Ocean Robotic Instrumentation (OCE 360) Syllabus

Course Description

In this course, we will investigate the use of ARM ('Advanced RISC Machine') processors to manage power, communications, actuation, and data acquisition in embedded marine applications. Embedded systems are critical to the deployment of "smart" oceanographic sensors which are capable of collecting and storing data in the field. In some cases, these sensors can take advantage of existing platforms (mobile or stationary) and are responsible solely for sampling and storage tasks. In other cases, the sensors may be mobile platforms themselves. Communication between sensor and user may need to take place in real time, with long delays/latencies, or not at all. Messages may consist of complex mission plans, data requests, and/or simple on/off.

The mbed ARM platform will be used as an example ARM platform. The first half of the semester will be devoted to laboratory exercises which demonstrate the various capabilities of the platform. The second half of the semester will consist of a system design, implementation, and deployment of a marine data collection system.

Instructor:

	S. Licht
Office	Sheets 211
Phone	(401) 874-6028
Email	slicht@egr.uri.edu

References/Resources:

Required Hardware:

Sparkfun "mbed Starter Kit"
<https://www.sparkfun.com/products/12968>
NOTE: Kit is supplied free to students for 2015, courtesy of NUWC/NAVSEA Naval Engineering Education Center funding.

Recommended text:

Fast and Effective Embedded System Design: Applying the ARM mbed.
by Rob Toulson and Tim Wilmhurst
<https://developer.mbed.org/cookbook/Textbook>

Course note to accompany recommended text:

<https://developer.mbed.org/cookbook/Course-Notes>

Miscellaneous materials will be posted on Sakai throughout the course.

Grading

Attendance/Participation	10%
Homework and Lab Reports	45%
Project Reports	45%

Disabilities:

If you have a documented disability which may require individual accommodations, please make an appointment with Prof. Licht as soon as possible. We will discuss how to meet your individual needs to insure your full participation and fair assessment procedures.

Location:
Lecture will be held in Watkins 12, with potential follow up work in Fish 8. Please come to Watkins 12 at the beginning of class, unless instructed otherwise.