

Syllabus for CS556A: Computer Architecture

Course Data

Faculty Member: Alberto Moreira

Semester, Year: Fall 2006.

Course Number: CS556A

Title of Course: Computer Architecture

Time and Location: Wednesdays, 7:45pm to 9:45pm, STH135.

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Course Description

This is an introduction to computer architecture and pipelined design. The course is based on the use of the Verilog HDL language to define and simulate architectural computer components and to investigate the behavior of typical processor pipelines.

Course Textbook

Patterson, D.A. and Hennessy, J.L., (2004), *Computer Organization and Design: The Hardware/Software Interface*, Third Edition: Elsevier Morgan Kaufmann.

Course Objectives

To teach the basic concepts of computer architecture and pipelined design.

Teaching Strategies

Lectures, homework, programming projects.

Course requirements

Six homeworks, one final exam presentation.

Examinations

The final examination will be an in-class presentation on a subject previously agreed with the lecturer.

Methods of Assessment and Computation of Grades

Homework Projects, 72 points, Final examination, 28 points. Total 100 points.

General Course Calendar and Topical Outline

Week 1 Combinational Logic.

Week 2 Registers and Clocked Logic.

Week 3	State Machines.
Week 4	Instruction Sets.
Week 5	Integer Arithmetic.
Week 6	Floating Point Arithmetic.
Week 7	The CPU Pipeline.
Week 8	Pipeline Hazards.
Week 9	Caches.
Week 10	Virtual Memory.
Week 11	Buses, I/O and Interrupts.
Week 12	Thanksgiving, no class.
Week 13	Out of Order Execution.
Week 14	Final Exam Presentations.
Week 15	Final Exam Presentations.

Classroom Policies

As requested by the Dean, you are hereby informed that the following policies are in place.

Americans with Disabilities Act (ADA) Rivier College wants to provide reasonable accommodations to students with disabilities. To accomplish this goal effectively and to ensure the best use of our resources, the College expects students to provide timely notice of a disability to the Office of Special Services for verification and for evaluation of available options. Any student whose disabilities fall within ADA should inform the instructor within the first two weeks of the term of any special needs or equipment necessary to accomplish the requirements

for the course. To obtain current information on this procedure, contact the Office of Special Services at telephone extension 8497.

Academic Honesty Plagiarism and cheating are serious breaches of academic honesty. In general, plagiarism is defined as the presentation of someone else's work in whatever form: copyrighted material, notes, film, art work, reports, statistics, bibliographies, and the like, as one's own, and failing to acknowledge the true source. Quoting word-for-word, or almost so, or using the argumentation of another source without acknowledging this dependence also constitutes plagiarism. Cheating is defined as the giving or attempting to give or to receive unauthorized information or assistance during an examination or in completing an assigned project. Submission of a single work for two separate courses without the permission of the instructors involved is also a form of cheating. If students are unsure whether a specific course of action would constitute plagiarism or cheating, they should consult with their instructor in advance.

Penalties for plagiarism and cheating vary with the degree of the offense and may take the form of the following academic sanctions:

- * the grade of F for the work in question;
- * the grade of F for the course;
- * notification of the department chair and/or Academic Dean of the College of the misconduct of the student;
- * recommendations that the student be suspended or dismissed from the College.

Statement on Attendance: The classroom is the heart of the educational experience at Rivier College because it provides, uniquely, a formal setting for the important exchanges among faculty and students. Regular and punctual attendance at all classes, essential for maximum academic achievement, is a major responsibility of Rivier College students. Failure to attend and contribute to the classroom environment significantly and demonstrably reduces the quality of the educational experience for everyone in the classroom. As a result, absences almost always impact the quality of performance.

As part of its commitment to a quality educational experience for all members of the Rivier community, the College formally requires specific attendance policies to be developed by its professors and reviewed by the Division Head and Academic Dean. Any attendance policy used by an individual professor as a criterion for evaluation must be specified in the course syllabus and presented to students during the first week of classes. These policies can be found in respective course syllabi, and may include reasonable penalties and sanctions for excessive absences. In the event of prolonged illness, accident, or similar emergency, it is the responsibility of the student to notify both the professor and the Office of the Academic Dean. Students must remember that it is always their responsibility to make up the work they may have missed during an absence from class. Students are directed to confer with their professors when their absences jeopardize satisfactory progress. Whenever a professor is absent without notification, students are expected to wait fifteen minutes before leaving and to sign an Attendance List, which a class member delivers to the Office of the Academic Dean.

Instructors are required to record attendance and alert the Registrar when a student fails to attend the equivalent of two weeks of courses (2 absences for a course meeting once a week, 4 absences for a course meeting twice a week, 6 absences for a course meeting three times a week). The student will then be alerted that he/she is in danger of falling under the "habitual non-attendance policy" (see below).

Habitual Non-Attendance Policy: Habitual non-attendance is defined as an absence in any course (for any reason whatsoever) equating to three full weeks of missed class sessions (3 absences for a course meeting once a week, 6 absences for a course meeting twice a week, 9 absences for a course meeting three times a week).

It is the responsibility of the student to notify the College of any intention to withdraw from a course or withdraw from the College. The College will attempt to resolve the issue of habitual non-attendance with the student; however, the College reserves the right to withdraw students who are no longer attending classes. Habitual non-attendance in one or more classes may result in administrative withdrawal from the class or classes affected, withdrawal from the College or, in cases with extenuating circumstances, an administrative leave of absence. In such cases a grade of W or NF will be assigned to the classes affected according to the appropriate date published in the academic calendar. Students who have attended no class sessions of a course or courses from which they are registered by the end of the drop/add period will be dropped from each class not attended. If a student never attended any courses during the drop/add period, the student will be withdrawn from his/her full schedule of courses.