

# Riverside City College

## Course Syllabus

CSC-11/CIS-11

Sections: 49433, 49501, 49434, 49502

Computer Architecture and Organization: Assembly

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### **Course Description:**

An introduction to microprocessor architecture and assembly language programming. The relationship between hardware and software will be examined in order to understand the interaction between a program and the total system. Mapping of statements and constructs in a high-level language onto sequences of machine instructions is studied as well as the internal representation of simple data types and structures. Numerical computation is performed, noting the various data representation errors and potential procedural errors. 54 hours lecture and 18 hours laboratory.

### **Course Info:**

Professor: Michael Risher  
Email: [michael.risher@rccd.edu](mailto:michael.risher@rccd.edu)  
Lecture: MW 6:00PM – 7:25PM CIS-A-123  
Lab: CCC LAB CIS-A-209  
Monday-Thursday 11:30AM – 7:30PM  
Friday 11:30AM – 7:30PM  
Virtual lab <https://rcc-ist-computer-lab.com>

Zoom: <https://rccd-edu.zoom.us/j/3702721513?pwd=Nsg5rgay394xyapDxEdbU9vDyQPg6W.1>

### **Emailing instruction:**

If you need to get ahold of me, please use the email feature within canvas. Should this not work for whatever reason you can email me at my rccd email however, make sure that the subject line starts with “[CSC-11]” without the quotes, then a useful subject that describes the subject of your email. That way your email gets to the right place. If it is not sent this way it is highly probable that it will be missed

### **Required Reading & Materials**

#### **Textbook required:**

- Textbook: *Raspberry Pi Assembly Language Raspbian Beginners*
- By: Bruce Smith

- ISBN: 978-1-4921-3528-9
- The fourth edition is also a valid alternative.

The bookstore offers price matching on Amazon, bn.com, and local competitors. The offer must match the textbook exactly meaning same edition, format, and rental. This may only include new books, but they do say it includes new, used, and used rentals, however I am not fully certain of this. The offer does not include digital textbooks & access codes, special orders, new rentals, peer-to-peer pricing, or online marketplaces.

### **Material required:**

- Raspberry Pi 3 or 4 Ultimate Kit
- Raspbian OS 32-bit version (note: do not use the 64-bit OS)
- Monitor and keyboard

If you are unable to purchase a kit, there are kits available for checkout in the CCC Lab. Supplies are limited so first come first serve. They will be available starting at the end of the 2<sup>nd</sup> week. There is also a space in the CCC lab to plug in your pi's to do the lab assignments

### **Course Objectives**

Upon successful completion of this course, students should be able to:

1. Write a range of assembly language programs, ranging from simple code segments, to medium size application programs.
2. Demonstrate the implementation of fundamental high-level programming constructs such as decision statements, looping statements, and functions at the machine-language level.

### **Student Learning Outcomes**

- Analyze and interpret assembly language code and hexadecimal format. Demonstrate how fundamental high-level programming constructs are implemented at the machine-language level.
- Write and execute programs in assembly language (utilizing application programming interfaces) illustrating typical mathematic and business applications.

### **Lab assignments**

A total of 18 hours of lab time is required for this course. This can be done in person in the CCC lab or in their virtual lab. Course lab assignments are programming problems from the course website these are to be turned in via an assignment submission on the canvas page. Lab work turned in after the due date will only be worth 50% credit. Assignments that are missing after the closing date will receive no credit.

### **Discussions**

Weekly you will be required to post two questions regarding the reading or the class material and then answer two students' questions to the best of your ability. These questions need to be meaningful and cannot be something like "what did we do during class today".

### **Quizzes**

There may be an occasional weekly quiz on canvas discussing the topics of the week and/or the required reading.

### **Tests & Projects**

There will be a comprehensive final exam. The exam will cover all the material that is introduced in the course. The final exam will be 100 points. There will be a final project for this course which will be worth 100 points. More information will be given as we reach the end of the semester

### **Make Up**

Tests and quizzes can be made up in the event of an unforeseen emergency given proper documentation of the absence.

### **Tentative Schedule**

Week	Subject	Reading
<b>1 8/19 - 8/23</b>	Intro / Getting Started	
<b>2 8/26 - 8/30</b>	Architecture	
<b>3 9/2 - 9/6</b>	Labor Day (no class) / Number Systems (Need to have your Pi by this week)	Introduction / Starting Out

<b>4 9/9 – 9/13</b>	Number Systems / Basic Assembly	First Time Out / Bits of RISC Machine
<b>5 9/16 – 9/20</b>	Basic Assembly / Data Processing / Bits /	ARM Arrangement / Data Processing
<b>6 9/23 – 9/27</b>	Logical Operations / Control flow	Logical Operations / Conditional Execution
<b>7 9/30 – 10/4</b>	Control flow / Shifting & rotating	Branch and Compare
<b>8 10/7 – 10/11</b>	Looping	
<b>9 10/14 – 10/18</b>	Looping & stacks/ functions	Stacks
<b>10 10/21 – 10/25</b>	Functions / Arrays	Writing Functions
<b>11 10/28 – 11/1</b>	Hardware	GPIO Functions
<b>12 11/4 – 11/8</b>	Hardware	
<b>13 11/11 – 11/14</b>	Indigenous Peoples' Day /	
<b>14 11/18 – 11/22</b>	Floating point	Floating Point
<b>11/25 – 11/29</b>	No classes	
<b>15 12/2 – 12/6</b>	SIMD	Neon
<b>16 12/9 – 12/13</b>	Finals week	

### **Course Breakdown**

<b>Categories</b>	<b>Percent</b>
Discussions	10%
Assignments	30%
Quizzes	30%
Tests & Project	30%

### **Grading Scale**

A	90% - 100%
B	80% - 89%
C	70% - 79%
D	60% - 69%
F	0% - 59%

### **Classroom & Lab policies and decorum**

Attendance is necessary to successfully complete this course. Anyone having a lapse of seven days **WILL BE DROPPED** from the course for non-participation. Attendance applies to the online sections as well you will need to login to canvas every week to keep your spot in the course. Be on time for class. No food or drink is allowed in the classroom. You are expected to be cooperative and respectful during class. Disruptive talking or behavior will

not be tolerated, and you will be asked to leave for the day; you will not receive credit for attending and will be counted as a missed day. If you receive an emergency call, please feel free to step outside to handle it. Any online discussions must be respectful and cooperative as if you were inside the classroom.

### **Academic Dishonesty (Cheating)**

Cheating will be taken seriously! Doing otherwise would be unfair to the honest students. RCC defines plagiarism as, “Presenting another person’s language (spoken or written), ideas, artistic works or thoughts as if they were one’s own.” This includes using someone else’s code as your own. Plagiarism is academically dishonest. Students must make appropriate acknowledgement of the original source where material written or compiled by another is used.

### **Student Accommodations**

If you have a physical, psychiatric/emotional, medical, or learning disability that may impact your ability to carry out assigned course work, I urge you to contact the staff in the DRC Office at (951)222-8060. The office is located on the Riverside Campus, in the Administration Building. The DRC will review your concerns and determine with you what accommodations are necessary and appropriate. All information and documentation are confidential.

### **Department Equity Statement**

Riverside City College School of Business, Information Systems and Technology embraces a notion of an intellectual community enriched by diversity with multiple dimensions, including race, ethnicity and national origin, gender, gender identity, sexuality, class, and religion. We are particularly committed to populations that have historically been excluded from equitable participation in the classroom, higher education institutions, and our communities. Individually, we are devoted to addressing our unconscious bias to pave the way for a more inclusive curriculum and learning environment.