EEL 4709C

Computer Design

Section: RVC

Internet/Fully Online

Spring Term 2026

Course Time Zone: Eastern Time (ET). Course due dates and times are according to this time zone.

Course Syllabus ([pdf](pdf))

Professor Information

Gang Quan

Roles: Primary Instructor

Email: gaquan@fiu.edu

Phone: 3053482808

Office Hours: By appointment

Office Location: EC3911

Department or Academic Unit: Electrical and Computer Engineering

Course Prerequisites

Course prerequisites, if any, are listed below.

Prerequisites: EEL3712, EEL3712L, and (ESI3215 or STA 3111 or STA 3033)

Course Description

This course introduces basic concepts for computer organization and design that are important for students to understand the major functional components in computer systems, their characteristics, performance, and interactions. The topics include classes of computers and their characteristics; Performance measurement and optimization; Instruction set architecture of a processor; Data representation and computer arithmetic; Instruction execution cycles and pipeline basic; Memory system hierarchy; and Parallel and distributed computing systems.

This course has met Quality Matters Standards for course design in an [official course review.](official course review)

Textbook and Course Materials

Computer Organization and Design: The Hardware/Software Interface (Zybook)

Subtitle: MIPS Edition, Edition 6

Required/Recommended: Required

Authors: David A. Patterson and John L. Hennessy

Publisher: ZYBOOKS

Publication Date: 2021

Copyright Date: 2021

ISBN 10: 9780128201091

ISBN 13: 979-8-203-15995-3

Chapters/Pages: 832

EEL 4709C-QUAN-SPRING 26-ZYBOOK CODE

Required/Recommended: Required

Authors: ZYBOOKS

Publisher: ZYBOOKS

Publication Date: 2020

Copyright Date: 2020

ISBN 10: 9780128201091

ISBN 13: 9798203159953

Chapters/Pages: 832

FIUEEL4709CQUANSPRING2026

Required/Recommended: Required

Authors: ZYBOOKS

Publisher: VST

ISBN 13: 8220149356741

FIUEEL2880ALAMSPRING2026

Required/Recommended: Required

Authors: ZYBOOKS

Publisher: VST

ISBN 13: 8220149356819

Panther Book Pack

Get all required course materials for $20.50 per undergrad credit hour through Panther Book Pack. You'll be charged automatically unless you opt out within 3 days after the add/drop deadline.

For more details, to compare costs, and to learn how to access your course materials, visit the [Panther Book Pack information page on FIU OneStop](#).

Student Learning Outcomes/Objectives

- **(CLA a) To describe different classes of computers and their characteristics**

- **(CLA b) To evaluate the performance of a computer and identify strategies and techniques to improve performance in computer architecture;**

- **(CLA c) To understand the instruction set architecture of a processor and to program using assembly language;**

- **(CLA d) To express integer and floating data into different representative forms and to perform simple arithmetic with pencil and paper;**

- **(CLA e) To describe processor design and instruction execution cycles;**

- **(CLA f) To describe and appreciate the memory hierarchy;**

- **(CLA g) To describe the motivations and challenges of the switch from sequential processing to parallel processing.**

Expectations of this Course

This is an online course, which means most (if not all) of the course work will be conducted online. Expectations for performance in an online course are the same as a traditional course. In fact, online courses require a degree of self-motivation, self-discipline, and technology skills which can make these courses more demanding for some students.

Students are expected to:

- review the getting started page located in the course modules;
- introduce yourself to the class during the first week by posting a self-introduction in the appropriate discussion;
- take the practice quiz to ensure that your computer is compatible with the learning management system, Canvas;
- interact online with instructor and peers;
- review and follow the course calendar and weekly outlines;
- log in to the course at least five times per week;
- respond to discussions by the due date specified. **No late work will be accepted** without a valid and documented excuse and prearranged with the instructor;
- respond to emails within two days;
- submit assignments by the corresponding deadline.

The instructor will:

- log in to the course at least five times week;
- respond to emails within 24 hours from M-F;

- **grade assignments and/or provide feedback within 7 - 14 days of the assignment deadline.**

Assignments & Assessments

Reading Assignments

- This is an individual assignment; discussions in groups are strongly encouraged
- Students are expected to read the assigned chapters/sections in the Zybook and finish the "Participation/Challenge Activities" in a timely manner.
- The assignment will be automatically submitted and graded in the ZyBook

Lab Assignments

- This is an individual assignment; discussions in groups are strongly encouraged
- Please check the lab assignment for lab activities and submission instructions
- Grading rubric: Please check the [Lab Report Format](#)
- Expected turnaround time for feedback or grades - two weeks

Homework

- This is an individual assignment; discussions in groups are encouraged
- Students are expected to submit their solutions in Canvas in a well-typed document, either in PDF or Word format
- Expected turnaround time - one week
- Grading rubric: Accuracy 80%, Presentation 20%

Collaborative Learning/Student Interaction

- This is a group assignment, worth 10% of your grade

- Student participation/interaction shall include the group discussions, presentations, Q&A, and review activities of study guides for their midterm and final exam.

Midterm and Final Exam

In order to mitigate any issues with your computer and online assessments, it is very important that you take the [Practice Quiz](#) from each computer you will be using to take your graded quizzes and exams. Assessments in this course are not compatible with mobile devices and should not be taken through a mobile phone or a tablet.

- Exact Date/Time: view exam details within the "Quizzes" section

- Turn-around time: one week

Grading

CourseGradesDistributionT

a

b

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Course Requirements	Weight
Reading Assignment	20%
Homework	15%
Lab assignment	20%
Collaborative Learnign/ Student Participation	10%
Midterm Exam	15%
Final Exam	20%
Extra Credit	2%
Total	102%

Letter Grade Distribution Table

Letter Grade	Sample Range %
A	91 to 102
A-	90 to 91-
B+	89 to 90-
B	81 to 89-
B-	80 to 81-

Letter Grade	Sample Range %
C+	79 to 80-
C	70 to 79-
D	60 to 70-
F	0 to 60-

Proctored Exams

Please note that the information contained in this section applies only if your course requires a proctored exam.

Through a careful examination of this syllabus, it is the student's responsibility to determine whether this online course requires proctored exams. Please visit our [Student Proctored Exam Instructions](#) webpage for important information concerning proctored exams, proctoring centers, and important forms.

Schedule of Topics

- **Classes of computers and their characteristics;**

- **Performance measurement and optimization;**

- **Instruction set architecture of processor and assembly programming;**

- **Data representation and computer arithmetic;**

- **processor design, instruction execution cycle, and pipeline basic;**

- **Memory system hierarchy;**

- **Parallel and distributed computing systems**

Canvas Schedule

Due Date	Assignment Name	Assignment Type	Points
	Academic Honesty Policy	Quiz	0
	Academic Honesty Policy	Quiz	0
	Collaborative Final Exam Review	Discussion	10
	Collaborative Midterm Exam Review	Discussion	10
	Midterm Exam	Quiz	100
	Open Forum	Discussion	0
	Practice Quiz	Quiz	0
	Practice Quiz	Quiz	0
1/18/26	Introduce Yourself	Discussion	5
1/18/26	Pre-class survey	Quiz	16
1/25/26	Homework Assignment 1	Assignment	100
1/25/26	Lab 1: Performance and Optimization	Assignment	100
1/25/26	Reading Assignment 1 (Zybooks)	Assignment	100
1/25/26	Reading Assignment 2 (Zybooks)	Assignment	100
2/1/26	Reading Assignment 3 (Zybooks)	Assignment	100
2/1/26	Reading Assignment 4 (Zybooks)	Assignment	100

Due Date	Assignment Name	Assignment Type	Points
2/8/26	Homework Assignment 2	Assignment	100
2/8/26	Lab 2: ISE and Assembly Programming	Assignment	100
2/15/26	Reading Assignment 5 (Zybooks)	Assignment	100
2/22/26	Homework Assignment 3	Assignment	100
2/22/26	Reading Assignment 6 (Zybooks)	Assignment	100
3/1/26	Lab 3: Procedure Call and Return	Assignment	100
3/8/26	Reading Assignment 7 (Zybooks)	Assignment	100
3/15/26	Homework Assignment 4	Assignment	100
3/15/26	Lab 4: Integer and FP Arithmetic	Assignment	100
3/25/26	Collaborative Midterm Study Report	Assignment	100
3/29/26	Midterm Survey	Quiz	10
3/29/26	Reading Assignment 10 (Zybooks)	Assignment	100
3/29/26	Reading Assignment 8 (Zybooks)	Assignment	100
3/29/26	Reading Assignment 9 (Zybooks)	Assignment	100
4/5/26	Homework Assignment 5	Assignment	100
4/12/26	Homework Assignment 6	Assignment	100

Due Date	Assignment Name	Assignment Type	Points
4/12/26	[Reading Assignment 11 (Zybooks)](#)	Assignment	100
4/12/26	[Reading Assignment 12 (Zybooks)](#)	Assignment	100
4/19/26	[Homework Assignment 7](#)	Assignment	100
4/19/26	[Reading Assignment 13 (Zybooks)](#)	Assignment	100
4/24/26	[Final Exam](#)	Quiz	100
4/25/26	[Collaborative Final Study Report](#)	Assignment	100
5/1/26	[Post-class survey](#)	Quiz	12

Course Communication

Communication in this course will take place via **the Canvas Inbox**. Check out the [Canvas Conversations Tutorial](#) or [Canvas Guide](#) to learn how to communicate with your instructor and peers using Announcements, Discussions, and the Inbox.

Policies & Resources

Before starting this course, please review the Policies & Resources Page in Canvas, which includes comprehensive information on various University and Course Level Policies, such as:

- **University Policies**

- **Accessibility and Accommodations**

- **Online Etiquette**

- **Technical Requirements and Skills**

- **Computer & Digital Literacy Skills**

- **Course Technology Accessibility Statements and Privacy Policies**

- **Academic Integrity**

- **Copyright Statement**

- **Nondiscrimination Statement**

- **Panthers Care & Counseling and Psychological Services (CAPS)**

- **Fair Use Policy**

Zoom Video Conference

Zoom is a video conference tool that you can use to interact with your professor and fellow students by sharing screens, chatting, broadcasting live video/audio, and taking part in other interactive online activities.

Zoom meetings can be accessed via the Zoom link in the course navigation menu. Once you click on the Zoom link, it will route you to join the meeting for the respective class session. You will also be able to view upcoming meetings, previous meetings that you have already joined, and meeting recordings. Before joining an actual class session:

 • Reference the [Zoom Student Tutorials](#) to learn about the tool, how to access your meeting room, and share your screen.

 • Access the [Zoom Test Meeting Room](#) to test out the software before joining an actual session.

If you encounter any technical difficulties, please contact the [FIU Canvas Help Team](). Please ensure you contact support immediately upon the issue occurring.

Nondiscrimination Statement

The **Office of Civil Rights Compliance and Accessibility** (CRCA) is responsible for ensuring that FIU maintains a workplace and learning environment free from discrimination, where current and prospective faculty, staff, and students are treated equitably. If any student, employee, or applicant has a sincere and reasonable belief that they have been discriminated against or harassed based on age, color, disability, marital status, ethnic or national origin, race, religion, retaliation, sex, or any other protected category, they can report their concerns to the CRCA team through report.fiu.edu.