Comprehensive Exam Review SWEN 563

General:
- The final exam is Monday May 15, 2017 from 2:45 to 4:45 PM.
- The exam will be in GOL-2400 – this is upstairs!
- This exam will be a mixture of short, medium and long answer essay type of questions and diagrams.

Terms and Definitions:
- Definitions of terms document from course schedule Definition of terms
  - Pages 9 through 14 -- terms and concepts
  - Pages 22 through 25 -- Taxonomy of Events and Deterministic Systems
- Overview of uC Architecture from course schedule Overview of uC Architecture
  - Pages 22 through 24 – Memory mapped I/O (what we use on the STM32)

Concepts:
- State machine (AKA Finite State Machine or FSM) – be prepared to create a state machine. Be sure to label all states and all events. State Machine
- Bare metal versus real-time operating system advantages/disadvantages based on your experience doing the labs.
- C Coding Standards – review the Naming Conventions and be prepared to identify problems in a code sample. C Coding Standards
- Processes versus Threads – advantages of each
- RTOS Lecture slides: RTOS overview
  - Cyclic executives (pages 9 through 11)
  - Interrupt service routines (pages 14 and 15)
  - Context switching (pages 16 thorough 18)
  - The task control block model process state diagram on page 27
  - Buffering data (pages 30 through 32)
  - Ring Buffers (pages 33 and 34)
  - Queues page 39
- Mutexes
  - Are provide by real-time operating systems to ensure atomic operation
  - Provide protection of sections of code that must be completed without interference from another thread.
- Lab related topics
  - Designing software to support both bare metal and real-time operating system environments (Project 2b)
  - Communication system design tradeoffs (Project 6)