

Course Information: Dynamical Systems and Differential Equations : MATH 490

Fall 2008

August 27, 2008

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| Lectures | MW - 2:30-3:45 PM, PHYS107 |
| Course web site | http://www.math.umbc.edu/~muruhan/fall08-490 |
| Instructor | Dr Muruhan Rathinam |
| Office | 433 Math/Psych (MP) |
| Phone | (410) 455-2423 |
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| Office hours | M 4-5, W 1-2 ; and/or by appointment. |
| Textbook | Differential dynamical systems, James D Meiss. |

1 Course Overview and Syllabus

This course will focus on the qualitative aspects of dynamical systems modeled by systems of ordinary differential equations. Most differential equations arising in applications cannot be solved in closed form. However fundamental questions such as existence and uniqueness of solutions, continuous dependence of solutions on initial conditions as well as notions of local and global stability can be investigated for a large class of dynamical systems. This course aims to develop an understanding of the theory behind the rich qualitative behavior of dynamical systems. Topics covered include existence and uniqueness, linear systems, characterization of behavior near equilibria, forms of local and global stability, Lyapunov functions, Poincare-Bendixson theorem, bifurcations and chaos.

2 Grading Policy

Letter grades are based on total score from homework problems, two in-class midterm exams, and a final comprehensive exam. Homeworks carry 30%, two midterm exams each carry 20% and the final exam carries 30%. If the total score is S (out of 100) then the grades are roughly determined as follows:

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| A | $90 \leq S \leq 100$ |
| B | $80 \leq S < 90$ |
| C | $65 \leq S < 80$ |
| D | $50 \leq S \leq 64$ |
| F | $S < 50$ |

However factors such as the overall distribution of scores S as well as consistency in homework and quizz performance also may affect the final letter grade.

Makeup exams may be given only under **exceptional** circumstances, and only with **written documentation**. You need to obtain **prior approval** from me except in case of unexpected medical emergency.

3 Academic Misconduct

Plagiarism and aiding others in plagiarism are considered forms of academic misconduct. This applies to exams as well as homeworks. For instance copying parts of someone else's homework and submitting as your own work would constitute academic misconduct. Such academic misconduct could result in disciplinary action which may include suspension or dismissal. Please consult the UMBC's Student Academic Conduct Policy for detailed information.

Wish you all a productive and pleasant experience with MATH 490!