

Spring 2007
Georgia Tech, CS 8803-DA
Tu/Th 1:35pm - 2:55pm
Classroom: CCB Room 101

Multicore Computing

<http://www.cc.gatech.edu/~bader/COURSES/GATECH/CS8803-Spring2007/>

Instructor: Prof. David A. Bader, KACB 1332, 404-385-0004, bader@cc

Office Hours: Tuesday/Thursday 3:00pm-4:00pm, or by appointment

Textbook:

1. Joseph JaJa, [Introduction to Parallel Algorithms](#), Addison-Wesley, 1992.

Optional programming books:

1. Nichols, Buttlar, Farrell,
Pthreads Programming: A POSIX Standard for Better Multiprocessing, O-Reilly
Media, 1996.
2. Lewis and Berg, *Multithreaded Programming With Pthreads*, Prentice-Hall, 1997.
3. Rohit Chandra, Ramesh Menon, Leo Dagum, and David Kohr,
Parallel Programming in OpenMP, Morgan Kaufmann, 2000.

Course Description: With commodity computing, embedded systems, and gaming engines switching to the use of multi-core processors (e.g. Intel Xeon, AMD Opteron, Sun T1, and IBM Cell), the design of explicit parallel algorithms to harness the available performance on real-world applications becomes an important tool. This course will introduce students to multi-core processor architectures, the design and analysis of algorithms and applications for multi-core chips, multicore programming methodologies, and measuring performance. Students will implement efficient programs on homogeneous and heterogeneous multi-core processors, such as the Cell processor used in the Sony PlayStation 3.

Pre-requisites: Data structures and algorithms (CS 1332); Computing organization and programming (CS 2110).

Grading:

- (30 %) Midterm
- (30 %) Homework Assignments
- (30 %) Final Project
- (10 %) Class participation

CLASS POLICIES

1. Please let me know as soon as possible if you will need to re-schedule an exam, or have any special needs during the semester.
2. Each student must read and abide by the Georgia Tech Academic Honor Code, see www.honor.gatech.edu.
3. Plagiarizing is defined by Websters as “to steal and pass off (the ideas or words of another) as one’s own: use (another’s production) without crediting the source.” If caught plagiarizing, you will be dealt with according to the GT Academic Honor Code.
4. When working on homework, you may work with other students in the class. However; you must turn in separate copies of the homework with the following written on it: your name and the names of everyone with whom you collaborated.
5. Homework is due by 5PM on the given due date. Late homeworks will not be accepted without a legitimate excuse and approval from the instructor.
6. No collaboration is permitted on exams. The midterm and final exams will be in-class, closed-book exams. You will be allowed to take a “cheat sheet” (double-sided 8.5 x 11 sheet of paper) into each exam.
7. Unauthorized use of any previous semester course materials, such as tests, quizzes, homework, projects, and any other coursework, is prohibited in this course. Using these materials will be considered a direct violation of academic policy and will be dealt with according to the GT Academic Honor Code.
8. For any questions involving these or any other Academic Honor Code issues, please consult me, my teaching assistants, or www.honor.gatech.edu.