Central Washington University
Department of Computer Science
Course Syllabus

CS311: Computer Architecture 1
Assembly Language
Summer 2021: Online

June 17, 2021

1 Course Information

Course Information	
Meeting Times	Lecture: Virtual Labs: Virtual
Instructor	Dr. Donald Davendra
Office	Virtual
Office Hours	Email
Phone	509-963-1432
Email	Donald.Davendra@cwu.edu
Textbook	Introduction to 64 Bit Windows Assembly & Programming: 4th Ed Author: Ray Seyfarth Publisher: CreateSpace Independent Publishing Platform ISBN-13: 978-1543138849 Website: `http://rayseyfarth.com/asm/`
Important Dates	Midterm: July 8 Final: July 29

2 Course Description

This course is designed as an introduction to computer architecture with focus on assembly language programming on the **x86-64 bit** architecture. This course will use the `yasm` assembly compiler and `ebe` interface.

- `yasm` can be downloaded from : `http://yasm.tortall.net/`
- `ebe` can be downloaded from : `http://rayseyfarth.com/ebe/index.html`

Ebe is only supported on Windows 10 OS, and only students with advanced knowledge of the Unix shell should attempt to install it on Linux distributions. It is NOT supported on the current version of Apple OS.

3 Student Learner Outcomes

3.1 Institutional Student Learning Outcomes

- *Critical Thinking Skills* - Students will demonstrate critical thinking by solving tasks and creating computer programs and analyzing programming techniques.
- *Communication and Technology Skills* - Students will demonstrate proficiency the use of technology through interaction with computer hardware and software.

3.2 Discipline Based Knowledge

Students will demonstrate knowledge of the computer science discipline.

- Program Student Learning Outcomes:
  1. To analyze a problem, determine if it could feasibly be solved with a computerized solution, design a solution and implement the solution.
  2. To find information needed to solve a computerized problem.
  3. To learn new programming languages with a minimum of assistance.
  4. To adapt to new computer technology with a minimum amount of assistance.
  5. To program in several programming languages.
- Course Student Learning Outcomes:
  1. The student will be able to create and modify programs of significant size using Assembly language in 64-bit programming.
  2. The student will be able to create software programs using commonly accepted practices for writing software, such as proper documentation, testing, and code writing.
  3. The student will be able to modify software written by other programmers (assessment tools: midterms, final examination and labs).
  4. The student will be able to compare and contrast Assembly language with other programming languages (assessment tools: midterms, final examination and labs).

4 Course Outline

The course will cover the following topics in the quarter.

1. Numbers type conversions (different bases)
2. Computer Memory Architecture
3. Memory mapping in 64-bit mode
4. Registers in 32/64-bit modes
5. Arithmetic in Assembly
6. Bit Operations
7. Branching and Looping in Assembly
8. Functions in Assembly

5 Teaching Strategies

This course will be **asynchronous** and virtual for the Summer 2021 quarter (apart from the midterm and final exam). Lecture videos, slides, codes and assignments will be posted on Canvas. Students are required to go through materials and do all the assignments. All assignments will have a due date.

All questions should be sent to the instructor through email.

6 Assessment

The assessment will consist of 5 programming assignments, 1 midterm and a final exam. The dates of the exams are the following (**subject to change if needed**):

Exam Type	Date	Time
Midterm	**07/08**	**12:00pm - 2:00pm**
Final	**07/29**	**12:00pm - 3:30pm**

6.1 Labs

Programming assignments will be posted on Canvas. It is the responsibility of the student to clarify the assignment. Due dates and grading rubric will be provided. No TA is assigned for this course in the Summer quarter and all questions needs to be sent to the instructor.

6.2 Grading schema

The grading criteria is given as follows:

Assessment Type	Grade
Five lab assignments: 10% each	50%
Midterm Exam	20%
Final Exam	30%

6.3 Grading Scale

The grading scale is given as the following:

Grading scale	
95 - 100	A
90 - 94	A-
87 - 89	B+
83 - 86	B
80 - 82	B-
77 - 79	C+
73 - 76	C
70 - 72	C-
60 - 69	D
0 - 59	F

7 Honor Code and Policies

7.1 Professional communication via email

Use proper communication when sending emails. Due to FERPA (Family Educational Rights and Privacy Act) regulations, please use your CWU email account for communication. Make sure you include the title of your message as if not added it may automatically go to spam. Please make sure to include your **name** and **class** code e.g. "CS311" in an email communication.

Email messages requesting extra credit, grade change or asking for any information that is included in the course syllabus, discussed in class or in Canvas will be ignored without notice.

7.2 Plagiarism Policy

- **Academic dishonesty will NOT be tolerated.**
- All assignments are individual work. Group work is not allowed and will be treated as cheating for all students involved.

- Please see the university policy on academic dishonesty in the Washington Administrative Code (see CWUP 5-90-040(22)). See WAC 106-120-027 and 106-120-028 at `http://apps.leg.wa.gov/WAC/default.aspx?cite=106-120-027` and `http://apps.leg.wa.gov/WAC/default.aspx?cite=106-120-028`.

Copying someone else's assignment or part of an assignment is cheating. If cheating is discovered on any assignment (labs, midterms or final exam) all students involved will receive an F grade for the entire course, and the matter will be reported to Student Success in accordance with CWU policies.

7.3 Assignment Submission Policy

- Late assignments will **NOT** be accepted.
- All due dates are final and every assignment **MUST** be submitted through Canvas. Any emailed assignment will be **discarded** without notice.
- All submitted files require the **student name**, **student ID** and the **honor code** at the top of the file. If this information is not provided, the submission will NOT be graded.
- Any issues regarding Canvas should be directed to Canvas support.

7.4 Tech Problem Policy

Keep the following important 24/7 Canvas Technical Support contacts nearby:
Toll Free Support Line: (877) 399-8897
Email Canvas Support: support@instructure.com

Canvas is not officially supported on mobile browsers, but it does offer an app for iOS and Android. However, because it is made to work on a desktop, this is not the best interactive experience. Since Canvas uses small elements of Flash, not all Canvas features may be supported on mobile devices, especially on iOS.

Technology glitches can, and are likely to, occur; do not wait until the last minute when doing assignments. Very occasionally the technology is not reliable. Canvas system or even the Internet may be down, speed becomes extremely slow, or you encounter frozen screen, etc. An official document is needed to prove this special situation in order to gain a second chance. Some examples of document are: any error messages displayed; a letter from your Internet service provider; an email from CANVAS support which pointed out causes of error, solution etc.

The best way to avoid these problems or to protect yourself is to prepare and start your work earlier. If the CANVAS or Internet was slow on Wednesday when you tried to work, you may finish your work later. If you encountered any tech problem in the last minute -

say at 4:55 pm Friday afternoon, I am afraid no one could readily assist you.

Please understand the whole **idea behind this policy is to be fair with every student in this online teaching environment**. For instance, you tried a time limit quiz/test once, but failed for some "tech" reasons. You either have the obligation to prove it to the instructor that this happened out of your control, or you should contribute by sharing the experience (inappropriate use) with other students so as they may not make the same mistake in the future.

7.5 General Policies

- Email queries will be responded to during working hours only.

7.6 Disability Statement

Central Washington University is committed to creating a learning environment that meets the needs of its diverse student body. If you anticipate or experience any obstacles to learning, contact Disability Services to discuss a range of available options. Student Disability Services is located in Hogue 126. Call (509) 963-2214 or email ds@cwu.edu for more information.

7.7 Accommodations for Religious Holidays

In compliance with **RCW 28B.137.010**, Central Washington University makes every effort to deal reasonably and fairly with students who, because of religious obligations, have conflicts with scheduled exams, assignments or required attendance. Students must present written notice to their instructor within the first two weeks of class listing the specific dates on which accommodations are required. Contact the Dean of Student Success at (509) 963-1515 for further information or questions.

7.8 CWU Covid-19 Information and Resources

Due to COVID-19, and under the directive and mandate of public health officials and the president of Central Washington University, **students must adopt face covering protocol** before entering any classroom or building at CWU until further notice. Students must also follow the social distancing placement marks in buildings and classrooms. If you do not have a face covering Central Washington University can provide one for you. If you have not yet received your CWU-supplied facial covering, please go the SURC Information Desk. Please do so prior to the start of your first class.

The **CWU COVID** website can be assessed from: `https://www.cwu.edu/fallguide2020/`

Stress and other life circumstances that may be out of your control can make learning and focusing difficult. If you find stress or other mental health concerns make academics difficult, Central has resources to support you. I encourage you to reach out as soon as you notice you're struggling.

1. Student Counseling Services (http://www.cwu.edu/medical-counseling/counseling-clinic) - crisis appointments available - 509-963-1391

2. Mental health crisis support outside of normal business hours - 1-800-273-8255; Text HOME to 741741, Call 9-1-1

3. Wellness Center - confidential sexual assault and other victim advocacy - 509-963-3213 - "We care" (http://www.cwu.edu/wecare)

4. Disability Services (http://www.cwu.edu/disability-services) - registration for accommodation - 509-963-2214

5. Case Management (https://www.cwu.edu/case-management/) - connect students with resources and support those most at-risk - 509-963-1515