

LE202: Basic Electrical Engineering Design II

Instructor: Songyot Nakariyakul, Supachai Vorapojpisut

Prerequisite: LE201

Course description:

Laboratory work and design projects on basic electronic circuits, digital systems, and electrical machines.

Course topics

Digital Circuit Lab (Songyot Nakariyakul) -- Room 508

Website: <http://songyot.ece.engr.tu.ac.th/LE202/>

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| Lab 1 | Introduction to Logisim and digital board |
| Lab 2 | Magnitude comparator |
| Lab 3 | 7-segment display |
| Lab 4 | Flip-flops and synchronous sequential circuits |
| Lab 5 | Counter |

MATLAB Lab (Supachai Vorapojpisut) -- Room 507

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| Lab 1 | MATLAB desktop; Using variables |
| Lab 2 | Vectors and matrices computation; Writing scripts |
| Lab 3 | Data import; Using table, text and logic data |
| Lab 4 | Advanced plotting; Flow control; Writing function |
| Lab 5 | Data analysis; GUI |

Digital Circuit Lab

Software: We will use Logisim (<http://www.cburch.com/logisim/index.html>) to simulate circuits in this lab. Logisim is a freeware and it is easy to use.

References:

1. Stephen Brown and Zvonko Vranesic, *Fundamentals of Digital Logics with Verilog Design*, 3rd Ed., McGraw-Hill, 2013.
2. M. Morris Mano and Michael D. Ciletti, *Digital Design*, 4th Ed., Prentice Hall, 2007.

Grading: > 80% = A
< 50% = F

Lab Policy: Copying and using another person's work is not allowed.

Schedule

| Date | Digital Circuits (Songyot) | Matlab (Supachai) |
|-------------|----------------------------|-------------------|
| 19 Jan 2018 | Group 1 | Group 2 |
| 9 Feb 2018 | Group 1 | Group 2 |
| 23 Feb 2018 | Group 1 | Group 2 |
| 2 Mar 2018 | Group 1 | Group 2 |
| 9 Mar 2018 | Group 1 | Group 2 |
| Midterm | | |
| 23 Mar 2018 | Group 2 | Group 1 |
| 30 Mar 2018 | Group 2 | Group 1 |
| 20 Apr 2018 | Group 2 | Group 1 |
| 27 Apr 2018 | Group 2 | Group 1 |
| 4 May 2018 | Group 2 | Group 1 |