

## Syllabus for Math 5392-06 (Spring 2009)

Note: Students must be given a copy of the course syllabus (preferably in both hardcopy and electronic formats) by the end of the first week of each fall and spring semester and by the second class day for each short semester (e.g., summer sessions, winter intersession, or summer intersession). **A copy must also be posted online at the instructor's ReSearch Profile** (<https://www.uta.edu/ra/real/loginscreen.php>) and placed in the departmental office.

**Name:** Chaoqun Liu

**Office Number:** 456 PKH, 411 S. Nedderman

**Office Telephone Number:** 817-272-5151

**Email Address:** cliu@uta.edu

**Office Hours:** 3:00-4:00 PM, TTH or by Appointment

**Course Number, Section Number, and Course Title:** Math 5392-06, 35148, Multigrid Method and Its Application in CFD

**Time and Place of Class Meetings:** 5:30-6:50 PM, Tuesday & Thursday

### Description of Course Content:

#### COURSE GOALS:

- Finite difference method for PDE
- Iterative methods for finite difference equations
- Basic idea and theory of multigrid method
- Multigrid for Laplace equations
- Multigrid for CFD

**Student Learning Outcomes:** Two assigned projects

**Requirements:** Knowledge of calculus, linear algebra, numerical analysis and programming or consent of the instructor

### Required Textbooks and Other Course Materials:

#### TEXTBOOK:

Multigrid Tutorial by Briggs, Henson, McCormick, Published by SIAM (06/01/2000), ISBN: 0898714621

#### Reference Book:

Computational Fluid Dynamics - A Practical Tool, by Tu, Yeoh, and Liu, published by Elsevier, ISBN-10: 0-7506-8563-8, October 2007.

### Descriptions of major assignments and examinations with due dates: [

Project one: Multigrid for solving Poisson's equation, due in mid term

Project two: Multigrid for cavity flow, due by the end of the Spring semester

**Grading Policy:** 50% for each project

**Attendance Policy:** Students must attend the class

**Drop Policy:** Refer to university drop policy

**Americans With Disabilities Act:**

The University of Texas at Arlington is on record as being committed to both the spirit and letter of federal equal opportunity legislation; reference Public Law 92-112 - The Rehabilitation Act of 1973 as amended. With the passage of federal legislation entitled *Americans with Disabilities Act (ADA)*, pursuant to section 504 of the Rehabilitation Act, there is renewed focus on providing this population with the same opportunities enjoyed by all citizens.

As a faculty member, I am required by law to provide "reasonable accommodations" to students with disabilities, so as not to discriminate on the basis of that disability. Student responsibility primarily rests with informing faculty of their need for accommodation and in providing authorized documentation through designated administrative channels. Information regarding specific diagnostic criteria and policies for obtaining academic accommodations can be found at [www.uta.edu/disability](http://www.uta.edu/disability). Also, you may visit the Office for Students with Disabilities in room 102 of University Hall or call them at (817) 272-3364.

**Academic Integrity:**

It is the philosophy of The University of Texas at Arlington that academic dishonesty is a completely unacceptable mode of conduct and will not be tolerated in any form. All persons involved in academic dishonesty will be disciplined in accordance with University regulations and procedures. Discipline may include suspension or expulsion from the University.

"Scholastic dishonesty includes but is not limited to cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts." (Regents' Rules and Regulations, Series 50101, Section 2.2)

**Student Support Services Available:**

The University of Texas at Arlington supports a variety of student success programs to help you connect with the University and achieve academic success. These programs include learning assistance, developmental education, advising and mentoring, admission and transition, and federally funded programs. Students requiring assistance academically, personally, or socially should contact the Office of Student Success Programs at 817-272-6107 for more information and appropriate referrals.

**Final Review Week:**

A period of five class days prior to the first day of final examinations in the long sessions shall be designated as Final Review Week. The purpose of this week is to allow students sufficient time to prepare for final examinations. During this week, there shall be no scheduled activities such as required field trips or performances; and no instructor shall assign any themes, research problems or exercises of similar scope that have a completion date during or following this week unless specified in the class syllabus. During Final Review Week, an instructor shall not give any examinations constituting 10% or more of the final grade, except makeup tests and laboratory examinations. In addition, no instructor shall give any portion of the final examination during Final Review Week. Classes are held as scheduled during this week and lectures and presentations may be given.

**Librarian to Contact:** See web at [www.uta.edu](http://www.uta.edu)

**Electronic Communication Policy:**

The University of Texas at Arlington has adopted the University "MavMail" address as the sole official means of communication with students. MavMail is used to remind students of important deadlines, advertise events and activities, and permit the University to conduct official transactions exclusively by electronic means. For example, important information concerning registration, financial aid, payment of bills, and graduation are now sent to students through the MavMail system.

All students are assigned a MavMail account. ***Students are responsible for checking their MavMail regularly.*** Information about activating and using MavMail is available at <http://www.uta.edu/oit/email/>.

There is no additional charge to students for using this account, and it remains active even after they graduate from UT Arlington.

**Make-up Exam Policy:** None

**Grade Grievance Policy:** Discuss with the instructor