



# **ICE 3003**

# **Computer Architecture**

**2013 Fall**  
**Section for Dept. of Software**  
**Euseong Seo**  
**([euseong@skku.edu](mailto:euseong@skku.edu))**

# Overview



- **What this course is about**
- **Who teaches this course**
- **Why you have to take this course**
- **What you will learn in this course**
- **What you will earn in this course**
- **How to succeed in this course**

# What This Course is About



- **Computer Architecture**
  - Internals of components
  - Relationship between components
  - Interface to upper layers
- **Components?**
  - Processor
  - Memory
  - Storage Device
  - I/O

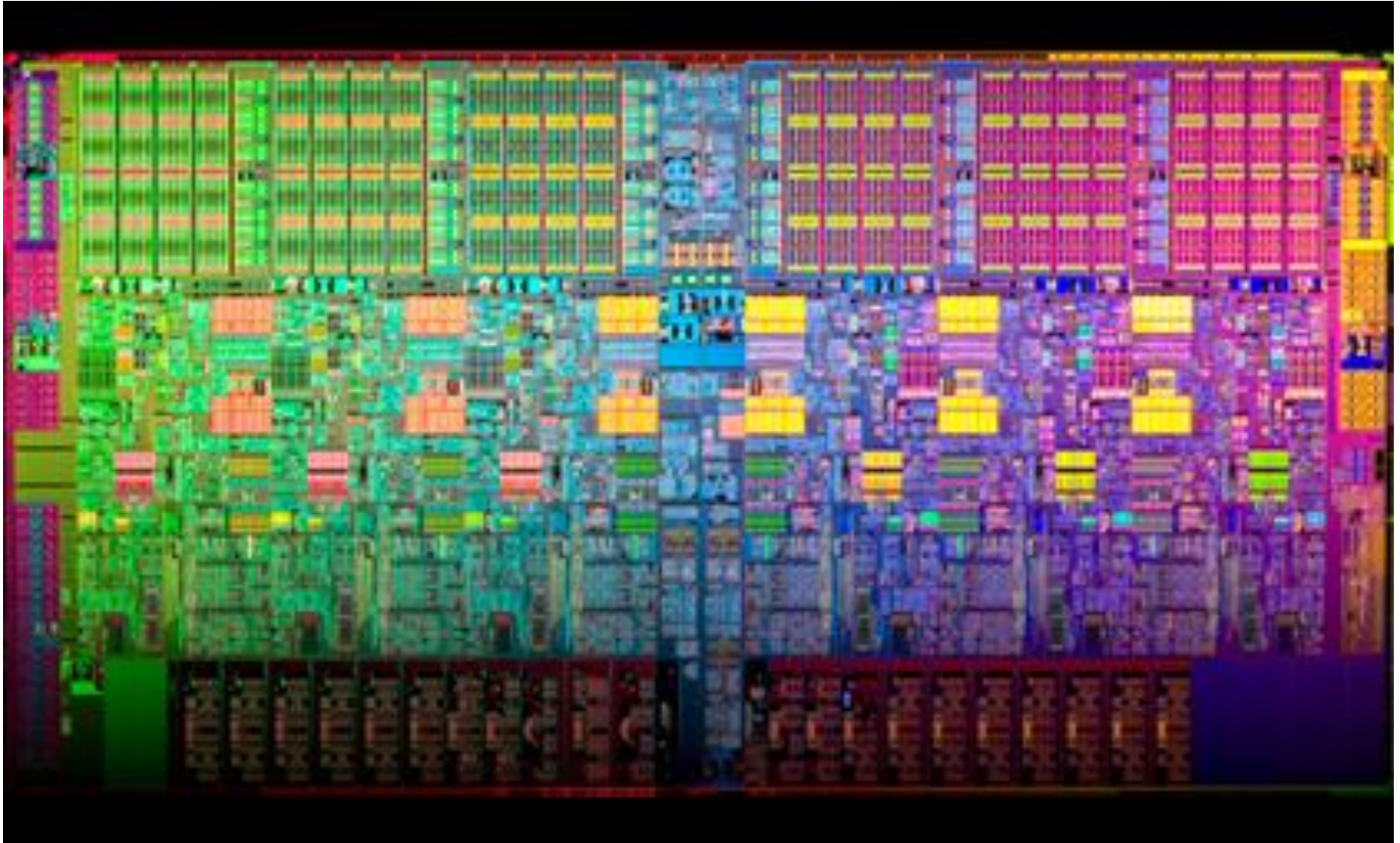
# World's Tallest Lego Tower

## ▪ Legoland Windsor, UK

- May 2-5, 2008
- To celebrate 50<sup>th</sup> anniversary of the Lego bricks
- 100 ft (~ 30.5m)
- 500,000 bricks



# Intel Xeon – 2.6B Transistors



# Administrative Information



- **Course Code**

- ICE 3003

- **Class Hour**

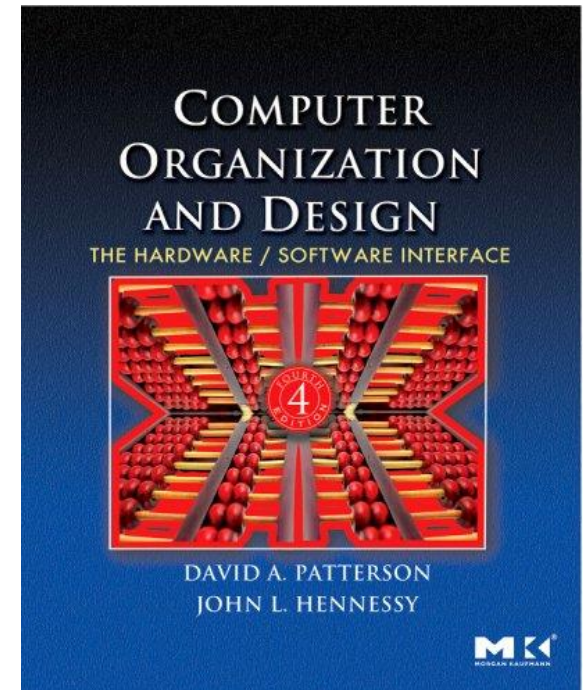
- Mon & Wed 13:30 PM ~ 14:45 PM

- **Lecture Room**

- #330110 (located on 1F in Semiconductor Bldg.)

# Textbook

- **Computer Organization and Design  
– The Hardware/Software Interface, 4<sup>th</sup> Ed.**
  - D. A. Patterson and J. L. Hennessy
  - Morgan Kaufmann, 2008



# Course Components



- **Lectures**

- Concepts
- Backgrounds

- **Reading Assignment**

- Technical details
- Supplementary concepts

- **Exams**

- Four exams
- All of them are equally important



# Course Web Page



- <http://csl.skku.edu/ICE3003F13>
- Check the web site regularly
- Class material, project information and other useful things will be posted there

# Grading

- **Proportion of Activities**
  - Participation 10%
  - Exams 90%
    - There are four exams. One for each quarter.
- **If you miss two of them, you will fail**
- **Up to four absences will be tolerated**

# Ethical Code



- **No academic misconduct will be tolerated**
  - Zero-tolerance policy
  - One who is found guilty will be kicked out of my class immediately

# The Lecturer



## ▪ Euseong Seo

- Software Department
- E-Mail: euseong (at) skku.edu
- Office: #85564
- Phone: (031) 299-4953

# Why You Have to Take This

- **To become a good software engineer**
  - My experience with S company engineers
- **To become a good hardware engineer**
  - This course covers the basic principles of computer hardware

# What You Will Learn



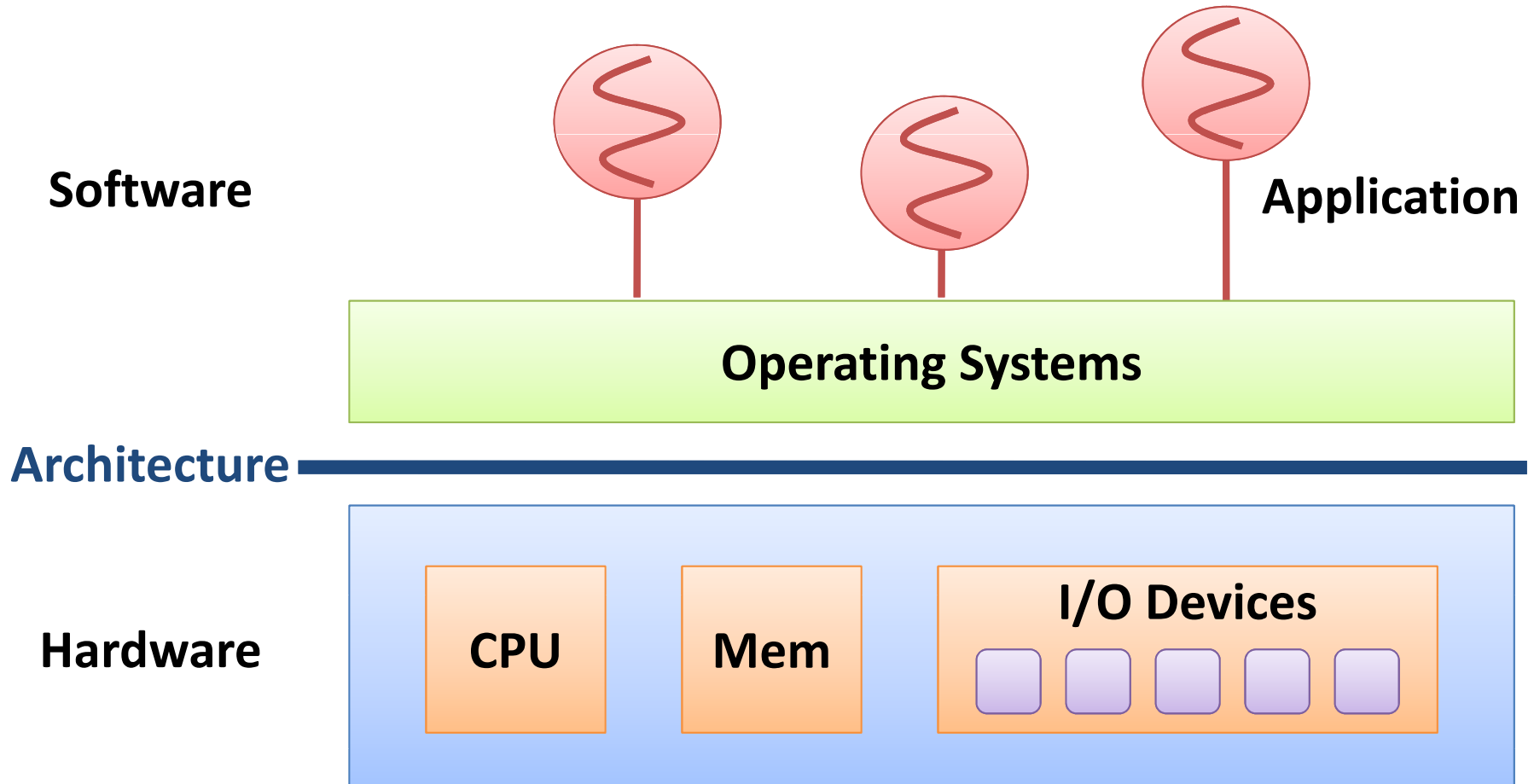
- **Components in a Computer System**
  - Roles and internals of them
  - Relationship between them
- **Code optimization techniques**

# What You Will Learn



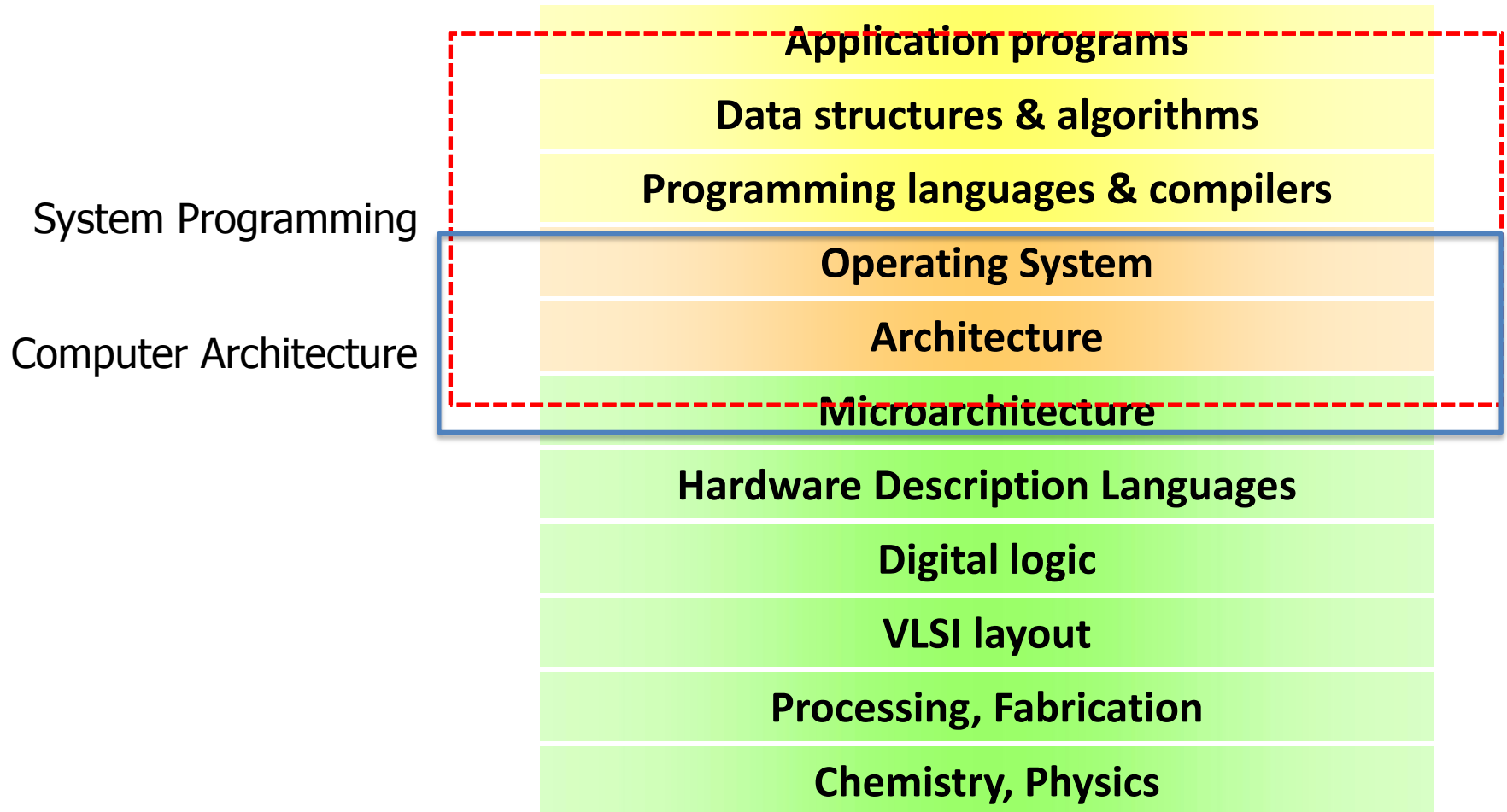
- Overview
- ARM instruction set architecture
- Arithmetic for computers
- Processor – data path and control
- Pipelining and hazards
- Cache memory
- Virtual memory
- Storage and I/O
- Multiprocessors

# What You Will Learn





# What You Will Learn



# What You Will Earn



- **You will get familiar with computer architecture**
  - A strong background for building extreme performance software
  - A good starting point for designing new hardware
- **You will be prepared for later “systems” classes in CSE**
  - Compilers, Operating Systems, Embedded Systems etc.

# Keys to Success



- Read and understand textbook thoroughly
- Memorize everything
- Invest as many hours as possible