ECE251 Course Syllabus: Fall 2021
Introduction to Microprocessors
TR 8:00 – 9:15  Clark A207

Instructor:  Dr. Bill Eads, ENGR C103E
Office phone:  (970) 491-0717 (during office hours only)
Home phone:  (970) 667-6914 (until 10 p.m.)
Email:  BEadsinCO@gmail.com
Office hours:  Tue., Thur.  9:30–10:30

Office Hours
Lab TA  Thom Wilkinson  tgwilk24@rams.colostate.edu  Monday 12-1 pm
Grader  Jose Alamos  Jose.Alamos@colostate.edu  Thursday 2-3 pm

Texts:  Embedded Systems with ARM Cortex-M Microcontrollers in Assembly Language and C
Dr. Yifeng Zhu, ISBN: 978-0-9826926-6-0, all editions acceptable.
The C Programming Language, Kernighan and Ritchie. Available online

Course Description:  Microprocessor organization, The C Programming Language, Assembly
Language, I/O techniques, device interfaces, applications, hardware and software.

Prerequisite:  ECE102 (Digital Circuit Logic)

Grading and Exams (tentative):  (+/- and upward curve grading is used)
Midterm Exam  18%
Final Exam  27%
Labs & Practical  30%  (21% Labs and 9% Practical)
Homework Assignments  10%
Quizzes & Participation  15%

Homework:  Homework problems will usually be assigned every other week due two weeks
later.  Late homework will not be accepted without prior instructor approval.

Labs:  There will be a series of 10 labs using the TM4C123G processor board; they are one and
two week labs.  There will be a lab practical exam in lab during the course, focused on
programming this processor.  Successful completion of all labs is required for a passing
course grade.

Collaboration:  You are expected to work on all homework problems and labs yourself (or
within your team), but reasonable collaboration is allowed and encouraged.  Copying
homework or software from another student is not allowed.  No collaboration will be allowed
on any quiz, exam or practical.

Attendance in class or online is expected.  If you are unable to attend class, it is your
responsibility to obtain class notes or other information.  Make-up quizzes will not be allowed;
however, your lowest quiz score will be dropped from your quiz average.
ECE 251 Course Outline

Digital Logic Fundamentals

Microprocessors: Major Components

C Programming Language

ARM Cortex Microcontroller: Register Model & Addressing Modes

ARM Cortex Assembly Language Programming

ARM Cortex Instruction Set:
  Data transfer and manipulation instructions
  Arithmetic Instructions
  Logical and Bit Operations
  Branch Instructions

MID-TERM Exam #1 in class Oct. 7

Advanced Assembly Programming
  Software Delay
  Programming Techniques
  Assembly Process
  Loops
  Stack and Stack Pointer
  Subroutines and Parameter Passing
  Mixing C and Assembly

Parallel I/O

Exceptions: Resets and Interrupts

SysTick Real Time Clock

ARM Cortex Serial I/O

Fixed-Point and Floating-Point Numbers

Analog to Digital Converter

Adding Memory to Processor

FINAL EXAM  Monday, Dec. 13, 2:00 p.m.