EENG3910.001 – DSP System Design Project

Class time: 1:00 – 3:50 PM, Monday (Fall 2022)
Classroom: B227 (meet in this classroom first at 1pm every Monday)
Lab location: B288

Instructor Information

Name: Dr. Xinrong Li
Pronouns: He/Him, Dr. Li
Office Location: B231
Phone Number: (940) 891-6875
Email: Xinrong.Li@unt.edu
Office Hours:
   11am – 12pm/noon, Monday (in-person, B231)
   11am – 12pm/noon, Wednesday (on Zoom, link is available in Canvas)

Teaching Assistant’s Name: Masleh Uddin Siddiqui
Pronouns: He/Him
Lab Location: B288
Email: MaslehUddinSiddiqui@my.unt.edu
Lab Help Hours:
   11:00am – 1:00pm, Tuesdays
   10:00am – 12:00pm Friday

Communication Expectations: UNT email and Canvas are the primary means of communication for this course. Students are expected to check their UNT email and Canvas course webpage on daily basis. Students should send concerns or questions to my UNT email (Xinrong.Li@unt.edu). You can expect to hear a response from me within two business days. The Canvas online system (https://unt.instructure.com) will be the learning management system that I will use to post lecture notes, reference documents, assignments, and announcements. Your homework assignment reports should be submitted in Canvas. Assignment grades will be available in Canvas within a week after submission. CLEAR has a webpage for students that provides Online Communication Tips (https://clear.unt.edu/online-communication-tips) that you may find helpful.

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.

Course Structure

This course has two components. One is the in-person lectures in B227 that may take about 2 hours during the designated class time. The second part of the course is the hands-on lab sessions to work on weekly lab assignments, which will take up the remaining time during the class period as well as some additional time out of the class period based on students’ own schedule. Students can work on lab assignments in the lab classroom B288 following the laboratory access schedule. Students are strongly encouraged to install software packages that are required for lab assignments in their own computers so students can alternatively work on some of the
lab assignments on their own computers. Throughout the semester, students are required to pick up the components and devices on the designated dates that will be announced in class.

Course Prerequisites or Other Restrictions

EENG 2620 (and EENG 2621 for Electrical Engineering students), and EENG 2920, all of which must be completed with a C or better grade.

Course Objectives

By the end of this course, students will be able to:

1. Understand basic concepts of embedded system design with microcontrollers;
2. Develop abilities to design and implement software for microcontroller systems;
3. Develop abilities to design and implement interfacing circuits for microcontroller systems.

Required/Recommended Materials

We will require a textbook and a number of reference materials as listed below:

- Additional reference materials that will be posted in Canvas.
- *Nucleo-L476RG Development Board and components package*, all of which can be picked up from the department lab manager Mr. Todd Pumphrey in office B238.

ADA Accommodation

The University of North Texas makes reasonable academic accommodation for students with disabilities. Students seeking reasonable accommodation must first register with the Office of Disability Access (ODA) to verify their eligibility. If a disability is verified, the ODA will provide you with a reasonable accommodation letter to be delivered to faculty to begin a private discussion regarding your specific needs in a course. You may request reasonable accommodations at any time; however, ODA notices of reasonable accommodation should be provided as early as possible in the semester to avoid any delay in implementation. Note that students must obtain a new letter of reasonable accommodation for every semester and must meet with each faculty member prior to implementation in each class. Students are strongly encouraged to deliver letters of reasonable accommodation during faculty office hours or by appointment. Faculty members have the authority to ask students to discuss such letters during their designated office hours to protect the privacy of the student. For additional information, refer to the Office of Disability Access website (http://www.unt.edu/oda). You may also contact ODA by phone at (940) 565-4323.

Supporting Your Success and Creating an Inclusive Learning Environment

As members of the UNT community, we have all made a commitment to be part of an institution that respects and values the identities of the students and employees with whom we interact. UNT does not tolerate identity-based discrimination, harassment, and retaliation so we will work as a class to collaborate in ways that encourage inclusivity.

Assessing Your Work

Listed below are the graded activities for the course, along with the points possible. No extra credit activities will be assigned in this course.

<table>
<thead>
<tr>
<th>Graded Activities</th>
<th>Points Possible</th>
<th>Percentage of Final Grade</th>
</tr>
</thead>
</table>

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<table>
<thead>
<tr>
<th><strong>Lab Assignments</strong></th>
<th>Each assignment is graded on a 50-point scale</th>
<th>50%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Final Project (report and presentation)</strong></td>
<td>Graded on a 100-point scale</td>
<td>40%</td>
</tr>
<tr>
<td><strong>Class Attendance</strong></td>
<td>Earn 1 point per class. Up to 10 points in total for whole semester.</td>
<td>10%</td>
</tr>
</tbody>
</table>

Final accumulated score computing formula:

\[
\text{final accumulated score} = \text{average of lab assignments} + 0.4 \times \text{final project score} + \text{class attendance score}
\]

Final accumulated score is on a 100-point scale. Final letter grade is assigned based on the grade distribution listed below:

- A = 90 - 100
- B = 80 - 89
- C = 70 - 79
- D = 60 - 69
- F = 0 – 59

Every student can improve by doing their own work and trying their hardest with access to appropriate resources. Students who use other people’s work without citations will be violating UNT’s Academic Integrity Policy. Please read and follow this important set of guidelines for your academic success (https://policy.unt.edu/policy/06-003). If you have questions about this, or any UNT policy, please email me or come discuss this with me during my office hours.

**Attendance and Participation**

Attendance in classes is mandatory for this course. Students are expected to attend class meetings regularly and to abide by the attendance policy established for the course. It is important that you communicate with the professor and the instructional team prior to being absent, so you, the professor, and the instructional team can discuss and mitigate the impact of the absence on your attainment of course learning goals. Please inform the professor and instructional team if you are unable to attend class meetings because you are ill, in mindfulness of the health and safety of everyone in our community. If you are experiencing any symptoms of COVID (https://www.cdc.gov/coronavirus/2019-ncov/symptoms testing/symptoms.html) please seek medical attention from the Student Health and Wellness Center (940-565-2333 or askSHWC@unt.edu) or your health care provider PRIOR to coming to campus. UNT also requires you to contact the UNT COVID Team at COVID@unt.edu for guidance on actions to take due to symptoms, pending or positive test results, or potential exposure.