Midland College Syllabus
2018 - 2019
MATH 2413
Calculus I
4 Semester Credit Hours
(4 Lecture/0 Lab)
Core Curriculum Course

Instructor Information:
Instructor: Click here to enter text. Office: Click here to enter text.
Phone: Click here to enter text. Email: Click here to enter text.
Office Hours: Click here to enter text.

Notice: Students MUST actively participate by completing an academic assignment required by the instructor by the official census date. Students who do not actively participate in an academically-related activity may be reported as never attended and dropped from the course.

Course Description:
This course is designed to enable students to become proficient in limits and continuity; the Fundamental Theorem of Calculus; definition of the derivative of a function and techniques of differentiation; applications of the derivative to maximizing or minimizing a function; the chain rule, mean value theorem, and rate of change problems; curve sketching; definite and indefinite integration of algebraic, trigonometric, and transcendental functions, with an application to calculation of areas. Prerequisite: MATH 1316 or MATH 2412 or a sufficient score on a math placement test.

Core Objectives:
This course fulfills the three-hour Mathematics requirement in the Midland College Core Curriculum. The Core Curriculum is a set of courses that provide students with a foundation of knowledge, skills and educational experiences that are essential for all learning. The Core Curriculum is available in the Midland College Catalog. As part of the core, this course addresses the following three objectives:

Critical Thinking Skills – Students will demonstrate critical thinking skills by sketching graphs of algebraic and transcendental functions considering limits, continuity, and differentiability at a point, and identifying appropriate calculus concepts and techniques to provide mathematical models of real-world situations and determine solutions to applied problems using differentiation rules in course assignments, instructor created proctored exams, and a departmental final exam.

Communication Skills – Students will demonstrate communication skills in written, oral, and visual form within the classroom setting through instructor posed questions, collaborative peer assignments, and exams.
Empirical and Quantitative Skills – Students will demonstrate empirical and quantitative skills by developing solutions for tangent and area problems using the concepts of limits, derivatives, and integrals, using differentiation rules to differentiate algebraic and transcendental functions, and apply the Fundamental Theorem of Calculus to evaluate definite integrals and articulate the relationship between derivatives and integrals through course assignments, instructor created proctored exams, and a departmental final exam.

Text, References and Supplies:
  - ISBN: 978-1-33-755251-6 (hardback book only)
- Scientific calculator
- WebAssign is required by some instructors.

Student Learning Outcomes
Upon successful completion of this course, students will:
1. Develop solutions for tangent and area problems using the concepts of limits, derivatives, and integrals.
2. Draw graphs of algebraic and transcendental functions considering limits, continuity, and differentiability at a point.
3. Determine whether a function is continuous and/or differentiable at a point using limits.
4. Use differentiation rules to differentiate algebraic and transcendental functions.
5. Identify appropriate calculus concepts and techniques to provide mathematical models of real-world situations and determine solutions to applied problems.
6. Evaluate definite integrals using the Fundamental Theorem of Calculus.
7. Articulate the relationship between derivatives and integrals using the Fundamental Theorem of Calculus.

Student Contributions, Responsibilities and Class Policies:
Students will be expected to comply with the policies outlined in the Midland College Catalog. Instructor policies concerning attendance and academic behavior are consistent with the policies in the catalog. Regular attendance is required to do well in this class.
Students will be evaluated based on the results of assessments outlined in the syllabus and Instructor Handout.

Attendance Policy:
It is the responsibility of the students to know the policies and procedures associated with absences. These policies are set by instructors. Excused absences
may include, but are not limited to, illness, severe weather, and death in the family. Instructors will determine whether or not an absence is excused. Please visit the Midland College Catalog

Withdrawal Policy:
Students who have enrolled in a Texas public institution of higher education as a first-time freshman in fall 2007 or later are permitted to drop no more than six courses during the entire undergraduate career. This limit includes all transfer work taken at a Texas institution of higher education and to second baccalaureate degrees. This statute was enacted by the State of Texas in spring 2007 (Texas Education Code 51.907). Any course that a student drops after Census Day is counted toward the six-course limit if “(1) the student was able to drop the course without receiving a grade or incurring an academic penalty; (2) the student’s transcript indicates or will indicate that the student was enrolled in the course; and (3) the student is not dropping the course in order to withdraw from the institution.” Please visit the Midland College Catalog

Scholastic Dishonesty:
Midland College does not tolerate scholastic dishonesty or academic misconduct in any form. Please read the Student Rights & Responsibilities section in the Midland College Catalog for more information.

Evaluation of Students:
Students will be evaluated based on grades which may including the following but are not limited to:

<table>
<thead>
<tr>
<th>Assessments</th>
<th>Percentage of Grade</th>
<th>Grade Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exams</td>
<td>65-80%</td>
<td>90-100 A</td>
</tr>
<tr>
<td>Quizzes/Activities</td>
<td>0-10%</td>
<td>89-80 B</td>
</tr>
<tr>
<td>Final Exam</td>
<td>20-25%</td>
<td>79-70 C</td>
</tr>
<tr>
<td></td>
<td></td>
<td>69-60 D</td>
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<tr>
<td></td>
<td></td>
<td>59-0 F</td>
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Students will be evaluated based on the results of examinations given throughout the semester. Your lecture instructor will inform you on the first day of class as to the tentative dates and content for each exam. Students are expected to complete each exam. Your instructor will inform you on the first day of class as to make-up procedures for missed exams and any exemption procedures if they apply (See Instructor Handout).

Course Schedule:
This class meets for 4 contact hours per week. For a tentative schedule of the class meetings and material to be covered during those meetings, please refer to the schedule distributed to each student on the first class meeting (See Instructor Handout).
Common Assessment:
All sections of this course have a common assessment. The common assessment for this course is shown in the schedule and is noted as such (see Instructor Handout).

Course Outline:
Chapter 2: Limits and Their Properties
2.2 Finding Limits Graphically and Numerically
2.3 Evaluating Limits Analytically
2.4 Continuity and One-Sided Limits
2.5 Infinite Limits

Chapter 2: Differentiation
3.1 The Derivative and the Tangent Line Problem
3.2 Basic Differentiation Rules and Rates of Change
3.3 Product and Quotient Rules and Higher-Order Derivatives
3.4 The Chain Rule
3.5 Implicit Differentiation
3.6 Derivatives of Inverse Functions
3.7 Related Rates
3.8 Newton’s Method

Chapter 4: Applications of Differentiation
4.1 Extrema on an Interval
4.2 Rolle’s Theorem and the Mean Value Theorem
4.3 Increasing and Decreasing Functions and the First Derivative Test
4.4 Concavity and the Second Derivative Test
4.5 Limits at Infinity
4.6 A Summary of Curve Sketching
4.7 Optimization Problems
4.8 Differentials

Chapter 5: Integration
5.1 Antiderivatives and Indefinite Integration
5.2 Area
5.3 Riemann Sums and Definite Integrals
5.4 The Fundamental Theorem of Calculus
5.5 Integration by Substitution
5.6 Indeterminate Forms and L’Hospital’s Rule
5.7 The Natural Logarithmic Function: Integration
5.8 Inverse Trigonometric Functions: Integration
5.9 Hyperbolic Functions

ADA Statement:
Midland College provides services for students with disabilities through Student Services. In order to receive accommodations, students must place documentation
on file with the Counselor/Disability Specialist. Students with disabilities should notify Midland College prior to the beginning of each semester. More information can be found at the Student Services – Disability Services or by contacting the Midland College Disability Specialist at 685-4505.

Student Services will provide each student with a letter outlining any reasonable accommodations. The student must present the letter to the instructor at the beginning of the semester.

Midland College does not discriminate on the basis of race, color, national origin, sex, disability or age in its programs and activities. The following individuals have been designated to handle inquiries regarding the non-discrimination policies: Tana Baker, Title IX Coordinator/Compliance Officer, 3600 N. Garfield, SSC 242, Midland, TX 79705, (432) 685-4781, t baker@midland.edu; Natasha Morgan, Director Human Resources/Payroll, 3600 N. Garfield, PAD 104, Midland, TX 79705, (432) 685-4534, nmorgan@midland.edu. For further information on notice of non-discrimination, visit http://wdcrobrocolp01.ed.gov/CFAPPS/OCR/contactus.cfm or call 1 (800) 421-3481.

Spanish

Midland College no discrimina por motivos de raza, color, nacionalidad, sexo, discapacidad, o edad en sus programas o actividades. Las siguientes personas han sido designadas para responder a cualquier pregunta o duda sobre estas políticas no discriminatorias: Tana Baker, Title IX Coordinator/Compliance Officer, 3600 N. Garfield, SSC 242, Midland, TX 79705, (432) 685-4781, t baker@midland.edu; Natasha Morgan, Director Human Resources/Payroll, 3600 N. Garfield, PAD 104, Midland, TX 79705, (432) 685-4534, nmorgan@midland.edu. Para más información sobre estas políticas no discriminatorias, visite http://wdcrobrocolp01.ed.gov/CFAPPS/OCR/contactus.cfm o llame al 1 (800) 421-3481.

Math/Science Division Information:
Division Dean: Dr. Margaret Wade 125 AHSF (432) 685-4615
Department Chair: Dr. Sonia Ford 110 AHSF (432) 685-4525
Division Secretary: Mrs. Carol Pritchard 124 AHSF (432) 685-6404
Division Clerk: Ms. Sarah Anderson 124 AHSF (432) 685-6896

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