

# Syllabus of MATH 718, Fall'09

## Analytical Solution Methods For Partial Differential Equations, II

**Text:** *Nonlinear Partial Differential Equations For Scientists and Engineers*, 2nd edition, by Lokenath Debnath, Birkhauser Boston, 2004.

**Time and Place of Class meeting:** MW, 10:00am–11:15am, CBC C118.

**Instructor:** Dr. Zhonghai Ding

**Office:** CDC 1004, Phone: 895-0386, Email: dingz@unlv.nevada.edu

**Office Hours:** MW: 1:00pm-3:00pm, or by appointment.

**Attendance:** Class attendance in this course is **mandatory**, and an important component of the course requirements.

**Homework:** Homework will be collected for every chapter. **No** late homework will be accepted. You are strongly encouraged to do homework every week. If you do homework, you will be rewarded on exams. The exams will be based on homework problems.

**Grading:** Course grades will be based on the following percentages.

Homework	30%	Midterm Exam	30%	Final Exam	40%
A: 91–100;	B <sup>+</sup> : 86-90;	B: 81–85;	C <sup>+</sup> : 76–80;		
C: 71–75;	D <sup>+</sup> : 66–70;	D: 60–65;	F: 0–59.		

**Remarks:**

1. Grades:  $A^-$  and  $B^-$  may be given on borderline cases, where class attendance and homework will be determinative factors.
2. Both Exams are take-home exams. The Midterm exam will be given on October 14, 2009. The final exam will be given on December 7, 2009.

**Learning Enhancement Services (LES) houses Disability Services, Tutoring Services, and Learning Strategies. If you have a documented disability that may require assistance, you will need to contact LES for coordination in your academic accommodations. The LES is located in the Reynolds Student Services Complex, Suite 137. The phone number is 895-0866, (TDD-895-0652). You may also visit the website at <http://www.unlv.edu/studentlife/les>.**

**Topics to be covered** (tentative):

- Variational principles for deriving nonlinear PDEs;
- First order quasi-linear equations and the method of characteristics;
- First order nonlinear equations and the generalized method of characteristics;
- Conservation law and the method of shock wave solutions;
- Burgers equation and Fisher's equation and the method of traveling wave solutions;
- The perturbation method;
- The method of similarity solutions.