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**COURSE INFORMATION**  
**MATH 2050 SA: Applied Analysis I**  
**SPRING 2024 (May 27 - June 14)**

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**Lectures:**                    MTWThF 2:30PM - 5:30 PM                    Location: RB 2024

**Instructor**                    Dr. Christopher Chlebovec  
Office: RB 2007  
Office Hours: By appointment

**Email**                            cchlebov@lakeheadu.ca (the best way to contact me!)

**Textbook**                    Suggested: *Advanced Engineering Mathematics* (6<sup>th</sup> Edition) – Zill & Cullen

**Class Notes**

Partially completed class notes are used concurrently with the lectures and will benefit you if printed and read prior to class. Class notes and other information will be accessible via D2L.

**Course Description**

Some important topics that will be covered include:

- Methods of Solving First-Order ODEs (initial-value problems, separable equations, exact equations, linear equations)
- Applications of First-Order ODEs (growth and decay, carbon dating, Newton's law of cooling, series circuits)
- Solutions to Linear Second-Order DEs and higher order ODEs (general form of a non-homogeneous equation – complementary solution & particular solution; initial-value problems; boundary-value problems; reduction of order; homogeneous linear equations with constant coefficients; undetermined coefficients; variation of parameters; Cauchy-Euler Equation)
- Applications of Second-Order ODEs (vibrating spring, RLC- circuit)

- Laplace Transform Methods (definition and elementary properties; inverse transforms; partial fraction techniques; first and second translation theorems; derivative of transforms; transforms of derivatives, integrals, and periodic functions; convolution theorem; application to initial-value problems; Dirac delta function)

\* The material for the course will be covered in Chapters 1, Chapter 2 (2.2, 2.3, 2.4 and 2.7), Chapter 3 (except 3.7, 3.10, and 11) and Chapter 4(except 4.6). Extra topics may be added, if time permits.

## **Class Policies**

If you come to class, I would appreciate that you show up on time. Please turn off your phone while in class. Midterms and exams must be taken on the date assigned and there will be no books, calculators, cell phones, or other aids allowed during the exams. Cell phones are not allowed to be on your person during midterms and exams, per university policy.

## **Accommodations**

Lakehead University is committed to achieving full accessibility for persons with disabilities. Part of this commitment includes arranging academic accommodations for students with disabilities to ensure they have an equitable opportunity to participate in all of their academic activities. If you think you may need accommodations, you are strongly encouraged to contact Student Accessibility Services (SAS) and register as early as possible. For more information, please visit: <http://studentaccessibility.lakeheadu.ca>

## **Evaluation**

### **A. Assignments (10 %)**

There will be daily assignments posted on WeBWorK. *Late assignments will not be accepted.*

### **B. Test I (30%)**

Test I is scheduled for **Friday, May 31** during class time.

### **C. Test II (30%)**

Test II is scheduled on **Friday, June 7** during class time.

### **D. Test III (30%)**

Test III is scheduled on **Friday, June 14** during the class time.

