MATH 215/255-- Elementary Differential Equations I/Ordinary Differential Equations

Session: 2014 Summer Term

- **Pre-requisite:** Mathematics 101 (integral calculus), Math 221 or 152 (linear algebra) or equivalent.

- **Co-requisites (crucial):** Mathematics 200 or 253 (multi-variable calculus) or equivalent.

- **Textbook:** Boyce & DiPrima, *Elementary Differential Equations and Boundary Value Problems*, 9th Edition (2008), or E-book version : *Elementary Differential Equations and Boundary Value Problems 9/E by* Coursesmart / Boyce / 133 (ISBN 9780470415399).

- **Instructor:** Akos Magyar, magyar@math.ubc.ca, **Office hours**: Math 229E, M 3-4pm, TF 11-12:30
- **Lectures:** MATH 100, MTF 1-2:50pm, W:1-150pm
- **TA:** Steven XU **Office hours:** TBA

GRADING: Your final grade will be based on your Midterm Exam (30%) and Final Exam (50%) *and your Homeworks and Quizzes (20%).*

The ***Midterm Exam is*** scheduled on ***June 6th*** in class. No notes, books or calculators will be allowed during the Midterm and the Final.

There will be 5 weekly ***Homework Assignments***. Out of those 3 have to be turned in on **May 21st (assignment #1)**, **June 2nd (assignment #3)** and on **June 18th (assignment #5)**.

There will be two ***Quizzes*** scheduled on **May 28th (from assignment #2)** and on **June 11th (from assignment #4).** Some of the Homework assignments and the Quizzes will be graded and handed back a week later. **Please keep in mind the dates!**

Policies: Missing the Midterm or a Homework Assignment/Quiz will normally result in a mark of zero. Exceptions may be granted in two cases: prior consent of the instructor or a medical emergency. In the latter case, the instructor must be notified as soon as possible (preferably before the test), and presented with a doctor's note immediately upon the student's return to UBC.

Problem Assignments listed below are due each week ***at the beginning*** of the Wednesday class (except the one on **June 2nd**) unless a Quiz is scheduled on that week.

Some (but not all) of the problems handed-in will be marked and handed back. You have to *show all the work* in order to get full credit.

1. Week of May 12th:

Reading: : Sections 1.2-1.3, 2.1-2.2, 2.4, 2.6
Homework Problems:
p.16: 7, 8, 12;
p.25: 18, 20.
p.48: 1, 6, 9, 32(b)(c)
p.39: 3(c), 8(c), 16, 30
p.75: 1,3,28
p.101: 1, 2, 13, 15,

Due: **May. 21st**

2. Week of May 19th:

Reading: Sections 2.3 2.5, 3.1, 3.3, 3.2
Homework Problems:
p.59: 2, 4, 16, 18b, 23a-c
p.88: 3, 5, 15, 20 a-c, 22,
p.144: 1, 9, 13, 17, 23
p.163: 2, 7, 17, 25a-c
p.155: 1, 2, 12, 13, 26

Quiz #1: May 28th

3. Week of May 26th

Reading: : Sections: 3.4, 3.6, 3.7, 6.1-6.2
Homework Problems:
p.171: 1, 14, 23
p.189: 3, 8, 15, 17
p.202: 3, 11, 17, 24
p.311: 5, 6, 15

Due: June 2nd

4. Week of June 2nd

Reading: : Sections: 6.3, 6.4, 7.5, 7.6,
Homework Problems:
p.320: 3, 10, 12, 23
p.329: 8, 9, 15, 21

p.336: 6, 7, 9 (for part (b) you can use a graphing calculator)
p.398: 1(a), 4(a), 15, 24, 26

Midterm Exam: June 7th 1-2pm

Quiz #2: **June 11th**

5. Week of June 9th:

Reading: : Sections 7.7, 7.8-7.9, 9.1
Homework Problems:

p.409: 2, 6, 14 (you don't have to sketch the direction field, just the phase portrait),
p.428: 2(b)(c), 8
p.494: 2, 3, 6 (only parts (a) (b) (c) only the phase portraits, don't have to sketch x_1 versus t), 14

Due: June 18th (Wed.)

6. Week of June 16th:

Reading: Sections: 9.2, 9.3, 9.4 (in part)
Homework *Problems:*

p.506: 2, 4, 6, 21, 24
p.516: 7, 9, 13 (in part (d) try to connect the local phase portraits near the critical points to get the "global" phase portrait of the system)

NOTE: You don't have to turn in this set of problems, but it is important to *try to do all of them* as preparation for the Final. I will upload the solutions.

Final Exam: TBA
