**Computer Science 11 – Computer Architecture and Organization: Assembly**

**0 Introduction:**

Course: CSC 11 - Computer Architecture and Organization: Assembly  
Professor: Paul J. Conrad

Website: <http://rccdopencampus.blackboard.com>, <http://pauljconrad.net>

EMail: [Paul.Conrad@rcc.edu](mailto:Paul.Conrad@rcc.edu), Phone: 951-222-8070

Lecture: Monday/Wednesday: 11:10AM-12:35PM in BE-100

Lab: TBA: MLK 219 (see Section 4.1 on Lab Requirements)

Office Hours: Monday, Wednesday: 2:00PM-4:00PM in BE-220J

Tuesday: 11:30AM-12:30PM in BE-220J

Prerequisite: None, Advisory: CSC 5/CIS 5

**1 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.

**2 Reading:**

Required Text: Raspberry Pi Assembly Language RASPBIAN Beginners

By: Bruce Smith

ISBN: 978-1-4921-3528-9



**2.1 Computer Hardware/Equipment:**

Required: Hardware: Raspberry PI 3 Starter Kit (Highly recommend Canakit’s Ultimate Starter Kit – See Link on Blackboard)

**3 SLO - Student Learning Outcome:**

Students should be able to:

* 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.

**4 Laboratory Assignments:**

Course lab assignments are programming problems from course websites. Lab assignments are to be turned in via Assignment Submission Tool on Open Campus with proper documentation of the lab assignment by the **specified due date**. Lab assignments are worth 10 points each. Lab work turned in after the due date will be considered late and worth 1/2 credit **until ONE WEEK after the due date**. Any later than that, it is worth zero credit.

**4.1 Laboratory Assignments:**

A required course component is completion of 18 hours of lab time. The objective of these lab hours is to provide students sufficient experience and practice with computer activities outside of lecture and homework assignments. A primary purpose of this time is to build computer programming skills studied in this course.

Completion of lab hours is required and you must attend weekly for at least 50 minutes per week in a regular, 16 week term. **You must have a minimum of one hour logged into the lab PRIOR to census day, (September 10th, 2017). Failure to do so WILL result in being dropped from the course, NO EXCEPTIONS!!!!**

Your scheduled lab time in WebAdvisor when you registered, is tracked when you log in at the computer (or log in terminal). If the tracking software is offline you must manually log your hours on the Manual Log Sheet located with the Lab Instructor on duty.

**4.2 Homework Assignments:**

Occasionally throughout the term, there may be homework assignments that are assigned. These assignments will be more challenging than lab assignments and should be done outside of class and lab time. These assignments will be assigned after the end of class on Wednesday, and will be due by 11:10AM the following Wednesday (some assignments may have due dates up to two weeks after being assigned – so take careful note of due dates).

Homework assignments are worth 10 points each. Homework turned in after the due date will be considered late and worth 1/2 credit **until ONE WEEK after the due date**. Any later than that, it is worth zero credit.

**5 Discussion Board Participation:**

As part of your course reading requirements, you will be required to participate in the Open Campus Discussion Board for our class. As a graded participation, you are to ask four questions or answer four discussion questions that your classmates have posted in the Discussion Board for the respective topic we are covering in class. This Discussion Board Participation is worth up to 4 points.

**In order to receive credit, the questions and/or answers must be a minimum of two sentences.**

Copy/pasting of another student’s answers will result in an automatic zero for the chapter discussion grade. Answers that do not add any value to the discussion forum will not be graded.

**6 Quizzes:**

There may be occasional weekly quiz on Wednesdays after **1:00PM and due no later than 11:10AM the next Wednesday**. The quizzes will be on Open Campus covering the discussed topics of the week. The quizzes will consist of up to twenty (20) multiple choice or true/false questions, worth 20 points total for the quiz. We will have approximately 10 quizzes throughout the semester.

**7 Exams:**

There will be one comprehensive final examination done online through Open Campus (will be made available on Dec 4th, due by Dec 11th). The final exam will cover all of the material introduced in the course, and will include a Final Project. Final Project presentation will be held on **December 11th, 2017 from 11:00AM to 1:30PM in room BE-100**. Final Exam is 100 points, and Final Project is 100 points.

**8 Reading and Exam Schedule:**

The table below is the tentative reading and examination schedule for this semester.

|  |  |  |
| --- | --- | --- |
| **Week/Date** | **Reading / In Class Objectives** | **Exam** |
| 1 – Aug 28th | Introduction |  |
| 2 – Sep 6th | Architecture |  |
| 3 – Sep 11th | Number Systems / Basic Assembly and C++ | Quiz #1 |
| 4 – Sep 18th | Basic Assembly and C++**\*\*** | Quiz #2 |
| 5 – Sep 25th | Data Processing / Bits / Logical Operations | Quiz #3 |
| 6 – Oct 2nd | Control Flow / Branching / Looping |  |
| 7 – Oct 9th | Shifts / Rotations | Quiz #4 |
| 8 – Oct 16th | Functions and Procedures | Quiz #5 |
| 9 – Oct 23rd | I/O | Quiz #6 |
| 10 - Oct 30th | Floating Point Introduction |  |
| 11 – Nov 6th | Floating Point (continuation) | Quiz #7 |
| 12 – Nov 13th | Software and Hardware | Quiz #8 |  |
| 13 – Nov 20th | Software and Hardware (continuation) | Quiz #9 |  |
| 14 – Nov 27th | Introduction to Super-Scalar Programming / TBD | Quiz #10 |  |
| 15 – Dec 4th | Wrapping Up / Review for Final |  |  |
| 16 – Dec 11th | Final Exam ( **Dec. 11th, 11:10AM to 1:30PM room BE-100)** | FINAL |  |

**\* Final Exam (Monday – Dec. 11th)**

**\*\* You must have your Raspberry PI 3 Ultimate Starter Kit by Sep 20th (will not allow use of lab loaner Pi’s after 9/20/2017)!**

**8.5 Make Ups:**

In general, there are no make ups. Exceptions only being for unforeseen emergencies with proper documentation. **In the event students have a work related obligation that must be met, arrangements in advanced can be discussed.**

**9 Grading Breakdown:**

|  |  |  |
| --- | --- | --- |
| **Task** | **Points** | **Grade Weight** |
| Discussion Board | 2 pts per topic | 10% |
| Lab Assignments/Homework | 10 pts each | 30% |
| Quizzes | 20 pts each | 20% |
| Final Exam\* | 200 pts\*\* | 40% |

**\* Failure to report for scheduled final examinations may result in a failing grade for the course. In case of illness or other emergency, the student must report to the instructor’s office or department prior to the beginning of the examination.**

**\*\* Final Exam is 100 points, Final Project is 100 points**

**10 Grading Scale:**

|  |  |
| --- | --- |
| **Letter Grade** | **Percentage** |
| A | 90% to 100% |
| B | 80% to 89% |
| C | 70% to 79% |
| D | 60% to 69% |
| F | 0% to 59% |

**Note: I do not round up percentages, e.g., an 89.8% will be submitted as a grade of B!**

**11 Classroom/Lab Policies**

Attendance is necessary for success in this course. **Do not be late for class as roll is taken at the beginning of class. Anyone late for class will be considered an unexcused absence. More than four (4) unexcused absences may result in being dropped from the course.** **Since Open Campus is an important tool used in this course, anyone who has not logged into Blackboard by Sunday, September 10th, 2017 will be dropped from the course.** During in class discussions, all mobile devices and personal computers must be turned off. There is no talking in class unless asking your instructor a question. The reading and lab assignments should be completed as assigned. Computer and Network Use in department classrooms and labs are governed by district policies found in Board Policy 3720 and are subject to Standards of Student Conduct located in the Student Handbook. Violations of these policies are subject to Disciplinary Actions as outlined in Section VI of the Student Handbook.

**12 Academic Dishonesty**

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. Cheating or dishonest practices, such as turning in the writing of someone else and claiming it as your own, will result in your receiving a failing grade on the assignment and possibly for the course. **I take academic honesty very seriously, so do honest academic work! In the event one student allows another student to copy the work, BOTH students will receive a failing grade on the work, or for the course.**

**13 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 Office of Disabled Student Services at (951)222-8060. The office is located on the Riverside Campus, in the Administration Building. The DSP&S will review your concerns and determine with you what accommodations are necessary and appropriate. All information and documentation is confidential.