

MATH*6011

Dynamical Systems I Winter 2018

CALENDAR DESCRIPTION: Basic theorems on existence, uniqueness and differentiability; phase space, flows, dynamical systems; review of linear systems, Floquet theory; Hopf bifurcation; perturbation theory and structural stability; differential equations on manifolds. Applications drawn from the biological, physical, and social sciences.

TEXT: No text is required, as the lecture notes will contain all required information. If you would like to look at a reference text book, try

- M. Hirsch and S. Smale, Differential Equations, Dynamical Systems and Linear Algebra, Academic Press, 1974.
- J. Guckenheimer and P. Holmes, Nonlinear Oscillations, Dynamical Systems and Bifurcations of Vector Fields, Springer-Verlag, 2002.
- L. Perko, Differential Equations and Dynamical Systems, Springer-Verlag, 2006.
- S. Wiggins, Introduction to Applied Nonlinear Dynamical Systems and Chaos, Springer-Verlag, 2003.

INSTRUCTOR: Dr. Herb Kunze
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hkunze@uoguelph.ca

OFFICE HOURS: Wednesday, 8:30-12:00

MEETINGS:

Lectures	Tues / Thurs	MACN 118	8:30-9:50
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COURSE ASSESSMENT: There will be four to five assignments and one 75-minute test.

	Value	Date
Assignments	50%	Due in class
Test	50%	Friday, April 20, 2:30-4:30

NOTES:

1. The lectures are the primary source of course material. Any text book reading is for extra examples and exercises.
2. The assignments you hand in are expected to contain your own work. There will be low tolerance for plagiarism or what I deem to be excessive collaboration.
3. The Undergraduate Calendar outlines the *Grounds for Academic Consideration* at https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/sec_d0e2239.shtml. A grade of zero is assigned for assignments missed due to unsatisfactorily explained reasons.

Appendix – Statements from the University Administration

The content on the other side of this page is what I want to say to and share with you. The University Administration asks that I also present the following items:

- This 0.5-credit course is offered by the Department of Math & Stats @ the University of Guelph. It is not a core course, but it is awesome. The course has no Teaching Assistant.
- The objectives of the course are that you will have a deep understanding and appreciation for the material that we cover and for the power and beauty of mathematics in general. We can also mention numeracy, critical thinking, and problem solving as skills that will develop.
- The Administration wants you to read (again) many standard statements that are also posted online by the Provost at <http://www.uoguelph.ca/vpacademic/avpa/checklist.php>.

<p><u>E-mail Communication:</u> As per university regulations, all students are required to check their <mail.uoguelph.ca> e-mail account regularly: e-mail is the official route of communication between the University and its students.</p>	<p style="color: red;">I will talk to you in class.</p>
<p><u>When You Cannot Meet a Course Requirement:</u> When you find yourself unable to meet an in-course requirement because of illness or compassionate reasons, please advise the course instructor (or designated person, such as a teaching assistant) in writing, with your name, id#, and e-mail contact. See the graduate calendar for info on regulations and procedures for Academic Consideration.</p>	<p style="color: red;">See Note 3 on other side. Just talk to me.</p>
<p><u>Drop Date:</u> Courses that are one semester long must be dropped by the end of the fortieth class day; two-semester courses must be dropped by the last day of the add period in the second semester. The regulations and procedures for dropping courses are available in the Graduate Calendar.</p>	<p style="color: red;">Friday, Mar. 9, but why drop? Just talk to me.</p>
<p><u>Copies of out-of-class assignments:</u> Keep paper and/or other reliable back-up copies of all out-of-class assignments: you may be asked to resubmit work at any time.</p>	<p style="color: red;">I've never had to do this.</p>
<p><u>Accessibility:</u> The University promotes the full participation of students who experience disabilities in their academic programs. To that end, the provision of academic accommodation is a shared responsibility between the University and the student. When accommodations are needed, the student is required to first register with Student Accessibility Services (SAS). Documentation to substantiate the existence of a disability is required, however, interim accommodations may be possible while that process is underway. Accommodations are available for both permanent and temporary disabilities. It should be noted that common illnesses such as a cold or the flu do not constitute a disability. Use of the SAS Exam Centre requires students to book their exams at least 7 days in advance, and not later than the 40th Class Day. More information: www.uoguelph.ca/sas</p>	<p style="color: red;">Talk to me.</p>
<p><u>Academic Misconduct:</u> The University of Guelph is committed to upholding the highest standards of academic integrity and it is the responsibility of all members of the University community – faculty, staff, and students – to be aware of what constitutes academic misconduct and to do as much as possible to prevent academic offences from occurring. University of Guelph students have the responsibility of abiding by the University's policy on academic misconduct regardless of their location of study; faculty, staff and students have the responsibility of supporting an environment that discourages misconduct. Students need to remain aware that instructors have access to and the right to use electronic and other means of detection. Please note: Whether or not a student intended to commit academic misconduct is not relevant for a finding of guilt. Hurried or careless submission of assignments does not excuse students from responsibility for verifying the academic integrity of their work before submitting it. Students who are in any doubt as to whether an action on their part could be construed as an academic offence should consult with a faculty member or faculty advisor. The Academic Misconduct Policy is detailed in the Graduate Calendar.</p>	<p style="color: red;">See Note 2 on other side.</p>
<p><u>Recording of Materials:</u> Presentations which are made in relation to course work—including lectures—cannot be recorded or copied without the permission of the presenter, whether the instructor, a classmate or guest lecturer. Material recorded with permission is restricted to use for that course unless further permission is granted.</p>	
<p><u>Resources:</u> The Academic Calendars are the source of information about the University of Guelph's procedures, policies and regulations which apply to undergraduate, graduate and diploma programs.</p>	