



Course Syllabus: Fall 2021

Class Information

- CS/SE 2340 Computer Architecture
- Monday/Wednesday 2:30 – 3:45 pm
- SCI 1.210

Class Resources. This is an in-person class with online supplemental resources.

- **eLearning:** We will use eLearning for the grade book, links to quizzes, and links to upload assignments.
- **YouTube:** Content lectures are on YouTube in the Computer Architecture playlist on my channel: <https://www.youtube.com/user/JaniceMazidi>
 - This content duplicates what I will cover in class, so you are not required to watch the videos. However, the videos can be helpful if you miss a class or want a short refresher on a topic.
- **Piazza:** We will use Piazza for asynchronous class discussion, announcements, homework instructions, etc.
 - Rather than emailing questions to me or the TA, please post your questions on Piazza so that everyone has the same information.
 - Piazza also has a free android/iphone app.
 - Sign up here: piazza.com/utdallas/fall2021/csse2340/home

Professor Contact Information

- Dr. Karen Mazidi
- Email: Karen.Mazidi@utdallas.edu
- Office: ECSS 3.203
- Office phone: 972-883-3868
- Office hours: Monday through Thursday 5:30-6:00 pm
 - Call me, Teams me, or just stop by

TA Contact Information

TBD

Course Pre-requisites

CS/CE/TE 1337 (Computer Science I) with a grade of C or better, and
CS/CE/TE 2305 (Discrete Math I) with a grade of C or better

Course Description

This course introduces the concepts of computer architecture by going through multiple levels of abstraction, and the numbering systems and their basic computations. It focuses on the instruction-set architecture of the MIPS machine, including MIPS assembly programming, translation between MIPS and C, and between MIPS and machine code. General topics include performance calculation, processor datapath, pipelining, and memory hierarchy. Credit cannot be received for both courses, ([CS 2340](#) or [SE 2340](#) and ([CE 4304](#) or [EE 4304](#)).

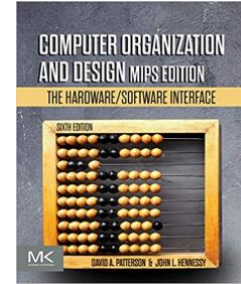
Student Learning Objectives

1. Students will convert numbers between bases 2, 10, and 16. Students will perform 2's complement arithmetic calculations.
 2. Students will create and debug Assembly language programs that include (a) integer operations, (b) floating-point operations, (c) control structures, (d) functions and macros, (e) static memory allocation for varied data types, (f) dynamic memory allocation, (g) standard I/O, and (h) memory-mapped I/O.
 3. Students will critique programs for efficient use of data types, addressing modes, and instructions, as well as for readability and maintainability using a provided rubric.
 4. Students will calculate computer performance measures. Students will use performance metrics to evaluate a chosen CPU architecture. Students will define terms used in CPU technical brochures.
 5. Students will differentiate between systems programs such as compilers, assemblers, linkers, and loaders, and explain how they are used by operating systems to convert programs into machine language to be executed.
 6. Students will explain the flow of information through a computer's core components, including the datapath, control, memory, and I/O.
 7. Students will diagram the flow of data, code, and control signals through a pipelined architecture. Students will evaluate the presence or absence of hazards in a pipelined architecture, and explain how the hazards could be avoided.
 8. Students will diagram and explain the memory hierarchy, including caches and virtual memory. Students will explain the different memory technologies used in computers.
 9. Students will contrast the four types of parallelism.
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Required Textbooks and Materials

Textbook: Computer Organization and Design MIPS Edition (6th ed)
by David A. Patterson and John L. Hennessy
ISBN-13: 978-0128201091
ISBN-10: 0128201096



If you have the 5th edition, that will be fine.

Software

This course will involve coding in the MIPS assembly language using MARS (MIPS Assembler and Runtime Simulator). Get it free here:

<http://courses.missouristate.edu/KenVollmar/mars/> or google MIPS MARS

This is a simple jar file that you can download and run.

Grading and Course Deliverables

Course grade is composed of:

- 30% - homework; approx. 10 assignments, mostly coding assignments
- 45% - 3 exams; 15% each
- 20% - quizzes; at least one a week
- 5% - attendance
- Letter grades will be assigned according to the UTD +/- conventions.
 - 0,1,2,3 minus
 - 4,5,6 neither plus nor minus
 - 7,8,9 plus

Course & Instructor Policies

- Assignments must be turned in on the due date, by 11:59 pm.
- Late assignments are deducted by 10% on the first and second days late. After two days, the assignment will not be accepted.
- Quizzes are not accepted late.
- Makeup exams are not given unless prior permission has been granted due to extenuating circumstances.
- There are no extra credit points or do-overs in this class. This is a college course with expectations that students put forth their best efforts as much as possible, and that not everyone will make an A.
- Do not turn in code or other work that is not your own. Discussion and collaboration are good things, turning in someone else's work as your own is not.
- **If you do not agree with a grade you have been given, you must make your case within a week of receiving the grade or the grade stands as is.**



Comet Creed

This creed was voted on by the UT Dallas student body in 2014. It is a standard that Comets choose to live by and encourage others to do the same:

“As a Comet, I pledge honesty, integrity, and service in all that I do.”

Academic Support Resources

The information contained in the following link lists the University’s academic support resources for all students. Please go to [Academic Support Resources](#) webpage for these policies.

Classroom Conduct Requirements Related to Public Health Measures

UT Dallas will follow the public health and safety guidelines put forth by the Centers for Disease Control and Prevention (CDC), the Texas Department of State Health Services (DSHS), and local public health agencies that are in effect at that time during the Fall 2021 semester. Public health measures may be required for class participation (e.g., wearing of masks, social distancing) and students who refuse to comply may face disciplinary action for [Student Code of Conduct](#) violations.

Students who have tested positive for COVID-19 or may have been exposed should not attend class in person and should instead follow required disclosure notifications as posted on the university’s website (see “[What should I do if I become sick?](#)” webpage)

UT Dallas Syllabus Policies and Procedures

The information contained in the following link constitutes the University’s policies and procedures segment of the course syllabus.

Please go to <http://go.utdallas.edu/syllabus-policies> for these policies.

The descriptions and timelines contained in this syllabus are subject to change at the discretion of the Professor.