Ordinary Differential Equations

MA2051 D07-D12, D14-D15 • D'15 • AK116

Syllabus & Calendar | Homework Assignments | Course Materials & News

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I n s t r u c t o r :

Vadim V. Yakovlev
Office: SH104C
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Office hours:

Mon: 4:00-5:00 pm,
Thur: 3:00-4:00 pm,
and *by appointment*

Teaching Assistant:

Kyle Dunn
Office: SL326
E-mail: kgdunn@wpi.edu

Text: S.J. Farlow, *An Introduction to Differential Equations and Their Applications*, Dover Publications, Inc., 2006.

Web Site: http://www.wpi.edu/~vadim/ODE/D15-Info.html

Teaching Team, Sections & Conferences

PLA Vishal K Rathi
Section D07 - SH 106, Tuesday, Thursday 10:00-11:00 am
Office Hours - SH Tutoring Center, Wednesday 1:00-2:00 pm
e-mail: vkrathi@wpi.edu

PLA Simon Escapa
Section D08 - SH 309, Tuesday, Thursday 3:00-4:00 pm
Office Hours - SH Tutoring Center, Wednesday 2:00-3:00 pm
e-mail: sescapa@wpi.edu

PLA Lin Jiang

Section D09 - SH 304, Tuesday, Thursday 9:00-10:00 am
Office Hours - SH Tutoring Center, Wednesday 12:00-1:00 pm
e-mail: ljiang@wpi.edu

PLA Sadie Grace Gauthier
Section D10 - SH 106, Tuesday, Thursday 11:00-12:00 am
Office Hours - SH Tutoring Center, Wednesday 12:00-1:00 pm
e-mail: sggauthier@wpi.edu

PLA Joao Mauricio Vasconcelos
Section D11 - SH 304, Tuesday, Thursday 1:00-2:00 pm
Office Hours - AK Pumpkin Lounge (AK113), Wednesday 5:00-6:00
e-mail: jcvasconcelos@wpi.edu

TA William Sanguinet
Section D12 - SH 308, Tuesday, Thursday 4:00-5:00 pm
Section D15 - SH 304, Tuesday, Thursday 3:00-4:00 pm
Office Hours - SH 205, Wednesday 3:00-5:00
e-mail: wcsanguinet@wpi.edu

TA Kyle George Dunn, Team Coordinator
Section D14 - SH 203, Tuesday, Thursday 9:00-10:00 am
Office Hours - SL326, Monday 1:00-2:00, Wednesday 2:00-3:00 pm
e-mail: kgdunn@wpi.edu

Course Information

Main Course Objectives

This course in differential equations, being one of the key capstones of our mathematics, uses many of the concepts introduced in previous calculus courses and gains further insights regarding their application in science and engineering. The topics in this course provide essential background and preparation for many other courses in sciences and engineering and for many activities in the post-graduate professional career.

By the end of the term, you should be able to

- solve separable differential equations via integration;
- solve first order linear equations using different methods;
- solve second order, constant-coefficient differential equations using characteristic functions, and undetermined coefficients;
- set up differential equation models for some real problems;
- set up second order differential equation models for oscillating systems;
- compute physical quantities such as amplitude, period, natural frequency, resonant frequency, and amplitude at resonance for forced spring-mass systems;
- use the Laplace Transform to solve ODEs.

Course Structure:

- Four lecture meetings per week
- Two conferences per week

Grading Scheme:

Quizzes 1 to 7: 48%, 6 x 8% each
Exams I & II: 50%, 2 x 25% each
Attendance of 12 (out 13) conferences: 2%*)
*) Attendance of all 13 conferences: 1(bonus)%

Point ranges for the course final grades:

- **A**: 102% - 90%; **B**: 90% - 80%; **C**: 80% - 70%; **NR**: < 70%

Conferences

The conference sessions are conducted by a member (PLA or TA) of this course's teaching team. Material considered in lectures, homework problems, and their reviews may be discussed during the conference hours. Students registered for particular section must attend conferences corresponding to this section.

Attentive participation in conference activities is a critical part of the learning process in this course. Attendance is strongly encouraged and directly reflected in the final grade for which 2% can be earned through attendance of at least 12 (out of 13) conferences. (All 13 attended will result in 1 *bonus* percent.) A missed conference won't be counted as an absence only in case of a genuine unavoidable (e.g., medical) emergency ***which you can document***.

Home Work & Quizzes

Homework is a required component of the course and is assigned for each section of the book covered in the lectures. Problems will be assigned daily (with a possible couple of exceptions) and posted on the course web page, in section Homework Assignments.

Homework is **not** handed in, so *each student should take a personal responsibility for doing sufficient study and practice*. In order to understand the math, it is necessary to do, at a minimum, the assigned problems, but additional exercises for further practice are strongly recommended.

To evaluate your course progress, **seven 30-minute quizzes** are offered throughout the course. The quiz problems are two-fold:

1. half of the problems (normally, two-three) are randomly selected from the preceding homework assignments;
2. half of the problems (normally, two-three) are quite similar to the problems in group 1, but they are new

For the work on the quizzes, the students are allowed to use their *notes with the solutions of the homework problems*. **Six best quiz scores** will be counted towards your final grade.

In accordance with the course Calendar, the quizzes will be held in the end of *each Thursday conference* and of the one on Tuesday, Apr 28. ***There are absolutely no make-up quizzes***. If a quiz conference is missed for any reason, this will simply count as a zero on the quiz.

Examinations

There will be two in-class Exams covering approximately equal portions of the course; therefore, the second Exam is *not* comprehensive. For the Exams' dates, see Syllabus & Calendar.

No notes, books, calculators, laptops, tables, gadgets, etc. may be used during these exams. Similarly to Quizzes, ***no make-up exams will be given***.

Additional Resources & Help

All TAs and PLAs hold their Office Hours which can be used for individual discussions/interactions aiming to assist in learning and understanding the meanings of the course's conceptual and practical issues.

Mathematics Tutoring Center

The Mathematics Tutoring Center (located outside of SH 002A) is available for any WPI student taking a math course; it thus could be an invaluable source of additional help with troubles and issues in this course.

- Monday-Thursday 10:00 am - 8:00 pm
- Friday 10:00 am - 4:00 pm
- No appointment needed - just come by!

All PLAs of the Teaching Team have their own work schedules with the Tutoring Center and could be conveniently seen there beyond their course Office Hours.

MASH

The Academic Resources Center also holds Math and Science Help (MASH) for MA2051. The MA2051 MASH Leader this term is Rachel Wigell, and she is available as follows:

- Mondays 4:00-5:00 pm, Tuesdays 1:00-2:00 pm, Academic Resources Center, Daniel Hall
- Thursday 5:00-6:00 pm, Exam Proctoring Center, Morgan Hall

Adaptations & Accommodations

If you need course adaptations or accommodations because of a disability, or if you have medical information to share with me that may impact your performance or participation in this course, please **make an appointment with your instructor as soon as possible**. If you have approved accommodations, please go to the Exam Proctoring Center (EPC) in Morgan Hall to pick up Letters of Accommodation.

Students with disabilities who need to utilize accommodations in this class are encouraged to contact the Office of Disability Services (ODS) to ensure that such accommodations are implemented in a timely fashion. This office can be contacted via email (DisabilityServices@wpi.edu), via phone (x4908), or in person (Daniels Hall, 137).

Academic Dishonesty

WPI's Academic Honesty policy, definitions and examples of academic dishonesty, and other info on the

subject (including explanations of the steps that will be taken if students are suspected of violating the policy) can be found at http://www.wpi.edu/offices/policies/honesty/; each student is expected to familiarize him/herself with this info. *All acts of fabrication, plagiarism, cheating, and facilitation* will be prosecuted according to the university's policy. If you are ever unsure as to whether your intended actions are considered academically honest or not, please see your instructor.

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