ESE 345: Computer Architecture

Fall 2017

**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
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**Course’s website:** [http://www.ece.stonybrook.edu/~midor/ESE345/index.html](http://www.ece.stonybrook.edu/~midor/ESE345/index.html)

**Teaching Assistants:** Tianchu Ji
Email: tianchu.ji@stonybrook.edu
TA office: 208 Light Eng.
TA hours: Tue & Thu 10:00 -11:00 AM

**Lecture:** MW 7:00-8:20 PM, 102 Light Engineering


**Recommended Books on the VHDL:**


**Project Deadline:** Last week of classes

**Course Grading:**

- Homeworks: 15%
- Exams: (two in-class midterms): 65%
- Project: 20%

**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.