Assembly Language and Computer Organization  
CSCE 2610, Section 021  
Summer 2020

Class Timings: Monday and Wednesday 3:30 PM – 5:20 PM, Remote delivery using Zoom: https://unt.zoom.us/j/92138243525

Instructor: Robin Pottathuparambil, Email: rpottath@unt.edu, Zoom Office Hours: Monday, Tuesday, Wednesday, and Thursday 11:00 AM – 12:00 PM or by appointment. Zoom Meeting: https://unt.zoom.us/j/756221441

Teaching Assistants:
- Xianwei Cheng, Email: xianweicheng@my.unt.edu, Zoom Help Hours: Monday and Wednesday 1:30 PM – 3:30 PM, Zoom Meeting: https://unt.zoom.us/j/7134570902
- Yuwen Cui, Email: cuiyuwen@my.unt.edu, Zoom Help Hours: Tuesday and Thursday 4:30 PM – 5:30 PM, Zoom Meeting: https://unt.zoom.us/j/94297202220

Course Webpage: All the course related material will be posted on the course webpage which is available through Canvas (https://unt.instructure.com/)

Course Outcomes:
- Understand the role of the different classes and components in a computer system and the interface between software and hardware in a computer system.
- Apply metrics to evaluate performance of a computer system using clock rate and clock cycles per instruction (CPI). Understand the different aspects of execution times reported when program complete their execution.
- Understand instruction set choices and write assembly language programs for simple C code and codes that include procedures.
- Perform integer and floating-point calculations using computer arithmetic algorithms.
- Describe the organization of a simple processor with data path and control path for simple instructions.
- Describe the requirement of memory hierarchy and evaluate the performance of different cache organizations.

Program Outcome Mapping:
- An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
- An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
- An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.


Catalog Description: Prerequisite: CSCE 2100, EENG 2710 or 2720. Principles of computer systems organization, instruction sets, computer arithmetic, data and control paths, memory hierarchies, and assembly language.
Topics:
• Computer Abstractions and Technology
• Instructions: Language of the Computer
• Arithmetic for Computers
• The Processor
• Large and Fast: Exploiting Memory Hierarchy

Grading:

<table>
<thead>
<tr>
<th></th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quizzes</td>
<td>8%</td>
</tr>
<tr>
<td>Remote Class Activity</td>
<td>10%</td>
</tr>
<tr>
<td>Homework</td>
<td>12%</td>
</tr>
<tr>
<td>Programming Assignments</td>
<td>20%</td>
</tr>
<tr>
<td>Midterm Exam (07/06/2020)</td>
<td>20%</td>
</tr>
<tr>
<td>Comprehensive Final Exam (08/07/2020)</td>
<td>30%</td>
</tr>
</tbody>
</table>

Quizzes: There will be four to five pop quizzes given throughout the semester. The pop quizzes can be given any time during the class. These will be to reward students who consistently attend the class but will be more than just attendance points. These quizzes can be only taken using Respondus LockDown browser, webcam, and a microphone.

Remote Class Activity: There will be several remote class activities during the class session that will reinforce the concepts that we learned in the class. These remote class activities will be scheduled during the class timing.

Homework: Homework will be in the form of problem sets with a due date one week after it is assigned. Homework will be assigned on Tuesdays as per the schedule. No late homework will be accepted. Homework must be done individually (you will learn the most from this). Any evidence of group participation or direct copying from unauthorized sources (Example: previous year’s solutions, textbook solutions, Wikipedia, and websites) will be interpreted as academic dishonesty. There will be four to five homework assignments.

Programming Assignments: The programming assignments are an integral part of the course and are intended to provide experience in the application of the concepts discussed in lecture. Programming assignments will be assigned on Wednesdays as per the schedule and with a due date of one week after it is assigned. There will be four to five programming assignments assigned. Programming assignments must be done individually and can be done on your own PC or using the server. Any evidence of group participation will be interpreted as academic dishonesty.

Recitations: There will be virtual recitations on Wednesdays starting from 2:30 PM to 3:20 PM. The TA will be virtually available at that time to help you with the programming assignments. There will be demonstrations on how to use the DS-5 simulator during the recitation.

Exams: There will be a midterm exam and a final exam. The exams are closed books and closed internet. Mobiles phones are not permitted and browsing the internet is not allowed. These exams require Respondus LockDown browser, webcam, and a microphone. Exams will include material from the modules, the readings, homework, and programming assignments and should be taken individually and not as a team. Final exam will be comprehensive.

• Midterm Exam: Total time allowed is 2 hours and will be available on Canvas from Monday, July 6th, 2020 3:30 PM till 11:59 PM
• Comprehensive Final Exam: Total time allowed is 2 hours and will be available on Canvas from Friday, August 7th, 2020 3:30 PM till 11:59 PM.
**Missing Classes/Assignments/Exams:** Attendance at all exams is mandatory. Throughout the semester, a student may miss classes, assignments, quizzes, or exams due to many reasons. Most of the reasons will not be accepted as an "excused" absence. Assignments, quizzes, or exams can be made-up only under extraordinary circumstances and only when notification is given to me before the quiz or exam is administered. A no-show for a quiz or exam without prior notification and a verifiable excuse (appropriate official documentation) results in a grade of 0 for that quiz or exam.

**Disputing Grades:** If you have a dispute with how an assignment, quiz, or exam is graded, you should get the solution to the assignment, quiz, or exam off the course website and examine it. If you really believe that your answer is correct (matches the answer given in the solution), contact the grader and discuss it with him. The grader will listen to your concern, and act on it, at their discretion. The solutions for programming assignments will not be posted, so contact the grader for disputing the grade if you have met all the requirements of the programming assignment and you have lost points. Note that instructor or grader addition errors should follow the above procedure. Assignment, quiz, exam, and homework grades are disputable for one week from the day the grades were assigned on Canvas.

**Syllabus Revisions:** This syllabus may be modified as the course progresses. Notice of such changes will be by email or announcement in class.

**Remote Class Policies:** Please make sure you are always muted during the class session. When you have a question, you can use the 'raise hand' option at end of each topic to ask a question. The instructor will give you a chance to ask your question. The use of cell phones, beepers, or communication devices is disruptive and is therefore absolutely prohibited during the remote class session and exams. Turn off your cell phone during the remote class session and while taking exams. If I catch you using these devices during the remote class or during the exams, the penalty can range from a formal warning to an 'F' for the course and you will be asked to leave the remote class. Except in emergencies, students using such devices must leave the remote class for the remainder of the class period. I know that some of you may wish to take notes directly on your computer and I have no problem with that. If, however, you choose to access your email, search the web, play games, or instant messenger your friends during class, you will have 10% deducted from your final grade for each transgression. If I am arriving late to the remote class, it will be because of circumstances beyond my control. You are expected to remain for 20 minutes past the scheduled remote class start time while I attempt to communicate my situation and relay instructions.

**Course Policies:** You are expected to spend at least 15 hours per week for this course. Keep all your graded assignments, quizzes, and tests for study and review. You should track your own progress using Canvas and be aware of current grades throughout the term. Final grading will be done as follows. A: ≥ 90%, B: ≥ 80% and < 90%, C: ≥ 70% and < 80%, D: ≥ 60% and < 70% and F: < 60%. Grades will be curved if necessary. Grades cannot be changed after they have been electronically entered into university’s system except for instructor error. Any extenuating circumstances that may adversely affect your grade must be brought to my attention before the final course grades are recorded. To be considered, such circumstances must be unusual, unavoidable, and verifiable.

**Disability Services/Special Needs:** UNT complies with all federal and state laws and regulations regarding discrimination including the Americans with Disability Act of 1990 (ADA). If you have a disability and need a reasonable accommodation for equal access to education or services, please contact the Office of Disability Accommodation. Please initiate this process and inform me during the first two weeks of class.

**Academic Dishonesty:** All the provisions of the University code of academic integrity apply to this course. In addition, it is my understanding and expectation that your signature on any test or assignment means that you neither gave nor received unauthorized aid. For homework and programming assignments, while discussion is allowed, direct copying is not, and students must turn in individual submissions. All students are required to know, observe and help enforce the UNT Code of Student
Academic Integrity. Academic dishonesty will result in disciplinary action according to UNT Policy 06.003. The penalty for a first offense can range from a formal warning to an ‘F’ for the course. Regardless of the penalty imposed, a record of the offense will be kept in the Office of the Dean of Students.

Student Perceptions of Teaching (SPOT): Student feedback is important and an essential part of participation in this course. The student evaluation of instruction is a requirement for all organized classes at UNT. The short SPOT survey will be made available July 31 – August 6 to provide you with an opportunity to evaluate how this course is taught.

Tentative Course Schedule:

<table>
<thead>
<tr>
<th>Week</th>
<th>Lecture</th>
<th>Assignments Due</th>
</tr>
</thead>
<tbody>
<tr>
<td>06/01 – 06/05</td>
<td>Computer Abstractions and Technology</td>
<td></td>
</tr>
<tr>
<td>06/08 – 06/12</td>
<td>Instruction set</td>
<td>Homework 1</td>
</tr>
<tr>
<td>06/15 – 06/19</td>
<td>Instruction set</td>
<td>Programming Assignment 1</td>
</tr>
<tr>
<td>06/22 – 06/26</td>
<td>Instruction set</td>
<td>Programming Assignment 2</td>
</tr>
<tr>
<td>06/29 – 07/03</td>
<td>Arithmetic for Computers/Review</td>
<td>Homework 2</td>
</tr>
<tr>
<td>07/06 – 07/10</td>
<td>Arithmetic for Computers</td>
<td>Midterm Exam</td>
</tr>
<tr>
<td>07/13 – 07/17</td>
<td>Processor design</td>
<td>Programming Assignment 3</td>
</tr>
<tr>
<td>07/20 – 07/24</td>
<td>Processor design</td>
<td>Homework 3</td>
</tr>
<tr>
<td>07/27 – 07/31</td>
<td>Memory Hierarchy</td>
<td>Programming Assignment 4</td>
</tr>
<tr>
<td>08/03 – 08/07</td>
<td>Memory Hierarchy/Review</td>
<td>Homework 4/Final Exam</td>
</tr>
</tbody>
</table>