

MATH 10150: Principles of Calculus
Fall 2024 Common Syllabus

Sections: Office hours for instructors will be announced in class and on Canvas.

<u>Section Number</u>	<u>Instructor</u>	<u>Meets</u>	<u>Location</u>
01	N. Nicholson	MWF 9:25-10:30	DeBartolo 136
02	K. Mulholland	MWF 10:30-11:20	DeBartolo 136
03	S. Starchenko	MWF 11:30-12:20	Hayes-Healy 117
04	N. Kuzmanovski	MWF 2:00-2:50	DeBartolo 136

Corequisite: MATH 12150: Principles of Calculus Tutorial (all meet on Thursdays for 75 min.)

<u>Section Number</u>	<u>Instructor</u>	<u>Time</u>	<u>Location</u>
11	J. Lanfranco	9:30 AM	DeBartolo 203
12	G. Yan	12:30 PM	DeBartolo 203
21	L. Riva	11:00 AM	DeBartolo 203
22	R. Murray	2:00 PM	Pasquerilla 109
31	C. Bender	12:30 PM	DeBartolo 204
32	J. Zoromski	3:30 PM	DeBartolo 203
41	K. Ellman-Aspnes	2:00 PM	DeBartolo 204
42	J. Chen	5:05 PM	Pasquerilla 112

Course Specifics	Course Requirements	Policies and Resources
Course Description Prerequisites What will I learn? How will I learn? How can I succeed?	Materials Your Approach Attendance Grading Policy Course Calendar	Accessibility Honor Code Inclusiveness Mental Health Privacy Technology Title IX Course Calendar

Course Specifics

Catalog Description

This course is meant as a focused reminder of the precalculus concepts that are most critical to success in calculus. There will be an extensive review of functions and specific classes of functions such as rational, logarithmic and exponential, and trigonometric functions. The course

will investigate these topics both mathematically and through a variety of applications, which will deepen your understanding of the concepts and strengthen your ability to apply mathematics to real-world situations.

Prerequisites

There are no prerequisites for this course, though the expectation is that you have seen a majority of the material before. Placement in this course should not be viewed negatively; rather, view the opportunity to be in this course as an opportunity to set yourself up for success throughout the calculus sequence.

What will I learn?

You will review and perfect the fundamental concepts of precalculus (algebra and trigonometry) that are necessary in calculus, emphasizing how these ideas are used in calculus. Moreover, you will apply them to a wide variety of real-world applications.

In addition to this material, a major goal of this course is to improve *how* you learn mathematics. By the end of the semester, you will be aware of your learning: what works and what does not work. In particular, you will learn how to properly structure your studying and practice so as to optimize your understanding, retention, and application of the contents.

How will I learn?

It is a simple truth: you cannot *learn* mathematics without *doing* mathematics. To that end, you will solidify your comprehension of the material by working problems (and particularly working problems as laid out in the, “How can I succeed?” section below). To summarize *how* you will learn:

Before class: a day or so before every lecture, look ahead at what we will be covering. Because most of the material in this class is review, it should look familiar. Spend a few minutes thinking about what you know about the concepts and what, if anything, confuses you about it. Then, arrive to class 5-10 minutes early and warm up your mind. Look at what we did the previous class and again at what we’ll be covering that day.

In class: engage fully with the lecture. Stay focused, taking notes and writing down things that confuse you. Fully commit yourself to the 50 minutes of classtime: don’t text, don’t tweet about how much fun you’re having, don’t sleep.

After class: approach the material as described below, and get help early and often. Ultimately, your success in this course is dependent upon your effort.

How can I succeed?

Approaches to learning vary from person-to-person. The following approach (“Introduce-Practice-Perfect”) is often successful, though. If you find yourself struggling, please see your instructor *early* in the semester to strategize what works *for you*.

To demonstrate this approach, imagine that we cover material from Section 3.1 on a given Monday. Take the following steps to introduce, practice, and perfect the material. **Keep all of your practice work in one place (a single notebook or folder on your tablet, for example), to look at your work when you visit your instructor or TA in their office.**

Introduce

As soon after class as possible, review what was covered in lecture and try a problem or two. You can find problems both in the *Achieve: Initial* problems (graded) as well as the recommended book practice problems (ungraded, but a great place to work problems that mirror exam questions).

Practice

Monday afternoon or evening, set aside 45-60 minutes (NEVER more than an hour) to work more practice problems. You can work problems from the recommended book problems until you feel comfortable enough to start working the *Achieve* (both *Initial* and *Main*) questions. Because these *Achieve* questions have a large number of attempts, you want to use them as a gauge of your progress: do them without following class examples and online guides. Test your own understanding of the material. When you're done, leave a few *Achieve* or book practice question to attempt tomorrow.

Perfect

The next day, without reviewing your notes or your previous work, attempt the remaining *Achieve* and/or recommended book questions. Are you able to do them on your own? How was your retention? Are you confident in your skills? If you feel good about all these questions, when you sit down at the exams, you will (a) have confidence in your abilities, and (b) unconsciously know where your brain stored math information in its long-term memory.

Periodically, you should return to types of questions you struggle with. Repeated work on problems over long periods of time lead to long-term retention, the ultimate goal for the concepts from this course.

Where can I get math help?

There are multiple avenues for getting mathematics help on campus. Do not hesitate to take advantage of them: they are here for you! These include your instructor's office hours, your TA's office hours, the Math Help Room (located in the O'Meara Commons in the basement of Hayes-Healy, open Mon-Thurs 1:00-9:00, Fri 1:00-4:00, and Sun 4:00-9:00), as well as tutoring services available through the Learning Resource Center (LRC) (see their page on how to arrange one-on-one tutoring or find when group tutoring sessions meet).

Course Requirements

Materials

Our course is part of Notre Dame's *First Day Access* program. You need not purchase anything from the bookstore. You will have access to everything via Canvas, and costs (at a discounted rate) are put directly on your student account.

Online Platform: *Achieve*, fully integrated into Canvas, is the online learning tool accompanying our textbook. ISBN: 9781319305369.

Note that the digital version of the textbook below comes with Achieve; unless you want a hard copy of the textbook, you will not need to purchase the textbook separately.

Textbook: *Preparation for Calculus: Functions and How They Change* by Crauder, Evans and Noell, Macmillan Learning.

Canvas: Canvas will be utilized for all course communication, grade posting, and online homework.

Calculator: Calculators can be used as an aid for calculation and simplification on homework; it is a tool meant to make your life easier. However, they are **not allowed** on any quizzes or exams, as will be the case in your calculus courses.

Your Approach

"In all that you do, settle for nothing less than your absolute best." Put forth your best effort into this class. Be proud of what you do and know that the course outcome is much more dependent on effort than it is on some deeply ingrained mathematical talent. You *can* and you *will* become a better mathematician with hard work.

Attendance

While attendance is not a part of the course grade, you simply will not be successful in this course unless you are present and engaged. This includes the Thursday Tutorial sessions, where you will practice, engage with classmates, and learn alternative techniques and approaches from the course TA. Note that there will be **no** tutorial sessions during the weeks we have mid-term exams.

Any missed assessment (such as a tutorial assessment or an exam) must be for a valid, verifiable reason and communicated well in advance of the absence. Exam dates are set and you should communicate with your instructor well in advance for excused absences from exams.

Achieve assignments are not extended for any absences.

Grading Policy

Your course grade will be computed via the following weighting system.

Assessment	Percentage of Grade
Achieve: Initial	5%
Achieve: Main	10%
Homework journals	10%
Tutorial activities	10%
Midterm exam (3)	15% each
Final Exam	20%

Achieve items: Graded activities are completed online via the Achieve learning system, which is fully integrated into Canvas (i.e., you can access it by going into Canvas). There are two types of graded Achieve assignments and one additional type you are encouraged to use:

- *Initial*: 1-2 introductory questions that are open for approximately one day after material has been lectured on. These problems are intended to be very simple, but the goal of using them is for you to interact with the material as soon after lecture as possible. At the end of the semester, your lowest two Achieve: Initial assignment grades will be dropped.
- *Main*: these are the larger homework sets for each section, typically open for one week after a section has been lectured on. Problems vary in difficulty from easy to challenging; these mirror the types of questions you should expect to see on quizzes and exams. At the end of the semester, your lowest two Achieve: Main assignment grades will be dropped.
- For additional practice, you have access to *Adaptive quizzes* on Achieve. While these do not count towards the course grade, you should use these “quizzes” as exam prep and measures of how well you know the material. These quizzes use artificial intelligence to present you with more challenging questions as you demonstrate that you’re learning the material.
 - For each quiz, you will have a target score (point total) you must attain.
 - Every question is worth a certain number of points.
 - Harder questions are worth more points and questions get more difficult as you get more correct.
 - You do not need to complete the quiz in one sitting.
 - At the end of the quiz, you receive a personalized assessment of how well you know various topics. Pay attention to this—it tells you what you know well and what you need to review.

Homework journals: Once per week (as announced on Canvas, but typically on Fridays) you will turn in a short Homework journal. It will list various Achieve questions for which you need to show your complete work for. A course grader will give you qualitative feedback *on your approach* (the grade on the journal is based on effort only). Because of this, the work must be yours and not copied from another student or online resource. That way, when the grader gives you suggestions, they are tips that *you* can use to improve *your* abilities. A printout of the journal, with work completed by hand, must be turned in at the start of class on the due date, or if a single PDF of the assignment is emailed due to an absence, it must be time-stamped before class begins. At the end of the semester, your single lowest Homework Journal grade will be dropped.

Tutorial activities: Every tutorial will consist of a group worksheet and a 4 question multiple choice quiz. The quiz questions will come *directly from Achieve and/or book practice questions* (as listed in the Homework journals). Additionally, some number of points on the quiz will be allocated to, “Did this student put full effort into the week’s group worksheet?” At the end of the semester, your single lowest Tutorial Activity grade will be dropped.

Midterm Exams: Three common-time exams will be given throughout the semester, with the location to be announced:

Thursday, September 26

Thursday, October 17

Tuesday, November 19

If you have an excused absence, you must speak with your instructor well in advance (ideally at least a week prior to the exam) to make the appropriate arrangements. If your final exam score is higher than your lowest midterm exam score, then that midterm exam score will be replaced with your final exam score.

Final Exam: A comprehensive final exam will be given during final exam week. The Registrar has tentatively scheduled our exam for

Monday, December 16, 7:30 PM - 9:30 PM

Letter grades: the percentage *you earn* in the course will determine the letter grade *you earn* (and consequently what will appear on your transcript). Letter grades cutoffs are listed below, but the instructors reserve the right to *lower* the cutoffs at the end of the semester (for example, the lower bound for an A- may be changed to be 89%). This determination will be done blindly and for the entire class. Note that the University interpretation of letter grades can be found at <https://registrar.nd.edu/assets/462315/gradingsystems.pdf>.

Percentage	Letter Grade	Percentage	Letter Grade
93-100%	A	77-79.99%	C+
90-92.99%	A-	73-76.99%	C
87-89.99%	B+	70-72.99%	C-
83-86.99%	B	60-69.99%	D
80-82.99%	B-	0-59.99%	F

Policies and Resources

Accessibility

It is the policy and practice of The University of Notre Dame to provide reasonable accommodations for students with properly documented disabilities. Students who have questions about Sara Bea Accessibility Services or who have, or think they may have, a disability are invited to contact Sara Bea Accessibility Services for a confidential discussion by emailing at sarabeacenter@nd.edu or by phone at 574-631-7157. Because the University's Academic Accommodations Processes generally require students to request accommodations well in advance of the dates when they are needed, students who believe they may need an accommodation for this course are encouraged to contact Sara Bea Accessibility Services at their earliest opportunity. Additional information about Sara Bea Accessibility Services and to learn more about the student process for requesting accommodations, please visit Accessibility Support at <https://supportandcare.nd.edu/for-students/current-students/accessibility-support/>.

Honor Code

Entering Notre Dame you were required to study the on-line edition of the Academic Code of Honor, to pass a quiz on it, and to sign a pledge to abide by it. The full Code and a Student Guide to the Academic code of Honor are available at: <http://honorcode.nd.edu>. Perhaps the most fundamental sentence is the beginning of section IV-B:

"The pledge to uphold the Academic Code of Honor includes an understanding that a student's submitted work, graded or ungraded – examinations, draft copies, papers, homework assignments, extra credit work, etc. – must be his or her own."

Note that no student may drop a course in which he or she has signed an Honor Code Violation Report (the form(s) filled out when an Honor Code violation takes place).

Inclusiveness

The University of Notre Dame is committed to social justice. I share that commitment and strive to maintain a positive learning environment based on open communication, mutual respect, and non-discrimination. In this class we will not discriminate on the basis of race, sex, age, economic class, disability, veteran status, religion, sexual orientation, gender identity, color, or national

origin. Any suggestions as to how to further such a positive and open environment will be appreciated and given serious consideration.

Mental Health

Diminished mental health can interfere with optimal academic performance. The source of symptoms might be related to your course work; if so, please speak with me. However, problems with other parts of your life can also contribute to decreased academic performance. The University Counseling Center (UCC) provides cost-free and confidential mental health services to help you manage personal challenges that threaten your emotional or academic well-being.

Getting help is a smart and courageous thing to do — for yourself and for those who care about you. For more resources please see ucc.nd.edu or supportandcare.nd.edu.

The UCC is located on the third floor of Saint Liam Hall Phone: 574-631-7336. It is open Monday through Friday, 8:30am – 5:00pm. Urgent Crisis Line 24/7

Privacy

This course is a community built on trust; in order to create the most effective learning experience, our interactions, discussions, and course activities must remain private and free from external intrusion. As members of this course community, we have obligations to each other to preserve privacy and cultivate fearless inquiry. We are also obliged to respect the individual dignity of all and to refrain from actions that diminish others' ability to learn. More, course materials (videos, assignments, problem sets, etc) are for use in this course only. You may not upload them to external sites, share with students outside of this course, or post them for public commentary without my advance permission. Please discuss with me in advance if you have any questions about this policy.

Technology

This course relies heavily on access to computers, specific software, and the Internet. At some point during the semester you WILL have a problem with technology: your laptop will crash, a file will become corrupted, a server will go down, or something else will occur. These are facts of life, not emergencies. Technology problems will not normally be accepted as excuses for unfinished work.

Title IX

The University of Notre Dame provides services for those who have been affected by sexual assault, sexual misconduct, dating or domestic violence, stalking and any conduct that creates a hostile environment. For help and further information including contact information for on and off-campus resources, please consult <https://titleix.nd.edu/support-resources>.