Abridged Syllabus: Principles of Computer Architecture

Contents

1 Details

Course & Section:	*Principles of Computer Architecture,* CISC 3310, MY0
Days & Time:	Mondays, Wednesdays (MoWe), 10:35 AM – 12:15 PM
Location:	Ingersoll Hall Extension, Room 525 (IA-525 in short)
Instructor:	Miriam Briskman
E-mail:	briskman@sci.brooklyn.cuny.edu
Response Time:	Within 24 – 48 hours, between 12 PM to 9:30 PM
Office Hours:	Wednesdays, 07:30 PM – 09:30 PM, online through Blackboard. Alternatively, please email me to schedule an appointment.
Course Materials:	[Free] *Computer Architecture*, by Dr Ranjani Parthasarathi. Link: https://www.cs.umd.edu/~meesh/411/CA-online/chapter/computer-architectureintroduction/index.html. [Free] *Computer Organization and Design Fundamentals Series*, by David Tarnoff. Link: https://dc.etsu.edu/etsu-oer/6/. [Free] *Introduction to MARIE, A Basic CPU Simulator*, by Jason Nyugen, Saurabh Joshi, and Eric Jiang. Link: https://marie.js.org/book.pdf. [Free] *NASM - The Netwide Assembler: Manual*, by Tatham et al. Link: https://www.nasm.us/doc/. **Note**: This course uses only free, open-source materials.
Prerequisites:	(CISC 1110 (Introduction to Programming Using C++) or CISC 1115 (Introduction to Programming Using Java) or (both CISC 1113 (Basic Principles of Java Programming with Science Applications I) and CISC 1114 (Basic Principles of Java Programming with Science Applications II)) or CISC 1170 (Java for Programmers) or CISC 1180 (Introduction to C++ for Programmers)) and CISC 2210 (Introduction to Discrete Structures)
Tools/Resources:	Blackboard; Access to a computer (OS doesn't matter); Adobe Acrobat Reader DC

1.1 Course Description

`(4 credits) Introduction to digital logic. Basic digital circuits. Boolean algebra and combinational logic, data representation and transfer, digital arithmetic. Instruction sets. Introduction to assembly languages: ALU and memory reference instructions, flow control, subroutine linkage, arrays and structures. Memory. I/O systems. Performance. Relationship between software and architecture.` (Taken from CUNYFirst.)

1.2 Course Objectives

By the end of this course, you will master the following skills:

- Learning of digital design, Boolean algebra, and logical gates.
- Understanding of computer representation of numbers/characters, and practice with arithmetic computer calculations.
- Familiarity with a simple computer: MARIE's architecture.
- Discussion of computer memory organization, I/O methods,
- Hands-on practice with an assembly language, and recognition of its way of control of computer hardware.
- Introduction to the CISC 3320 (Operating Systems) course.
- Independent searching and verbal expression of answers based on given sources or your opinion.

Please refer to the Required Electronic Tools and Resources section at the end of the full version of the syllabus for information about how to obtain the software required for this course (for free, of course.)

2 Grading Components

The course's grade is influenced by the following components:

Attendance	10%
Participation	15%
Homework	20%
Midterm	25%
Final	30%
Extra Credit	5%

3 Grades

Students will receive a letter grade for the course according to the following score distribution established by CUNY:

<60	**60-62**	**63-66**	**67-69**	**70-72**	**73-76**	**77-79**	**80-82**	**83-86**	**87-89**	**90-92**	**93+**
F	D-	D	D+	C-	C	C+	B-	B	B+	A-	A

A grade of A+ will be granted for numerical grades of 97 or higher after all extra credit points you received are applied to the grade.

4 Important Brooklyn College Policies

4.1 Center for Student Disability Services

The Center for Student Disability Services (CSDS) is committed to ensuring students with disabilities enjoy an equal opportunity to participate at Brooklyn College. In order to receive disability-related academic accommodations students must first be registered with CSDS. Students who have a documented disability or suspect they may have a disability are invited to schedule an interview by calling (718) – 951 – 5538 or emailing Josephine.Patterson@brooklyn.cuny.edu. If you have already registered with CSDS, email Josephine.Patterson@brooklyn.cuny.edu or testingcsds@brooklyn.cuny.edu to ensure the accommodation email is sent to your professor.

4.2 Nonattendance Because of Religious Beliefs

The Brooklyn College undergraduate Bulletin for the years 2023 – 2024 states:

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The New York State Education Law provides that no student shall be expelled or
refused admission to an institution of higher education because he or she is unable
to attend classes or participate in examinations or study or work requirements
on any particular day or days because of religious beliefs.  Students who are
unable to attend classes on a particular day or days because of religious beliefs
will be excused from any examination or study or work requirements.  Faculty must
make good-faith efforts to provide students absent from class because of religious
beliefs equivalent opportunities to make up the work missed; no additional fees
may be charged for this consideration.
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Based on the description above, if you are incapable of attending a class because of religious observance, you should e-mail me at least 48 hours before that class so that proper accommodations could be made. If this is an exam day, we will schedule a make-up exam when it is convenient to you, and if an assignment is due, the due date will be extended, and I will tell you when the new due date is.

4.3 Brooklyn College Policy on Academic Integrity

The faculty and administration of Brooklyn College support an environment free from cheating and plagiarism. Each student is responsible for being aware of what constitutes cheating and plagiarism and for avoiding both.

The complete text of the CUNY Academic Integrity Policy can be found at this site:

https://www.cuny.edu/about/administration/offices/legal-affairs/policies-resources/academic-integrity-policy/

If a faculty member suspects a violation of academic integrity and, upon investigation, confirms that violation, or if the student admits the violation, the faculty member MUST report the violation. Students should be aware that faculty may use plagiarism detection software.

This means that if you cheat on a test or assignment, I MUST file a report which will initiate academic penalties. Additionally, the assignment in which you cheat will get an unfortunate score of 0.

4.4 Brooklyn College Bereavement Policy

Students who experience the death of a loved one should refer to:

https://www.brooklyn.edu/policies/bereavement/

4.5 Brooklyn College Library

New student? Returning to campus? Looking for materials for your class or research? Check out the plethora of resources that the Brooklyn College Library is providing to you:

https://library.brooklyn.cuny.edu/resources/

You will certainly find something useful there!

4.6 More Information: Bulletin

For more information about the policies of Brooklyn College and other essential information, please refer to the Bulletin, which you can find on the following web-page:

https://www.brooklyn.edu/registrar/bulletins/

5 Important Dates

August 28 (We): Start of Fall 2024 Term
August 28 (We): First lecture of CISC 3310, section MY0
September 02 (Mo): Labor Day: College Closed
September 03 (Tu): Registrar drops everyone waitlisted for Fall 2024 courses
September 03 (Tu): Last day to add a course
September 18 (We): Grade of W is assigned for officially withdrawing from a course
October 02 – 04 (We – Fr): No classes scheduled
October 11 – 12 (Fr – Sa): No classes scheduled
October 14 (Mo): Columbus Day: College Closed
October 15 (Tu): Conversion Day: Classes follow Monday schedule
November 06 (We): Last day to withdraw from a course with a grade of W
November 27 (We): Conversion Day: Classes follow Friday schedule
November 28 – 29 (Th – Fr): Thanksgiving: No classes scheduled
November 30 – December 01 (Sa – Su): Thanksgiving: No classes scheduled
December 14 (Sa): Last day of classes!
December 15 – 21 (Su – Sa): Week of Final Examinations for the Fall 2024 Term

Please refer to the Brooklyn College Academic Calendar for the Fall 2024 semester to view other important dates not mentioned above:

https://www.brooklyn.edu/events/tag/Fall-2024-main-academic-calendar/list/?tribe_organizers%5B0%5D=8878

6 Schedule

Note that the schedule below is tentative; if changes are made, I will notify you and will post the updated syllabus/schedule on Blackboard.

All assignments, excluding the exams, are due at 11:59 PM EST, on Blackboard.

Week	Date	Topics, Exams, and Assignment Deadlines
1	08/28 (We)	**Welcome!** Syllabus Review
2	09/02 (Mo)	College Closed: **No CISC 3310, MY0 lecture!**
	09/04 (We)	Topic 1: Intro to Computer Architecture
3	09/09 (Mo)	Topic 1: Intro to Computer Architecture – Cont'
	09/11 (We)	Topic 1: Intro to Computer Architecture – Cont'
4	09/16 (Mo)	Topic 1: Intro to Computer Architecture – Cont'
	09/18 (We)	Topic 2: Data Representation • Homework 1 on Topic 1 due
5	09/23 (Mo)	Topic 2: Data Representation – Cont'
	09/25 (We)	Topic 2: Data Representation – Cont'
6	09/30 (Mo)	Topic 2: Data Representation – Cont'
	10/02 (We)	No classes scheduled: **No CISC 3310, MY0 lecture!**
7	10/07 (Mo)	Topic 2: Data Representation – Cont'
	10/09 (We)	Topic 3: Boolean Algebra & Logic Gates • Homework 2 on Topic 2 due
8	10/14 (Mo)	College Closed: **No CISC 3310, MY0 lecture!**
	10/15 (Tu)	Conversion Day: **We have a lecture today!** Topic 3: Boolean Algebra & Logic Gates – Cont'
9	10/16 (We)	Topic 3: Boolean Algebra & Logic Gates – Cont'
10	10/21 (Mo)	Topic 3: Boolean Algebra & Logic Gates – Cont'
	10/23 (We)	Topic 4: Circuits
11	10/28 (Mo)	Topic 4: Circuits – Cont'
	10/30 (We)	Topic 4: Circuits – Cont' • Homework 3 on Topics 3 and 4 due
12	11/04 (Mo)	**Midterm Exam: 10:35 AM – 12:15 PM, at the West End Building (WEB), 1st floor, computers M133 – M188**
	11/06 (We)	Topic 5: Computer Instructions

Week	Date	Topics, Exams, and Assignment Deadlines
13	11/11 (Mo)	Topic 5: Computer Instructions – Cont'
	11/13 (We)	Topic 6: MARIE: Architecture Example
14	11/18 (Mo)	Topic 7: Memory
	11/20 (We)	Topic 8: I/O • Homework 4 on Topics 5 and 6 due
15	11/25 (Mo)	Topic 9: Intro to Assembly Language
	11/27 (We)	Conversion Day: **No CISC 3310, MY0 lecture!**
16	12/02 (Mo)	Topic 9: Intro to Assembly Language – Cont'
	12/04 (We)	Topic 9: Intro to Assembly Language – Cont'
17	12/09 (Mo)	Topic 10: Performance & Architecture Types
	12/11 (We)	Topic 11: Intro to Operating Systems • Homework 5 on Topics 7, 8, and 9 due
Finals	12/16 (Mo)	**Final Exam: 10:30 AM – 12:30 PM, at the West End Building (WEB), 1st floor, computers M133 – M188**

– End of CISC 3310 Abridged Syllabus –