

CSIT 256-51 Computer Architecture & Assembly Language CRN 17207

Fall 2021 - Syllabus v0.2

Section 51 - CRN 17207

Thursday 5:30 pm - 10:15 pm W309

Course Modality: in the classroom

The class will be conducted as a regular class with Lecture and Lab time in the classroom. Canvas is the official source for: Syllabus, Class Schedule, Slides, Demos, Homework/Lab/Project Assignments, Exam Information

Alternate Course Modality: Remote Synch

In case we are displaced from campus, then the Course Modality will be "Remote Synch". '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 Thursdays starting at 5:30 pm.

If we are displaced from campus, then link(s) to Zoom meeting(s) will be added to the Learning Management System (LMS), Canvas

Syllabus Versions

- Version 0.2 - 9/6/2021 - fixed a few typos, such as room number
- Version 0.1 - 9/1/2021 - first release
- Version 0.0 - 8/30/2021 - 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/>



Instructor Info

Name: Stephen T. Brower

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Fall 2021 Office Hours in the Office (9/1 - 12/13):

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

Course Overview

(Prerequisite: CSIT 254 Data Structures & MATH 151 Calculus I or equivalent)

This course is the third in the sequence for students in Computer Science planning to transfer to a four-year college. It may also be taken as a free elective by interested students with sufficient background. This course focuses on the components of a computer that describe its architecture: storage, the central processing unit, the instruction set and addressing modes. The course also examines the way these components are interconnected and the nature of the information flow between them. Students will use Assembly language to reinforce these concepts.

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 the lab. Students who are successful in this class typically spend approximately seven hours *outside of class*

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each week working on the subject. This includes reviewing class notes, reading and studying the textbooks, doing homework and reviewing demo Assembly code.

Attending all lectures is essential for success in this course because this reinforces and explains the material presented in the textbook. Additional programming techniques, which may not be found in the book, will be demonstrated in class and during lab time.

Grade Determinants:

Item	Percent
Homework (~9)	10%
Assembly Labs (~11)	25%
Architecture Labs (~6)	5%
Assembly Project (1)	10%
Exam #1 (10/14)	15%
Exam #2 (11/18)	15%
Final Exam (12/16)	20%

Grade % Range

A	89.5-100.0+
B+	86.5-89.4
B	79.5-86.4
C+	76.5-79.4
C	69.5 - 76.4
D	59.5 - 69.4
F	0 - 59.4

Software/Computer Requirements:

The computer labs have the “Visual Studio 2019 Professional” software needed to complete the in-class labs. The Author’s Library and sample project has to be installed; a .zip file is in Canvas that contains all of the files needed.

If you own a computer that can run the Visual Studio 2019 software, you can download the “Visual Studio 2019 Community” version which is free from Microsoft (see <https://visualstudio.microsoft.com/downloads/>)

The Irvine Library that is in Canvas in the “Visual Studio 2019 - Library Addendum” module, is configured to be installed on the root of the C:\ drive

If you wish to install the Irvine Library on a different driver or a different folder, you need to edit the configuration files. The author of the Assembly book, Kip Irvine, has installation/running notes on his web page: See <http://kipirvine.com/asm/> and then click on "Getting Started with MASM and Visual Studio 2019".

The installation process takes time, so don’t wait until the Assembly Project is due to install the software.

Not all of the computers in the open lab in the West Building may have Visual Studio 2019 installed. The Open Lab on the second floor of the West Building is open 6 days a week. For the schedule of the open computer labs for Fall 2021 Semester (see: <https://www.raritanval.edu/reopen-technology>)

Note: If we become displaced from campus, the Open Lab may not be available or have reduced hours

Laptops in the classroom:

You are allowed to use your own laptops in the classroom. Wireless devices should be able to connect to "RVCC-Student" by providing your G# and password. (see: <https://commons.raritanval.edu/admin/mis/tshome/TSGuide/Pages/Network.aspx>)

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, and the Canvas alerts are not always punctual.

So please email me at: stephen.brower@raritanval.edu

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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 Thanksgiving 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 Routine:

Most nights will be broken into 5 segments: Architecture Lecture, Architecture Lab, Assembly Lecture, Lab Lecture, Lab

Architecture Lecture: This lecture will be on the Computer Architecture material.

Architecture Lab: The Architecture Labs will be done in groups.

Assembly Lecture: This lecture will be on the Assembly Language material and will include demonstrations in Assembly Language. Students are encouraged to experiment in Assembly

Lab Lecture: The Instructor will introduce the Lab for the evening. It will vary week to week how long the introduction will take. It could be as short as a few seconds or as long as 15 minutes.

Lab: This is lab time to work on the Assembly Language Labs and Project. Almost every week there will be an assembly lab. During lab time take as many breaks as you need.

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).

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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)

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.

The Architecture Labs will be distributed on paper in class and you will return the paper. These Architecture Labs can be done in small groups (2-3 per group)

It is preferable that you submit the Architecture Labs by the end of the Architecture Lab time, but the latest to submit is the end of class (10:15pm)

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 11/19 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.

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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 paper based / closed note / closed book / no electronic devices and will be on Architecture and Assembly. The Architecture part will be Short Answer and "Problem" type questions. The Assembly part will have questions that will be either to hand write a few lines of assembly code or some code will be provided and you have to describe the output and/or show the contents of the registers in hexadecimal.

Exam 2 will be an open note / open book / open computer "hands on" exam in Assembly.

The Final Exam will be paper based / closed note / closed book / no electronic devices. The format 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 and reviewed in class

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 November you ask for "Extra Credit" to make up for the missed homework, the answer is NO.

Additional Policies:

Classroom Behavior

Cell Phones:

For the "lectures" please silence cell phones. It is understood that there may be times when emergency calls occur or the "pick me up at the airport" call needs to happen. For those calls please step into the hallway to take the call. During lab time, you can turn the sounds back on the cell phones.

Talking:

For the "lectures" please don't talk. It is understood that you may need to turn to a neighbor for the occasional question like "what slide is he on?" or "which file is that?" or "what page # did he say?" and that's fine. It is the full conversations that are distracting not only to the instructor but to the class as a whole.

For the Lab Time you can talk all you want, but "indoor voices" please.

Language:

The instructor will try his darn-doodliest to not swear during class time but an occasional expletive may slip out. Please try your darn-doodliest not to swear but don't fear reprisals if an occasional expletive slips out.

Proper Use of Computers:

Lecture: the instructor is easily distracted by typing and would prefer that computers are not used during the lecture, except for opening and view demo Assembly files. Pointing and laughing at the monitors is very distracting. ***Printing during lecture is extremely distracting***

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and very upsetting. If class members repeatedly distract the instructor, then all computers and laptops must be closed down for the rest of the semester.

Lab: During lab time everyone should be working on the labs/projects in Assembly. None of the labs/projects require social media sites like Facebook.

Bathroom Breaks:

Lecture: Depending on the length of the lecture there may be a break partway through, and usually it will be announced at the start. If you need to leave for a break just quietly get up and leave.

Lab: take all the breaks you need.

Class Attendance:

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.

Note: sometimes attendance is taken based on what graded items were not returned. If you come in late and see that graded items were returned, please wait for a break or Lab Time to get your graded items

Delayed Opening:

If the College announces a delayed opening at any location due to inclement weather or other emergency situation, all offices will be closed and all College classes and/or other activities will be suspended at that location until the delayed opening time.

Classes scheduled to begin before the delayed opening time that have 60 minutes or more of instruction time remaining at the delayed opening time will begin at the delayed opening time and conclude at the regularly scheduled ending time. Classes scheduled to begin before the delayed opening time that have fewer than 60 minutes of instruction time remaining at the delayed opening time will be canceled.

Classes scheduled to begin at or after the delayed opening time will meet as scheduled.

Children's Campus

The Children's Campus at RVCC offers on-campus childcare to student-parents while they go to class, study, complete coursework or work during the week. Spaces are limited. Call 908 – 231 – 8807 or visit their webpage for more information.

<https://www.raritanval.edu/childrens-campus/childcare-preschool>

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Transfer & Career Services

The RVCC Career Services Faculty and staff educate and support students in their career and life planning and prepare them for lifelong success. The office helps students build confidence and overcome obstacles, connect academic and co-curricular experiences, develop professional success skills, gain career related experiences, and create a powerful, personal digital identity. We offer career counseling and coaching, skills assessments, guided career exploration and decision-making; resume and cover letter review, assistance with internship and job searches, interview preparation, access to mentors and career connections, employer insights programs, and many more opportunities to prepare for your future.

It's never too early to begin exploring! Start your personal and professional journey, bridge your academic and professional life.

Connect with Career Services (

https://commons.raritanval.edu/studentserv/career_serv/pages/index.aspx) and Visit our YouTube Channel. (<https://www.youtube.com/channel/UCbicXNnj09BrdD1ArmStK8Q>)

Campus Resource Center & Food Pantry

Any student who has difficulty accessing sufficient food to eat, stable housing, or meeting other basic needs, and believes this may affect performance in this course, is urged to contact me (your professor) or the campus Resource Center for support. The Resource Center and Food Pantry is located behind the Student Lounge/Game Room on the second floor of College Center, across from the cafeteria. For more information contact the Resource Center and Food Pantry at: ResourceCenterAndFoodPanty@raritanval.edu . For a video of what services are available, please watch: <https://www.youtube.com/watch?v=YfpbfSoGGK4>

Center for Accessibility and Inclusive Education

Reasonable Accommodation: Raritan Valley Community College offers reasonable accommodations and/or services to persons with disabilities. Any student who has a documented disability and wishes to self-identify should contact the Center for Accessibility and Inclusive Education at (908) 526-1200 ext. 8534, or email caie@raritanval.edu.

Accommodations are individualized and in accordance with Section 504 of the Rehabilitation Act and the Americans with Disabilities Act. To receive accommodations, students must be registered with the Center Accessibility for Inclusive Education. Students should register with the office as soon as possible. No accommodation is official until the Accommodation Letter is issued from the student to their instructor.

Support Services

“As a student you may experience a range of issues that can cause barriers to learning. We care about your overall well-being and RVCC Counseling Services is here to help with any issues you may experience”.

If you are experiencing suicidal thoughts, personal distress, and/or addictions:

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Counselors are available during business hours in the Advising and Counseling Services (ACS) suite, 1st Floor, College Center. Personal crises are a priority in ACS and all services are free and confidential.

For appointments, call (908)526-1200 X8336 or email counselors at personalcounseling@raritanval.edu. Emails will not be checked outside of the hours of operation. After hours, or during college breaks or closures contact: **Psychiatric Emergency Screening Services (PESS) at 908-526-4100 (24/7) or dial 911 and go to your nearest emergency room.**

On and Off Campus Resources:

<https://commons.raritanval.edu/studentserv/conduct/Pages/Emergency-Contacts.aspx>

N.J. HOPE LINE at 855-654-6735 for peer support and suicide prevention hotline;

REACH NJ at 844-732-2465 for help navigating/accessing treatment for addiction

Student Handbook

You are responsible for all policies stated in the Student Handbook, including Academic Integrity Policy and Code of Student Conduct.

See: https://commons.raritanval.edu/studentserv/conduct/pages/Policies_and_Documents.aspx

Withdrawal Procedure

See school's web page for Fall 2021 Withdrawal and Refund Schedule and Refund Info (see: https://commons.raritanval.edu/admin/finance/Documents/Fall%202021%20WithdrawalRefund%20Schedule%20and%20Enrollment_Payment%20Calendar.pdf)

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

Class Schedule

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

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