United States Naval Academy
Department of Weapons, Robotics, and Control Engineering

Course: EW432 Embedded Microcontroller Applications (NOTE- renamed to *Internet of Things*)

Credits: 3 credits – 2 recitation hours – 2 laboratory hours

Course Description: High speed wireless networks and powerful microcontrollers now allow almost anything to connect to the Internet. The proliferation of such devices is commonly called the "Internet of Things" (IoT). This course covers the fundamental technologies of IoT including computer networks, the Linux operating system, the Python programming language, and popular web frameworks. Find out how to build your own IoT devices from the microcontroller to the web server and everything in between. This course assumes a functional knowledge of C programming, no prior experience with Python or Linux is required.

Pre-requisites: EW200 or Instructor Approval

Course Coordinator: Prof. John Donnal

Textbook: Automate the Boring Stuff with Python by Al Sweigart (ISBN-13 : 978-1593279929)

Course Objectives: At the completion of this course students will be able to:
- Use the Linux operating system and command line interface (CLI)
- Control hardware devices with Python
- Design and host interactive web pages
- Update a website based on hardware sensor data
- Control hardware devices from a website

Topics: This course will cover the following major topics:
- Python programming language
- Computer networks and security
- Frontend website design including:
  - HTML
  - CSS
  - Javascript
- Backend website design including
  - Server Management
  - Python web frameworks
  - Databases
- Linux operating system and command line interface

Last Updated: 07-January-2020