Department of Electronics Engineering Technology
Division of Engineering, Computer & Technology
West Campus Building 9, Room 140 (407) 582-1902/1903
http://www.valenciacc.edu/west/engineering/

SESSION: Fall 2023

Course Syllabus for CET2123C – Fundamentals of Microprocessors – CRN 11786

Catalog Course Description: Introduction to basic principles of microprocessor architecture and assembly language programming. Content divided into two sections: microprocessor architecture and programming. Designed around 8086/8080A microprocessor architecture, bus architecture, memory (R/W Memory, ROM, and EPROM), and memory map. Programming includes such topics as introduction to 8086/8080A instruction set, loops, indexing, time delays, and subroutines. (Special Fee: $ 67.00)

Prerequisites: **CET 2114C** or departmental approval

Course Learning Outcomes: Students will be able to

- Analyze the hardware architecture of a microprocessor
- Define the architecture of 8085 and 8086 microprocessors
- Write software programs to perform applications
- Write instructions within the constraints and capabilities of its registers and the bus system
- Define programming techniques such as looping, counting, and indexing required for repetitious tasks
- Apply code conversion techniques for interfacing the microcomputer with the external world
- Define the basic concepts of data communication
- Identify input/output interface peripheral devices

Class Time and Location: Mixed Mode Course, Tuesday 2:30 – 4:30 PM @ West 11-243 (ATTENDANCE REQUIRED)

Textbook: Intel Microprocessors – Architecture, Programming, and Interfacing,
Barry B. Brey, Eighth Edition, Publisher: Pearson,
ISBN: 978-0-13-50246-8

Lab Manual: Will be provided by the Instructor

Professor's Information:

Instructor: Dr. V. Rajaravivarma
Office: West Campus, Bldg. 9 – Room 118
Phones: (Office) 407.582.5739
Email: vrajaravivarma@mail.valenciacollege.edu

Office Hours:
Bldg. 9 – Room 118: Monday 1:30 – 2:30 PM
Monday 4:30 – 5:30 PM
Tuesday 1:30 – 2:30 PM
Tuesday 4:30 – 5:30 PM
E-mail/Canvas message: Wednesday 8:00 – 11:00 AM
Thursday 8:00 – 11:00 AM
Friday 8:00 - 10:00 AM
Phone/video call/Office 9-118 in person: by appointment

Student Performance Assessment:

Homework & Quiz	**15%**
Laboratory Assignments	**25%**
Midterm	**25%**
Final Exam	**35%**

A:	**90% - 100%**
B:	**80% - <90%**
C:	**70% - <80%**
D:	**60% - <70%**
F:	**< 60%**

Important Dates:

Drop/Refund Deadline	August 28th
No Show Reporting Period	August 30th – September 8 th
Labor Day	September 4th
Veterans Day	November 10th
Student-Initiated Withdrawal Deadline ("W" Grade)	October 27th
Thanksgiving Break	November 22nd – November 26th
Final Exam	December 5th Tuesday @ 2:30 PM
Final Grades Viewable in Atlas	December 12th

Tentative Course Outline for CET 2123C; CRN 11786 Fall 2023

Date	Lecture Material	Homework	Lab	Due Date
Week 1 8/22/2023	Syllabus, Chapter 1: Sections 1-1:1-4 Introduction to the Microprocessor and Computer	Chapter 1		August 26, 2023 Saturday Midnight
Week 2 8/29/2023	Chapter 2: Sections 2-1.2-2 The Microprocessor and its Architecture	Chapter 2	Lab 1	September 2, 2023 Saturday Midnight
Week 3 9/5/2023	Chapter 3: Sections 3-1, 3-2 Programming Model & Addressing Modes	Chapter 3	Lab2	September 9, 2023 Saturday Midnight
Week 4 9/12/2023	Chapter 4: Sections 4-1:4-5 Programming (Data Movement Instructions)	Chapter 4	Lab 3	September 16, 2023 Saturday Midnight
Week 5 9/19/2023	Chapter 5: Sections 5-1:5-5 Programming (Arithmetic & Logic Instructions)	Chapter 5	Lab 4	September 23, 2023 Saturday Midnight
Week 6 9/26/2023	Chapter 9: Section 9-1 8086/8088 Hardware Specifications	Chapter 9	Lab 5	September 30, 2023 Saturday Midnight
Week 7 10/3/2023	Review			
Week 8 10/10/2023	**Midterm Exam (Chapters 1-5, Theory & Lab)** **MUST BE PRESENT (F2F) FOR EXAM: Tuesday October 10, 2023 @ 2:30 PM**			
Week 9 10/17/2023	Chapter 6: Section 6-1 Programming (Control Instructions)	Chapter 6		October 21, 2023 Saturday Midnight
Week 10	Chapter 7: Programming Using	Programming	Lab 6	October 28,

10/24/2023	Assembly Language with C/C++	Assignment #1		2023 Sunday Midnight
Week 11 17/31/2022	Chapter 8: Microprocessor Programming	Programming Assignment #2	Lab 7	November 4, 2023 Saturday Midnight
Week 12 11/7/2023	Chapter 8: Microprocessor Programming	Programming Assignment #3	Lab 8	November 11, 2023 Saturday Midnight
Week 13 11/14/2023	Chapter 8: Microprocessor Programming	Programming Assignment #4	Lab 9	November 18, 2023 Saturday Midnight
Week 14 11/21/2023	Chapter 8: Microprocessor Programming **Project Presentation**	Programming Assignment #5	Lab 10	November 27, 2023 Monday Midnight
Week 15 11/28/2023	**Project Presentation** Review			
Week 16 12/5/2023	**FINAL EXAM (Comprehensive -Theory & Lab)** **MUST BE PRESENT (F2F) FOR EXAM: Tuesday December 5, 2023 @ 2:30 PM**			

Homework Questions and Problems

Chapter 1 Pages 46-49

23,24,25,26,48,49,50,55,57,59,60,63,64,65,66,67,71,72,75,76,78,79,80

Chapter 2 Pages 74-75

5,6,7,8,9,13,14,15,20

Chapter 3 Pages 107-108

1 (a),(b),(c),2,3,6,7,8,

Chapter 4 Pages 154-155

1,2,3,4,6,7(a),(c),(e),8,9,13

Chapter 5 Pages 189-190

1(a),(b),(d),3,4,5,9,10,12(a),(b),13,17,18,19,20,23,25,26,29,39(a),(b),(c),40, 41,(a),(c),(d),42,43(a),(b),(c),44,45,47,48(a),(b),(c)

Chapter 6 Pages 221

1,2,3,4,6,7,13,1,4,15,16,17,18,19

Chapter 9 Pages 326-327

1,4,5,6,7,8,9,10,11,29,38

Attendance Policy

- Since this is a mixed-mode course, everyone is required to attend the weekly class meeting.
- Students are encouraged to ask questions by sending an e-mail or Canvas message to the instructor.
- Students who are not participating in online activities may be withdrawn from the course, at the discretion of the instructor.

Assignment Due Dates and Late Work

- **No late assignments** be accepted. Late assignments will be given a grade of zero (0).
- **All assignments must be uploaded as a PDF to Canvas** on the due date.
  - Canvas will not accept anything besides a PDF. Make sure you know how to save your files as a PDF.
  - **DO NOT WAIT UNTIL THE LAST MINUTE TO SUBMIT AN ASSIGNMENT.** If you wait until the last minute, and have an issue submitting the assignment – you will receive a grade of zero. Turn your assignments in early enough to notify the instructor if you are having issues. It is your responsibility to make sure all work is turned in by the deadline.
- **It is your responsibility to make sure your files are uploaded properly.** If I cannot read/open/access your file, you will receive a grade of zero (0) for the assignment.

Lecture Content

- Because this is an online course, the lecture content will be delivered online. Lecture videos will be posted weekly; it is **required** that students watch the videos for each topic **and submit weekly assignments related to the lecture topics.**

Course Communication Policy

- Important information about the course will be posted to Canvas and sent to every student's Atlas e-mail account. It is the student's responsibility to check Atlas e-mail and Canvas daily, for announcements pertaining to the course.

Exams

- The midterm and the final exam will be administered at a **common time**. **The entire class will take the exam at the exact same time.**
- This means you must be available to take the midterm and final exam during the date and time posted on the course syllabus. You must be available the same way that you would be available for an on-campus exam in a face-to-face course.

- Exams will be delivered online; it is your responsibility to have a working computer and any other required hardware/software prior to the start of the exam.

Lab Requirements & Written Report:

- A **typed** lab report will accompany every exercise done in this course. **A PDF file** of the lab

COVER PAGE: Includes Title of the Laboratory, your name, Course Title & Number, Submitted to: Instructor Name, Department Label, and Date of Submission – all in the same order.

INTRODUCTION: What are your goals or objectives in this lab? Explain what you are attempting to learn. In your lab manual or your lecture notes, look up the theory behind what experiment you are performing and discuss away.

PARTS LIST: All parts and equipment used should be listed in this section.

DISCUSSION: ***An in-depth description of the background and theoretical information researched relevant to the experiment. When applicable, governing laws and/or equations should be included***.

1. In your own words discuss the important topics related to the experiment. Use the textbook and other resources to assist you with the necessary information required for this section of the report.
2. Include **sketches, diagrams, drawings and pictures taken** of the experimental Set-Up and how you intend to fulfill your purpose.

VALIDATION OF DATA AND RESULTS:

Measured data and calculations; presentation of data through tables and graphs; sketch of experimental configuration; and discussion of experimental results, sources of error(s), and accuracy of measurements.

Refer specifically to the data collected during your experiment. Discuss any trends that you observed in your data. Do these data trends support the theory behind this lab? Why or why not?

ANSWERS TO LAB QUESTIONS: Some lab exercises have questions at the end. They must be answered in this section of the Lab Report.

CONCLUSION: Briefly summarize the results of the experiment. Did the experiment yield the desired results? Give your interpretation of the results. What has been learned, recommendation for future work or improvements in the experiment.

Makeup Policy

No make-up exams are permitted. If there will be an issue being present for an exam, speak to the instructor **immediately**.

Extra Credit Policy

- No opportunities will be provided during this course. Make it a priority to discuss your progress with the instructor EARLY - do not wait until the final exam is approaching if you are concerned about your grade.

Student Code of Conduct and Core Competencies

Students are strongly encouraged to read the Valencia policy Manual Student Code of Conduct and Computer Acceptable Usage and Student Core Competencies found at the following links:

http://valenciacollege.edu/generalcounsel/policy/

http://valenciacollege.edu/competencies

Illness Statement:
"*If you are unable to participate in the course due to illness, family emergency, etc., please communicate with me as soon as possible in order to create a plan to complete any missed assignments so that your learning can progress in your course. In the case of a prolonged online absence, please communicate with me as soon as possible in order to create a plan for the best course of action*."

Students with Disabilities
Students with disabilities who qualify for academic accommodations must provide a letter from the Office for Students with Disabilities (OSD) and discuss specific needs with the professor, preferably during the first two weeks of class. The Office for Students with Disabilities determines accommodations based on appropriate documentation of disabilities (WC SSB 102, ext. 1523)

Distance Tutoring & Technology Support at Valencia: You can easily access Valencia's *free* distance tutoring and tech support from a computer, laptop or mobile device.

> Distance tutoring services are provided fully online via Zoom. Through this service, you will receive real-time assistance via a Valencia tutor. Online tutoring is offered in: mathematics, sciences, accounting & economics, computer programming, EAP and foreign languages, and writing.
>
> Online Learning Technology Support services are also available. Students can receive assistance with navigating: Canvas, OneDrive, Zoom, YouTube, and Microsoft Office (Word, Excel, & PowerPoint). Support is also provided for video editing (via iMovie and MovieMaker) and converting documents from a Mac to PC. Tech support is available live (on-demand) via Zoom, by appointment, or via email. Students are encouraged to use the 24/7 Canvas Help located inside Canvas by clicking on the "Help" icon.

To get started using the Distance Tutoring and Learning Technology Support services, please visit www.valenciacollege.edu/tutoring. Through this site, you can view the schedule of tutors/tech support assistants, find available times, learn more about the services, and access a collection of supplemental resources that are available 24/7.

Hours of Operation:
Monday-Friday: 8 am – 10 pm
Saturday & Sunday: 9 am – 7 pm

DISCLAIMER: **Any Changes in the policy and/or schedule of this syllabus may be made at the discretion of the instructor at any time during the semester.**