MA 6113   **Fall 2019**

Stochastic Differential Equations
Course Website: www.math.mun.ca/~ou

Instructor:	Dr. C.H. Ou, Office HH-3014, Phone 864-8779, Email: ou@mun.ca
Office Hours:	Monday 9:30–12:30, Friday 9:30–12:30 or by appointment
Lectures:	Monday and Wednesday (10:30-11:45). Classroom: EN1002
Labs:	None.
Reference book:	**by Oksendal, Bernt: Stochastic differential equations.** Sixth edition. Universitext. Springer-Verlag, Berlin, 2003.
and reference book:	by Panik, Michael J.: Stochastic Differential Equations: An Introduction with Applications in Population Dynamics Modeling. 2017, Wiley.
Prerequisite:	High level of undergraduate course Math3161 and Math4160 for differential equations and some 4000 level undergraduate course for probability and random processes, or permission of the instructor.
Evaluation:	10% assignments, 30% Term Test, 60% Final Examination.

Important Dates

Oct 16   **TERM TEST #1.** (held in the classroom).
Nov 13   **TERM TEST #2.** (held in the classroom).

Notes

- There will be an assignment in about every two weeks. You must hand in your completed assignment at the **beginning of class** on the due date. Late assignments will **not be marked**.

- **Copy of assignments** from other students is a serious **academic offence** and you will get zero for this course.

- Attendance may be taken at the classroom. It will be used in deciding borderline cases at the end of semester.

- The test dates and class syllabus are tentative and may be subject to changes. It is the student responsibility to attend class regularly and to make note of any change.

Course Outline

The course will include the following topics:

- Mathematical Preliminaries:Differential equations.

- Mathematical Preliminaries: Probability Spaces, Random Variables and Stochastic Processes

- Ito Integrals

- Ito's Formula and the Martingale Representation

- Stochastic Differential Equations

- Application to population biology–stochastic differential equations and numerical solutions. If time allowed, lecturing or reading of applications to other subjects-mathematical finance or applications to science and engineering subjects.