Syllabus
TECH 3230
Embedded System Programming

# Course Information

## Course Description and Purpose

Advance programming topics used for embedded systems and Internet of Things (IoT) devices. Two hours lecture; 3 hours lab per week. PREREQUISITE: TECH 1211.

## Required Text and Other Materials

AVR Microcontrollers and ATMEL Studio for C Programming with Arduino by Warwick A. Smith ISBN 978-1-907920-46-2

## Course Objectives

1. Reinforce student understanding of programming fundamentals.
2. Advance students proficiently in programming.
3. Demonstrate a knowledge of various programming techniques for embedded systems.
4. Demonstrate knowledge of arrays, strings, special variable types, pointers, and memory storage.
5. Introduce students to hardware and software interrupts
6. Introduce students to software libraries and software optimization.

## Course Topics / Tentative Schedule

1. Review of programming fundamentals (2 weeks)
2. Special variable types and scope (1 week)
3. Bitwise operators and bit manipulation (1 week)
4. Functions (1 week)
5. Pointers (1 week)
6. Arrays (1 week)
7. Strings and string manipulation (2 weeks)
8. Programming Interrupts (1 week)
9. Storing to Ram, Rom, Flash Memory (1 week)
10. Creating C Libraries (2 weeks)
11. Code Optimization (2 week)

## Course Methodology

Students will be evaluated in the following manner:

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|---|---|
| Test and Final (at least 3) | 50% |
| Labs | 40% |
| Homework, quizzes, attendance | 10% |

## Grading

Final letter grades for the semester will be based on the standard plus/minus grading scale.