Math 308 (Differential Equations), Section 520, Spring 2014
Instructor: Dr. Mariya Vorobets

Class hours: T 12:45 – 2:00, BLOC 117
R 12:45 – 2:00, BLOC 128

Web page: `http://math.tamu.edu/~mvorobet/Math308/S14/`

Office: Milner 005, e-mail: `mvorobet@math.tamu.edu`

Office hours: T 2:30 – 3:30, W 2:00 – 4:00, or by appointment

Course Web Page: The course web page will be my main source of communication to you aside from class and office hours. Check the course page regularly for announcements, exam information and the course schedule.

The Mathematics Department has a web-page for Math 308
http://www.math.tamu.edu/courses/math308/

Email Policy: Check your official TAMU email account regularly. You are responsible for any information I send via email. Because of the privacy rights, I cannot discuss grades via email or over the phone. Please include your name and the section number in the subject line.

Text: Included in the course fees is the payment for the e-book version of the textbook
W. E. Boyce, R. C. DiPrima, Elementary Differential Equations.

Once enrolled in the course, the students will receive a code that they can use to download the book.

The following book might be helpful:

B. R. Hunt, R. L. Lipsman, J. E. Osborn, J. M. Rosenberg Differential Equations with MatLab. 2nd eddition, Wiley, ISBN 0-471-71812-2

A personal copy of MatLab is useful, but not necessary, since you will be able to work remotely on Calclab computers.

Topics covered: This is a course in differential equations. Topics include linear ordinary differential equations and systems of linear differential equations, second order linear equations, solutions using Laplace transforms, numerical methods.

Homework: Homework problems will be assigned every week. The homework problems and the due date will be posted on my web page. You are expected to do all the assigned homework problems. Late homework will not be accepted. If for some reason you can not be in class and turn in your HW in due day, you may drop it off before the class on due day in my mailbox in Milner 130 (please, do not slide them under the door of my office). Collaboration on homework is allowed, but you have to write your ENTIRE solution by yourself. Similarly written homeworks will receive no credit. **When you turn in your homework do not forget to put your name on it, homework number and staple all the sheets.** All work must be shown. No credit would be given for the answer that is not supported by any work.

It is very important for your success in class that you do your homework regularly, completing all of the suggested problems and practicing working with MatLab. Visit me to discuss these problems and seek my help if needed.

Examinations: Your grade will be determined by homeworks, three midterms, and a cumulative final exam.

The *tentative* midterms dates are: Exam I – Feb. 13, Exam II – March 20, Exam III – Apr. 24.

The *final* exam is scheduled for Wednesday, May 7, 8:00 – 10:00 in BLOC 117.

No collaboration on the midterms and on the final is allowed. The use of books, cell phones or notes of any sort during exams is not permitted.

Grading Policy:

EXAM I = 20%, EXAM II = 20%, EXAM III = 20%, HW = 15%, FINAL EXAM = 25%, TOTAL = 100%.

I may curve any grade and will then compute the course grade by the following rule: A for 90 – 100%, B for 80 – 89%, C for 70 – 79%, D for 60 – 69%, and F for 0 – 59%.

Plan of lectures:

- **Week 1.** Section 1.1, 1.2, 1.3. Introduction to differential equations, direction field, solutions, linear/non linear equations.

- **Week 2.** Sections 2.1, 2.2, 2.3, 2.4. Linear equations, separable equations, modeling first order equations, differences between linear/non linear equations.

- **Week 3.** Sections 2.5, 2.6, 3.1, 3.2. Autonomous equations, Exact equations, integrating factors, homogeneous equations with constant coefficients, solution of linear homogeneous equations, Wronskian.

- **Week 4.** Sections 3.3, 3.4, 3.5. Complex root or repeated roots of the characteristic equation, reduction of order, method of undetermined coefficients.

- **Week 5.** Review for Test 1, Test 1.

- **Week 6.** Sections 3.6, 3.7, 3.8. Variation of parameters, mechanical, electrical, and forced vibrations.

- **Week 7.** Section 6.1, 6.2, 6.3 Definition of Laplace transform, solution of initial value problems, step functions.

- **Week 8.** Sections 6.4, 6.5, 6.6. Differential equations with discontinuous forcing functions, impulse functions, convolution integral.

- **Week 9.** Review for Test 2, Test 2.

- **Week 10.** Sections 7.1, 7.2, 7.3, 7.4. Introduction to first order linear equations, review of Matrices, eigenvalues, eigenvectors, basic theory of systems of first order linear equations.

- **Week 11.** Sections 7.5, 7.6, 7.8. Homogeneous linear system with constant coefficients, complex eigenvalues, repeated eigenvalue.

- **Week 12.** Sections 7.8, 7.9. Repeated eigenvalues, non homogeneous linear systems.

- **Week 13.** Sections 5.1, 5.2, 5.3, 5.4. Review of power series, Series solutions near an ordinary point, Euler equa- tions, regular singular poin.

- **Week 14.** Review for Test 3, Test 3.

- **Week 15.** Review for final.

Help Sessions and Week in Review: The Mathematics Department offers help sessions for Math 308 students. See `http://www.math.tamu.edu/courses/helpsessions.html` for schedule and more information.

There will be week-in-review sessions on Wednesdays at 5:30 - 7:30 p.m. in BLOC 117. Problems will be posted before each session. See

`http://www.math.tamu.edu/~mvorobet/Math308/WIR/` for more information.

Make-up Policy: No make-ups will be given without written evidence of an official University excused absence (see *University Student Rules*). In addition, you must notify me **NO LATER** than the end of the second working day after the missed assignment. **If no such notice is given, the rights to a make-up are forfeited.** Specifically, in the case of injury or illness, students are required to obtain a confirmation note from a health care professional affirming date and time of a medical office visit regarding the injury or illness. I will NOT accept the "Explanatory Statement for Absence from Class" form as sufficient written documentation of an excused absence.

Late Work Policy: Late work (for which you do not have a University approved excused absence) will NOT be accepted. This includes all written and online assignments.

Scholastic Dishonesty: Copying work done by others, either in-class or out-of-class, is an act of scholastic dishonesty and will be prosecuted to the full extent allowed by University policy. Collaboration on assignments, either in-class or out-of-class, is forbidden unless I grant permission.If you cheat on an assignment, you will receive a zero. Also, you will be reported to the University.

Remember the Aggie Code of Honor: **"An Aggie does not lie, cheat, or steal or tolerate those who do."**

For more information about the Honor Council Rules and Procedures visit the web site: `http://www.tamu.edu/aggiehonor`

Copyright notice: All course materials (both printed and web-based) are protected by U.S. Copyright Laws. No multiple copies can be made without written permission by the instructor.

Students with disabilities: The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services, in Cain Hall, Room B118, or call 845-1637. For additional information visit http://disability.tamu.edu