

CS 347 Course Logistics

Randal E. Bryant
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Topics

- **instructors**
- **textbook**
- **grading**
- **recitations**
- **schedule**

URL: <http://www.cs.cmu.edu/afs/cs/academic/class/15347-s98/www/home.html>

Newsgroup: cmu.cs.class.cs347

Teaching staff

Instructors

- Prof. Randy Bryant (Mon 3-4, 7128 Wean)
- Prof. Todd Mowry (Fri 10-11, 8123 Wean)

TA's

- Herb Derby (Tues 1:30-2:30, 7130 Wean)
- Jason Flinn (Wed 10:30-11:30, 8208 Wean)
- Miroslav Velez (Thurs 2-3, 2134 Hammerschlag)

Course secretary

- Joan Maddamma (7121 Wean)

These are the nominal office hours. Come talk to us anytime!
(Or send email)

Textbook

J. L. Hennessy and D. Patterson,

- *Computer Organization and Design: The Hardware / Software Interface,*
- *Second Edition*
- Morgan Kaufman, 1998.

Relation to Course Material

- Solid coverage of basics
- We will supplement heavily

Platform Issues

- Book based on MIPS instruction set architecture
- We will be using Alpha
- Conceptually very similar
 - Both based on RISC philosophy

Grading

Tests (50%)

- Two in class exams (12.5% each)
- Final (25%)

Assignments (50%)

- 4 homeworks (~1 week, 3-5% each)
- 3 labs (~2 weeks, 8-12% each)
- May collaborate in groups of up to three

Grading Characteristics

- **Assignment scores tend to be high**
 - Serious handicap if don't hand one in
- **Tests have big bearing on letter grade**
 - Wider range of scores
 - Only chance for us to evaluate individual performance

Recitations

Recitation Coverage

- Supplement lecture material
- Useful information regarding labs and assignments
- Talk about important tools
 - performance analysis, scripting languages

Attendance

- Not recorded
- Highly recommended

Schedule: First Part

Class	Date	Topic	Reading	Asst	Lect
1	01/13	Overview	1		Both
2	01/15	Measurement	2.1--3	H1 Out	TCM
3	01/20	Integer arithmetic	4.1--7		REB
4	01/22	Floating Point	4.8	H1 Due, H2 Out	REB
5	01/27	Fast arithmetic	4.9--12		REB
6	01/29	Memory Technology	7.1	H2 Due	TCM
7	02/03	Cache structure	7.2	L1 Out	REB
8	02/05	Cache performance	7.3		REB
9	02/10	Virtual memory	7.4, 7.6--9		TCM
10	02/12	I/O, Storage	8.1--10	L1 Due	TCM
11	02/17	Exam #1			

First Part Highlights

Primary Coverage

- Arithmetic
- Memory hierarchy

Assignments

- H1: Performance measurement
- H2: Arithmetic
- L1: Cache simulator
 - Evaluate how different cache designs would perform on actual programs

Schedule: Second Part

Class	Date	Topic	Reading	Asst	Lect
12	02/19	ISA basics	3.1--5, A.1, A.10	H3 Out	TCM
13	02/24	Procedures	3.6, 3.9--10, A.6		TCM
14	02/26	Data structures	3.7--8, 3.11	H3 Due, L2 Out	REB
15	03/03	Code Optimization	Handouts		TCM
16	03/05	Benchmarking	2.4--9		TCM
17	03/10	Other ISAs	3.12--15		REB
18	03/12	Pipelining basics	6.1--3	L2 Due	REB
19	03/17	Data hazards	6.4--5		REB
20	03/19	Exam #2			

Second Part Highlights

Coverage

- **Machine-level programming**
- **Optimizing code performance**
 - Based on properties of compilers, CPUs, memory system
- **CPU implementation**

Assignments

- **H3: Machine level programming**
- **L2: Program optimization**
 - Hands-on experience with important programming skill

Schedule: Third Part

Class	Date	Topic	Reading	Asst	Lect
21	03/31	Control hazards	6.6--7	L3 Out	TCM
22	04/02	Multicycle instructions			TCM
23	04/07	Superscalar	6.8--6.12		TCM
24	04/09	Instruction-level parallelism		L3 Milestone	TCM
25	04/14	Multimedia computing	Handouts		REB
26	04/16	Network Technology	Handouts	L3 Due, H4 Out	REB
27	04/21	Internetworking			REB
28	04/23	Multiprocessors	9.1--10		TCM
29	04/28	Multiprocessors (cont.)		H4 Due	TCM
30	04/30	Multiprocessors (cont.)			TCM

Third Part Highlights

Coverage

- Rest of CPU design
- Characteristics and architectural implications of multimedia computing
- Networking
- Parallel processing

Assignments

- **L3 Pipeline simulator**
 - Simulate pipelined Alpha implementation
 - Develop comprehensive test suite
 - Largest assignment of term
- **H4 Multimedia Computing**

Platform

Digital Alpha 21164

- **One of the fastest processors available**
 - 460 Mhz, lots of horsepower
- **Nice instruction set**
 - Easy to learn & implement simulator
- **Excellent performance tuning tools**

The Catch

- **Not available yet**
- **Have arranged course so that we don't need until mid-February**