

# MATH 256 DIFFERENTIAL EQUATIONS: OUTLINE

*Session 2014W, Term 1 (Sep-Dec 2014)*

<http://www.math.ubc.ca/~jcwei/MATH256-2014.html>

**Description:** From the UBC Calendar: "Linear ordinary differential equations, Laplace transforms, Fourier series and separation of variables for linear partial differential equations."

**Topic prerequisites:** Linear algebra including eigenvalues of matrices (MATH 152); Integral calculus including some ordinary differential equations (e.g. MATH 101); Some multivariable calculus including partial derivatives (e.g. MATH 200)

## Instructor:

- Session 102: Every Mon, Wed, Fri, 10:00-11:00, Room: Hennings 201, Instructor: Duncan Hewitt. E-mail: dhewitt@math.ubc.ca
- Session 103: Every Mon, Wed, Fri, 14:00-15:00, Room: Math 100; Instructor: Juncheng Wei, Math Annex 1224, Tel. 604-822-6510, E-mail: jcwei@math.ubc.ca

**Objectives:** This course is intended for analytical methods in solving ordinary (ODEs) and partial differential equations (PDEs). The focus is on the analytical techniques. Very few proofs will be involved.

**Textbook :** W.E. Boyce and R.C. DiPrima, *Elementary Differential Equations and Boundary Value Problems*, Wiley (10th Edition, 2012; or any Edition)

## Topics

- First order ordinary differential equations [Chapter 1, 2]
- Second order ordinary differential equations [Chapter 3]

- Systems of first order linear ordinary differential equations [Chapter 7]
- The Laplace transform [Chapter 6]
- Partial differential equations and Fourier series [Chapter 10]
- If time permits: Boundary value problems and eigenvalue problems [Chapter 11]

### **Grading**

Your grade will be determined by the following formula:

Grade (100/100) = Final exam (50/100) + Two midterm exams (40/100) + Homework (10/100)

### **Exam Schedule**

- Midterm Exam I. Friday, Oct. 3. Covers Chapter 1, 2, and 3
- Midterm Exam II. Monday, Nov. 17. Covers Chapter 7 and 6
- Final Exam. Covers all topics

### **Homepage**

There will be 10 assignments which will be posted on my (or your instructor's) web page: [www.math.ubc.ca/~jcwei](http://www.math.ubc.ca/~jcwei), [www.math.ubc.ca/~dhewitt](http://www.math.ubc.ca/~dhewitt).

Lecture notes, assignments, solutions to assignments and examinations will be posted on my (or your instructor's) web when they are ready.

### **Office Hours:**

MON, 4:40-5:30, MATX 1118

WED, 4:40-5:30, MATX 1118

THURS, 1-1:50, MATX 1118

**Final Remark:** Any questions? Please send me an email or drop by my office Math Annex 1224.