


Sergei S. Pilyugin

Courses


 MAP 6327 Applied Differential Equations

 MAA 5104/4102 Advanced Calculus (E and PS) 1

Publications

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Schedule

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## MAP 6327 Applied Differential Equations

MAP 6327 Applied Differential Equations (Section 219F)

Instructor: Sergei S. Pilyugin [http://people.clas.ufl.edu/pilyugin/courses/map6327\\_f2015/](http://people.clas.ufl.edu/pilyugin/courses/map6327_f2015/)

- **Announcements:** There are no current announcements.
- **Prerequisites:**
- **Time and Room:** MWF 3 (9:35 – 10:25 a.m.), LIT 217.
- **Final Exam Time and Room:** TBA.
- **Textbook:** Ordinary Differential Equations with Applications (2nd ed.) by C. Conicone, Springer-Verlag New York, 2006 (ISBN 0-387-30769-9).
- **Critical dates:** Aug. 24 (classes begin), Dec. 9 (classes end).
- **Holidays:** Sep. 07 (Labor Day), Nov. 6-7 Homecoming, Nov. 11 (Veterans Day), Nov. 25-28 (Thanksgiving).
- **Office Hours:** MWF4 (10:40-11:30 a.m.) in LIT 458, or by appointment. Please, call me at 352-392-0281 X296 or use e-mail: [pilyugin@ufl.edu](mailto:pilyugin@ufl.edu) for communication. For more details, see my schedule.
- **Description and Objectives of the Course:** MAP 6327 covers theory and methods for analyzing linear and nonlinear systems of ordinary differential equations, the concepts of stability and asymptotic behavior of solutions. Weekly schedule: W1-2: Review of calculus in Banach spaces: contraction principle, implicit function theorem; W3-4: General theory of ODEs: existence, uniqueness, and extensibility of solutions, flows, invariant sets and manifolds, variational systems and linearization; W5-6: Qualitative theory: omega limit sets, attractors, stability, phase plane analysis, Poincare-Bendixson theory; W7-8: Linear systems theory: fundamental matrices, linearized stability, Floquet theory, stability of periodic orbits; W9-10: Origins of ODEs: Euler-Lagrange equation, classical physics, coupled pendula (Fermi-Ulam-Pasta oscillator), inverted pendulum, Mathieu equation, partial differential equations; W11-12: Hyperbolic theory: stable, unstable, and center manifolds, Grobman-Hartman theorem; W13-14: Continuation of periodic solutions.

- **Grading System:** The grade is determined by 4 midterms (25 points each) based on homework problems. The resulting score determines the letter grade according to the following table

Letter Grade	A	A-	B+	B	B-	C+	C	C-	D+	D
Score	100 – 93	92 – 88	87 – 83	82 – 74	73 – 69	68 – 64	63 – 59	58 – 54	53 – 49	48 – 40

- **Course policies:**
- **Closed-book policy:** No use of calculators, or books will be allowed during any in-class tests/quizzes.
- **Policy related to make-up exams or other work:** There will be no opportunities to make up for work not submitted. However, if a student provides a legitimate excuse well in advance, scores will be prorated. Work with due date should be turned in at the beginning of class on the stated due date. Late work will not be accepted and will be deemed work not submitted.
- **Policy on class attendance:** Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found in the online catalog at: <https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>.
- **University's honesty policy:** UF students are bound by The Honor Pledge which states, "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code". On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." The Honor Code (<http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.
- **For students with disabilities:** Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the instructor when requesting accommodation.
- **Students' evaluations of the course:** Students are expected to provide feedback on the quality of instruction in this course based on 10 criteria. These evaluations are conducted online at <https://evaluations.ufl.edu>. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/results>.
- **Disclaimer:** I reserve the right to change the above policies if situations warrant.

Homework problems by section:

To be posted.

