University of North Texas, College of Engineering  
Department of Electrical Engineering

EENG 3910: Project V – Digital Signal Processing System Design

Spring 2016  
Monday, 2:00 AM - 4:50 PM  
Classroom/Lab: NTDP B288

Instructor
• Dr. X. Li, Office: NTDP B231, Tel: (940) 891-6875, Email: xinrong@unt.edu
  Office Hours: Monday and Thursday, 11:00 AM – 12:00 PM  
  (Additional appointments can be requested by email.)
• TA: Veena Chidurala, Lab: NTDP B288, Email: VeenaChidurala@my.unt.edu;  
  Lab help hours: Wednesday 9:30 AM – 12:30 PM, Friday 1:00 – 4:00 PM

Course Description
• To study basic theory and applications of modern digital signal processing, to learn basic  
  theory of real-time digital signal processing, and to develop ability to implement and simulate  
  digital signal processing algorithms using MATLAB and on real-time DSP platform.

Prerequisites
• EENG 2620

Course Objectives
• Understand basic concepts of digital signal processing theories and techniques;
• Develop basic understanding of real-time digital signal processing;
• Develop ability to implement digital signal processing algorithms in Matlab;
• Develop ability to implement digital signal processing algorithms on real-time DSP platform.

Required Textbook and References
• No textbook required. Lecture notes will be provided as appropriate.
• Tiva LaunchPad references:
  o Wiki: http://processors.wiki.ti.com/index.php/Tiva_C_Series_TM4C123G_LaunchPad
  o TI E2E: http://e2e.ti.com/
  o Getting started with the TIVA C Series TM4C123G LaunchPad:
    http://processors.wiki.ti.com/index.php/Getting_Started_with_the_TIVA%E2%84%A2_C_Series(TM4C123G_LaunchPad
• MATLAB References (online materials and recommended reference books)
Course Requirements and General Policies

- Class attendance is mandatory.
- Remember to turn off phones prior to class.
- Everyone must turn in individual homework. Simply copying other's homework will be treated as a violation of academic honesty.
- Late assignments will be penalized except in extenuating circumstances. Homework is due before the class in the following week.
- If you have any questions regarding assignment grades, talk to TA and instructor to have the issues resolved right away. After the Pre-finals Week, no appeals on assignment grades will be accepted.
- Do not wait until the last minute. If you are having trouble with this class, talk to instructor.
- Visit http://www.unt.edu/csrr/ for your rights and responsibilities.

Disability Accommodation

- The University of North Texas (UNT) complies with Section 504 of the 1973 Rehabilitation Act and with the Americans with Disabilities Act of 1990. UNT provides academic adjustments and auxiliary aids to individuals with disabilities, as defined under the law. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring accommodation, please see the instructor and/or contact the Office of Disability Accommodation (http://www.unt.edu/oda/) at 940-565-4323 during the first week of class. It is the responsibility of students with certified disabilities to provide the instructor with appropriate documentation from the Dean of Students Office.

Grading Policies

- Lab assignment and report, 60%
- Final project report and presentation, 40%
- There will be no extra credits.
- Final accumulated number score is on a 100 point scale.
- Final letter grade distribution: A = 90 - 100, B = 80 - 89, C = 70 - 79, D = 60 - 69, F = 0 - 59
- According to the College of Engineering degree requirements, you need a final letter grade of C or better to pass this class.

Course Outline and Tentative Schedule

You can find the lecture notes and homework assignments in the Blackboard Learn.

- First day of classes, Jan. 25, Monday
- Introduction to DSP, LaunchPad (basic programming), and CCS
- Introduction to LaunchPad (Interrupt, Timer, UART)
- Introduction to LaunchPad (Timer, Pushbutton)
- AD Conversion
- DA Conversion (and SPI)
• PWM Signal Output (and NI myDAQ)
• Audio Signal Input and Output
• Frame-based Processing
• Digital Filter Design
• Real-Time Digital Filtering
• Final Project (3 weeks)
• **Final Project Presentation, Monday, May 2, Pre-finals Week**
• **Final Project Report Due, Monday, May 9, Finals Week**

**Useful Links**

- UNT Catalogs: [http://www.unt.edu/catalog/](http://www.unt.edu/catalog/) (catalogs, academic calendars, class schedule)
- Office of the Registrar: [http://essc.unt.edu/registrar/](http://essc.unt.edu/registrar/) (schedule of classes and exams, etc.)
- Eagle Student Services Center: [http://essc.unt.edu/](http://essc.unt.edu/)
- Blackboard Learn: [https://learn.unt.edu/](https://learn.unt.edu/) (course syllabus, notes, assignments)

_Last updated: 01/20/2016_