

Computer Architecture & Assembly Language

CSIT 256-51V - CRN 27557 - Spring 2021 - Syllabus v0.0

Section Info

Section 51v - CRN 27557

Monday 5:30 pm - 10:15 pm "Remote Synch"

Course Modality: "Remote Synch"

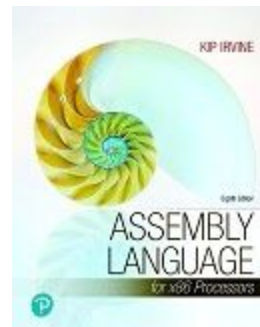
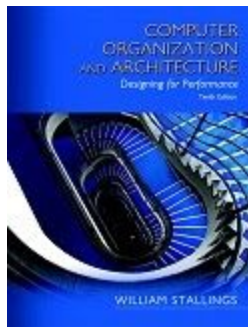
The class will be conducted as a "Remote Synch" course. The 'Remote' means that we will work from home instead of on-campus and the 'Synch' is short for synchronous which means the class has a scheduled meeting time, for us that is Mondays starting at 5:30 pm.

Link(s) to Zoom meeting(s) will be in the Learning Management System (LMS) called Canvas

Versions

- Version 0.0 - 1/18/2021 - First draft

Book Information



There are two books for the course:

Computer Organization & Architecture, William Stallings, Pearson/Prentice Hall, 10th Edition

Note: homework will be from the Stallings Book

Assembly Language for x86 Processors, Kip Irvine, Pearson/Prentice Hall, 8th Edition

Note: To complete the labs in Assembly Language, the Irvine book is a needed reference

Author's Website: <http://asmirvine.com/>

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Instructor Info

Name: Stephen T. Brower
Work # (908) 526-1200 x8259 *

Office: West Building W324 *
preferred email: stephen.brower@raritanval.edu

* For Spring 2021, I will not be on campus - the best way to reach me will be via email. I will have “drop-in” office hours via Zoom - link(s) in Canvas

Canvas:

Canvas is the official source for the latest: Syllabus, Class Schedule, Slides, Demos, Homework Assignments, Lab Assignments, Assembly Project, Exam Information

Spring 2021 Office Hours (1/19 - 5/3 excluding Spring break):

- Monday 3:00 - 4:30
- Tuesday 5:00 - 6:00
- Wednesday 3:00 - 4:30
- Thursday 5:00 - 6:00
- and by appointment

Which Email to use and Email Response Time

If you have a question or have an issue submitting an assignment in Canvas, the preferred (fastest) way to contact the instructor is via his preferred email: stephen.brower@raritanval.edu

Over the last several semesters, I found the email system embedded in Canvas frustrating. So please email me at: stephen.brower@raritanval.edu

The goal is to respond in less than 24 hours. Please don't expect a response after 10 pm.

Occasionally there are known exceptions such around Spring Break where a response may take a little longer. If the instructor knows ahead of time there will be a period of unavailability longer than 24 hours, that will be communicated to the class.

Course Overview

This course, which is required for Computer Science students, focuses on the components of computer architecture: storage, data types and structure, instruction set and addressing modes. The course examines the way these components are interconnected and the nature of information flow between them. Students will use Assembler language to reinforce these concepts.

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General Education Learning Outcomes

At the conclusion of the course, students will be able to:

1. Apply creative and critical thought in designing computing solutions that demonstrate knowledge of the computer architecture
2. Apply quantitative reasoning to interpret data used in solving problems

Course Learning Outcomes

At the conclusion of the course, students will be able to:

1. Describe the main components of computer systems that define its architecture (CPU, storage, memory, instruction sets, and addressing modes)
2. Discuss the way the main components of computers are interconnected
3. Recognize assembly language syntax while reading and analyzing assembly language programs
4. Design, develop and test programs using MS Assembly Language commands while featuring various basic Assembly Language operations (data/program transfer, arithmetic instructions, indirect memory, addressing, procedures and stack operations)
5. Design, develop and test programs in the MS Assembly Language that include strings, arrays, macros, and conditional processing (Boolean instructions, loops)

Course Management, Structure and Pace

This course meets for approximately five hours a week for 14 weeks. Students should plan on putting in at least two hours of study time for every hour spent in class for lecture. Additionally, students should plan study time of another half hour for every hour spent in lab. Students who are successful in this class typically spend approximately seven hours *outside of class* each week working on the subject. This includes reviewing class notes, reading and studying the textbooks, doing homework and reviewing assembly code.

Zoom for Lectures / Lab time

As a “Remote Synch” course, Zoom will be used for the time we spend in the class.

Zoom Lectures

If we were in a traditional classroom, I would be able to see the student’s faces. I could see multiple “deer in the headlights” looks and realize I was going too fast and needed to back up

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and slow down and re-explain something. I could see multiple students falling asleep and realize I needed to move on or do an impromptu group exercise.

For the lecture I am asking you to have the webcam on and be muted.

My asking of the students to use their webcam to project their face while I am lecturing can benefit everyone so I can read the audience. I may not adjust if 1 person looks lost or 1 person starts to doze off, but if I realize 4-5 or more look lost or 4-5 or more face-plant on the keyboard (that happens) then I will adjust.

Zoom has buttons for go faster, go slower, need a break and there is a button for raise hand and Zoom has a chat where questions could be posted.

I am afraid that when reviewing code (this course involves programming) I may forget to position the code and the Zoom room side by side so I can read the audience, look for hands and see if hands are raised. I'm sure I will forget multiple times and I apologize in advance.

Zoom Lab Time

There are a half dozen group exercises for this class where we will use breakout rooms in Zoom. To work in these breakout groups, you need a webcam so your fellow group members can see you, and you need a microphone so your fellow group members can hear you.

For this class, the programming labs will be individual exercises programming in Assembly Language.

If we were in a traditional classroom, I could hear someone groan or see someone literally pull out their hair and I would realize that although they didn't ask for help, they need help. In a traditional classroom, I would periodically walk up and down the aisle because some people are hesitant to ask for help from afar but will ask if I am nearby.

If we were in a traditional classroom, I could look over your shoulder at your code or output screen on your computer and offer advice or direct through some clicking.

Although this is my second semester using Zoom for "Lab Time" I am still not really sure what the best way is to handle lab time.

There will be times that it would help me if you share your screen so I can see the code, but then so does the whole class. So I will use a breakout room so only you and I can see your screen.

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For lab time I want to help those that want help and I want to leave alone those that want to be left alone

Zoom down?

Remember August 24th 2020? Zoom had a major outage.

If that happens, I will create a Microsoft Teams meeting and email the link to the class.

If both Zoom and Microsoft Teams are down...Beats me!

Additional Software/Computer Requirements:

Unless you plan on working in the open lab on campus (which has limited hours now), you will need access to a computer with Visual Studio Community 2019 and the author's library (Irvine). The author's library is compatible with "Visual Studio 2019 Professional" and "Visual Studio 2019 Community".

There are links in Canvas with some information. See the "Preparing your computer" module in Canvas

The Visual Studio version for the Mac does not support Assembly Language. See "Got Mac?" page in Canvas

Course Routine

The course usually consist of 5 possible segments: Architecture Lecture, Architecture Lab, Assembly Lecture, Assembly Lab Lecture and Lab Time (6 nights will have 2 separate Labs) - all will be conducted in Zoom

The Architecture Lectures will be on the hardware from the Stallings book. Slides are in Canvas. Some lectures will include approaches to working on "problems".

Architecture Lab: the Architecture Labs will be done in groups. Breakout rooms will be set up in Zoom. (if we were in the classroom they would be on paper...this past summer I was able to port them electronically...some students chose to print the lab sheet, do the lab by hand, took a picture of the lab sheet, and loaded the picture into canvas)

Assembly Lecture will be on Assembly Language from the Irvine book and will include demos in Visual Studio. Slides and demo files are in Canvas

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Lab Lecture: Some Assembly Labs may need a few more comments than others. Probably for the semester as a whole the average is 5 minutes.

Assembly Lab Time: For the Assembly Labs, you will work individually. If you get stuck you may need to share your screen for the instructor to see. We can do that in a breakout room so no one else sees

Zoom Recording Policy

There are a number of privacy issues regarding the recording of Zoom lectures, especially the potential recording of students. I will not be recording the lectures and posting them later.

There are a handful of software demonstrations that I will do live that I will also record a video not in Zoom demonstrating the same software. The Software Demonstration videos I record outside of Zoom will be made available via Canvas

Grade Determinants:

Item	Percent
Homework	10%
Assembly Labs	25%
Architecture Labs	5%
Assembly Project	10%
Exam #1	15%
Exam #2	15%
Final Exam	20%

Grade % Range

A 89.5-100.0+
B+ 86.5-89.4

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B	79.5-86.4
C+	76.5-79.4
C	69.5 - 76.4
D	59.5 - 69.4
F	0 - 59.4

Homework

Homework will only be from the Architecture book and the page/question numbers will be posted in Canvas.

Homework must be submitted electronically via Canvas :

- Typed in assignment
- Typed and saved as a .docx or .rtf file and attached to assignment
- For a problem based homework (S9/S11) you can handwrite, scan/take a pic and the image attached to assignment

See below for the Late Policy(don't be late) and the Cheating Policy (don't cheat)

Assembly Labs

The Assembly Labs will be posted in Canvas (see the Posting Status page in Canvas).

The Assembly Labs correspond to the chapters covered in the Assembly book. They are designed as "In-Class Labs" meaning the intent is that the labs can be completed in about 2-3 hours. Some labs have multiple parts.

The expectation is that the Assembly programs will compile, but this course doesn't have the "if it doesn't compile it's a 0" policy the way the CSIT 105 and CSIT 254 have. However, **20 minutes is the max time that will be spent trying to fix syntax errors; if there are still syntax errors it will be a 0.**

To submit the lab the *.asm file(s) must be attached to the assignment in Canvas. This way the instructor can run the assembly code.

See below for the Late Policy(don't be late) and the Cheating Policy (don't cheat)

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Architecture Labs

The problem based questions that would have been part of the homework, are now done as an "Architecture Lab". There are only 6 Architecture Labs.

Although all of the Architecture Labs can be submitted by editing a document, it is possible that some of the Architecture labs may be easier for you to print, complete on paper, and then attach a scan/pic of the paper into Canvas

See below for the Late Policy(don't be late) and the Cheating Policy (don't cheat)

Assembly Project

The hope is that the Assembly Project will be posted around 4/12 or 4/19 in Canvas.

Unlike the Assembly Labs which can be done in 2-3 hours, the Assembly Project will be a larger more complicated program which will take longer to write. Students in the past ignored this warning, waited until the night it was due to start, were unable to complete it in time, and complained that Brower is a lousy instructor.

The expectation is that the Assembly Project will compile, however, **5 minutes is the max time that will be spent trying to fix syntax errors; if there are still syntax errors it will be a 0.**

To submit the project the *.asm file must be attached to the assignment in Canvas. This way the instructor can run the assembly code.

See below for the Late Policy(don't be late) and the Cheating Policy (don't cheat)

Exams

The schedule has the dates/times of the exams.

Exam 1 will be on Architecture and Assembly. Exam 2 will be a computer-based "hands on" exam in Assembly. It will be like a timed lab where you have 1 attempt to finish a program in 2 hours. The format of the Final Exam will be like Exam 1.

For all of the exams, about a week before the exam an "Information Sheet" with format, content, and sample questions will be loaded into Canvas

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Cheating Policy

You must work alone on the Homework, Assembly Project, and Assembly Labs. Cheating is not allowed. All parties involved in cheating will be dealt with according to the school's policy on cheating. The penalty can range from 0 on the assignment to F for the course.

For the assembly labs, asking the instructor for hints is not considered cheating. It is ok to email an assembly file to the instructor to ask for assistance. But, don't expect a response after 10:15 pm on any night.

NOTE: you have permission to use the instructor's demo .asm files, in whole or in part, for your labs and projects

Late Policy

According to the RVCC Catalog, for a 14 week course students are not to be penalized for 1 week of absences. To accommodate this, at the end of the semester the lowest "Homework" grade, the lowest "Assembly Lab" grade, and the lowest "Architecture Lab" grade will be dropped.

"Life Happens"

According to the RVCC Catalog, students are not to be penalized for 1 week of absences. To accommodate this, at the end of the semester the lowest "Homework" grade, the lowest "Assembly Lab" grade, and the lowest "Architecture Lab" grade will be dropped. That handles life happens.

Extra Credit

Some exams/assignments contain extra credit questions/opportunities. Other than that, no extra credit opportunities will be provided.

For example, if you choose not to submit ANY homework and then in April you ask for "Extra Credit" to make up for the missed homework, the answer is NO.

Class Attendance:

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Zoom Attendance Note: Attendance will be taken. (I am more likely to remember the same night as Architecture Labs or Exams.)

For the record, the 'School Policy': Students are expected to attend all classes for every course in which they are enrolled. To accommodate students' reasonable, personal situations that might prevent them from attending classes, each student is entitled to excused absences amounting to the equivalent of one week's class time in a semester. Absences in excess of this standard are handled individually by each faculty member. A student with absences amounting to one-fifth or more of the term's lecture or laboratory classes is subject to administrative withdrawal by the Dean of Instruction upon the recommendation of the faculty member.

Visiting Campus?

As of 1/19, there are only 3 access points to the main part of the campus. Please see the reopening page for information on visiting campus. (see: <https://www.raritanval.edu/reopening>)

Open Labs

For the schedule of the open computer labs for Spring 2021 Semester (see: <https://www.raritanval.edu/reopen-technology>) Before the pandemic, only 8 computers in the lab clustered closely together in the west building had the software. I assume that with social distancing, the number of accessible ones is much less than 8.

Withdrawal Procedure

See school's webpage for Spring 2020 Withdrawal and Refund Schedule and Refund Info (see:

https://commons.raritanval.edu/admin/finance/Documents/Spring%202021%20WithdrawalRefundSchedule%20and%20Enrollment_Payment%20Calendar.pdf)

(see: https://commons.raritanval.edu/admin/finance/Pages/refund_info.aspx)

Syllabus Part 2-College Policies

Please see the "Syllabus Part 2-College Policies v3" document

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Class Schedule

Please see the Class Schedule for the listing of lecture topics and timing of homework / labs / project / exams

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