

Math 261 - Elementary Differential Equations, Fall 2026 Course Syllabus

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Office: Learning Resource Center 323J

Office hours: Mon 2-3, Tues 12-1, Wed 2-3, Thurs 11-1, Fri 12-1

Class Room/Time: INN-B 303, MTWF 11:00-11:50 am

Course website: community.wvu.edu/~bal0018/math261F26.html

Homework assignments and course announcements may be posted on the website or sent via email. Please be sure to check the website regularly, and to regularly check the email address you have on record. You are responsible for any information posted on the course website.

Textbook: Trench, *Elementary Differential Equations with Boundary-Value Problems*, available to download for free at

<https://math.libretexts.org/@go/page/9389>.

Catalog Data: MATH 261 Elementary Differential Equations (4-0) Credits 4. Ordinary differential equations, Laplace transforms, partial differential equations, Fourier series, applications.

Prerequisite: MATH 251 or grade "B" or better in MATH 315.

Course Objective: Upon completion of the course, the student should be able to classify and solve the types of ordinary differential equations covered in this course, be able to write and solve a differential equation for an applied problem, and be able to interpret the meaning of the solution for an applied problem.

Course Outcomes: Upon successful completion of the course, the student will be able to do the following:

1. Solve first order differential equations.
2. Solve ordinary differential equations using the methods of undetermined coefficients (annihilators) and the method of variation of parameters.
3. Develop a system of linear differential equations to model a physical process.
4. Find the Laplace transform of functions and use the Laplace transform to solve differential and integral equations.
5. Find power series solutions of second order ordinary differential equations.
6. Find the Fourier series of functions.
7. Solve PDEs and boundary (initial) value problems using separation of variables.

Course material: This course is a study of differential equations. The majority of the course will be dedicated to ordinary differential equations (ODEs), and we will discuss both the classification of such differential equations and various different methods to solve them, as well as the many types of real-world problems that differential equations help model. Finally, we will discuss Fourier series as well as the classification and solution of certain partial differential equations (PDEs). A rough schedule of the topics covered can be found on the last page.

Grading: Your final grade will be based on homework, quizzes, three exams during the semester, and the final exam. Your final course score will be the maximum of the following two grading schemes:

- 10% Homework + 5% Quizzes + 20% Exam 1 + 20% Exam 2 + 20% Exam 3 + 25% Final Exam
- 10% Homework + 5% Quizzes + 25% (highest grade of the three exams) + 25% (middle grade of the three exams) + 5% (lowest grade of the three exams) + 30% Final Exam

Letter Grade Cutoffs: A: 90%, B: 80%, C: 70%, D: 60%, F: below 60%

Homework: Homework will be completed online with MyOpenMath.com. When you sign-up, you will use the Course ID and Enrollment Key given in class and posted on the eCampus site. Homework assignments will be due most Fridays. Note that most problems on the homework assignments may be resubmitted as often as needed until they are correct, so you should strive for a homework percentage near 100%!

A note about the homework: the only real point of the homework is for you to do it. The time you spend thinking, trying things, getting wrong answers, and (hopefully) getting right answers is the purpose of the homework. The exams are where your course grade will really be decided, and the homework is your training for the exams. Don't skip your training!

Exams: There will be three exams, tentatively scheduled for Wednesday, September 9; Wednesday, October 7; and Wednesday, November 11. These will be 50 minute exams taken during the regular lecture time. The final exam time has been set by the university, and will be Wednesday, December 9 from 10:00-11:50. Make-up exams will only be given to students with excused absences, and such make-up exams must be scheduled within 24 hours of the missed exam.

Quizzes: There will be a quiz given most weeks in which there is no exam. This will be a very brief quiz given at the beginning of class, intended to test you with more immediacy than the exams and with less consequence. The problems that appear on the quiz will be taken from the homework problems I assign. Only your best 5 quizzes will count toward your grade, and there will be absolutely NO make-up quizzes.

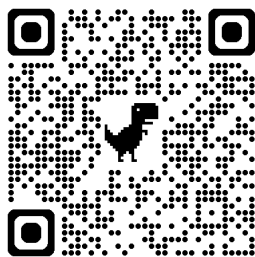
Getting Help: Always remember: asking for help when you need it is not a sign of weakness, but a sign of strength! Please feel free to attend my office hours or email me if you have questions about the course material. If you are unable to make it to my regularly scheduled office hours, I am willing to make an appointment to meet at another time if possible. Free tutoring is also available through the Student Success Center, located in the library on the second floor of LRC. You should also find out if you qualify for TRIO SSS, located in Benedum 100, which also provides tutoring services. Additionally, for quick math questions, you can feel free to stop by the Math Department in LRC 323 and ask any math professor with an open door. Finally, I would also encourage the formation of study groups, to learn from each other and help each other learn.

Class policies:

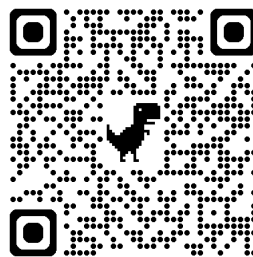
- Graphing calculators will never be allowed during any exams. Scientific calculators will be considered on an exam by exam basis. You may use any calculator to help you do the homework if you wish, but you should keep in mind that you may be required to solve similar problems without a calculator on the quizzes and exams.
- While class attendance does not directly factor into your grade computation, attendance of each lecture is highly recommended. Regular attendance will tend to lead to better understanding of the course material, which tends to lead to better performance on exams.
- If you believe a problem on a homework assignment or midterm exam has been graded incorrectly, you must notify the instructor of your complaint within 7 days of the date the exam is handed back. If you are unable to retrieve your graded material at the time it is handed back, it is your responsibility to make arrangements with the instructor to retrieve the material at another time.

Institutional Policies: Students are responsible for reviewing policies on inclusivity, academic integrity, incompletes, sale of course materials, sexual misconduct, adverse weather, student evaluation of instruction, and other statements. For these detailed policies of West Virginia University, please review:

<https://facultysenate.wvu.edu/resources/syllabus-policies-and-statements>.



QR Code for Course Website



QR Code for MyOpenMath

Date	Topic	Date	Topic
18-Aug	Syllabus, 1.2: Intro to Diff Eqs	12-Oct	7.2: Review of Power Series
19-Aug	1.2: Intro to Diff Eqs	13-Oct	7.2: Review of Power Series
21-Aug	2.2: Separable Equations	14-Oct	7.3/7.4: Solutions about Ordinary Points
24-Aug	2.1: Linear First Order Equations	16-Oct	7.3/7.4: Solutions about Ordinary Points
25-Aug	2.5: Exact Equations	19-Oct	7.5-7.7: Solutions about Singular Points
26-Aug	2.6: Integrating Factors	20-Oct	7.5-7.7: Solutions about Singular Points
28-Aug	2.4: Bernoulli and Homogeneous Equations	21-Oct	8.1: Laplace Transform
31-Aug	4.1: Growth and Decay	23-Oct	8.2: Inverse Laplace Transform
1-Sep	4.2: Cooling and Mixing	26-Oct	8.3: Laplace Transform of IVP
2-Sep	4.2: Cooling and Mixing	27-Oct	8.4: Unit Step Function
4-Sep	Catch-Up	28-Oct	8.5: Piecewise Continuous Forcing Functions
8-Sep	Review	30-Oct	8.5: Piecewise Continuous Forcing Functions
9-Sep	Exam 1	2-Nov	8.6: Convolution
11-Sep	5.1: Homogeneous Linear Equations	4-Nov	10.1/10.2: Systems of Differential Equations
14-Sep	5.2: SOLHECCs	6-Nov	Catch-Up
15-Sep	5.2: SOLHECCs	9-Nov	Catch-Up
16-Sep	5.3: Nonhomogeneous Linear Equations	10-Nov	Review
18-Sep	5.4/5.5: Method of Undetermined Coefficients	11-Nov	Exam 3
21-Sep	5.4/5.5: Method of Undetermined Coefficients	13-Nov	11.1: BVPs and Orthogonality of Trig Functions
22-Sep	5.6: Reduction of Order	16-Nov	11.2/11.3: Fourier Series
23-Sep	5.7: Variation of Parameters	17-Nov	11.2/11.3: Fourier Series
25-Sep	Cauchy-Euler Equations	18-Nov	12.1: The Heat Equation
28-Sep	6.1: Spring Break	20-Nov	12.1: The Heat Equation
29-Sep	6.1: Spring Break	30-Nov	12.2: The Wave Equation
30-Sep	6.2: Spring Break	1-Dec	12.3: Laplace's Equation
2-Oct	6.3: RLC Circuits	2-Dec	Review
5-Oct	Catch-Up	4-Dec	Review
6-Oct	Review		
7-Oct	Exam 2		