ECE 527: System-On-Chip Design
Fall 2023

Website: https://courses.grainger.illinois.edu/ece527/fa2023/

Lecture: 2013 ECEB
Time: Tuesday/Thursday 11:00 - 12:20 PM Central Time

Labs: 4022 ECE Building

- Lab details will be introduced in Lecture 3.
- The TAs will hold Lab Sessions the week a lab is released. Lab sessions will be run during TA office hours, introduce core lab concepts, and have time for Q&A. More info will be posted to the Campuswire as needed.

Pick up your lab kits at 3-5 PM Friday (8/25) in CSL 403. Each 2-person team checks out one lab kit.

Instructor: Deming Chen (dchen@illinois.edu)
Office hours: Tuesday 4:00 - 5:00 PM Central Time, CSL 250 and on Zoom for online students.
Zoom link:
https://illinois.zoom.us/j/83070928177?pwd=a2laQXVaZ3V5ZFNsejlNT1NzYlpxdz09
Meeting ID: 830 7092 8177. Password: 674838.

TAs:

- Scott Smith (scottcs2@illinois.edu)
  Office hours: 6:00 - 8:30 PM Mondays, Central Time, ECEB 4022 and online. Same Zoom link as above for online students.

- Hanchen Ye (hanchen8@illinois.edu)
  Office hours: 10:00 AM -12:30 PM Fridays, Central Time, ECEB 4022 and online. Same Zoom link as above for online students.

Credits:
Four hours.

Text:
Class notes.

Supplementary materials:
Related Research Papers.

Prerequisites:
ECE 425 (or equivalent), ECE 391 (or equivalent)

Dates	Topics	Release/due date
8/22	Introduction and overview	
8/24	SOC design methodology	MP 1 release on 8/24, due 9/3
8/29	Lab review	
8/31	Hardware design	
9/5	Embedded processor & software	MP 2 release on 9/4, due 9/17
9/7	Reconfigurable computing	
9/12	MoC & System Modeling	HW 1 release on 9/11, due 9/25
9/14	High-level synthesis (HLS)	
9/19	HLS coding style	MP 3 release on 9/18, due 9/27
9/21	HLS techniques	
9/26	Scheduling & Binding	
9/28	HW-SW co-design (1)	MP 4 release on 9/28, due 10/8
10/3	HW-SW co-design (2)	
10/5	FCUDA	HW 2 release on 10/4, due 10/18
10/10	ScaleHLS/ScaleFlow	MP 5 release on 10/9, due 10/29
10/12	**Introduction - Research project starts**	
10/17	Machine learning and DNN (1)	
10/19	Machine learning and DNN (2)	
10/24	DNN Acceleration (1)	
10/26	DNN Acceleration (2)	
10/31	**In-class Midterm exam**	
11/2	GPU	
11/7	Hybrid cloud	
11/9	System security	
11/14	Research case studies (1)	
11/16	Research case studies (2)	**Initial research project report due**
11/21	**Thanksgiving break**	
11/23	**Thanksgiving break**	
11/28	Research projects updates from students (1)	
11/30	Research projects updates from students (2)	
12/5	Additional Q&A session for research projects	
12/12	**1:30-4:30 (Final research project presentation)**	
12/15	**Final research project report due**	

Grading policy:
Machine problems total (30%)

- Machine problem 1: 5% (70% actual work + 30% report)
- Machine problem 2: 5% (70% actual work + 30% report)
- Machine problem 3: 5% (70% actual work + 30% report)
- Machine problem 4: 5% (70% actual work + 30% report)
- Machine problem 5: 10% (70% actual work + 30% report)

Class participation: 5%
Homework: 10%
Midterm: 20%
Research Project 35%: (70% actual work + 20% report + 10% presentation)

Class discussion
We encourage you to post your questions on Campuswire so everyone can participate in class-related discussions and benefit from them. Please do not include answers or code solutions in public posts and discussions.

Link: https://campuswire.com/p/G893E6B86
Join Code: 9179

Lateness Policy
15% off/day, cannot be more than 3 days late.