

NTUEE: Digital System Design - Class Syllabus

Spring Semester, 2025

Instructor: Prof. Andy Wu

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- E-mail: andywu@ntu.edu.tw
- Facebook Forum: <https://www.facebook.com/groups/dsdspring2024>
- Class Website: <https://cool.ntu.edu.tw/courses/35943>
- Classroom: MK-118
- Schedule: Thu. 7,8,9 (2:20pm begins)

Teaching assistant (TA): Ben & Alex

- Room: EE2-232 (Access IC Lab)
- Office hour: Wed. 14:20-15:10 (email me in advance)
- E-mail: ben@access.ee.ntu.edu.tw, alex@access.ee.ntu.edu.tw

Textbook

Slides in courses are main materials, related textbooks can be referred to:

- “Verilog HDL: Digital design and modeling,” Joseph Cavanagh, CRC Press, 2007.
- “Computer organization and design: The hardware/software interface,” David A. Patterson and John L. Hennessy, 2014, 5th Edition.
- “Computer organization and design: The hardware/software interface,” David A. Patterson and John L. Hennessy, RISC-V Edition.
- “Digital system designs and practices: Using Verilog HDL and FPGAs,” Ming-Bo Lin, 2008.

Prerequisite

- Switch Circuits and Logic Designs
- Computer Architecture

Schedule:

Week	Date	Topic	Content	Homework Release	Homework Deadline
1	02/20	Intro.	Course Overview, Intro. to Digital System Design	HW0	
2	02/27	HDL 1	Fundamentals of Hardware Description Language		
3	03/06	HDL 2	Logic Design at Register Transfer Level	HW1	
4	03/13	HDL 3	Logic Design with Behavior Coding		
5	03/20	HDL 4	Testbench Writing, Verification Tool		
6	03/27	SYN 1	Synthesizable Coding	HW2	HW1
7	04/03	Spring break			
8	04/10	SYN 2	Synthesis Environment and Constraint		
9	04/17	Optimization	Complexity Management and Improvement	Exercise	HW2
10	04/24	Midterm Exam			

11	05/01	CA 1	Memory Hierarchy and Pipelined Architecture	HW3	Exercise
12	05/08	CA 2	Advanced Topic: Branch Prediction and RVC ISA		
13	05/15	CA 3	Advanced Topic: M Extension and Applications	Final Project	HW3
14	05/22	TA Hour for Final Project			
15	05/29	Project Check Point			Final Check.
16	06/05	TA Hour for Final Project			
17	06/12	Final Project Presentation			Final Project

Homework Teaching Assistant:

HW1: 王泓予, pony@access.ee.ntu.edu.tw

HW2/3: 鄭至盛, sam@access.ee.ntu.edu.tw

Final: 江浩瑋, jackson@access.ee.ntu.edu.tw

Grading

- **A+ (ranking > 20% and final score > 90), A (ranking > 40% and final score > 85)**
 - Homework: **36%** (HW1: 8%, HW2: 8%, HW3: 8%, Exercise: 12%)
 - Midterm Exam: **32%**
 - Final Project: **30%**: Check Point: 12%, Submission: 18%
 - Impression: **2%** (Attendance/Attitude/Bonus)
 - **Copying someone else's homework/test or part of a homework/test is cheating. When cheating is discovered, all students involved will receive no credit for the homework/test.**
- <note> 抄襲與被抄襲作業皆為零分**