



University of Houston
Department of Computer Science

Syllabus

COSC 2440 – Computer Organization and Architecture
Prof. Kevin Long, kblong@uh.edu, +1 713-444-8706
Fall 2020

Required prerequisites: COSC 1430 – Introduction to Programming.

Class Schedule:

- This is a synchronous online course with two sections, one at 4-5:30pm Mondays and Wednesdays, and the second immediately afterwards from 5:30-7pm. The information we cover is the same for each, and you may swap as often as you like.

Accessing the Class:

- Classes consist of 180 minutes of lecture material a week, plus any extra we might need for homeworks and labs. Lectures consist of live and pre-recorded material.
- We also will host live lab streams for you to join to get any help you need on your lab. You just come when you like, unannounced, by joining either of the two lab streams. Like the lectures, you're not restricted to joining the one to which the registrar assigned you.
- Each week, some of the lecture will be live, and some will be pre-recorded. Everything is uploaded and available afterwards. Can't make a lecture? Review the recording.
- We will use WebEx to stream, at least initially. It's bullet-proof and free. If Microsoft Teams will ever stop crashing, I may move us to that platform. The links to join are below in the schedule grid.
- I'll break the lectures up into topics, covered in 10-15 minute segments. With roughly 30 lectures, that means we will cover material in This lets you consume in bite-size chunks. I'll also try to have questions for you to instantly check your knowledge for each topic. That's a change so I may have to combine some to keep up.

Homeworks have always taken longer than the lectures, so plan your week accordingly. I will try and bring the homework problems and the lectures into Blackboard, so that you can test your understanding on a per-topic/video basis and get an immediate grade.

Anything I teach is recorded and uploaded for replay. The sections are identical, so I may upload both sections of lectures or just pick the better of the two and upload it once.

Recordings are uploaded to YouTube, and maybe to Microsoft Teams, as we're trying it out in parallel. One advantage of Teams is that it's a bit easier for us to continue the discussion about a lecture after it's over; for example, I can add links to other resources, share documents, answer questions, and the like. I typically do not monitor comments made on something I share on YouTube.

I'll keep sections in sync for assignments and labs also. Despite your being assigned a lab "time", they're all asynchronous, meaning you can do them whenever you like. However, we will have a WebEx set up for each lab session and will have a TA there to help you with your lab. The 4pm class's lab overlaps with the 530pm class's lecture, so you'll see two things at 5:30pm on Mondays. They're separate WebEx sessions, but both will be on the calendar.

We will also have other office hours scheduled by the TA's during the week. If you have a question, you can just hop on one of those video calls and meet with them.

Classes and Labs Schedule

Class	Class Title	Days & Times	WebEx
COSC 2440-01 (17001)	Computer Org & Architecture (Lecture)	MoWe 16:00 - 17:30	Join meeting
COSC 2440-03 (17019) & 6308-01 (14048)	Computer Org & Architecture (Lecture)	MoWe 17:30 - 19:00	Join meeting
COSC 2440-02 (17002)	Computer Org & Architecture (Laboratory)	Mo 17:30 - 19:00	Join meeting
COSC 2440-04 (17020)	Computer Org & Architecture (Laboratory)	Mo 19:00 - 20:30	Join meeting

Teaching Assistants:

We have six TA's this semester. There are here to help, and will have less grading to do since many things will be graded online the instant you turn them in. This frees them up to work with students. I'll assign each of you to a TA as a primary contact, but once the TA hours are scheduled, you can pick the time that works best.

The TA's have a private channel in Teams. You can post a question to them by sending an email to: 034e5546.UofH.UH.EDU@amer.teams.ms. Sorry the address is strange, it's random. Things to email include general questions that might be good for the TA team to know about -- a problem with a lab, something to bring to their attention. If you have questions about specifics on a lab or homework, it might be a lot easier for you to join one of their office hours.

Labs follow classes, and there are 3 TA's assigned to each pair as follows:

Class Time	Lab Time	Name	Email	CougarNet ID
4-5:30	5:30-7	Alireza Ansaripour	aansaripour@uh.edu	aansarip
		Yuan Tian	ytian14@uh.edu	ytian23
		To be determined	TBD	
5:30-7	7-8:30	Farah Naz Chowdhury	fchowdhury4@uh.edu	fchowdh2
		Md Mahin	mmahin@uh.edu	mmahin
		Mahsa Rezaei Firuzkuhi	mrezaeif@uh.edu	mrezaeif

There is a WebEx meeting scheduled for the labs that is separate from the class lecture WebEx invite. You can find the invites for the labs in the Lab discussion channel in Teams. A TA will open the WebEx each week and help with whatever you need. You just join the WebEx. The lab WebEx probably are not the place to ask questions about your grade or your lab extension request, etc., especially if others are there trying to get understanding how to do the lab. That's best left to office hours.

Office Hours

We will also have office hours throughout the week, both for the TAs and for me.

I will announce my office hours as soon as I pin down the TA's, but I expect them to be a couple of times a week on Tuesdays and Thursdays, once in the morning and the other in the afternoon. More to come. We can have a one-on-one WhatsApp/text exchange (which most prior students have preferred), you can send me a chat in Teams, ask for a private call, etc. – just let me know you want to talk and we can.

Lecture and Exam Dates

There are 30 scheduled lectures and two exams: a mid-term and a final. We'll spend part of a lecture before each reviewing things. The mid-term will take place during normal class time. The final is scheduled by the University [here](#)¹. According to that document, the 4pm class their final on Monday, Dec. 14, and the 5:30 class has theirs on Friday, Dec. 11.

Files and Recordings

Lectures are recorded and made available for replay in at least two places:

- the class Dropbox drive which you can access [here](#)²
- our YouTube playlist (not a channel, so you don't need to subscribe) located [here](#)³

Communicating with the Instructor:

- Your first line of defense for all things homework and lab are the TA's. They have the solutions and can guide you through the assignments. *Please contact them first.*

¹ <https://uh.edu/academics/courses-enrollment/final-exam-schedules/>

² https://www.dropbox.com/sh/es9tq305ag7xlvb/AADrYuTh_6wgpXhlTFfQ00zYa?dl=0

³ <https://www.youtube.com/playlist?list=PLUFEqGBIW8KvbDK0tqYA-zFq9XdqNxXIX>

- If you have a concern that warrants an immediate response, like finding a mistake in the homework, or you've asked a couple of friends and none of you can get into the WebEx or hear me), then WhatsApp or text me immediately at 713-444-8706. Sometimes I'm sooo into it that you'll have to resort to drastic measures like using the WebEx drawing tool to graffiti a plea for help on the slide I'm showing or unmuting to interrupt me. Seriously, I can be that zoned in, and my reaction will be one of appreciation for not making a silent movie.
- If you do want to WhatsApp me, the first time you send me something, introduce yourself as a student in 2440 and your name, please.

Letters of Recommendation

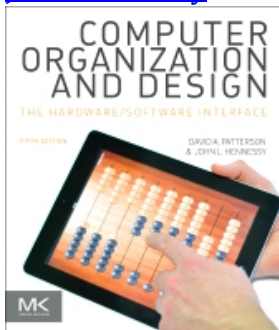
One of the areas that causes me the most pain is not being able to keep up with requests for letters of recommendation. They have exploded in recent semesters, and I have missed deadlines which is no good for anyone. I'll institute a signup process this semester for anyone needing a letter for grad school or an internship, etc. One of the most important things to ask yourself is whether I would have any reason to know who you are and know anything about you. It's harder when we're all online, but you need to find a way to make that happen if you want me to write a letter for you. The whole process sounds harsh, but I can't over-promise and under-deliver.

What will be covered?

The basics of computer organization and architecture, including low-level computer design, basics of digital design, and hardware/software interface; principles of pipelining and caching, instruction pipelining, SIMD and multiprocessor systems. The book and course are about the structure and function of computers. Their collective purpose is to present, as clearly and completely as possible, the nature and characteristics of modern-day computer systems.

Textbook

Our class textbook is Patterson and Hennessy's Computer Organization and Design, MIPS Edition, The Hardware/Software Interface, 5th edition, by [David Patterson](#) and [John Hennessy](#).



Computer Organization and Design MIPS Edition
The Hardware/Software Interface
5th Edition

ISBN: 978-0-12-407726-3
ISBN10:0124077269
Copyright date: Sep 26, 2013
Pages: 800

IMPORTANT: We will not use the printed book, but rather an online electronic version from zyBooks. The book is web-based and requires a paid subscription. You must purchase your own license key; you cannot complete the course borrowing someone else's key, since the exercises and material I track is on a per-student basis.

Here's how to buy a license:

1. Sign in or create an account at learn.zybooks.com
2. Enter zyBook code: **UHCOSC2440LongFall2020**
3. Subscribe

A subscription is **\$72**. Students may begin subscribing on Aug 10, 2020 and the cutoff to subscribe is Dec 02, 2020. Subscriptions will last until Dec 30, 2020.

Please note that the Dec 2 deadline is set by Zybooks and occurs prior to the end of the semester. If you wait until Dec 3 to purchase a license to try and get through the entire semester's worth of reading in a weekend, you will not be able to buy the license and there is nothing I can do about it.

If you wish to use an accessible version of the textbook, please notify accessibility@zyBooks.com so that they can enable that version for you. You may revert back to the original version at any time.

If you have any questions about your key or access, drop an email to help@zybooks.com

There is a very good alternate text that we will use from time to time by William Stallings: Computer Organization And Architecture: Designing For Performance, 10Th Edition, ISBN 10: 0134101618 / ISBN 13: 9780134101613

You are not required to purchase the book, but seem to always be plenty of copies available for less than \$20 on abebooks.com [here](#). If you want to invest, it's not too expensive.

Tools we use:

- We'll continue to use **Dropbox** for slides, notes, copies of homeworks, articles, helpful extras, and solutions once posted. Always look here first for everything except announcements and homework uploads. Our folder this semester is [here](#)⁴
- **WebEx** for live streaming of Lectures, Labs and study sessions
- our **YouTube** playlist located [here](#)⁵

⁴ https://www.dropbox.com/sh/es9tq305ag7xlvb/AADrYuTh_6wgpXhlTFfQ00zYa?dl=0

⁵ <https://www.youtube.com/playlist?list=PLUFEqGBIW8KvbDK0tqYA-zFq9XdqNxXIX>

- Microsoft Teams CS2440 space, [here](#)⁶
- Zybooks, which once subscribed to, is [here](#)⁷
- Blackboard

Attendance: I do not typically take attendance in class, but may be compelled to. Plan on attending lectures until further notice.

There is a strong correlation between attendance and better grades.

The University requires that I include the following in this syllabus:

Excused Absence Policy (required for all courses)

Regular class attendance, participation, and engagement in coursework are important contributors to student success. Absences may be excused as provided in the University of Houston [Undergraduate Excused Absence Policy](#) and [Graduate Excused Absence Policy](#) for reasons including: medical illness of student or close relative, death of a close family member, legal or government proceeding that a student is obligated to attend, recognized professional and educational activities where the student is presenting, and University-sponsored activity or athletic competition. Additional policies address absences related to [military service](#), [religious holy days](#), [pregnancy and related conditions](#), and [disability](#).

Work Assignments:

You will have several types of assignments in this course:

- 1) zyBooks' Participation and Challenge Activities – they help guide you through the material and will count as a homework at the end of the semester.
- 2) Subject quizzes -- as close as we can make them to after the lecture, graded instantly, to help you gauge that you're understanding
- 3) Labs quizzes -- one per lap, that you take to prove you completed the lab that week
- 4) Traditional homeworks will be assigned via Blackboard, and an email will be sent notifying you of the availability of the homework. We will try to move these into a quiz format as well, so that they're graded instantly, but since they will include problems that can take a while to work on, we need to figure out how to separate the asking from the answering. We may give you time to practice similar problems and then give you a chance to answer another that's graded.
- 5) Labs count towards your course grade. More below.

My homeworks contain errors, usually small, because I write a lot of the material new each semester. Do not be shy about reaching out to your TA with questions since if the problem seems impossible, it may very well be. One nice thing about online grading is that if I change the answer after you've turned it in, Blackboard will regrade it based on the corrected answer. I very much appreciate hearing about them, and from past experience, you enjoy giving me the heads-up. A win-win.

⁶

<https://teams.microsoft.com/l/team/19%3a4e96e53d76d34c7c85f24aa62ac00889%40thread.tacv2/conversations?groupId=e6a14e78-b5a8-49a9-a1d6-d23f8ee6050f&tenantId=170bbabd-a2f0-4c90-ad4b-0e8f0c4259>

⁷ <https://learn.zybooks.com/zybook/UHCOSC2440LongFall2020>

Labs:

You'll have a lab each week to complete, and an online quiz afterwards.

Exams:

The registrar schedules exams so that there is no possibility of it conflicting with another. Now that things are online, I will not grant requests to change exam times since the usual scattering of travel to other countries and such should not make a difference. The University has published the exam time for a number of months, so there should be nobody who finds themselves in a time conflict.

The final exams are generally not comprehensive, and count for the same proportion of your final grade as the mid-term. The mid-term is designed to fit within a regular class lecture period of 90 minutes. The final may go longer.

Grading:

Grading is weighted as follows:

Midterm Exam	20%
Homework assignments	45%
Labs/Programming [†]	15%
Final Exam	20%

Grades for everything are posted in BlackBoard's Grading Center. You are responsible for monitoring the posting of your grades. The TAs are asked to grade everything within a week of the deadlines, so if a grade is missing, you should assume there is a problem and contact them.

†: Graduate students are not required by the university to take labs. Therefore, you have three options:

- Substitute a project for the semester's worth of labs
- Do the labs anyway (they're interesting) – if you start taking labs, I'll assume that's your election
- Skip the labs, and I'll just count the homeworks for 60% of your grade

Other Important Notices:

The University requires that I include the following:

[Syllabus Changes](#) (required for all courses)

Due to the changing nature of the COVID-19 pandemic, please note that the instructor may need to make modifications to the course syllabus and may do so at any time. Notice of such changes will be announced as quickly as possible through (*specify how students will be notified of changes*).

The University recommends that I include the following:

[Resources for Online Learning](#)

The University of Houston is committed to student success, and provides information to optimize the online learning experience through our [Power-On](#) website. Please visit this website for a comprehensive set of resources, tools, and tips including: obtaining access to the internet, AccessUH, and Blackboard; requesting a laptop through the Laptop Loaner Program; using your smartphone as a webcam; and downloading Microsoft Office 365 at no cost. For questions or assistance contact UHOnline@uh.edu.

UH Email

Email communications related to this course will be sent to your [Exchange email account](#) which each University of Houston student receives. The Exchange mail server can be accessed via Outlook, which provides a single location for organizing and managing day-to-day information, from email and calendars to contacts and task lists. Exchange email accounts can be accessed by logging into Office 365 with your CougarNet credentials or through Access UH. They can also be configured on [iOS](#) and [Android](#) mobile devices. Additional assistance can be found at the [Get Help](#) page.

Webcams

Access to a webcam is required for students participating remotely in this course.

Honor Code Statement

Students may be asked to sign an honor code statement as part of their submission of any graded work including but not limited to projects, quizzes, and exams: *"I understand and agree to abide by the provisions in the (select: [University of Houston Undergraduate Academic Honesty Policy](#), [University of Houston Graduate Academic Honesty Policy](#)). I understand that academic honesty is taken very seriously and, in the cases of violations, penalties may include suspension or expulsion from the University of Houston."*

Synchronous Online Courses: This course is being offered in the Synchronous Online format. Synchronous online class meetings will take place according to the class schedule. There is no face-to-face component to this course. In between synchronous class meetings, there may also be asynchronous activities to complete (e.g., discussion forums and assignments). This course will have a final exam per the [University schedule](#). The exam will be delivered in the synchronous online format, and the specified date and time will be announced during the course. Prior to the exam, descriptive information, such as the number and types of exam questions, resources and collaborations that are allowed and disallowed in the process of completing the exam, and procedures to follow if connectivity or other resource obstacles are encountered during the exam period, may be provided.

Alternative Assessment in Any Course Format: An alternative assessment will be used in the place of the traditional final exam at the course conclusion. Instructions will be provided, including the date and time that the assessment materials will be released to the class and will be due, resources and collaborations that are allowed and disallowed in the process of completing the assessment, procedures to follow if connectivity or other resource obstacles are encountered during the assessment period, acceptable submission formats, and submission location.