

EE 480: Embedded Systems

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Winter 2020, December 14 - January 16

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Virtual Office Hours: By Appointment

Website: <https://sites.google.com/view/ee480>
Class Hours: Web Course Delivery

Course Description

A continuation of the study of digital systems and microprocessors focusing on the principles and applications of embedded systems.

Prerequisites

EE 380

Required Textbook

Book: Exploring Raspberry Pi: Interfacing to the Real World with Embedded Linux

Author: Derek Molloy

ISBN-10: 1119188687

ISBN-13: 978-1119188681

Amazon Link (Kindle): <https://www.amazon.com/Exploring-Raspberry-Pi-Interfacing-Embedded-ebook-dp-B01H2KNGX8/dp/B01H2KNGX8/>

Amazon Link (Paperback): <https://www.amazon.com/Exploring-Raspberry-Pi-Interfacing-Embedded-dp-1119188687/dp/1119188687>

Required Embedded System

Raspberry Pi 4

***Amazon Link:** <https://www.amazon.com/CanaKit-Raspberry-4GB-Starter-Kit/dp/B07V5JTMV9>

*This kit includes all components needed (except USB keyboard and mouse) to use the RPi. The HDMI video output of the RPi can be connected to supported computer monitors or televisions.

Course Topics to be Covered

1. Embedded System Hardware
2. Embedded System Software - Linux
3. Remote Device Control
4. Software Control
5. External Component Interfacing
6. Interactions with the Physical Environment

Grading Policy

The final grading policy for EE 480 is as follows:

90% and above: A

80% to 89.99999%: B

70% to 79.99999%: C

60% to 69.99999%: D

Below 60%: F

There is no rounding of scores. Thus, 89.999990% is a B. **If you have questions regarding grading, you must come see the instructor within one week after the date the assignment was returned.**

Grading

- 30% Content Assessments
- 40% Homework Assignments
- 30% Projects
- 0.5% (Bonus) Topic Summaries

Content Assessments (30%)

Each student should complete all content assessments independently. Content assessments will replace exams in EE 480. These assessments will consist of one question (topic) and possibly multiple subquestions related to the topic. These assessments will be related to course lectures, videos, assigned reading, homework assignments, and project content. Acceptable submitted file formats include text files, PDF, and image files.

Homework Assignments (40%)

Each student should complete all homework assignments independently. Homework assignments will be written responses and diagrams related to the material covered in the class. These assignments must be your own work. You may not take/give/submit a physical or electronic copy of any part of a solution to a homework assignment from anyone or any public resource. Acceptable submitted file formats include text files, PDF, and image files.

Projects (30%)

Each student should complete all projects independently. EE 480 will include small projects related to the content covered in the class. Project topics include the use of a Raspberry Pi embedded system, related software, and control of external devices. These projects must be your own work. You may not take/give/submit a physical or electronic copy of any part of a solution to a project from anyone or any public resource. You may use developed software APIs as a part of your assignment solution. Acceptable submitted file formats include text files, PDF, and image files.

Topic Summaries (0.5% Bonus)

Topic summaries (700 words single or double spaced) can be submitted for extra credit. These summaries can consist of overviews of class lectures and videos, specific research/interest areas related to your project focus, or more in-depth articles related to class topics. Each topic summary submitted will increase your course grade by 1/2 of a point (1 point overall grade increase for every 2 topic summaries).

Topic summaries must be typed and submitted electronically (one summary per day, no exceptions). A total of 10 topic summaries can be submitted throughout the course. Topic summaries may cite references, as long as the references are listed on the second page of the summary, and the references are not plagiarized. Summaries will be checked for plagiarism at the end of the semester. If any of your topic summaries have been found guilty of plagiarism, you will lose all topic summary bonus points for the semester.

Each topic summary must include: Your Name, Date, Topic Summary Title, and References.

Course Policies

EE 480 will be taught as a web based, self paced class. A course schedule will be maintained on the course website. Due dates for assignments will be posted on the course schedule although any assignment can be submitted until the last day of the course with no penalty.

The course will consist of reading assignments from the textbook and supplemental articles, videos, and documentation from various web sites.

Academic Dishonesty Policy

All homework assignments, projects, and content assessments are to be completed individually. You may discuss problems in any assignment/project with your colleagues, but copying solutions is forbidden. For the project, it is expected that you have written every line of code that

you submit (with the exception of code given in class). You may use developed software APIs as a part of your assignment solution.

The minimum punishment requested for plagiarism, or any other academic misconduct, is dismissal from the class with a failing grade. You are required to protect your work from plagiarism. If your work is plagiarized, it will be assumed that you were a willing participant in the plagiarism and you will receive the same punishment as the plagiarist, absent evidence to the contrary.

Accommodations for Disabilities

In compliance with University policy, students with disabilities who require academic and/or auxiliary accommodations for this course must contact the Student Accessibility Resource Center located in Downing Student Union, 1074. SARC can be reached by phone number at 270-745-5004 [270-745-3030 TTY] or via email at sarc.connect@wku.edu. Please do not request accommodations directly from the professor or instructor without a faculty notification letter (FNL) from The Student Accessibility Resource Center.

Title IX Misconduct/Assult Statement

Western Kentucky University (WKU) is committed to supporting faculty, staff and students by upholding WKU's Title IX Sexual Misconduct/Assault Policy (#0.2070) at [wku title ix policy and grievance procedure.pdf](#) and

Discrimination and Harassment Policy (#0.2040) at [discrimination.pdf](#)

Under these policies, discrimination, harassment and/or sexual misconduct based on sex/gender are prohibited. If you experience an incident of sex/gender-based discrimination, harassment and/or sexual misconduct, you are encouraged to report it to the Title IX Coordinator, Andrea Anderson, 270-745-5398 or Title IX Investigators, Michael Crowe, 270-745-5429 or Joshua Hayes, 270-745-5121. Please note that while you may report an incident of sex/gender based discrimination, harassment and/or sexual misconduct to a faculty member, WKU faculty are "Responsible Employees" of the University and MUST report what you share to WKU's Title IX Coordinator or Title IX Investigator. If you would like to speak with someone who may be able to afford you confidentiality, you may contact WKU's Counseling and Testing Center at 270-745-3159.