ENGG2020 Digital Logic and Systems

Chapter 0

The Chinese University of Hong Kong

2018-19 Term 1

Course Information

Lecturer :

Dr. Yu Ying Kin, ykyu@cse.cuhk.edu.hk

Rm. 1012, Ho Sin Hang Engineering Building (SHB)

Consultation Hours: Tuesday 13:00 to 15:00

Tutors :

Luo Luyang, lyluo@cse.cuhk.edu.hk Rm. 1024 SHB

Hu Xiaowei, xwhu@cse.cuhk.edu.hk, Rm. 1024 SHB

Wang Shujun, sjwang@cse.cuhk.edu.hk, Rm. 903 SHB

Li Kang, kli@cse.cuhk.edu.hk, Rm. 1024 SHB

Liu Quande, qdliu@cse.cuhk.edu.hk, Rm. 1024 SHB

Course Information

Grading System :

Laboratory Exercises: 15% of the overall marks

Two Tests: 15% + 20% of the overall marks

Final Examination: 50% of the overall marks

In-class Exercises: 0% of the overall marks

You may not be able to pass this course if you get less than 35% in the final examination. If your final exam mark is <35%, your participation in the class will be considered.

Contact Hours

Lectures:

Tuesday 1030-1115 at LSB LT1

Thursday 1630-1815 at TYW LT

Tutorials (No tutorial in week 1):

Wednesday 1130-1215, 1230-1315, 1530-1615, 1630-1715, 1730-1815

Tests and Lab Sessions

Tests:

Each 45 minutes held during lecture time

Tentative dates: October 4 and November 8 (Thursdays)

Lab Sessions:

Each < 120 minutes

Required to take 5-10 minutes to demonstrate the results to the tutors

Tentative dates: Weeks 4, 8 and 12 (No tutorials during these weeks)

Proposed time slots: Thu (pm), Fri (am/pm)

Course Contents

1. Digital Systems and Binary Numbers

Binary Numbers, Number-Base Conversions, Signed Binary Numbers, ...

2. Boolean Algebra and Logic Gates

Basic Theorems, Properties of Boolean Algebra, Boolean Functions, Canonical and Standard Forms, Digital Logic Gates, ...

3. Gate-Level Minimization

K-Map Method, Product-of-Sums Simplification, Don't-Care Conditions, ...

Course Contents

4. Combinational Logic

Combinational Circuits, Analysis Procedure, Design Procedure, Decoders, Encoders, Multiplexers, ...

5. Synchronous Sequential Logic

Sequential Circuits, Latches, Flip-Flops, ...

6. Registers and Counters

7. Memory and Programmable Logic

Reference Books

M. M.R.Mano and M.D.Ciletti, *Digital Design*, 5th Ed., Peason, 2013.

R. J. Tocci, N. S. Widmer, and G. L. Moss, *Digital Systems: Principles and Applications*, 12th Ed., Peason, 2017.

R. P. Jain, *Modern Digital Electronics*, 4th Ed., McGraw-Hill, 2010.

T. L. Floyd, *Digital Fundamentals: A Systems Approach*, Pearson, 2013.

Jr. C. H. Roth, L. L. Kinney, *Fundamentals of Logic Design*, 7th Ed., Cengage Learning, 2013.

Important Notes

Be PUNCTUAL to class

Pls. try to minimise your disturbance if you are late

Keep QUIET during class

Unless you're raising questions to course teachers or tutors or during in-class activities

DON'T use/play with your smartphone if you come to the lecture

You must switch it off or change it to vibration mode.

Important Notes

Reasons for limiting the use of smartphones in class

A study by Duncan, Hoekstra, and Wilcox (2012) demonstrated that students who reported regular cell phone use in class showed an average negative grade difference of 0.36 ± 0.08 on a four-point scale.

Another study by Tindell and Bohlander (2011) found that other students are distracted when students text in class

Duncan, D., Hoekstra, A., & Wilcox, B. (2012). Digital devices, distraction, and student Performance: does in-class cell phone use reduce learning? Astronomy Education Review, 11, 010108-1, 10.3847/AER2012011.

Tindell, D. & Bohlander, R. (2011). The use and abuse of cell phones and text messaging in the classroom: A survey of college students. College Teaching. 60. Pgs. 1-9.

Academic Honesty

Zero Tolerance

Plagiarism, cheating, misconduct in test/exam will be reported to the Faculty Disciplinary Committee for handing.

Penalty

Zero marks for the concerned assignments/test/exam/whole course, reviewable demerits, non-reviewable demerits, suspension of study, dismissal from University.

University Guidelines to Academic Honesty

http://www.cuhk.edu.hk/policy/academichonesty/

Student/Faculty Expectations

Let's join hands to create a positive, respectful, and engaged academic environment inside and outside classroom.

Full version of Student/Faculty Expectations on Teaching and Learning

http://www.erg.cuhk.edu.hk/upload/StaffStudentExpectations.pdf