EEL4730 - Programming Embedded Systems
Three Credits, Two and a half hours, Engineering Topic.
Instructor: Dr. Herman Watson.
Specific Course Information:
Embedded Systems implementation using programming of synchronous state machines to capture
behavior of time-oriented systems for running on microcontrollers.
Specific Goals for the Course
a. Specific outcomes of instruction
Upon successful completion of this course, the student will:
Understand the stages of the embedded system problem solving process and a relationship to the
development of software for implementation. Use C Language to capture and study time-oriented
behavior of systems.
b. Explicitly indicate which of the student outcomes listed in Criterion 3 or any other outcomes
are addressed by the course.
In this course the student will have to show
(a) an ability to apply knowledge of mathematics, science, and engineering (X)
(b) an ability to design and conduct experiments (simulations), as well as to analyze, interpret data
(X)
(c) an ability to design a system, component, or process to meet desired needs (X)
(d) an ability to function in multi-disciplinary teams (N/A)
(e) an ability to identify, formulate, and solve engineering problems (homework) (X)
(f) an understanding of professional and ethical responsibility (N/A)
(g) an ability to communicate effectively (through project reports) (N/A)
(h) the broad education necessary to understand the impact of engineering solutions in
a global and societal context (X)
(i) a recognition of the need, and an ability to engage in life-long learning (X)
(j) a knowledge of contemporary issues (X)
(k) an ability to use the techniques, skills, and modern engineering tools necessary for
engineering practice (X)
(l) a knowledge of probability and statistics (X)
Brief list of the topics to be covered
1. Introduction to embedded systems
2. Bit-Level manipulation in C
3. Time-ordered behavior and state machines
4. Time intervals and synchronous SMs
5. Input/output
6. Concurrency
7. Creating a task scheduler
8. Communication
9. Utilization and scheduling
10. Embedded system coding issues

**GRADING:**

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**Conversion of Numerical Grade to Letter Grade**

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