湖北工業大學
HUBEI UNIVERSITY OF TECHNOLOGY

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| **Course Title** | Calculus I |
| **Course Code** | MATH 1111 |
| **Semester** | Winter 2027 |
| **Course Length** | 4 Weeks, 60 Contact Hours |
| **Credits** | 4 |
| **Instructor** | Wang Mei |
| **Office** | NO.2 Teaching Building B206 |
| **Email** | 15072447699@163.com |
| **Prerequisite** | N/A |

**Course Description**:

This course offers a comprehensive introduction to calculus concepts and techniques, starting with limits. It covers the theory and applications of derivatives, antiderivatives, and definite integrals, along with the calculus of trigonometric, exponential, and logarithmic functions.

**Delivery Mode:** In-Person, Face-to-Face Instruction

**Course Goals:**

Students who successfully complete this course will demonstrate competency in the following general education core goals:

- **Critical thinking skills** – Students will engage in creative and/or innovative thinking, and/or inquiry, analysis, evaluation, synthesis of information, organizing concepts, and constructing solutions.
- **Communication skills** – Students will demonstrate effective written, oral, and visual communication.
- **Teamwork** – Students will demonstrate the ability to work effectively with others to support a shared purpose or goal and consider different points of view.
- **Social responsibility** – Students will demonstrate intercultural competency and civic knowledge by engaging effectively in local, regional, national, and global communities.

**Student Learning Outcomes:**

Upon completion of this course, students will be able to:

- compute derivatives (including derivatives of trigonometric and inverse trigonometric, exponential, and logarithmic functions), compute limits (algebraically, and using L'Hopital's Rule), and use limits to compute derivatives;

- understand, use, and translate between multiple representations of functions, limits, and derivatives;
- solve complex and novel problems using tools from calculus;
- build a mental framework of calculus that serves as a foundation for future learning.

**Textbooks/Supplies/Materials/Equipment/ Technology or Technical Requirements**:

Robert Smith and Roland Minton, *Calculus (4th edition, early transcendentals functions)*. McGraw-Hill, 2012.

**Course Requirements**:

**Homework**
Homework is crucial to success in this course. It is the way in which you will develop the mathematical habits that will help you be successful on the larger quizzes and tests.

**In-Class Quizzes**
In-class activities/quizzes will be announced or unannounced. Always be ready. The lowest quiz grade will be dropped when calculating final grades. Missed quizzes due to absence of any kind will not be made up.

**Exams**
There will be a midterm exam and a final exam: the midterm exam will be weighted 25%, while the final will each be weighted 30%. A detailed study guide for each exam will be given about a week before the scheduled exam date.

| **Assessments: Activity** | **Percent Contribution** |
|---|---|
| Homework | 25% |
| In-Class Quizzes | 20% |
| Midterm Exam | 25% |
| Final Exam | 30% |

**Grading:**

Final grades will be based on the sum of all possible course points as noted above.

| **Grade** | **Percentage of available points** |
|---|---|
| A | 94-100 |
| A- | 90-93 |
| B+ | 87-89 |
| B | 84-86 |
| B- | 80-83 |
| C+ | 77-79 |
| C | 74-76 |
| C- | 70-73 |
| D | 64-69 |
| D- | 60-63 |

F 0-59

**Course Schedule**:
*The schedule of activities is subject to change at the reasonable discretion of the instructor. Minor changes will be announced in class, major ones provided in writing.*

| MATH 1111 Schedule | | |
|---|---|---|
| Lecture | Topic | Readings |
| L1 | Course Introduction | --- |
| L2 | Limits<br>The Concept of Limit | Chapter 1 |
| L3 | Computation of Limits | Chapter 1 |
| L4 | Continuity and Its Consequences | Chapter 1 |
| L5 | Limits Involving Infinity; Asymptotes | Chapter 1 |
| L6 | Derivatives<br>Tangent Lines and Velocity<br>The Derivative | Chapter 2 |
| L7 | Computation of Derivatives: The Power Rule<br>The Product and Quotient Rules | Chapter 2 |
| L8 | The Chain Rule | Chapter 2 |
| L9 | Derivatives of Trigonometric Functions<br>Derivatives of Exponential and Logarithmic Functions | Chapter 2 |
| L10 | Implicit Differentiation and Inverse Trigonometric Functions | Chapter 2 |
| L11 | Applications of Differentiation<br>The Mean Value Theorem<br>Linear Approximations and Newton's Method | Chapter 3 |
| L12 | Indeterminate Forms and L'Hopital's Rule | Chapter 3 |
| L13 | **Midterm Exam** | --- |
| L14 | Maximum and Minimum Values<br>Increasing and Decreasing Functions | Chapter 3 |
| L15 | Concavity and the Second Derivative Test | Chapter 3 |
| L16 | Overview of Curve Sketching<br>Optimization | Chapter 3 |
| L17 | Integration<br>Antiderivatives | Chapter 4 |
| L18 | Sums and Sigma Notation<br>Area | Chapter 4 |
| L19 | The Definite Integral | Chapter 4 |
| L20 | The Fundamental Theorem of Calculus<br>Integration by Substitution | Chapter 4 |
| L21 | The Natural Logarithm as an Integral | Chapter 4 |
| L22 | Applications of Integration | Chapter 5 |
| L23 | Exponential Growth | Chapter 5 |
| L24 | Separation of variables | Chapter 5 |
| L25 | **Final Exam** | --- |

**Accommodation Statement:**

Academic accommodations may be made for any student who notifies the instructor of the need for an accommodation. It is imperative that you take the initiative to bring such needs to the instructor’s attention. Students who may require assistance in

emergency evacuations should contact the instructor as to the most appropriate procedures to follow.

**Academic Integrity Statement**

Each student is expected to maintain the highest standards of honesty and integrity in academic and professional matters. The University reserves the right to take disciplinary action, up to and including dismissal, against any student who is found guilty of academic dishonesty or otherwise fails to meet the standards. Any student judged to have engaged in academic dishonesty in coursework may receive a reduced or failing grade for the work in question and/or for the course.

Academic dishonesty includes, but is not limited to, dishonesty in quizzes, tests, or assignments; claiming credit for work not done or done by others; hindering the academic work of other students; misrepresenting academic or professional qualifications within or without the University; and nondisclosure or misrepresentation in filling out applications or other University records.

**Other Items:**

**Attendance and Expectations**

All students are required to attend every class, except in cases of illness, serious family concerns, or other major problems. We expect that students will arrive on time, be prepared to listen and participate as appropriate, and stay for the duration of a meeting rather than drift in or out casually. In short, we anticipate that students will show professors and fellow students maximum consideration by minimizing the disturbances that cause interruptions in the learning process. This means that punctuality is a must, that cellular phones be turned off, and that courtesy is the guiding principle in all exchanges among students and faculty. You will be responsible for the materials and ideas presented in the lecture.

**Assignment Due Dates**

All written assignments must be turned in at the time specified. Late assignments will not be accepted unless prior information has been obtained from the instructor. If you believe you have extenuating circumstances, please contact the instructor as soon as possible.

**Make-Up Work**

The instructor will not provide students with class information or make-up assignments/quizzes/exams missed due to an unexcused absence. Absences will be excused and assignments/quizzes/exams may be made up only with written documentation of an authorized absence. Every effort should be made to avoid scheduling appointments during class. An excused student is responsible for requesting any missed information from the instructor and setting up any necessary appointments outside of class.

**Access, Special Needs and Disabilities**

Please notify the instructor at the start of the semester if you have any documented disabilities, a medical issue, or any special circumstances that require attention, and the school will be happy to assist.