South Dakota School of Mines & Technology

Calculus II, Spring 2024

MATH 125 -- M03, M04
4 Credit Hours

Instructor Information

Instructor's Name

Dr. Paul May

Instructor's Contact Information

Email: paul.may@sdsmt.edu

Office Location: McLaury 308E

Office Hours: MWThF, 1:00 – 2:00 PM in office. Appointments can be made outside office hours.

Email is my preferred method of contact. I will respond to emails within 24 hours on weekdays.

Course Information

Course Start/End Dates

01/08/2024 - 05/03/2024

Course Meeting Times and Location

M03: MWThF 10:00 – 10:50 AM, McLaury Building, Room 306

M04: MWThF 12:00 – 12:50 PM, McLaury Building, Room 207

Course Delivery Method

The course will be centered on lectures, given at the location and times above. Lectures will be professor-delivered presentations of the course material. Students are strongly encouraged to ask questions at any point in the lecture, though specific time will be allotted at the beginning of each lecture to ask questions about homework problems.

Course Description

A continuation of the study of calculus, including the study of sequences, series, polar coordinates, parametric equations, techniques of integration, applications of integration, indeterminate forms, and improper integrals.

Course Prerequisites

MATH 123

Student Learning Outcomes

Please visit https://www.sdsmt.edu/Academics/Departments/Mathematics/Curriculum-and-Courses/

Course Goals
Please visit https://www.sdsmt.edu/Academics/Departments/Mathematics/Curriculum-and-Courses/

Course Topics
Topics we discuss in this course may include, but are not limited to, the following: transcendental functions, derivatives and integrals of transcendental functions, integration by parts, integration using trigonometric identities, integration using trigonometric substitutions, integration by partial fractions, L'Hopital's Rule, improper integration, analysis of sequences, series analysis (including the series divergence test, geometric series, the Integral Test, p-series, the Direct Comparison Test, the Limit Comparison Test, the Ratio Test, the Root Test, and the Alternating Series Test), power series, Taylor series, the basics of matrix algebra (including matrix arithmetic, determinants, row operations, and inverses), applications of matrices to linear systems, and an introduction to vectors (including vector arithmetic, dot products, cross products, and their applications).

Course Materials

Required Textbook(s) and Materials
Thomas' Calculus, 15th Edition

- ISBN: 9780137616077
- You should have First Day Access to the text via D2L's Bookshelf.

Students are expected to take notes in class. Your class notes and the textbook will be the core of your study materials.

The date of in-class quizzes/exams will be posted on D2L at least one week in advance.

Supplementary Materials
None

Technology Equipment Needed for the Course
For sections covering matrix algebra and computation, students will need a device (laptop, pad) capable of running Maple.

Technology Skills Needed for the Course
Students are expected to be able to navigate to D2L to check grades and use their email to contact their professor. Students will need to be able to operate a device (laptop, pad) capable of running Maple.

Course Grading

Coursework

Grades in this course are entirely composed of in-class quizzes and exams. The four exams, including the final exam, are the largest fraction of your grade (80%). The entirety of a regular class meeting will be allocated for each exam. At the end of the semester, your lowest midterm exam grade will be replaced by your final exam grade, if this replacement will be beneficial to your final grade.

In-class quizzes are a smaller fraction of your grade (20%). There will be on average two quizzes prior to each midterm exam, giving a total of 6.

Homework problems will be assigned during lectures. These will not be graded, but you will not perform well on quizzes and exams if you do not complete the homework. At least two problems will be copied **exactly** from the homework onto every quiz and exam. Students are encouraged to bring questions surrounding the problems to office hours and/or lectures.

Gateway quizzes – An addition to the above coursework, there will be two gateway quizzes, the first on derivatives and the second on indefinite integrals. If you pass the gateway quizzes, they will not affect your final grade. However, failure to pass just one of the gateways lowers your final class grade by one grade (if your points as totaled above would get you an “A”, your final grade in the class would drop to a “B”). Failure to pass both gateways lowers your final class grade by two whole grades.

Each gateway will have six questions, and you must get five right to pass. There is no partial credit on these questions, so even a small sign error means you miss the question. You may retake the gateways as many times as you like, but only once per day. There will be a strict deadline for each gateway, after which you cannot retake it. This will be announced in class more than two weeks in advance.

If a gateway exam is not passed, you must be certified before making another attempt. The exact process for certification will be discussed in class, but is intended to show the student made an effort to learn the material missing from their last attempt. It is in the best interest of the student to pass the gateway the first time.

Attendance Policy

Attendance will not be taken, but students are fully expected to attend lectures. Habitual attendance makes success far more likely, and missing quizzes and exams far less likely.

Late/Make-up Assignment Policy

In general, students are expected to take quizzes and exams during their allotted time, and exceptions will be few. Students with conflicts must notify the instructor, in person or by email, at least 48 hours in advance to schedule an alternate time. It is acknowledged that emergencies happen, and if a sufficient reason is provided, students can schedule a make-up if the instructor is contacted within 12 hours of the exam/quiz conclusion.

Academic Integrity

South Dakota Mines is committed to academic honesty and scholarly integrity. The South Dakota Board of Regents Policy 2:33 provides a comprehensive definition of "Academic Dishonesty", which include cheating and plagiarism. All Instructors at South Dakota Mines are required to report allegations of academic misconduct to the Student Conduct Officer. The South Dakota Board of Regents Policy 3:4 provides detailed information regarding key definitions, policy information, prohibited conduct, and the Student Conduct process adhered to at South Dakota Mines. Any student suspected of violating academic integrity standards will be reported in accordance with the process outlined on the South Dakota Mines website.

Grading and Assessment

Assignment Name/Description	Points	Percent
Exam 1	80	20
Exam 2	80	20
Exam 3	80	20
Exam 4 (Final)	80	20
Quizzes (In total, across approximately 6)	80	20
TOTAL	**400**	**100**

Special Note Regarding Final Exams: Per South Dakota Mines Policy (II-6-2), if you are scheduled to take three or more final/last exams on the same day during finals week, you may request that the middle exam(s) of the day be rescheduled. ***You are required to make this request of your Instructor(s) at least 30 days prior to the last day of regular classes***.

Grading Scale

Letter Grade	Percent
A	90 to 100%
B	80 to 89.99%
C	70 to 79.99%
D	60 to 69.99%
F	0 to 59.99%

Academic Freedom Statement

Academic Freedom is the cornerstone upon which higher education is built. Academic freedom, as defined by BOR policy 1:11, is fundamental to the advancement of truth, development of critical thinking, promotion of civil discourse, and contribution to the public good. Each course includes the freedom to discuss relevant matters and present various scholarly views in the classroom, as determined by the subject-matter expertise of the instructor. Students are encouraged to develop the capacity for critical thinking and to pursue the truth, debate ideas, express and evaluate their opinions, and draw conclusions. Students are free to take reasoned exception to the views offered in any course of study and to reserve judgment about matters of opinion, but they are responsible for learning the content of any course of study for which they are enrolled.[1]

[1]Language adapted from the American Association of University Professors "Joint Statement on Rights and Freedoms of Students".

Complaint Process

While we hope that every student has a meaningful and positive experience at South Dakota Mines, should a concern arise, students are encouraged to first attempt to resolve their concern directly with the person or office directly involved. Following that attempt, should the concern remain unresolved, students are encouraged to reach out to the Dean of Students office at DeanOfStudents@sdsmt.edu or 605.394.2416. Additionally, students may access the online form to submit their complaint, appeal, or grievance.

Grade Appeal Policy

In alignment with BOR Policy 2:9, students who wish to appeal their final course grade shall first discuss the matter with the course instructor. If the concerns are unresolved following that discussion, students may utilize the online form to submit "Appeal – Academic" for a "Grade Dispute".

Opportunity for All - Student Success Services and Support

Students are provided a one-stop source for information regarding all the services and supports to ensure success. Visit the Opportunity for All page to access service and department information including ADA accommodations, Career Services, Counseling, Office for Inclusion, Slide Rule (math support), Student Success, Title IX, Tutoring, and Veterans Services, to name a few.

South Dakota Board of Regents Required Syllabus Statements

The following statements may be found online in South Dakota Board of Regents Academic Affairs Council Guideline 5.3.A:

- Freedom in Learning
- Americans with Disabilities Act
- Academic Dishonesty and Misconduct
- Acceptable Use of Technology
- Emergency Alert Communications

Tentative Course Schedule

Week and Dates	Topics
Weeks 1 - 5	Transcendental functions and Integration Techniques • Chapter 7: 1,2,3,5-7 • Chapter 8: 1-2, 5-8 (Exam on Week 5)
Weeks 6 - 10	Infinite Sequences and Series • Chapter 10: 1-8 (Exam on Week 10)
Weeks 10 - 15	Matrix Algebra and Computation • Chapter 12.1-12.4 (Exam on Week 15)