BOB JONES UNIVERSITY
PURSUE A HIGHER CALLING

College of Arts and Science
Division of Mathematical Sciences

Ma 136
Calculus II
Fall 2026

Professor:	James A. Knisely, Ph.D.
Office:	Alumni 64
Office Hours:	MWF 7:30 – 8:45 a.m. | Th 7:30 – 9:30 a.m. Tu 1:30 – 2:45 p.m. | Please email or text to confirm availability
Email/Text/Teams:	jknisely@bju.edu | Cell 864-517-2437 | MA 136 F26
Communication Policy:	Feel free to email or contact me via Microsoft Teams for questions and/or extended help. You may text where appropriate (not during class).
Classroom:	AL 314
Meeting:	MWF 1:00 - 1:50 p.m. | Tue 12:30 - 1:20 p.m.
Credit/Load:	4/4
Textbook(s):	*Calculus* 11th ed. by Larson/Hostetler/Edwards

Catalog Description:

A continuation of Ma 135. Topics include definite integration, differentiation and integration of transcendental functions and other algebraic curves, and applications.

Calculator Requirements:

TI-89 or TI-Nspire CAS calculator required

Prerequisites:

At least a grade of C- in MA 135, Calculus I

Course Context:

The faculty of the Division of Mathematical Sciences has developed five broad goals and has aligned these goals with the Bob Jones University Institutional Goals (IG) and the goals of the Bible and Liberal Arts Core (BLA). We believe these goals support the IG/BLA of the University. These Division Goals (DG) are to:

1. Mature the student in the theory and applications of mathematics and computer science.
2. Provide the student the required mathematical and computing background to function and contribute effectively in today's technological society.
3. Provide the student a platform for continued learning and development of his God-given abilities.
4. Instill in the student a desire to use his abilities in service to Christ.
5. Provide an appropriate liberal arts complement to a wide variety of majors.

Course Goals (CG):

1. To develop a Christian perspective of Calculus and related scientific endeavor (DG 4, 5)
2. To develop Christ like qualities such as perseverance, diligence, and dependence on God. (DG 3, 4)
3. To develop mathematical maturity and independent thinking (DG 1)
4. To develop a greater appreciation for the beauty and power of Calculus (DG 1, 3)
5. To develop a greater interest in exploring mathematical ideas independent of the teacher (DG 1, 3)
6. To prove the basic theory of Integral Calculus (DG 1, 2, 3)
7. To develop mathematical modeling and problem solving skills with the power of Calculus tools (DG 2)
8. To develop skill and techniques of differentiation and integration--the basic computations of calculus (DG 2, 3)
9. To develop the ability to present mathematics in written and oral form(DG 5)

Course Objectives:

With at least 70% accuracy, the student will be able to do the following:

Course Objectives	Course Goals Supported	Course Content (Chapter(s))	Primary Assessment
A. Graph, integrate and differentiate rational expressions, the trigonometric functions, their inverses, the logarithmic function, and the exponential function. (NCTM A.5.1)*	2, 7, 8	5, 8	Tests
B. Write the definitions of all terms and concepts of Integral Calculus (NCTM A.5.1)	3, 6	5, 8	Tests
C. Prove certain important theorems of Calculus, like the Extended Mean Value Theorem, and L'Hopital's Theorem, Taylors' Remainder Thm. (NCTM A.5.1)	2, 3, 4, 6	8, 9	Theory Test/Test
D. Use numerical integration techniques to estimate the value of a definite integral. (NCTM A.5.1)	7, 8	4	Test
E. Determine the convergence of infinite series and approximate the sum of those series which converge	1, 4	9	Test
F. Use calculator and computer simulated graphics as well as physical models to discuss calculus concepts. (NCTM A.5.6)	5, 7	4, 7	Tests
G. Relate geometric concepts to finding the area between curves, volumes and surface areas of solids of rotation, and arc length in both parametric and polar form (NCTM, A.5.5)	3, 4, 7, 8	10	Test/Paper
H. Solve Calculus problems related to real-world applications. (NCTM A.5.5, A.5.6)	7, 8	10	Test
I. Use a graphing calculator to solve Calculus problems. (NCTM A.5.6)	3, 7	5, 8, 9 10	Tests
J. Present a theorem with proof and application to the class.	9	5,8,9,10	Presentation

Course Content:

1. Theory and applications of the calculus of transcendental functions; logarithmic and exponential functions, trigonometric and inverse trigonometric functions
2. Inverse functions and relations, one-to-one functions, natural logarithmic function, natural exponential function, derivatives and integrals, and growth and decay. Natural logarithms and differentiation, Natural logarithms and integration, Exponential functions- differentiation and integration, Exponential functions with bases other than e, Inverse trigonometric functions - differentiation and integration,
3. Definition of the Limits at infinity, Extended Mean Value Theorem and L'Hopital's Theorem, Theory and applications of Improper integrals, Integrals involving infinite intervals and discontinuous, unbounded integrals.
4. Theory and applications of infinite series. Representing functions with power series. Determine convergence, bounds on limits.
5. Equations and graphs of conics and rotations in space.
6. Representing functions in parametric and polar forms
7. Technology in calculus: Use of a graphing calculator to graph in parametric and polar form. Use a CAS calculator to find derivatives of equation in polar and parametric form and to find power series representations of functions.

Course Requirements:

The course grade will consist of**

- In-class tests covering sections 5.1-5.5, sections 5.6-5.9, chapter 8, sections 9.1-9.6, and conic sections. These tests will be worth between 70 and 80 points each.
- Take-home projects covering rational function integration and reduction formulas worth 35 points, and power series work (from chapter 9) worth 80 points.
- A technology test, taken in Canvas, demonstrating calculator skills in solving problems from parametric equations and polar functions.
- Section homework assignments will be collected on days of in-class tests or when a take-home test is collected. Each section will be worth 2 points.
- A cumulative final exam, worth 120 points.

** Point assignments are subject to change.

Course Evaluation:

All course/assignment grades are based on the evaluation of the work communicated by the student. Unclear or incomplete communication of the solutions, which includes the process, may result in a penalty at the professor's discretion.

Letter grades will be based on a standard 10-point scale. Final grades for this course will not automatically be rounded up. Rounding is contingent on the student's homework and engagement throughout the semester.

General Policies:

Deportment

Compliance with student handbook policies is expected during class. The classroom is to be a professional environment. That means you are to come to class prepared for the day's discussion, your attention is expected to be on course related material, and you are expected to positively contribute to the class.

Emergencies During Class

In case of emergency requiring evacuation, students will go down the stairs on the fountain side and exit the door facing Wade Hampton underneath the stairs. Students will immediately cross the street and gather by the fence with their class. If we are unable to exit the building, the professor will instruct the students on the best course of action. To be able to respond quickly to external threats, professors may keep classroom doors locked. If you are late arriving to class, you may need to knock on the door and be let in.

Absences

BJU attendance policy is in effect (see https://home.bju.edu/bju-policies/ for details).

- Scheduled tests/quizzes should be taken before your planned absence; please contact your professor to make arrangements for doing so. You are personally responsible for getting notes from your classmates and discussing the missed material with them. You should not expect your professor to privately re-teach you the material you missed. Your professor is always available to help you with specific questions. If an unannounced quiz/assessment is taken during the class that you miss, you will NOT be allowed to make it up, and you WILL receive a zero on the assignment. Work may always be completed early (see your professor if you wish to take a test early).
- Missing an in-class test because you feel you are not prepared to take it is not acceptable. Work missed for this reason will not be made up and you will receive a zero on the assignment.
- For absences due to incapacitating illness or emergency, you should contact the instructor as soon as you realize you will not be in class to make arrangements to make up any missed work. Tests will be made up without penalty for the first occurrence. Each subsequent time a test is missed because of incapacitating illness or emergency, an additional 10% grade penalty for that test will be incurred. A 10% penalty will be assessed for a late submission of take-home tests. All late work must be made up by the next class period unless other arrangements have been made with the professor.

Presentation of Work

The goal is professional, fluent, and clear communication of what you know.

PW 1: Proper use of mathematical notation is expected. The structure of notation conveys specific meaning and should be used appropriately.

PW 2: Mathematical presentation is like grammar. There are subjects, verbs (=, ≤, >, etc.), and objects. Always write in complete sentences.

PW 3: Tests/presentations/projects are not only about what you know, but about what you can communicate about what you know so the presentation of your work/logic should always be neat, orderly, clearly defined, and with the appropriate amount of supporting detail. (Excessive steps are not required; however, answers alone are not (usually) acceptable.)

PW 4: Always work down the page. (Working in multiple columns is generally not acceptable.) There should be one problem worked in each row because this contributes to clarity and the development of your logical argument.

PW 5: Skip lines between problems. If you have dense handwriting, skip every other line and skip 2-3 lines between problems.

PW 6: Clearly label problems/sub-problems. Problems do not necessarily have to be worked in order but must be clearly labeled either way. Your professor will communicate their expectation on presenting problems out of order.

PW 7: Answers are to be presented as the logical conclusion of your work, not as the only important thing (e.g. at the start of the problem and/or unconnected with any justifying work).

PW 8: Work should be submitted on clean 8.5 × 11 inch (standard-size) paper and should not be submitted with spiral/ripped edges.

PW 9: Take-home tests (when time is not limited) should be neatly presented (rewritten, organized, no scratchwork, etc.) as a final polished piece.

PW 10: Follow any additional instructions given.

Your professor may refuse to accept work that does not meet the minimum presentation requirements above, or they may choose to deduct up to 10% from the assignment.

Problems Expectations

The goal is to prove your mastery (not your just barely comprehending). Failure to meet these expectations will be reflected in lower test scores.

PE 1: Read all words carefully in a question. Everything is important, so know what the meanings of all words are and how those words tell you to respond.

PE 2: Theory is a precise expression of important ideas. While it is not graded word for word, jot for jot, the precise ideas must be maintained. Embrace thorough, smooth learning and presentation. Can you recite the theory from the last class period quickly, comfortably, and conversationally?

PE 3: Theory tells us how to solve problems. Know exactly what problems connected to each theorem or definition look like, and know how to solve them.

PE 4: Know what the key steps of each problem are. Present only the key steps (or the minimum needed to get the answer right and show all your logic).

PE 5: Do enough practice for each type of problem so that you are smooth.

Homework

Homework is intended as a space for you to develop conceptual understanding and skill at communicating your understanding. It is collected only as way to help you develop discipline and maturity. It is due at the **start** of the indicated class period (or may be turned in early). No late homework is accepted, and you may not copy solutions from another source.

You may upload scans of your work instead of submitting it on paper.

You are done with homework when you can anticipate test questions, solve them, and appropriately communicate those solutions regardless of how many or few problems you have completed.

Late Policy

Assignments not submitted as directed by the due date will incur the following late penalty.

- No late homework/in-class assignments are accepted.
- Written assignments/projects/take-home tests are penalized at 10% per day for the first three days and a grade of 0% after that.
  Late paper submissions must include the date and time the paper is submitted and be in the credenza by 8am the next day. The next day penalty begins at 8am.
- In-class tests must be taken by the date given in class (or selected time in the case of an oral exam) unless there is incapacitating illness (see attendance policy below). Missing a test/taking the test late (including an oral exam) will result in a 10% penalty unless excused by the professor. Tests should be made up prior to the next class period unless other arrangements have been made with the professor.
- Work (except for the final exam) may always be completed early. Contact your professor if you wish to take a test early.

Academic Integrity Policies:

The university's Academic Integrity Policy is in effect (see https://home.bju.edu/bju-policies/ for additional details).

Definitions of Integrity Violations

Integrity is the reflection of the character and nature of God in our actions; therefore, students will be expected to work with integrity. In academia, violations of integrity generally fall into one or more of the following categories:

- Cheating: unauthorized use or attempted use of assistance, information, or aids in any academic assignment
- Falsification: submitting work done by others, changing work after submitting an assignment, reporting false information about the completion of an assignment
- Unacceptable collaboration: working with others when not permitted, using AI to generate ideas, thoughts, or content without the explicit permission of the professor
- Facilitation of Cheating: helping another student violate academic integrity, communicating quiz/test questions to other students

- Plagiarism: the intentional or unintentional use to any degree of the ideas or words of one's source material without proper acknowledgement

All work done for this class must represent your own effort, your own understanding, and your own communication of the material.

Course Integrity Policies

If information is taken from other sources (which is at times appropriate), it always needs to be referenced and credit given where it is due. Use standard referencing techniques as taught in En 102. Solutions found on the internet are not to be copied.

- Homework: While you are encouraged to work together on the homework assignments, simply copying someone else's solution is neither useful nor acceptable. Your homework should represent your work and your understanding of the work.
- Tests (In-Class and Take-Home): No resources may be used while taking the test unless permitted by the professor. The presence of any unauthorized material on your desk, in your calculator, on your laptop, etc. while taking a test will be construed as cheating and will be dealt with as such.
  Internet/AI enabled devices or any communication devices (including but not limited to smart glasses, watches, earbuds, etc.) are not permitted to be used and should be stored out of sight during the testing period. Accessing these types of devices during the test will be construed as cheating and will be dealt with as such.
  Cheating on a test will likely result in a zero on the test and will be submitted to the Academic Integrity Committee.
- Projects: You are encouraged to discuss the general ideas needed to complete the project as discussed in this course with your classmates but are not permitted to work together on your project. Your projects must represent your own ideas, your own work, and your own communication of your work.

Assignment submissions will be evaluated for plagiarism and AI usage at the discretion of the professor. If you have a question about any source you are considering using, it is wise to gain your professor's approval before using it. You are always permitted to ask your professor for help. Any help they choose to provide is acceptable.

AI Usage Policy

The goal of the assignments in this course is to learn to develop the skills covered, NOT to complete the tasks assigned. The use of AI to complete or jumpstart tasks defeats the goal of the assignments. Therefore, you may not use generative AI tools in this course for any assignment without the professor's express permission. AI tools include, but are not limited to, CoPilot, Apple Intelligence, Chat GPT, Bing Chat, Google Bard, Grok, Deepseek, Grammarly, and language translators.

Use of generative AI to develop code (such as Python or R) may be helpful during the project (each student has permission to use AI for only this purpose, other purposes require express permission). It would be wise to consult with your professor before incorporating it into your work. Reliance on AI to generate code has not yet resulted in an acceptable paper. If you do use it, you must document it as indicated above. You may NOT use AI to generate the text/discussion in your project.

Documentation of Permitted AI Use

Should an AI tool be used with permission, its use must be documented (including the tool used, a summary of the prompts provided and the portions of the assignment that were based on AI generated work). See https://style.mla.org/citing-generative-ai/ for details on citing the use of AI.

Additional Document(s)

- Lecture schedule