

EE320: Digital System Laboratory

Spring 2016

- **Course Overview**

The aim of this course is to give students hands-on experience in designing and building digital systems through practical experiments. This experimental course, related to basic circuit theory and digital systems, is focused on both hands-on experience and design practice with the following experiments: 1. Utilization of experimental equipment such as oscilloscope, power supply, and function generator, 2. Basic electric circuit theory with R, L, and C circuit networks, 3. Various digital circuits and systems, 4. Design specific digital system for given functionality as a term project.

- **Instructor (Team teaching):**

- **Jeehoon Jung**, Engr. Bldg. 2, #301-2 (jjung@unist.ac.kr)
- **Seong-Jin Kim**, Engr. Bldg. 2, #401-1 (kimsj@unist.ac.kr)
- **Team teaching:** one professor gives lectures **biweekly** (can be adjusted) and grade will be individually given for the two classes

- **Office Hours:**

- **Jeehoon Jung:** Mon 17:00 ~ 18:00, or any time by appointment
- **Seong-Jin Kim:** Mon 17:00 ~ 18:00, or any time by appointment

- **TA:** To be announced

- **Name**, lab, email
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- **Textbooks**

- *Handouts for EE320*, ECE, UNIST
- *Experiments in Digital Fundamentals* 10th edition, David M. Buchla, Pearson Prentice Hall.
- *Digital Design*, 5th edition, M. Mano and M. Ciletti, Pearson Prentice Hall.
- *PSIM User Manuals & Tutorials*

- **Grading Policy**

- 5 points per **Lab Demonstration** and **Preliminary Report with Quiz** (for prerequisite learning)
- 10 points per **Report**
- 30 points per **Term Project** (or 60 points for single TP)
- Lab Point Total: (5+5+10) * 12 + 60 = 300
- 30 points for both **Lecture and Lab attendances**. Starting from 30 points for full attendance, -5 points for each absence. F grade for absences more than six times.
- Total Absolute Score: 300+30 = 330

- **Requirements**

- Pre-learning is mandatory for all lecture and lab works and preliminary report for each lab should be prepared.
- Quiz will be given irregularly to check pre-learning.
- Term project will be achieved using practical soldering on a universal board.

- **Due Dates**

- Preliminary reports are due by the BEGINNING of the present week's lab.

- Main reports are due by the BEGINNING of the next week's lab.
- **Lab Operation Policy**
 - If a student has a justifiable reason, he/she can change the lab section temporarily (e.g., for one week only) with permission from the involved TAs. It is recommended for the student to talk in personal to the involved TAs about the desired change at least one day in advance.
 - Written reports should be hand-written to discourage plagiarism. Exceptions may be made in some cases (e.g., the disabled).
 - Written reports should be in English (exception: person's name).
 - Late reports should be submitted to the TA in charge.
 - No food or drink in the lab. Bottled water with its cap closed may be permitted. An exception to this can be made temporarily by the TA's discretion.
- **Delay Penalty**
 - One point per day (24 hours) for preliminary reports
 - Two points per day (24 hours) for lab reports
- **Announcement and Homework will be given in the Blackboard**
- **Questions? (Blackboard)**
 - Please use the Web Board as much as possible. Questions directly sent by e-mail will be ignored.
- **Schedule**

Week	Monday	Lab. Contents	Lab #
1	2/29	No class	None
2	3/7	Intro: Oscilloscope, Laboratory Instrument, and Measurements of Voltage, Current, Passive Comp.	1
3	3/14	BCL1: Ohm's Law and Resistive Circuits	2
4	3/21	BCL2: Thevenin, Norton, Kirchhoff theorems	3
5	3/28	BCL3: Superposition and Impedance Matching	4
6	4/4	BCL4: Transient Response and Resonance in RLC Circuits	5
7	4/11	DSL1: Number Systems and Logic Gates	6
8	4/18	Midterm Exam (No Class)	-
9	4/25	DSL2: Boolean Laws, DeMorgan's Theorem, and Logic Circuit Simplification	7
10	5/2	DSL3: Adder and Magnitude Comparator	8
11	5/9	DSL4: Combinational Logic Using Multi and Demultiplexers	9
12	5/16	DSL5: D Latch and D Flip-Flop	10
13	5/23	DSL6: JK Flip-Flop, One-Shots, and Astable Multivibrators	11
14	5/30	DSL7: Synchronous and Shift Register Counters	12
15	6/6	Term Project Week (TBD)	TP
16	6/13	Final Exam (Term Project Demonstration)	TP
17	6/20	Term Project Demonstration	TP