused absences as well.
- There will be a (small) bonus for students who attend all the classes.
Questions?