

Instructor: Prof. Wenchao Li

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Office Location PHO 336
Office Hours Wednesday 1-2 pm *or* by appointment

TAs:

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Office Hours Monday 3 – 4 pm
 Tuesday 2 – 3 pm
 Wednesday 3 – 4 pm
 Thursday 2 – 3 pm
 Friday 3:30 pm - 4:30 pm

**** TAs will be holding the office hours in the lab (PHO 307)**

Course Description:

The growing popularity of modern embedded systems calls for a new generation of electrical and computer engineers who can easily cross the boundary between hardware and software. The course is designed to help breed such engineers by introducing students to a balanced, integrated view of software and hardware in designing electronic systems. The lectures will survey a broad array of subjects including system specification languages, embedded processors, memory architecture, communication architecture, real-time operating systems, scheduling, energy efficiency in hardware and software, hardware-software co-design techniques, and verification techniques. The concepts will be reinforced with homework and project assignments that involve system design, modeling and validation. The assignments will involve C/Linux programming, ARM/Linux-based evaluation boards, and optionally other microprocessor or FPGA-based boards.

Prerequisites:

Experience in C/C++ programming and Linux
EC413, Computer Organization or equivalent

*Prior C/C++ programming knowledge is a **hard requirement**. Please discuss with the instructor if you have any questions.

References:

There are no mandatory textbooks for this class, but we will be reading papers and chapters from books from time to time. Any required reading will be listed on Blackboard.

A few reference books for this course:

- Jonathan Cobert, Linux Device Drivers, Third Edition, O'Reilly, 2005. (*online version available for free*)
- Robert Love, Linux Kernel Development, Second Edition, Novell Press, 2005.
- Frank Vahid, Tony Givargis, Embedded System Design: A Unified Hardware/Software Introduction, John Wiley & sons, Inc. 2002.
- Christopher Hallinan, Embedded Linux Primer: A Practical Real-World Approach, Second Edition, Prentice Hall, 2010.
- Edward A. Lee and Sanjit A. Seshia, Introduction to Embedded Systems, A Cyber-Physical Systems Approach, <http://LeeSeshia.org>, Second Edition, MIT Press, ISBN 978-0-262-53381-2, 2017. (*online version available for free*)

Grading:

Homework Assignments: 20%

Lab Assignments: 20%

Project: 30%

Final Exam: 20%

Participation: 10%

Assignments:

Homework and labs are assigned in class. Deadline is strictly enforced, and late submissions will be penalized according to the following policy:

- 5% reduction of the grade every 6 hours. Submissions that are delayed for more than 48 hours after the deadline are not accepted.

We will use PHO 307 for the labs.

Academic Honesty:

All students are responsible for reading Boston University's academic conduct policy. If you are unclear about any item related to academic honesty, you should immediately ask the professor or the TAs. Dishonesty in representing one's academic work is a serious ethical violation, and will be reported according to university policy.

Course Website and Communication:

You are required to periodically check the course website on BU Blackboard (learn.bu.edu) and your e-mail. Blackboard will have the course schedule, slides, links to reading materials, assignments, announcements, and a discussion board. Please use the discussion board for your class-related questions.

When you email the instructor or the TAs, please put **"EC535-Sp17" in the subject line** to ensure timely response.