

Fall 2016-2017

CISc 530

Computer Architecture

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Office Hours: On Email.

COURSE OVERVIEW

This course will provide:

- An understanding for the functional elements and structures of digital computers.
- Detailed study of at the register transfer level illustrates arithmetic, memory, I/O and instruction processing will be covered.

COURSE OBJECTIVES

The primary objectives of this course are:

- Introduce the most important system architecture approaches.
- Give a wider understanding of how real systems operate and, from that understanding, the ability to optimize their use.

The emphasis of the course is on teaching the fundamentals, and not on providing a mastery of specific commercially available hardware or software tools or programming environments.

PREREQUISITES

- BS in computer information sciences or other related BS.

TEXTBOOK and REFERENCES

- “The Essentials of Computer Organization and Architecture”, 4th Edition, 2015, by Linda Null.

Note students with disabilities: Harrisburg University's policy is not to discriminate against qualified students with documented disabilities. It is also your instructor's policy to try and help students learn by whatever reasonable means necessary. If you have a disability related need that requires a modification in your testing situation, please notify your instructor a week before the first test or quiz so that your need can be accommodated. You may be asked to present documentation that describes the nature of your disability and the recommended remedy.

HU CORE COMPETENCIES

At the conclusion of this course a student will have met the following core competencies that reflect HU's mission:

- Critical Thinking and Problem Solving skills are demonstrated by the student's ability to:
 - Identify and clarify the problem,
 - Gather information,
 - Evaluate the evidence,
 - Consider alternative solutions,
 - Choose and implement the best alternative.
- Communication - The core communication skills are demonstrated by the student's ability to:
 - Express ideas and facts to others effectively in a variety of formats, particularly written, oral, and visual formats,
 - Communicate effectively by making use of information resources and technology.
- Teamwork and Collaboration - The students will be working with others to increase involvement in learning and by sharing one's own ideas and responding to others' reactions to sharpen thinking and deepen understanding.
- Information Technology - The students will be making effective use of the .NET information resources and technology.
- Competency Assessment: One assignment (Assignment 00) will be used to evaluate your level of proficiency in an HU core competency (Information Literacy) (<http://www.harrisburgu.net/academics/core-competencies.php>) directly connected to that assignment. This competency assessment will not impact your grade in this course, but can be used as a gauge for you to self-evaluate your progress in developing your skill level in specified core competencies attached to the assignment. This additional evaluation can be a point of discussion between you and your academic advisor as well as a key component of your work in SEMR 200, SEMR 300, and SEMR 400. Your final grade in SEMR400 will be influenced by your competency assessments and related ePortfolio artifacts throughout your coursework at Harrisburg University.

COURSE CONDUCT

A few rules will help us to get the most of our investment in CISC 530:

Classes will start on time and end as scheduled. Please take your seat prior to the start of class.

You will attend each class and actively participate in the discussions during class. If you are uncomfortable with public speaking, or if English is not your native language, please talk to the instructor in the first two weeks of the course to establish ways to make you more comfortable in speaking and interacting with other students (your peers).

For every hour of class time, I anticipate that you will need to budget about 3 hours of out-of-class time. This implies that you need to budget about 120 hours of out-of-class time over the course of the semester. This time estimate is a guide and you may need to budget more. For example, if the material is new to you or difficult to comprehend, it will require more of your time.

You are responsible for all the readings, even if the material is not explicitly covered in class. You should read the class materials prior to class and be prepared to discuss and ask questions about the readings and quiz materials. You should also re-read the material after class as not every topic will be covered during class time. Many passages in the text may need to be read several times to gain clarity.

Also, taking notes on the material you are reading and reflecting on the reading and these notes will help you better understand the issues, concepts and techniques that are being presented.

All work must be completed and turned in on or before the assigned date. No late work will be accepted. Late means after the due date and time. Note that a computer's failure is not an excuse (it represents poor planning on your part).

All written work must be done using a word processor. Carefully proofread your work since mistakes which include spelling errors, grammatical errors, and typos will affect your grade. Your work should be properly referenced and adhere to standards of both academic integrity and proper form. Generally, I prefer the APA style (see www.apa.org).

All class credit-related electronic mail must be done using Harrisburg's electronic mail service and the student's assigned Harrisburg University ID. Students are welcome to use Gmail, Yahoo mail, Hotmail or any other service for their private non-class-related use. By 'credit-related' I mean all work to be evaluated for credit. Any work submitted through a different mail system will not be accepted.

When individual work is assigned it should be done by you, alone. Students who participate in University-sanctioned events (such as athletics) must make prior arrangements and give the instructor ample notice. Missing class for practice is not advised.

Course Outline:

CISc 530		
Week	Topic	Assignment
1	Introduction to the Course Introduction to the course material, grading, assignments, due dates, and other logistics related to the course. CH1: Introduction	(Assignment 1) Write a report on current and future Technologies in computer architecture.
2	Continue CH1: Introduction	(Assignment 2) Write a report on the different compilers and interpreters that may be used in a computer environment.
3	CH2: Data Representation in Computer Systems	
4	CH3: Boolean Algebra and Digital Logic & Focus on Karnaugh Maps	(Assignment 3) Write a report on current and future Technologies on the types and functionality of memories in a computer environment.
5	CH4: Cache Memory	

6	CH5: A Closer Look at Instruction Set Architectures	
7 MID TERM Examination	CH1 to CH5	
8	CH6: Memory	(Assignment 4) Write a report on 3 types of available operating systems and how these may relate to specific applications.
9	CH7: Input/output and Storage Systems & Focus on Data Compression	
10	CH8: System Software	
11	CH9: Alternative Architectures	(Assignment 5) Write a report on Embedded Systems hardware and software Technologies.
12	CH10: Topics in Embedded Systems	
13	Continue CH10	
14 Final Term Examination	CH6 to CH10	
15		

ASSIGNMENT, EXAM, and QUIZ DESCRIPTIONS

There are assignments, quizzes, a mid-term exam, and a final exam. Please consult the schedule, which is/will be posted on Moodle, to see when the assignments, quizzes, and exams are scheduled.

Here is a brief description of each:

1. Five (5) Assignments - Each student is responsible for completing the assignments in accordance with the specifications given by the instructor. Each assignment is between 5 to 7 pages and is worth a maximum of ten (10) points, a total of fifty (50) points.
1. Mid-term Examination - This examination will cover the class material up to the midpoint of the semester, a total of twenty (20) points.
2. Final Examination - This will be a comprehensive examination that covers all the course material, a total of thirty (30) points.

STATEMENT ON ACADEMIC INTEGRITY

According to the University's Student Handbook: Academic integrity is the pursuit of scholarly activity free from fraud and deception, and is the educational objective of this institution. Academic dishonesty includes, but is not limited to cheating, plagiarism, fabrication of information or citations, facilitating

acts of academic dishonesty by others, unauthorized possession of examinations, submitting work of another person, or work previously used without informing the instructor, or tampering with the academic work of other students. Any violation of academic integrity will be thoroughly investigated, and where warranted, punitive action will be taken.

Students should be aware that standards for documentation and intellectual contribution may depend on the course content and method of teaching, and should consult the instructor for guidance in this area.

HONOR CODE

We as members of Harrisburg University community pledge not to cheat, plagiarize, steal, or lie in matters related to academic work. As a Community of Learners, we honor and uphold the *HU Honor Code*.