

**MA 16010 Applied Calculus I**  
*Purdue Indianapolis, Fall 2024 Semester*  
MW 12-1:15PM, ICTC162

**Instructor**

- Keshav Dahiya, Graduate Student, Department of Mathematical Sciences, PIN.
- *Office:* LD225, *Email:* kkeslav@purdue.edu
- *Office Hours:* Fridays 1:30-3:30pm or by appointment using email.

**Course Description**

- *Credit hours:* 3. This course is equivalent to IU MATH 22100.
- *Topics:* trigonometric and exponential functions; limits and differentiation, rules of differentiation, maxima, minima and optimization; curve sketching, integration, anti-derivatives, fundamental theorem of calculus. Properties of definite integrals and numerical methods. Applications to life, managerial and social sciences.
- *Learning Outcomes:*
  1. To create functional models and simplify difference quotients, compute limits of functions and apply limit laws.
  2. To compute derivatives of elementary functions, including exponential, logarithmic and trigonometric functions, and apply rules of differentiation.
  3. To sketch the graph of functions with the help of differentiation techniques, find maxima and minima of functions; optimization problems.
  4. To compute integrals of some elementary functions and apply the Fundamental Theorem of Calculus.
  5. Topics to be covered at a level required to perform standard applications related to life sciences, management and technology.
- *Prerequisite:* ALEKS Math Assessment 075 or SATR Math 620 or SAT Mathematics 600 or ACT Math 26 or Undergraduate level MA 15400 Minimum Grade of C- or Undergraduate level MATH 15400 Minimum Grade of C- or Undergraduate level MA 15800 Minimum Grade of C-.
- *Textbook:* Peter Kuhfittig, Technical calculus with analytic geometry 5th edition.

**Attendance and Grading**

- *Lecture Attendance:* It is recommended to attend all lectures. When conflicts or absences can be anticipated the student should inform the instructor of the situation as far in advance as possible. For unanticipated or emergency absences when advance notification to the instructor is not possible, the student should contact the instructor as soon as possible by email. Under academic regulations, excused absences may be granted for cases of grief/bereavement, military service, jury duty, and parenting leave. For details, see the Academic Regulations and Student Conduct section of the University Catalog website.

- *Calculators and Technology*: No calculators or other forms of technology can be used on in-class, closed-books assessments (quizzes, tests, final exam). A scientific calculator is strongly recommended for doing homework. However, no calculators are permitted on quizzes, tests or the final examination for this course.
- *Homework and Quizzes*: Homework will be assigned every week. However, it will not be graded. There will be a **quiz every Wednesday** in the last 10-15 minutes of class, except in the first week or if there is a test scheduled that week (see syllabus timeline). **Each quiz is worth 10 points** and there would be a **total of 10 quizzes**. The problems appearing on a quiz would be based on the homework problems assigned for the previous week. **No makeup quiz will be conducted but the least two quiz scores will be dropped.**
- *Tests*: There will be **3 tests** (see syllabus timeline). **One must get prior permission for a make-up test.** No make-ups will be allowed after the test is returned. No technology of any kind can be used on the tests. Note that if use of technology is found during a test, especially cell phones, it will result in a grade of 0.
- *Final Examination*: There will be a Final Exam, whose date/time/room will be determined by the 5th week of the semester. **One must pass the Final Exam to pass this course.**
- *Grading Policy*: The scores of the best 8 quizzes, the 3 tests, and the score in the final exam, will be considered for the final grade.

Assignment	Quizzes	Tests	Final Exam
Weightage	25%	45%	30%

The following breakup will be generally followed but is subject to change later on.

Percentage	97%	93%	90%	87%	83%	80%	77%	73%	70%	67%	60%
Grade	A+	A	A-	B+	B	B-	C+	C	C-	D+	D

- There will be no more work to earn credit for this course after the final exam is given unless arrangements are made with the instructor prior to the final exam.
- *Make-up Policy*: Instructors don't have to give students make-ups unless there are legitimate excuses. In order to avoid prolific and unnecessary make-ups, **any make-ups granted by me would be much harder than regular tests** and there would be 20% deduction of points.

### Withdrawal Dates

- Last day to drop a course without it on your record: Friday, August 30
- Last day to drop a course and receive a W: Tuesday, November 19

### Accommodations for Students with Disabilities

Purdue University strives to make learning experiences accessible to all participants. If you anticipate or experience physical or academic barriers based on disability, you are encouraged to contact the Disability Resource Center at: [drc@purdue.edu](mailto:drc@purdue.edu) or by phone: 765-494-1247.

If you have been certified by the Disability Resource Center (DRC) as eligible for accommodations, you should contact me as soon as possible. Please be sure to send me a copy of your Course Accessibility Letter.

### **Mental Health/Wellness Statement**

Purdue University is committed to advancing the mental health and well-being of its students. If you or someone you know is feeling overwhelmed, depressed, and/or in need of support, services are available. For help, such individuals should contact Counseling and Psychological Services (CAPS) at (765)494-6995 and <http://www.purdue.edu/caps/> during and after hours, on weekends and holidays, or through its counselors physically located in the Purdue University Student Health Center (PUSH) during business hours.

### **Nondiscrimination Statement**

Purdue University is committed to maintaining a community which recognizes and values the inherent worth and dignity of every person; fosters tolerance, sensitivity, understanding, and mutual respect among its members; and encourages each individual to strive to reach his or her potential. In pursuit of its goal of academic excellence, the University seeks to develop and nurture diversity. The University believes that diversity among its many members strengthens the institution, stimulates creativity, promotes the exchange of ideas, and enriches campus life. For more information, please see Purdue's full Nondiscrimination Policy Statement.

### **Academic Integrity**

Academic integrity is one of the highest values that Purdue University holds. Individuals are encouraged to alert university officials to potential breeches of this value by either emailing [integrity@purdue.edu](mailto:integrity@purdue.edu) or by calling 765-494-8778. While information may be submitted anonymously, the more information that is submitted provides the greatest opportunity for the university to investigate the concern.

Purdue prohibits academic dishonesty. According to University policy cheating, plagiarism, lying and deceit in any of their diverse forms (such as the use of substitutes for taking examinations, the use of illegal cribs, plagiarism and copying during examinations) is dishonest and must not be tolerated. Moreover, knowingly to aid, abet, directly or indirectly, other parties in committing dishonest acts is in itself dishonest. If found guilty of academic dishonesty, possible penalties can range from receiving a zero on the assignment to expulsion from the University. For more details about the Purdue policy on academic dishonesty see <https://www.purdue.edu/odos/osrr/academic-integrity/index.html>

### **Commercial Note Taking in Classes**

Notes taken in class are generally considered to be "derivative works" of the instructor's presentations and materials, and they are thus subject to the instructor's copyright in such presentations and materials. No individual is permitted to sell or otherwise barter notes, either to other students or to any commercial concern, for a course without the express written permission of the course instructor. See University Senate Document 03-9, April 19, 2004.

### **Other Issues**

In the event of a major campus emergency or other circumstances beyond the instructor's control, course requirements, deadlines, and grading percentages are subject to changes that may require a revised semester calendar. To get information about changes in this course please check your Purdue email frequently.

Date	Topic	Exams/Quizzes
Mon Aug 19	Class Info and Section 2.1	
Wed Aug 21	Sections 2.1 cont. and 2.2	
Mon Aug 26	Sections 2.3 and 2.4	
Wed Aug 28	Sections 2.5, 2.6	Quiz 1
Mon Sep 02	NO CLASS - Labor Day	
Wed Sep 04	Section 2.7	Quiz 2
Mon Sep 09	Sections 2.8, 2.9	
Wed Sep 11	Sections 3.1 and 3.2	Quiz 3
Mon Sep 16	Review for Test 1	
Wed Sep 18	TEST 1 (Chapter 2)	Test 1
Mon Sep 23	Sections 3.2 cont. and 3.4	
Wed Sep 25	Sections 3.4 cont. and 3.6	Quiz 4
Mon Sep 30	Sections 6.1 and 6.2	
Wed Oct 02	Sections 6.2 cont. and 6.3	Quiz 5
Mon Oct 07	NO CLASS - Fall Break	
Wed Oct 09	Sections 6.4 and 6.5	Quiz 6
Mon Oct 14	Sections 6.6 and 6.7	
Wed Oct 16	Sections 6.8 and 6.11	Quiz 7
Mon Oct 21	Review for Test 2	
Wed Oct 23	TEST 2 (Chapters 3, 6)	Test 2
Mon Oct 28	Sections 4.1 and 4.2	
Wed Oct 30	Sections 4.3, 4.4 and 4.5	Quiz 8
Mon Nov 04	Section 4.6 and 4.7	
Wed Nov 06	Sections 4.8, 4.9	Quiz 9
Mon Nov 11	Sections 5.1 and 5.2	
Wed Nov 13	Sections 5.2 cont. and 5.3	Quiz 10
Mon Nov 18	Review for Test 3	
Wed Nov 20	TEST 3 (Chapter 4, Sections 5.1, 5.2, 5.3)	Test 3
Mon Nov 25	Sections 5.4, 5.5, 5.6	
Wed Nov 27	NO CLASS - Thanksgiving Break	
Mon Dec 02	Review for Final Exam	
Wed Dec 04	Review for Final Exam	