



CECS 341, COMPUTER ARCHITECTURE AND ORGANIZATION

Spring 2020

Instructor: Jelena Trajkovic

Phone: (562) (985-1133)

Office Hours: Wednesday 1:30 pm-2:30 pm

Course: CECS 341, Computer Architecture and Organization

Class Days/Times: M/WTh 11:00 – 11:50 am

Lab Days/Times: M/W 12:00-1:15 pm

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Prerequisites: CECS 225 or CECS 285

Term: Spring 2019

Class Location: VEC - 419

Class Location: ECS-404

Course Description

Prerequisites: CECS 225 or CECS 285 with a grade of “C” or better.

Review of logic design. Instruction set architecture. Arithmetic logic units. Data path and control. Pipelining and performance. Memory system organization and design. Virtual memory and paging. I/O interfacing. Vector and array processing. Distributed computing and supercomputing. Contemporary computer designs.

Student Learning Outcomes

Upon successful completion of the course, students will be able to:

1. Define computer abstractions, understand technology trends, and understand, compute and compare performance metrics.
2. Understand concept of Instruction Set Architecture, manipulate and read assembly code.
3. Express instructions, numbers and data in binary form. Perform arithmetic and logic operations.
4. Design processor components: simple processor, pipeline datapath and control unit.
5. Define and detect hazards and exceptions. Implement techniques to resolve hazards.
6. Define and design memory hierarchy. Understand operation of and design cache memory.
7. Understand trends in contemporary processor design.

Required Texts/Readings

Textbook: ZyBook

- a. Sign in or create an account at learn.zybooks.com
- b. Enter zyBook code: CSULBCECS341TrajkovicSpring2020
- c. Subscribe

Development Environments:

EDAPlayground.com: An EDA Tool Suite built into a web site. Used for the design, simulation, and analysis of digital systems relating to concepts presented in lecture. No installation necessary, just login and code.

MARS MIPS simulator: Can be downloaded from BeachBoard (Requires Java Runtime Environment)

Computer Access: ECS-412 or any ECS lab with Windows or Linux machines

General computer labs: Two open access computer labs are available for current CSULB students. Both the Horn Center (located in lower campus) and the Spidell Technology Center (located in Library) are a great resource for students needing to use a computer. Visit the [Open Access Computing Facilities - http://www.csulb.edu/library/guide/computing.html](http://www.csulb.edu/library/guide/computing.html) website for an extensive list of all available software installed in both computer labs.



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BeachBoard Access

To access this course on [BeachBoard](#) you will need access to the Internet and a supported Web browser (Firefox is the recommended browser). You log in to [BeachBoard](#) with your CSULB Campus ID and BeachID password. Bookmark this link for future use, or you can always access it by going to [CSULB - http://www.csulb.edu/](#)'s homepage and clicking on the BeachBoard link at the top of the page. Once logged in to BeachBoard, you will see the course listed in the My Courses widget on the right; click on the title to enter the course.

Tentative Course Schedule

- Weeks 1-7: Computer Abstractions and Technology. Instructions: Language of the Computer. Arithmetic for Computers.
- Week 8: Review and Midterm (tentative 3/11)
- Weeks 9-15: The Processor. Large and Fast: Exploiting Memory Hierarchy. Review.
- Final Exam

Course Policies and Requirements

Grading Policy

Distribution of letter grades will be done using [grading curve](#). Please make yourself familiar with this method and understand that grade assignment is at instructor's discretion.

Evaluation Method

Evaluation Tool	Weight
Laboratory	30%
Homework Assignments	20%
Midterm Exam	20%
Final Exam	30%
Attendance: 3 unexcused absences	-5%

Laboratory

There are 8 lab assignments, and an extra credit lab assignment. Assignments and the due dates will be posted on the course web site on BeachBoard. For each lab you need to upload files to BeachBoard DropBox before the due date/time. You need to submit:

1. Lab report: please see BeachBoard for the "LabReportTemplate"
2. Required lab files, as specified in each lab assignment

Lab assignment will need to be demonstrated to the instructor during the lab session on the specified due date. Lab time will be used to solve problems, prep for the new lab assignment and take demos: please note that you are likely to **need to dedicate additional time outside lab hours** to develop the solutions for your labs and test them out. Lab experiments should be performed, and the reports should be written **individually**. Each lab report needs to include the following sentence: *"I certify that this submission is my original work"* and your signature.

Homework Assignments



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There will be 6 homework assignments. Assignments and the due dates will be posted on the course web site on BeachBoard and on **ZyBook**. The purpose of the homework not only to earn you some credit, but also to help you keep up with the course work. The Homework assignments will be form the ZyBook, and they will be online. Assignments need to be done **individually**. Submitting the assignment in ZyBook will be equivalent to signing the following sentence: "I certify that this submission is my original work"!

Midterm and Final Exam

There will be two midterm and one final exam. There will be **no make-up midterm exam**. Students that are absent from the midterm exam for any reasons will receive 0% for their midterm grade and will write the final exam for 55% of their total grade.

Attendance Grade

At CSULB attendance is mandatory (please see Attendance Policy). Moreover, it has been shown that the students who attend classes/labs and study regularly obtain better learning outcomes in terms of better grades, lasting knowledge and transferable skills. Therefore, attendance will be checked randomly during class, lab or both. 3 or more unexcused absences will cause -5% of the total grade.

Late work/Make-up policy

There will be **no credit** for late submission of your HW assignment or Lab report/files, except for demo: demo of a late submission will give up to 50% of partial credit for demo portion only, **if** time permits. A lab assignment needs to be demoed within the first 4 lab sessions (2 weeks) of the due date. Exception will be made for the extraordinary circumstances with appropriate proof. In case of **foreseeable** events, such as personal, community, religious events, or appointments made ahead of time, the instructor will be happy to arrange for submission and demo **before** the due date.

Communication Policy

We will use BeachBoard to communicate information, post assignments and corresponding due dates (HW dues dates are on ZyBook and BB) and discuss course-related topics. Moreover, you may email your questions to the instructor, and you will be receiving the response within the 48h (excluding weekends or holidays). Please put "CECS 341" in the subject! Also note, that if you email *just* before the assignment due date or exam may not receive the response in timely manner, as the responses will be in FIFO order.

Plagiarism/Academic Integrity Policy

It is the student's responsibility to familiarize themselves with official [CSULB University policy of Academic Integrity](#). Also, the students need to know what is considered [Cheating and Plagiarism](#). There is **zero tolerance** for cheating, plagiarism, or any other act of violation of Academic Integrity policy. Work that you submit is assumed to be original unless your source material is documented appropriately, using proper citation. Using the ideas or words of another person, even a peer, or a web site, as if it were your own, is plagiarism. Any individual or group caught cheating on homework, and lab assignments, or on the midterm or final exams will be subjected to full extent of academic actions allowed under University regulations. At a minimum, any student caught violating Academic Integrity Policy will receive no credit for the work concerned and one grade lower letter grade.

University Withdrawal Policy

The students need to familiarize themselves with the University Policies for [Dropping or Withdrawal](#). Class withdrawals during the final 3 weeks of instruction are not permitted except for a very serious and compelling reason such as accident or serious injury that is clearly beyond the student's control and the



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assignment of an Incomplete grade is inappropriate (see [Grades](#)). Application for withdrawal from CSULB or from a class must be officially filed by the student with Enrollment Services whether the student has ever attended the class or not; otherwise, the student will receive a grade of "WU" (unauthorized withdrawal) in the course. Please refer to the [CSULB Course Catalog](#) to get familiar with the policy.

Attendance Policy

Students are **expected to attend classes** regularly. Please refer to and get familiar with the [CSULB Attendance Policy](#).

Disability Accommodations

Students with a disability or medical restriction who are requesting a classroom accommodation should contact the [Disabled Student Services \(DSS\)](#). DSS personnel will work with the student to identify a reasonable accommodation in partnership with appropriate academic offices and medical providers. The [policy](#) of the CSU is to make its programs, services, and activities accessible to students, faculty, staff, and the general public who visit or attend a campus-sponsored event, with disabilities. The students are **strongly** encouraged to reach out to DSS as soon as possible and to notify the instructor in advance of any need for special accommodation due to a university verified disability.

Personal Assistance

Any student who is facing academic or personal challenges due to difficulty in affording groceries/food and/or lacking a safe and stable living environment is urged to contact the [CSULB Student Emergency Intervention & Wellness Program](#). Additional resources are available via [Basic Needs Program](#). The students can also email supportingstudents@csulb.edu, call (562)985-2038, or if comfortable, reach out to the instructors as they may be able to identify additional resources.

Emergency Preparedness

The students are strongly encouraged to familiarize themselves with the [Personal Preparedness Instructions](#) and other resources under "Emergency Preparedness" link on [CSULB University Police web site](#).

Technical Assistance

If you need technical assistance at any time during the course or need to report a problem with BeachBoard, please contact the Technology Help Desk using their [online form](#), by phone at (562) 985-4959 or visit them on campus in the Academic Service (AS) building, room 120.

Tutoring

Take advantage of free peer tutoring to keep up your grades in challenging classes. Tutoring runs through the last day of the semester in the Engineering Student Success Center (ESSC) in EN2-300. Visit the link below for more information:

http://www.csulb.edu/college-of-engineering/engineering-tutoring#asp_ETP

Student Conduct

- In case of any issue, it is very important to contact your instructor **in timely manner**.
- Student feedback is highly encouraged. Please feel free to contact the instructor to share any concern or opinion about the course throughout the semester and participate in the **anonymous**



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survey (via BeachBoard). If I hear from you during the course I have an opportunity to address your concern and modify the course immediately.

- Cell phones, smart watches, smart rings, or any communication devices are **not allowed** during midterm and final exams. Having it in your position is going to be considered violation of Academic Integrity Policy, and the students will be subject to penalty according to the University Policy. Please note just turning the device off is not OK, it must not be in the student's possession: you may leave it at home (!?), submit it to the instructor, or leave it in your backpack near the instructor's desk.
- You are training to be a professional, consequently, we expect you to behave like a professional. A professional is polite, considerate and respectful of others. It is rude, inconsiderate, and disrespectful to your fellow students and to the professor to talk in class, arrive late, text or take calls. No one can learn if you are chatting to your neighbor!

Disclaimer

In the event of extraordinary circumstances beyond the University's control, the content and/or evaluation scheme in this course is subject to change.