

Math 1920 Course Syllabus

Course Title:

Calculus II

Course Description:

A topics course providing a wide view of different techniques and applications of calculus in the plane. Techniques of integration and applications of integration fully developed. Power series and Taylor series included. Emphasis on multidisciplinary applications includes approximation; applications of integration to physics, biology, and business; and geometric and power series applications.

Course Prerequisites:

This course requires a grade of C or better in Math 1910 or its equivalent. Familiarity with graphing calculators (TI-83, 84, etc) is required. You may not use graphing calculators with symbolic manipulation software (DERIVE, MAPLE, etc.) on exams.

Instructor Information:

Instructor:

Office:

E-mail/Phone:

Office Hours:

Webpage:

Required Materials:

Textbook: Calculus: Early Transcendentals (With WebAssign Access), 9th Edition, by James Stewart

Course Purpose:

This is a course on integral calculus with an introduction to differential equations, sequences and series. It is the second in a sequence of three courses designed to provide skills and concepts necessary for continued study in mathematics as well as in physics, computer science and engineering. From the text, we will cover material from Chapters 6, 7, 10 and 11 inclusive.

Learning Outcomes:

Upon completion of this course with a passing grade, the student will have:

1. Interpret the area enclosed between curves as definite integral and compute its value.
2. Set up the Reinmann sum representing the volume enclosed by a geometric solid, convert the result to a definite integral and compute its value.
3. Interpret a volume of revolution of a function's graph around a given axis to a (Riemann) sum of disks or cylindrical shells, convert to definite integral form and compute its value.
4. Express the length of a curve as a (Rienmann) sum of linear segments, convert to definite integral form and compute its value.
5. Express the surface area of revolution of a function's graph around a given axis as a (Rienmann) sum of rings, convert to definite integral form and compute its value.
6. Anti-differentiate products of functions by parts.
7. Recognize and implement appropriate techniques and anti-differentiate products of trigonometric functions.
8. Devise and apply a trigonometric substitution in integral involving Pythagorean quotients.
9. Decompose a rational integrand using partial fractions.
10. Determine convergence of improper integrals with discontinuities in their domain or infinite limits of integration.
11. Use the concept of the limit at infinity to determine whether a sequence of real numbers is bounded and whether it converges or diverges.
12. Interpret the concept of a series as the sum of a sequence and use the sequence of partial sums to determine convergence of a series.
13. Decide whether, and to what value, an infinite geometric series converges.
14. Recognize the embedded infinite geometric series in geometric application.
15. Use comparison, with a corresponding integral, with other series and be aware of the consequences of reordering term in conditionally converging series.
16. Be able to decide whether an alternating series converges from the limit and monotonic decrease of the sequence of absolute values of its terms.
17. Distinguish between absolute and conditional convergence of series and be aware of the consequences of reordering terms in conditionally converging series.
18. Perform the ratio and root test to determine convergence of infinite series.
19. Interpret a converging power series as a function.
20. Determine the Taylor series of the nth order and determine an upper bound on its remainder.
21. Establish Euler's Formula by comparing the Taylor series for the complex exponential and the trigonometric functions.
22. Manipulate Taylor series by substitution and (anti-) differentiation to obtain expansions for other functions.
23. Compute the length of a curve segment from its parametric representation.
24. Apply basic anti-differentiation techniques to selected problems arising in various fields, such as physical modeling, economics and population dynamics.
25. Apply basic optimization techniques to selected problems arising in various fields, such as physical modeling, economics and population dynamics.

Course Requirements:

In order to complete this course successfully, the learner is required to:

- Attend class lectures
- Participate in class activities
- Read and study class assignments
- Solve assigned problem sets
- Successfully complete quizzes and tests
- Use technology where appropriate

Sections To Be Covered:

Chapter:	Sections Covered:
5	Review optional
6	6.1-6.3
7	7.1-7.8 (7.6 optional)
8	8.1
10	10.1-10.2
11	11.1-11.10

Course Evaluation:

Grading Scale:

Percentage	Grade
90 – 100	A
80 – 89	B
70 – 79	C
60 – 69	D
Below 60	F

Important Dates:

Last Day to drop without a grade:

Last Day to drop with a W:

Final exam Time and Date:

Drop/Withdrawal Policy and Dates:

Please note the Drop Policy and Withdrawal procedures as they are stated in the Current Registration Guide. A grade of “I” will be given only in accordance with University Policy. No

grade of “W” will be assigned after the official drop date except in situations involving extreme extenuating circumstances beyond the student’s control. In particular, a “W” will not be granted merely because the student is failing. Students should be aware that missing the official drop date and thereby receiving an “F” can have ramifications on financial aid.

Lottery Scholarship Policy:

Do you have a lottery scholarship? To retain the Tennessee Education Lottery Scholarship eligibility, you must earn a cumulative TELS GPA of 2.75 after 24 and 48 attempted hours and a cumulative TELS GPA of 3.0 thereafter. A grade of C, D, F, FA or I in this class may negatively impact TELS eligibility.

If you drop this class, withdraw, or if you stop attending this class, you may lose eligibility for your lottery scholarship, and you will not be able to regain eligibility at a later time.

For additional Lottery rules, please refer to your [Lottery Statement of Understanding form](#) or contact your [MT One Stop Enrollment Counselor](#).

Reasonable Accommodations for Students with Disabilities:

Reasonable Accommodations for Students with Disabilities: Middle Tennessee State University is committed to campus access in accordance with the Title II of the Americans with Disabilities Act and Section 504 of the Vocational Rehabilitations Act of 1973. Any student interested in reasonable accommodations can consult the Disability & Access Center (DAC) [website](#) and/or contact the DAC for assistance at 615-898-2783 or [email](#).

Free Tutoring:

Math tutoring for this course is available as a free service to MTSU students in KOM 252. Tutoring is fundamental to your success as a student. At every level of your academic journey, you will discover that tutoring assists your understanding, recollection, and application of what was presented in the classroom.

Take advantage of our FREE tutoring service and learn how to study, get help with understanding difficult course material, receive better test grades, or simply improve your grade point average. Tutoring is available in *study skills* and *learning strategies* that includes sessions on time management, notetaking, when and where to study, and memory principles. Tutoring is also available in over 200 courses including biology, history, computer information systems, physics, math, psychology, chemistry, economics, recording industry and many more. The central location for tutoring is the Tutoring Spot, located in Walker Library, but also conducted at various other campus sites. For available tutoring opportunities, visit the [Student Success](#) website. For questions, call the tutoring spot at 615-904-8014.