

## Syllabus

**Text:**

**Differential Equations** by Polking, Boggess, and Arnold

**Software:**

**The Student Edition of MATLAB**

**The manual to be used with the software:**

**Ordinary Differential Equations Using MATLAB** by the two of the authors of the textbook (which is available at no additional cost, as is written in the preface of the textbook). Three additional differential equations files should be downloaded from <http://math.rice.edu/~dfield>. Be sure that the version of the auxiliary files matches your version of MATLAB. The three files go in the directory `toolbox\local` of the MATLAB directory on your PC.

**Instructor:**

Alexander Wentzell

e-mail: [wentzell@math.tulane.edu](mailto:wentzell@math.tulane.edu)

409 Gibson Hall 862-3452

Web page: <http://www.math.tulane.edu/~wentzell>

**Lectures:**

Mondays, Wednesdays, Fridays 12 – 12:50 in Gibson 325

**Office hours:**

Mondays, Wednesdays, Fridays 11 – 11:50 AM, or by appointment

**Teaching assistant:**

Pollack

**Labs:**

Thursdays 5:30 – 6:45 PM in Gibson 325.

**Course information**

The course will cover material in the first ten chapters of the book. You must read the text – better do it *before* the lecture. It is very important to solve problems accompanying the text: the only way to really learn mathematics is not to be shown how some problems are solved but rather to solve them with your own hands. Ideally, you should solve all problems; however I am giving a smaller list of problems that are given to you as **home assignments**. They won't be collected or graded. There will be also special project-type homework assignments, which **will be** collected and graded. The grades for these home assignments will count 15% of your overall course grade. There will be **quizzes** given in

the lab; they will count another 10% of your grade. There will be three **tests** accounting together for 40% of the overall grade. And there will be a **final exam** on May 2 from 8 AM till noon (location to be announced) – counting 35% of your grade.

Tentative dates of the tests: **Test # 1**, February 14; **Test # 2**, March 13; and **Test # 3**: April 24.

### Projects

There will be group projects for groups of no more than 4 students. Everyone in the group should contribute substantially. No late or poorly written projects will be accepted.

### Homework

Homework (except for the projects) will not be collected. However, some homework problems, with or without slight modifications, will appear in quizzes and tests (so will some examples worked out in the lectures). So it is very important to work on the problems assigned below. You are encouraged to discuss these problems with other students.

#### Tentative order of the topics, with the list of homework problems:

Section 2.1	Problems ## 3, 7, 10, 13, 18, 21, 22, 31
Section 6.1	Problems ## 1, 2, 3
Section 2.2	Problems ## 2, 3, 9, 14, 17, 33
2.9	Problems ## 7, 8, 9, 10, 11, 16, 17, 18, 19, 21, 23, 27, 30, 31
2.4	Problems ## 2, 3, 10, 13, 18, 19, 29
2.5	Problems ## 1, 3, 5, 8, 13
2.7	Problems ## 1, 2, 3, 7, 9, 11, 21, 23, 25, 27, 29, 31
Section 3.1	Problems ## 1, 3, 9, 10, 16, 20
Section 4.1	Problems ## 13, 17, 18, 21, 22, 24
4.2	Problems ## 1, 3, 5
4.3	Problems ## 1, 3, 9, 11, 12, 17, 18, 20, 25, 28, 30, 38
4.5	Problems ## 1, 2, 5, 6, 10, 11, 15, 19, 25, 27, 31, 33, 40, 41, 45
4.7	Problems ## 2, 7, 9, 10, 12, 13, 31, 32
Section 5.1	Problems ## 1, 3, 5, 15, 17, 19, 21, 23, 29
5.2	Problems ## 1, 2, 3, 5, 19, 23, 27, 29, 31, 35, 37, 41
5.3	Problems ## 1, 3, 4, 5, 7, 9, 15, 17, 19, 21, 23
5.4	Problems ## 1, 3, 11, 13, 15, 19
5.5	Problems ## 1, 3, 5, 7, 11, 12, 13, 17, 19, 21, 23, 25, 27, 29
5.7	Problems ## 4, 5, 6, 8, 13, 23, 26
Chapter 7:	Page 282: ## 11, 14, 16, 17, 31, 33, 37, 41, 49, 53, 54
	Page 299: ## 1, 23, 25, 29
	Page 306: ## 3, 11, 19, 23
	Page 316: ## 11, 13, 17, 19, 21
	Page 321: ## 14, 16, 21, 22, 28, 30
	Page 328: ## 23, 25, 27, 31, 37

Section 8.1	Problems ## 1, 4, 6, 7, 11, 13, 16
8.2	Problems ## 21, 23, 25
8.3	Problems ## 1, 3, 7, 9, 10
8.4	Problems ## 11, 12, 13, 17, 19, 21
8.5	Problems ## 17, 23, 24, 27
Section 9.1	Problems ## 1, 3, 9, 11, 14, 17, 19, 24, 25, 27
9.2	Problems ## 1, 3, 7, 9, 15, 16, 18, 22, 24, 28, 29, 31, 33
9.3	Problems ## 1, 10, 11, 12, 16, 17, 20, 21
9.4	Problems ## 4, 6, 7, 9, 14, 19, 20
9.5	Problems ## 3, 7, 9, 11, 13, 14, 16
9.7	Problems ## 1, 3, 10, 12, 13, 14, 16
Section 10.1	Problems ## 1, 3, 5, 9, 11
10.2	Problems ## 1, 7, 9, 11, 14
10.3	Problems ## 1, 5, 9, 10, 11
10.4	Problems ## 1, 5, 23, 25