



Course Syllabus

Name of Course

MAC 2312 / 80307 / Fall 2026

4 Credit Hours/4 Contact Hours

Pre-requisites: Math placement test or minimum grade of C in MAC 2311

Contact Information

Instructor

Name: Kristi Krutcek
Title: Assistant Professor of Mathematics
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Instructor Credentials:
A.A., Gulf Coast Community College
B.S.B.A. in Accounting, University of West Florida
M.Ed. in Curriculum and Instruction in Math (K-14), Concordia University
M.S., Mathematical Sciences, University of West Florida

Office Location: SUW 256
Office Hours: See canvas
Response Time: 24-48 hour window

Division Chair

Name: Ms. Hadley Pridgen
Title: Division Chair
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Division Administrative Assistant

Name: Mr. Scott Spencer
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Course Information

Catalog Description:

This course affords students a mastery of foundational mathematical and computation models and methods by applying such models and methods in problem solving. Topics included are:

- Basic differential equations
- Area and the definite integral
- Antidifferentiation
- Fundamental Theorem of Calculus
- Inverse trigonometric functions

- Arc length
- Techniques of integration
- Infinite sequences and series
- Taylor's formula
- Parametric equations and polar coordinates

Student Learning Outcomes:

Students will

- Set up and solve basic differential equations
- Develop an understanding of various integration techniques
- Solve application problems involving integration
- Evaluate improper integrals
- Demonstrate an understanding of various sequences and series

Course Materials & Resources:

Calculus, Early Transcendental Functions, Larson/Edwards, 8th edition, 2022

Delivery Method:

This course meets face to face. Course material, assignments, and announcements may be offered via Canvas as a supplemental approach to learning at the discretion of the instructor. Please make sure that you have access to a computer with a webcam and internet service, in the event a change in course delivery is needed.

Student Expectations

In this course, communication and feedback will occur through various channels, including GCSC email, Canvas Inbox, Canvas Announcements, Canvas Discussions, Microsoft Teams or Zoom, assignment feedback, and instructor office hours. Review the statements below so that you understand the expectations for communication.

As a student at Gulf Coast State College, you are expected to:

- **Adhere to Course Guidelines:** Follow the guidelines detailed in the course syllabus, along with any additional instructions provided by the instructor. This includes understanding and complying with the course objectives, grading criteria, and academic policies.
- **Maintain Regular Contact:** Keep in touch with your instructor and classmates via your GCSC email or other designated communication channels. Regular contact helps clarify doubts, share ideas, and foster a collaborative learning environment.
- **Active Participation:** Engage actively in class discussions and submit assignments on time. Your active participation is crucial for your academic success and contributes to a vibrant learning community.

As your instructor, my commitment to you is to:

- **Provide Timely Feedback:** I will review and provide feedback on your assignments and submissions promptly. My goal is to help you understand your strengths and areas for improvement, which is crucial for your academic growth.
- **Respond Via Canvas Inbox:** I will respond to your emails or messages within 24-48 hours (excluding weekends), unless otherwise noted. I understand the importance of clear and timely communication in addressing your questions and concerns.
- **Post Regular Announcements:** To keep you updated and help you manage your time effectively, I will send out weekly reminders via announcements. These reminders will include important dates, upcoming assignments, and any changes to the course schedule.
- **Maintain Weekly Office Hours:** I will maintain regular weekly office hours, but I can also be available by appointment. This is to ensure I'm available for any questions or concerns that may come up during the week.

Course Schedule

In this class, students will be expected to:

- Solve first order differential equations and demonstrate applications and modeling
- Find and analyze direction fields
- Apply Euler's method
- Find the area between two curves
- Find volumes of regions by disks, washer, and cylindrical shell methods
- Find the length of a plane curve.
- Find the area of a surface of revolution.
- Solve work problems.
- Analyze problems involving moments, center of masses, and centroids
- Analyze problems of fluid pressure and force
- Demonstrate knowledge of general integration
- Apply integration by parts
- Solve trigonometric integrals
- Evaluate integrals by using trigonometric substitution
- Evaluate integrals containing rational functions by partial fractions
- Evaluate integrals by use of a tables of integrals
- Determine and evaluate indeterminate forms of limits
- Evaluate indeterminate limits using L'Hopital's Rule
- Evaluate improper integrals
- Analyze general sequences
- Analyze monotone sequences
- Analyze infinite series
- Apply convergence tests to series
- Analyze and form Taylor and Maclaurin polynomials
- Apply the comparison, ratio, and root tests
- Analyze alternating series and identify conditional convergence
- Analyze intervals of convergence for power series
- Construct Taylor and Maclaurin series
- Analyze the convergence of Taylor and Maclaurin series
- Apply differentiation and integration techniques to power series
- Analyze conic sections and apply knowledge of conics to solve problems

Compute plane curves and parametric equations
Demonstrate knowledge of finding polar coordinates and polar graphs
Calculate the area and arc length using polar coordinates
Apply polar coordinates to demonstrate Kepler's law

The daily schedule, given out on the first day of class, includes specific dates that each topic will be covered.

Grading

GCSC Grading Scale

The college grading scale is: A (100-90), B (89-80), C (79-70), D (69-60), and F (59-0).

Calculation of Grades

The grade for this class consists of 5 unit tests, each one counting 12.5% of the final grade, for a total of 62.5%. Quizzes and/or homework assignments will constitute 12.5%. The final exam will be taken by all students who are still enrolled at the end of the semester and will count 25%. At the instructor's discretion, the final exam may replace one unit test grade. In order to be eligible to use the final exam as a replacement grade, the student must have taken all five unit tests.

Course Policies

Accessibility Statement

Gulf Coast State College supports an inclusive learning environment for all students. If there are aspects of the instruction or design of this course that hinder your full participation, reasonable accommodations can be arranged. Prior to receiving accommodations, you must register with Student Accessibility Resources. Appropriate academic accommodations will be determined based on the documented needs of the student. Please visit [GCSC's Student Accessibility Resource \(SAR\) webpage](#) to learn more. For information regarding the registration process, email sar@gulfcoast.edu or call 850-747-3243.

Attendance Policy

Regular class attendance and participation are significant factors that help to promote success in college. Students are expected to attend all class meetings of all courses for which they are registered.

You are expected to know the instructor's specific attendance policy, as stated in the syllabus for each course. In the event of absence, you should contact your instructor as soon as possible to indicate the reason and to inquire whether make-up work is possible. (Make-up work is offered solely at the discretion of your professor.)

If your absences in a class become excessive, as stated in the course syllabus, your professor may contact you, indicating that further absence may result in your withdrawal from the course. Your professor can withdraw you from a course for excessive absences without your permission.

Instructors will monitor attendance at the beginning of each semester. If you are not in attendance during this period, you may be withdrawn from the course. You will be financially responsible for the course and a "W or NS" will appear on your transcript. Withdrawal from a course may also have implications for financial aid.

Make-Up Work Policy

- **NO** Extra credit
- **SOME** out of class assignment grades may be dropped at the discretion of the instructor.
- Out of class assignments are due by the date your instructor sets. It is your responsibility to know and adhere to the due dates.
- **NO** retakes of any tests.
- **NO** test grades will be dropped.
- The Schedule set forth outlines what is covered and what the deadlines are. You know in advance the testing dates for each test; therefore, missing a test is unacceptable and you will receive a grade of zero for that missed test without a make-up. However, if missing a test is unavoidable, then you require prior approval.
- If a test is missed due to a valid excuse and is granted, then a make-up test will need to occur as per agreement with your instructor. Proof of why you missed test will be required, and it is the student's responsibility to make necessary arrangements to contact their instructor regarding a make-up test.
- The final exam can be used to replace the lowest unit test grade, if it helps improve your grade.
- Missed test grades (grades of zero) will not be replaced.

Withdrawal Policy

Two withdrawals are permitted per credit course. After that, a grade will be assigned. Please be concerned about withdrawals. When admitting students into certain programs, universities may calculate withdrawals as grades. It is your responsibility to verify the effects of enrollment and/or withdrawal upon your financial assistance (financial aid, scholarships, grants, etc.). There are two kinds of withdrawals---student and administrative.

- *Student Withdrawal (W1)* - Students wishing to withdraw must complete the online Student Withdrawal Form before the scheduled withdrawal deadline as published in the College catalog. Student withdrawals initiated prior to the scheduled withdrawal deadline will be recorded as a grade of "W." The withdrawal deadline for an off-term or condensed term is one week after midterm.
- *Administrative Withdrawal (W2)* – A faculty member may withdraw a student up to the published withdrawal deadline for violation of the class attendance policy in which case the student will receive a grade of "W." The withdrawal deadline for an off-term or condensed term is one week after midterm.

Students cannot withdraw from developmental studies courses (college-preparatory classes) after the drop/add period without written permission from their instructor and/or their academic advisor.

Academic Integrity

Honest participation in academic endeavors fosters an environment in which optimal learning can take place and is consistent with the college's mission. Academic misconduct, including cheating or

plagiarism, is destructive to the spirit of an educational environment. GCSC professors report every instance of student academic misconduct to the college for inclusion on the student's records. Most course syllabi include an academic honesty policy and the consequences for violating this policy. Familiarize yourself with course policies regarding authorized or unauthorized use of AI to avoid the pitfalls of academic dishonesty.

The following definitions will apply:

"Cheating"

includes but is not limited to use of any unauthorized assistance in taking quizzes, tests, or examinations; dependence upon the aid of sources beyond those authorized by the instructor in writing papers, preparing reports, solving problems, or carrying out other assignments; the acquisition without permission of tests or other academic materials belonging to a member of the College's faculty.

"Plagiarism"

includes, but is not limited to, the use by paraphrase or direct quotation of the published or unpublished work of another person without full and clear acknowledgment as well as the purchase of papers or projects. It can also include overuse of an editing program like Grammarly or submitting work written by an Artificial Intelligence (AI) generator like ChatGPT. Make certain to consult your course syllabi for your instructor's guidelines of AI material.

"Self-plagiarism"

occurs when a student submits the same or considerably similar document to fulfill requirements in different classes. For example, if a student submits a term paper in Religion they originally wrote for an English class, this is self-plagiarism. Once a paper receives a grade in one class, it cannot be submitted again for another class.

"Generative Artificial Intelligence (AI)"

is technology that uses machine learning to create new content, such as text, images or code, based on user input. These systems are trained on vast amounts of data, including large language models and image or code generators. Common examples include ChatGPT, GitHub, Copilot, Google Gemini, Perplexity, and the Grammarly AI function.

Sanctions for incidences of academic misconduct, depending on the severity of the incidence and/or its repetition, may range from receiving an F grade (or 0) for the test, assignment, or activity, to failure of the course, to suspension or dismissal from the college.

Classroom Recording

In accordance with federal and state privacy laws, students may record class lectures for their own personal educational use, in connection with a complaint to the college, or as evidence in internal or external legal proceedings. Students may not publish or upload the recordings or any components thereof without the knowledge and written permission of the faculty member. Failure to obtain permission to publish could lead to the students' having to pay damages, attorney fees, and court costs. For more information about what can be recorded, please see the guidelines in the GCSC Student Handbook.

Generative Artificial Intelligence (AI) Policy

The use of generative AI tools in academic work requires clear guidelines to maintain academic integrity. Please review the policy selected for this course regarding the use of AI tools such as ChatGPT, Copilot, Grammarly's AI features, and similar platforms for assignments, research, and other coursework.

See the student handbook for further information. Students with questions about acceptable use should consult their instructor.

Prohibited Use of AI

The use of AI-generated content is strictly prohibited in all assignments, coursework, and throughout all stages of the work process, such as brainstorming, outlining, or drafting. This includes but is not limited to, tools such as ChatGPT, Copilot, and Grammarly's AI function. Use of AI tools will be treated as a violation of academic integrity and may result in penalties, including a zero on the assignment and additional disciplinary actions as outlined in the college's academic integrity policy.

The Math Division at GCSC discourages you from utilizing AI as a substantial source of your learning. You are expected to do your own work in this course and will be graded on your mastery of the material herein. Although AI can be an outside resource for problem solving, it may not be a reliable source. What is most important in a math course is that you personally learn the step-by-step processes that it takes to find solutions to problems, to analyze data sets, to create mathematical models, and to apply what you have learned, in theory or through formulas, to applications of mathematics found in real-life instances.

For graded assignments (tests, quizzes, or otherwise), you will not be allowed to use any AI tools, such as chatbots, text generators, paraphrasers, summarizers or solvers, to complete any part of your assignments. Using AI tools for graded assignments will be considered a form of academic dishonesty and could result in a grade of zero for the assignment and disciplinary action. If you have any questions about what constitutes acceptable uses of AI tools, inside or outside the classroom, please consult your instructor.

Anti-Discrimination Policy

Gulf Coast State College does not discriminate against any person in its programs, activities, policies or procedures on the basis of race, ethnicity, color, national origin, marital status, religion, age, gender, sex, pregnancy, sexual orientation, gender identity, genetic information, disability, or veteran status. All questions or inquiries regarding compliance with laws relating to non-discrimination and all complaints regarding sexual misconduct or discrimination may be directed to Amanda Reed, Executive Director of Human Resources/Title II/504/Title IX Coordinator and Employment Equity Officer, Gulf Coast State College, 5230 W. US Highway 98, Panama City, FL 32401; 850-769-1551, ext. 3516. Rules, policies, fees, and courses described in this catalog are subject to change without notice.

Syllabus Policy

For any syllabus posted prior to the beginning of the term, the instructor reserves the right to make minor changes prior to or during the term. The instructor will notify students via e-mail or Canvas announcement when changes are made in the requirements and/or grading of the course.

Student Support Resources

Gulf Coast State College is committed to providing you with the resources you need for success as a student and beyond. View all the academic and student support resources provided at GCSC on the [Student Services web page](#).

Course Technology & Support

To successfully participate in this online course, students must have basic computer and digital information literacy skills and meet the following technology requirements:

- **Computer:** Up-to-date web browser that supports the Canvas learning management system; please refer to the system requirements for compatibility and information on using the Canvas app on mobile devices.
- **Internet Speed:** Minimum bandwidth of 8 Mbps upload/download speed to effectively engage in online activities and access multimedia.
- **Office 365 software:** Available for free download through GCSC Information Technology Services (ITS).

If you need technical support, contact the ITS Help Desk, available 24/7 at (850) 913-3303.