

Syllabus - CS3320 – Fall 2010

Course Information:

CS3320: Computer Architecture II: Advanced Computer Design and Implementation

CRN: 14009 (August 23, 2010 – December 1, 2010)

Approval Code: DP (Department Approval)

LECT MW 10:30am-11:50am COMP 321

Cr: 3.0

Course Description: The organization and structure and the major hardware components of computers; the mechanics of information transfer and control within digital computer systems.

Prerequisites: CS 3432 and EE2369, each with a grade of “C” or better.

Textbook: Computer Organization and Design - The Hardware / Software Interface, Fourth Edition, David A. Patterson and John L. Hennessy (Morgan Kaufmann)

Instructor: Professor Patricia J. Teller, Ph.D.

Computer Science 223

Office Hours: M 3:00pm-4:00pm, W 3:00pm-4:00pm and by appointment

Phone: 915-747-5939 Email: pteller@utep.edu

Teaching Assistant: Aritra DattaGupta

Computer Science TBD

Office Hours: TBD and by appointment

Phone: TBD Email: adattagupta@miners.utep.edu

Important Dates:

Labor Day (University Closed): September 6

Tuition Payment Deadline for Students who Registered during the 1st week of Classes: August 27

Census Day – Last Date to Drop without W: September 8

Last Day to Select Pass/Fail Option: September 17

\$30 Graduation Application Deadline (\$45 after this date): October 1

Course Drop Deadline: October 29

Deadline to Submit Candidates' Names for the Commencement Program: November 12

Last Day of Classes and of Complete Withdrawal from the University: December 2

Dead Day: December 3

Final Exams: December 6-10

Final for this course: Friday, December 10, 10:00am-12:45pm COMP 321

Last Day to Accept Late Graduation Applications: December 10

Commencement: December 11

Final Grades Due to the Records Office: December 15

Final Grades Officially Available to Students via Touchtone, On-line, and UTEP e-mail: December 20

Course Outcomes:

On successful completion of this course, students will

1. be able to:
 - a. explain the representation of floating-point numbers
 - b. define virtual memory
 - c. discuss interfacing processors and peripherals
 - d. understand multiprocessor systems
 - e. apply knowledge of arithmetic algorithms and real-time scheduling
 - f. analyze cache design
 - g. examine representation of integer numbers
 - h. evaluate computer performance in terms of space and time tradeoffs
 - i. evaluate instruction set architecture design and implementation
 - j. construct datapath and control mechanisms used in processor implementations
 - k. propose processor implementation alternatives (single-cycle, multiple-cycle, and pipelined implementations) for a particular situation
 - l. prepare memory hierarchy design given certain requirements
2. be able to apply the following in new situations: knowledge of
 - a. computer performance in terms of space and time tradeoffs
 - b. instruction set architecture design and implementation
 - c. representation of integer numbers
 - d. datapath and control mechanisms used in processor implementations
 - e. processor implementation alternatives (single-cycle, multiple-cycle, and pipelined implementations)
 - f. memory hierarchy design
3. be able to apply: knowledge of
 - a. arithmetic algorithms multiprocessor and real-time scheduling
 - b. cache design
4. have been introduced to:
 - a. representation of floating-point numbers
 - b. virtual memory
 - c. interfacing processors and peripherals

Grade Basis (100 points total):

Exams (3): 10, 15, and 25 points for 1st, 2nd, and 3rd exam, respectively
RATs (Reading Assessment Tests) and Quizzes (11, drop 1): 10 points
Projects (3 due beginning of September, October, November): 30 points
Homework/Attendance/Participation (10): 10 points

To pass the course with a C or better, you must score at least 60 on the final exam.

In general, 90-100: A; 80-90: B; 70-80: C; 60-70: D; below 60: F

Tentative Course Schedule (subject to change) – Reading for sections to be covered during a week should be done before the class meeting on Monday of that week:

Week Ending (Friday)	Chapter Sections	Homework Due Date	RAT / Quiz	Project	Exam
08/27/2010	(Read Chapter 1)				
09/03/2010	Chapter 1 Review and 2.1-2.8	1.1-1.9 – Mon 8/30	RAT (2.1-2.8) – Mon 8/30; Quiz (1.1-1.9) – Wed 9/1	Assign Project 1 – Mon 8/30	
09/10/2010 Holiday: 9/6	2.9-2.19	2.1-2.8 – Wed 9/8	RAT (2.9-2.19) – Wed 9/8		
09/17/2010	3.1-3.8	2.9-2.19 – Mon 9/13	RAT (Chapter 3) – Mon 9/13		
09/24/2010	4.1-4.4	3.1-3.8 – Mon 9/20	Quiz (Chapters 2 and 3) – Wed 9/22		
10/01/2010	4.5-4.7	4.1-4.4 – Mon 9/27			Exam (Chapter 1-3) – Wed 9/29
10/08/2010	4.8-4.13	4.5-4.7 – Mon 10/4	Exam Review – Wed 10/6	Project 1 Due – Mon 10/4 Assign Project 2 – Mon 10/4	
10/15/2010	5.1-5.4	4.8-4.13 – Mon 10/11	Quiz (4.1-4.7) – Mon 10/11		
10/22/2010	5.5-5.12	5.1-5.4 – Mon 10/18	RAT (5.5-5.12) – Mon 10/18; Quiz (4.8-4.13) Wed 10/20		
10/29/2010	6.1-6.4	5.5-5.12 – Mon 10/25		Assign Project 3 – Mon 10/25	
11/5/2010	6.5-6.8	6.1-6.4 – Mon 11/1	Quiz (Chapter 5) – Mon 11/1	Project 2 – Due Mon 11/1	Exam (Chapter 4-5) – Wed 11/3
11/12/2010	6.9-6.13	6.5-6.8 – Mon 11/8	Exam Review – Wed 11/10		
11/19/2010	7.1-7.4	6.9-6.13 – Mon 11/15	RAT (7.1-7.4) – Mon 11/15		
11/26/2010	7.5-7.9	7.1-7.4 – Mon 11/22	Quiz (Chapter 6) – Mon 11/22		
12/03/2010 Last class: Wed 12/1	7.10-7.13 and Course Review	7.5-7.9 Mon 11/29		Project 3 – Due Wed 12/1	
12/10/2010					Final Exam – Comprehensive – Friday 12/10 10:30am-12:45pm

Student Guidelines:

Time: *This course is time intensive. You should continuously be reading, start assigned work early, and maintain a constant effort throughout the semester. To be successful you should expect to spend at least two to three quality hours outside of class per hour spent in class.*

Office Hours: If you have problems or difficulties with respect to the course material, you are expected to come to see either Dr. Teller or the Teaching Assistant (TA) assigned to this course, i.e., Aritra DattaGupta, during the above-specified office hours or during a scheduled (by email) appointment. If Dr. Teller is in her office and her door is open, feel free to see if she can meet with you. Dr. Teller and the TA assigned to this course are here to help you learn so please feel free to send either of them email with questions – send the email to Dr. Teller or Aritra DattaGupta (the course TA) via Blackboard or to pteller@utep.edu or to adattagupta@miners.utep.edu, and put CS3320-HELP in the subject line.

Access to Course Materials: You can access the material related to this course (e.g., syllabus, news, notes of the class, assignments, etc.) through Blackboard. Through Blackboard, the course's TA and Dr. Teller will post announcements and send you email. In addition we will use the discussion board and chat facilities, as well as the assignment facilities. Please note that several pieces of information (e.g., course schedule, assignments, etc.) might change during the semester. It is your responsibility to consult the information available on Blackboard regularly.

Reading: *You are expected to do assigned reading **BEFORE** the specified material is scheduled to be discussed in class.* Reading assignments will be announced in class and posted on Blackboard. Not all assigned material will be covered in class. *It is your responsibility to ask questions in class regarding assigned material that is not fully understood.*

Homework: *Some homework will be assigned before the related material is covered in class; other homework will be assigned after the related material is covered in class.* You will be given full credit only for problems that you have made a serious effort to solve. You will be given no credit for problems that you have not made a serious effort to solve.

Homework must be turned in on the due date, at the beginning of the class. *Solutions to homework problems must be written with a black or blue pen, or typed; **do not use pencil.*** If your homework is written with a pen, make sure it is legible and as clear and neat as is possible. If a solution is not legible, no credit will be given for the solution.

If you need clarification on a homework assignment, contact the course TA, Aritra DattaGupta, or Dr. Teller well before the due date. Also, if you have a question about a homework grade, see the course TA as soon as possible since *you have only one week after you receive a graded homework to contest the grade.*

As indicated below, *plagiarism will not be tolerated.* Although discussions are encouraged, the actual written homework problem solutions must represent your own work and should not be taken from an answer sheet from a previous semester or from a source on the Internet.

Grades for homework problem solutions will be based on effort and adopted methodology. In most cases, for homework assignments, the correctness of an answer is not the only basis for a grade. For example, if you make a solid effort to answer a question and your methodology is sound (for the most part), if you computer the wrong answer, you can get full credit.

Class Participation and Collaboration: Since much learning takes place via discussion, you are encouraged to participate in class and to have open discussions with classmates about the topics

covered in the course in person and via Blackboard tools (i.e., discussion boards and chat). However, this does not imply in any way that your homework or project should represent a cooperative effort. With respect to homework and projects, you are encouraged to discuss with others the related concepts that will help you solve homework problems and projects, but the solutions that you submit must be **your own**, in the sense that they should be in your **own words or code** and should be **understood by you**.

Knowledge Assessment: RATs, quizzes, homework, projects, and exams will test your individual understanding of the course material. **RATs (Reading Assessment Tests)** will be given to test whether or not you read the material in the textbook, while **quizzes** will be given to test your understanding of material in the textbook as well as material discussed in class. In general, makeup RATs and quizzes will not be given. **Homework** will be assigned on Monday and will be due the following Monday. Graded homework will be returned one week after it is submitted. At that time, the homework solution will be posted on Blackboard or handed out in class. Homework must be **legibly printed (with a dark pen) or typed**, and must be handed in on time. No credit will be given for homework handed in after the due date. There will be three **projects**, each with a due date. Late projects will be downgraded 10% per day of lateness. Two **exams** (each 50 minutes), in addition to the final exam, will be given during the semester. Exam solutions will be discussed in class. In general, makeup exams will be given only under extraordinary circumstances.

Deadlines: For deadlines related to homework, projects, reading assignments, RATs quizzes, and exams, please check Blackboard as well as the tentative course schedule above.

Grading: *You have one week from the time an assignment, quiz, RAT, project, or exam is returned to you to contest a grade.* If you think an error was made in grading a quiz, RAT, or exam, make sure to make an appointment with Dr. Teller to discuss it – if the error is with respect to an assignment or project, make sure to make an appointment with the course TA, Aritra DattaGupta, to discuss it. No changes in grades will be made if you do not address the issue with Dr. Teller within this time frame. Discussions related to graded work (i.e., homework, exams, RATs) will take place in in-person meetings scheduled by appointment or during office hours.

Student Behavior: Students are expected to behave courteously and professionally according to the standards published at http://hoop.utep.edu/Student_Affairs_Chapter_One-HOP.htm.

Mobile telephones/laptops: *Mobile phones MUST be switched off during class and the use of laptops is not allowed during class.*

Course Withdrawals/Drops: If you decide to withdraw from the course, you are responsible for ensuring that all steps are taken to formally withdraw. Do not assume that you will be dropped automatically. Beginning the 1997 Fall semester, students or faculty members may initiate a drop with a grade of W until the drop deadline. After that date, students may be dropped only with a grade of F. After that date, grades of W may only be assigned in exceptional circumstances after a written petition from a student and with the approval of the faculty member and the academic dean.

I Grades: The grade of I (incomplete) will be given **ONLY** if you are unable to complete the course due to documented appropriate circumstances beyond your control that develop after the last day to withdraw from the course. Appropriate circumstances include illness and death or crisis in your immediate family. In **NO** case will an I grade be assigned to avoid a grade of D or F in the course.

Cheating/Plagiarism: Cheating is unethical, not acceptable, and will not be tolerated. Plagiarism is using information or original wording in a paper, book, program, etc. without giving credit to the source of that information or wording: it is also not acceptable. You are expected to not submit work under your name that you did not do yourself and not submit work for this class that you did for another class. If

you are found to be cheating or plagiarizing, you will be subject to disciplinary action, per UTEP catalog policy. Refer to <http://www.utep.edu/dos/acadintg.htm> for further information. .

Disabilities: I will make any reasonable accommodations for students with limitations due to disabilities, including learning disabilities. Please see me personally before or after class in the first two weeks or make an appointment, to discuss any special needs you might have. If you have a documented disability and require specific accommodations, you will need to contact the Disabled Student Services Office in the East Union Bldg., Room 106 within the first two weeks of classes. The Disabled Student Services Office can also be reached in the following ways:

Web: <http://www.utep.edu/dsso>

Phone: (915) 747-5148 voice or TTY

Fax: (915) 747-8712

E-Mail: dss@utep.edu