

VANIER

C É G E P / C O L L E G E

Faculty of Science & Technology

Department of Mathematics

Course Title:	Differential Equations	Teacher:	I.T. Ivanov
Course Number:	201-HTL-VA	Office/Phone:	D264, ext. 7737
Section:	00001	Webpage:	gauss.vaniercollege.qc.ca/~iti
Semester:	Winter 2023	Email:	ivanovi@vaniercollege.qc.ca

Please note that the modality and detailed calendar of this course may need to be modified as a result of changing government health regulations. Should changes become necessary, this course outline will be modified accordingly.

Course Objectives: To introduce the student to differential equations and their applications.

Course Description: This course is an introduction to the study and to the applications of Differential Equations. Particular emphasis will be placed throughout the course on using differential equations to model a wide variety of real-world problems involving dynamic systems, that is, systems which change and evolve with time. Dynamical systems modeling is used in physics and chemistry, in engineering design studies, in bioengineering, in ecological management, in urban planning, and in finance, to name just a few fields of application.

Ponderation: Theory 3 hours, Lab 2 hours, Homework 3 hours.

Prerequisites: Integral Calculus, 201-NYB

Teaching Methods: A combination of lectures, class and lab exercises, along with homework and classwork will prepare the students for two tests. The programming language Python will be introduced and used in the course. Student projects will illustrate the use of differential equations modeling in areas of science and engineering of interest to the students.

Textbook: Elementary Differential Equations, 12th Edition by W.E. Boyce, R.C. DiPrima and D.B. Meade, Publisher John Wiley and Sons, ISBN: 9781119777773.

Additional Expenses: Scientific calculator

Office Hours: Noon - 2pm Tuesdays

Competencies to be achieved: For the course objectives and the expected learning outcomes please consult the attached course content document.

LIA (Learning Integration Assessment):

Comprehensive Assessment (ESP) worth 20% of the term mark.

Evaluation Procedures and Breakdown of Marks:

Homework, in-class work, simulations	25%
Midterm exam	20%
Final exam	35%
ESP paper	20%

Note: A passing grade in the ESP component is needed to receive ESP credit.

Important Dates: An in-person midterm exam is tentatively scheduled for **March, 9th**. An in-person cumulative final exam will take place during the final exam period. Online and written assignments will be due every week. ESP project deadlines will be discussed in the first week of classes and will be distributed in an ESP guidelines document.

Academic Resources: Links to free online differential equations courses, books and other materials are provided on the Webpage of the course.

Course Policies:

1. **Missed tests and in class assessments** will not be re-administered unless the student provides valid proof, such as a medical note, or some other compelling reason. Failure to do so will result in a grade of zero.
2. Attendance is highly recommended. It is the student's duty to remain informed about what takes place in class he/she misses. Absence from class does not excuse students from their responsibilities.
3. Students are expected to check the course Webpage on a regular basis. Course material, announcements, and important dates will be posted there.
4. Student work should be submitted in Adobe pdf format. A document which is corrupted and cannot be opened will receive a grade of zero.

General Academic Policies: It is the student's responsibility to be familiar with and adhere to the Vanier College Academic Policies. These policies can be found online on the Vanier College website, under Policies. Your attention is drawn in particular to the following policies. A brief summary of each is included.

Student Academic Complaints (Policy number 7210 - 8) The Vanier College Student Academic Complaints Policy and procedures puts an emphasis on mediation as the primary means to resolve complaints in the academic area. If you have a problem with a teacher and have been unable to resolve it by talking with him or her, you may wish to enlist the help of the Faculty Mediation Committee. The committee member names and contact information are available in Student Services or through the office of the Faculty Dean.

Department Coordinator: Elena Naidenova naidenoe@vaniercollege.qc.ca
Faculty Dean: Haritos Kavallos kavalloh@vaniercollege.qc.ca

Cheating and Plagiarism (Policy number 7220 - 31) Any form of cheating or plagiarism will result in a grade of zero on the test or assignment and a letter from the teacher will be placed in your file. A repeated offence may lead to even more serious consequences. Please consult the Vanier Student Writing Guide, the Vanier College Catalogue, the Student Handbook, and your teacher for more information.

Student Misconduct in the Classroom (Policy number 7210 - 19) This policy provides guidelines for handling cases of student misbehaviour in the classroom and other instructional settings. Such cases may include conduct that is abusive to the teacher and/or other students, or disruptive to the teaching/learning process. This policy does not limit the teacher's or the College's right to take immediate action in cases of imminent danger to persons or property.

Code of Conduct The Code of Conduct sets forth principles, guidelines and norms of behavior expected from all individuals present at Vanier College, including students, faculty, employees, administrators, members of the Board of Directors, contractors and visitors.

Student Absences for Religious Holy Days see IPESA, Section 2.2.6) Students whose religious obligations require them to be absent from the College on a holy day not formally recognized in the College calendar must inform their teachers, in writing, during the first week of classes, of the particular date(s) and times of the religious holy days on which they must be absent by completing and submitting to their teacher the Religious Holy Days Absence form found on the Registrar's Office page on the Vanier College website <http://www.vaniercollege.qc.ca/registrars/request-forms/religious-holy-days>. Absences approved in this manner are considered to be excused absences. Students are responsible for material covered in the classes and labs they miss.

Student Proficiency in the Language of Instruction (Policy number 7210-33): The purpose of this policy is to foster student proficiency in English, the formal language of instruction at Vanier College. Emphasis on literacy and communication skills (writing, reading, speaking, and listening) is essential to students' academic and professional success.