ESE 345: Computer Architecture

Fall 2019

Description: This course focuses on the fundamental techniques of designing and evaluating modern computer architectures and tradeoffs present at the hardware/software boundary. The emphasis is on instruction set design, processor design, memory and parallel processing. Students will undertake a design project using a hardware description language and modern CAD tools.

Prerequisites: ESE380 ESE382 3 credits

Instructor: Prof. Mikhail Dorojevets
Office: 243 Light Engineering, 632-8611
Office Hours: MW 9:50 –11:50 AM
E-mail: mikhail.dorojevets@stonybrook.edu

Course’s website: http://www.ece.stonybrook.edu/~midor/ESE345/index.html The last lecture notes (pdf) are here.

Teaching Assistants: Ryan Thielke
Email: ryan.thielke@stonybrook.edu
TA office: 208 Light Eng.
TA hours: Tuesday, Thursday 10:00-11:00 am

Lecture: MW 7:00-8:20 PM, 102 Light Engineering No use of computers/phones during lectures!


Recommended Books on the VHDL:


Project Deadline: Last week of classes

Course Grading: Homeworks: 12% Exams: (two in-class midterms): 66% Project: 22%

Course Learning Outcomes:

Upon completion of this course, students will learn: 1) computer performance and instruction set design principles, 2) MIPS architecture and basics of assembly language programming, 3) integer and floating-point arithmetic, 4) processor, caches, and memory design, and 5) use of VHDL/Verilog languages in the processor datapath design and verification.