

MATH 1324 (3:3:1)

MATHEMATICAL ANALYSIS I

MATHEMATICS DEPARTMENT

Division of Arts & Sciences

South Plains College

SPRING 2025

Shirley Davis

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South Plains College

MATH 1324 – Mathematical Analysis I

{ Section 002, M W 11–12:45 pm { **Math Bldg., Rm. 105**, respectively
{ Section 003/090, T R 11–12:45 pm { **Math Bldg., Rm. 105**

I. Instructor Info

Professor: Miss S. Davis

Office: 103 MATH Bldg.

Phone: (806) 716 – 2699

E-mail address: sdavis@SouthPlainsCollege.edu

➤ SPC email address

➤ **Not Bb email address**

- Any questions or comments should be sent using **Blackboard email** (i.e., Course Messages) not your SPC email. SPC email will be used as a secondary communication tool.

- **Response Times**

I will do my best to respond to your email within the primary office hours availability zone posted on Blackboard. If the emails are overwhelming in volume then please allow me 72 hours = 3 business days of receipt Monday through Thursday throughout the regular business day Monday through Thursday to respond to your email. If I do not respond within 72 hours please email again. Response times are dependent on whether my proposed method of emailing is respectively followed. In other words, if you decline to follow my instructions for emailing me through Blackboard and email me through my SPC email account then response times could take weeks.

- **Messaging/Announcements:** **Blackboard email** and postings will be used as our primary virtual means of communication. **SPC Email will be used as a secondary communication instrument since student emails can be overwhelmed by administrative emails.** Your course will be contained within Blackboard. The instructor will post general announcements in Blackboard usually accompanied with email to your SPC email address.

You must check Blackboard homepage on a regular basis preferably daily.

Office Hours:

Monday	Tuesday	Wednesday	Thursday	Friday
8 – 8:30am 10:35 – 11am 3:05 – 4:05pm	2:15 – 4:15pm	10:35 – 11am 3:05 – 4:05pm	2:15 – 3:45pm	2 hours (Designated time posted weekly)
<i>or by appointment</i>				
At these designated times, I will be available to help you. You do not need an appointment for office hours. When you come by, I may be assisting another student, but please wait patiently, and I will attend to you eventually.				

Table 1 – Office Hours

II. Course Info

Text:

College Mathematics for Business, Economics, Life Sciences, and Social Sciences, 13th Edition by Barnett, Ziegler, & Byleen, Prentice Hall Publisher, 2011. (ISBN: 0-321-94551-4)

Supplies:

Scientific calculator (or graphing calculator), Graph paper, a ruler, *(at least a 3 in ring) notebook*, hole puncher, stapler, a staple puller, & a red pen/pencil.

(If your lack of responsibility results in you asking to borrow any of the supplies from me then there will be automatic 5 point deduction from your final grade. **Bring your supplies to class everyday!**)

Purpose:

To provide a transferable course in Mathematical Analysis I for Business Administration majors and CIS majors; and to lay a foundation for the study of Mathematical Analysis II.

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III. Attendance Policy

Attendance:

Lectures, effort, engagement, and Q&A are the most important activities for success in this course. The instructor maintains records of the student's attendance and submission of assignments throughout the semester. Maintaining a time management schedule for the online video lectures is crucial to avoid lagging in this class. The student is expected to attend at least eighty percent (80%) of the total class meetings and submit at least eighty percent (80%) of the total class assignments to have the best chance of success. If the student fails to meet these minimum requirements, the instructor has the right to drop the student with a grade of F or an X, depending on the instructor's discretion.

IV. Equipment

A. Online Essentials:

1.) Internet access

- Working, reliable internet access with the ability to participating in online conferences via Blackboard or Zoom.
- Libraries, school and public communities, are a great source to computer accessibility.

2.) Computer (laptop highly recommended) and Webcam

3.) Blackboard (Bb)

- The online course management system that will be used for this course.
- A wealth of information is provided to you for this class in the **MA Bb**. All the information for this class will exist on Blackboard including but not limited to syllabus & compendium, homework assignments, worksheets supplements, videos, & etc., but additional material involves Classroom Conduct, Technological & Equipment info & assistance, Tutoring opportunities, previous semester student evaluations, and miscellaneous administrative information. Please be responsible to log in to Blackboard and visit **MA Bb** page and peruse through it to become familiar with all the items.

Login at <http://southplainscollege.blackboard.com> . The user name and password should be the same as the MySPC and SPC email.

User name: first initial, last name, and last 4 digits of the Student ID

Password: Original Campus Connect Pin No. (located on SPC acceptance letter)

- *Technical Support:* Student support is available by emailing blackboard@southplainscollege.edu or calling 716-2962. When emailing a request for help, include your full name, course(s) enrolled in, name of instructor(s) and a phone number where you can be reached.

4.) Calculator

- A scientific calculator for this course is recommended.
- Acceptable: TI-83, TI-83+, TI-84, TI-84+, or TI-84+ Silver Edition but many others are also acceptable.
- Any other graphing calculator, you will need to read you manual to determine how to make the processes work.
- The TI graphing calculator model is not allowed in this class: TI-Nspire.
- Cell phones and similar devices may NOT be used as calculators and no sharing of calculators is allowed.

5.) Other Resources

- You are expected to keep up with the schedule set forth by the due dates of the homework assignments and the exams. If you need help, please ASK! Here are some other good resources online:
 - Your instructor is your first and BEST resource for any help!!!!
 - Free online math videos at www.khanacademy.org, www.patrickjmt.com, www.mathtv.com, & MIT Opencourseware.

6.) Troubleshooting

- Computer Issues
 - If your personal computer becomes "disabled", then you will need to seek an alternate computer source.

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V. Coursework Policies

Assignment Policy:

Homework will be assigned daily (located on MA Bb). You are expected to work all problems assigned in each assignment and to seek help when you do not understand. You are responsible for keeping up to date and prepared. Homework is to be completed and be kept in a notebook that must accompany you to each (f2f) class session. The homework assignments may be graded periodically. *However, the practice is required in order to more fully understand each topic and to successfully negotiate the quizzes and the tests.*

Assessments:

There will be random quizzes given over the assigned homework in which no make-ups will be allowed. The total number of quizzes for the semester is unpredictable but only a portion will count as the quiz grade. **Make-up quizzes will NOT be given.**

Tests:

There will be four tests (final exam exclusive) face-to-face (f2f) unless circumstances change. Exams will be f2f unless there exist **verified extenuating circumstances** in which the exams will be conducted online through virtual meetings. The final exam will be comprehensive.

If the final exam score is greater than any non-zero major exam score then the final exam score replaces the major exam score. In other words, the major exam score will be deleted, and the final exam score will count two times (an exception is the Honest Effort Rule (H.E.R.) policy). See your OUTLINE for the approximate date for each test.

Make-up Policy:

There is no automatic provision for making up exams. Only under **verified extenuating circumstances** (e.g., death in the family, hospitalization, +COVID test) will make-up exams be inevitable. These situations will be dealt with on a trial-by-trial basis. If at all possible, the instructor should be notified prior to missing an exam.

If you happen to miss an exam, a grade of **0** will be administered, and under the **H.E.R.** (Honest Effort Rule), this missed exam of grade **0** will not be replaced by the final exam even if the final exam is greater.

Grading Policy:

Your final grade will be based solely on major exam scores, quiz average, and a comprehensive final.

Grading Score:

$$\text{Final score} = \frac{\text{Test 1} + \text{Test 2} + \text{Test 3} + \text{Quiz Avg.} + \text{Final Exam score}}{5}$$

NOTE: If the final exam score is greater than the least non-zero major exam score (excluding the Homework/Quiz avg.) then the final exam score replaces the least non-zero major exam score. In other words, the major exam score will be deleted and the final exam score will count two times.

Grading Scale:

Table 2 - Grading Scale

A:	90 and above	D:	60 – 69
B:	80 - 89	F:	59 or below
C:	70 - 79		

Borderline Grades: These grades will be evaluated with regard to attendance and mature conduct in class.

Blackboard Gradebook: Your grades will be accessible in MA Bb Gradebook. However, I consider Bb Gradebook the UNOFFICIAL grade because, at any time, it may not contain all your grades for the course. For your final score in this course, you will obtain at the end of the semester **through Texan Connect &/or Colleague.**

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Study:

You should normally spend approximately 2-3 hours outside of class to study for each hour of lecture. Some material will require more time than other material. Also, your mathematical background is a major factor in the time spent completing the homework. Try to study the assigned lesson as soon after the class meets if possible. With your greatest effort, try not to get behind on the homework! Refer to the “How to Study” sheet for further detailed studying suggestions.

Notebook: Homework, quizzes, tests, and other useful material should be kept in a notebook in which the notebook will be used as a reference and study guide. The notebook will be brought to class everyday! The following material will be placed in the notebook in the order listed:

- | | |
|--|--|
| <ul style="list-style-type: none"> • Cover sheet including Name, Class, and Semester, • Syllabus, • Procedure pages, • Assignment sheet, • Notes, | <ul style="list-style-type: none"> • Work, • Quizzes, • Tests, & • Miscellaneous |
|--|--|

Table 3 – Notebook Material

*To print all the material for your notebook, please visit the **MA Blackboard** page. All printed material needs to be read at least once during the term of this course.*

Tutoring:

Free tutoring is available in the Math-Engineering building (Levelland campus, room M116) and online. For the Math-Engineering building tutor, please remember to sign in when you seek help from a tutor. For free online tutoring, please refer to **CA Bb**.

Video Review Recordings:

Video Review Recordings for many topics in this course are available at the following web address

<http://www.youtube.com/playlist?list=PLXbDWrtfFWZFOCGqxo4tgqNK2ZFz17K6G>

The topics available for this class are**For Math Analysis:**

1. Linear Programming – Graphical Method
2. Linear Programming – Standard Simplex Method
3. Nonstandard Simplex

From College Algebra:

- | | | |
|---|---|-----------------------------|
| 8. Quadratic equations | 11. Inequalities | 12. Lines (Slopes, etc.) |
| 9. Functions | 13. Graphing | |
| 16. Exponential & Logarithmic Functions | | |
| 17. 2 x 2 Systems | 18. 3 x 3 Systems | 19. Systems of Inequalities |
| 20. m x n Systems | 21. Solving Systems of Equations using Matrices | |
| 22. Operations with Matrices | 23. Determinants | 24. Cramer’s Rule |

Table 4 – Math Video Reviews

Critical Dates:

<i>Jan 20</i>	Martin Luther King, Jr. Holiday	<i>April 11</i>	WEB Pre-registration for Summer & Fall Interim 2025
<i>March 17 – 21</i>	Spring Break	Final Exams	
<i>March 29</i>	EASTER	<i>May 6</i>	(10:15 – 12:15pm, Wednesday)
<i>April 24</i>	Last Day to Drop		

Table 5 - Special Dates

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VI. Responsibilities & Consequences

Student Responsibilities:

- Attend class and be aware of announcements made in class.
- Work homework problems early enough to seek help if needed.
- Form study groups.
- Get help from tutors, tapes, and/or the instructor.
- Read and know the attendance policy.
- All students are encouraged to implement good hygiene measures such as washing hands regularly, using hand sanitizer, and covering coughs/sneezes. Hand sanitizing stations are available across all SPC locations.
- **** Please, turn off cell phones and pagers during class! ****
 - If the instructor determines that activation of a cell phone, pager, PDA, Ipad, laptop, or any electronic device interrupts the lecture or classroom discussion or impedes the progress of any student then the instructor may ask the student to leave the class temporarily or permanently.
 - **No technologic devices such as cell phones, PDA's, etc. are to be used during tests or in-class quizzes.**
- **Follow the classroom policy, no food or drink allowed in the classroom if posted.**
- **In addition to the No Food or Drink classroom policy and in accordance to campus policy, no tobacco products are to be permitted and consumed in class.**
- **Do not dress for the beach or for bed.**
- **You will obtain your final grade for the class through Texan Connect &/or Colleague.**

Cell Phone Policy:

All students will, during each class period and for its duration, place and keep their cell phone in its deactivated state, provided that they are at the present time in possession of said device, face-down in the right-hand corner and on the top surface of their desk unless the cell phone is used as a laptop function. If a student's cell phone activates and/or the student engages in text messaging during class at anytime during the semester, the student, by the instructor's discretion, could be permanently dismissed from the class for the remainder of the semester. If a student's cell is activated during class and/or the student engages in text messaging determined by the instructor, and **the student chose not to place their phone on top of their desk as mentioned above** then the student will be dismissed from the class by the instructor permanently.

Academic Integrity:

The attempt of any student to present as his or her own any work which he or she has not honestly performed is regarded by the faculty and administration as a serious offense and renders the offender liable to serious consequences, possibly suspension. For more detail, see "Academic Integrity" and "Student Conduct" in the South Plains College General Catalog.

You are expected to work alone on all quizzes and tests. You are not allowed to use any electronic device other than your calculator during a quiz or test. If you choose to cheat, you will be withdrawn immediately from this class with a grade of "F."

Academic Misconduct:

Complete honesty is required from students in all facets of course work including homework assignments, tests, and the final exam. See the South Plains College Catalog for more detail.

Sanctions for Cheating or Plagiarizing:

A grade of "F" in the course will be assigned to any student caught cheating or plagiarizing; additional sanctions may also be considered. Students are responsible for understanding the meanings of the words cheating and plagiarizing.

VII. Questions:

I invite all your questions **except** the following:

1. I wasn't able to make it to class. Did I miss anything? (Yes.)
2. Is this going to be on the test? (Perhaps, not directly, but if the ideas were not important, I would not be discussing them in class.)
3. Do you have the test graded? (I normally have the tests graded by the next class day. However, there are times that I do not have them graded but I will have them graded as soon as I can.)

Verified Extenuating Circumstances

Death in the family, hospitalization, +COVID test, etc. with written proof.

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VIII. Objectives:

Course Objectives: Upon completion of this course and receiving a passing grade, the student will have mastered at least 70% of the course objectives. The course objectives state that the student will be able to:

- | | |
|---|--|
| a.) Solve and graph linear equations and inequalities. | b.) Solve quadratic and polynomial equations. |
| c.) Analyze quadratic and polynomial functions. | d.) Find the zeros, asymptotes, and domains of rational functions. |
| e.) Use exponential properties to solve exponential equations. | f.) Use the properties of logarithms to solve logarithmic equations. |
| g.) Solve systems of linear equations using substitution, elimination and graphing. | h.) Solve linear systems using matrices. |
| i.) Use matrix operations to solve matrix equations. | j.) Determine the inverse of a square matrix. |
| k.) Find the determinant of a matrix. | l.) Solve optimization linear systems using the simplex method. |
| m.) Solve financial mathematical problems of simple and compound interest. | n.) Solve financial mathematical problems of future and present value. |

IX. SPC Policies & Procedures

A. COVID:

If you are experiencing any of the following symptoms, please do not attend class and either seek medical attention or get tested for COVID-19.

- Fever or chills
- Cough, shortness of breath, difficulty breathing
- Sore throat
- Congestion or runny nose
- Muscles or body aches
- New loss of taste and smell
- Fatigue
- Headache
- Nausea or Vomiting
- Diarrhea

Please also notify DeEtte Edens, FNP-C, Associate Director of Health & Wellness, at dedens@southplainscollege.edu or 806-716-2376

1. SPC will follow the recommended 3-day isolation period for individuals that test positive.
 - a.) Please note that day 0 is the date of positive test. Day 1 begins the first full day after the date of positive result.
2. COVID reporting
 - a.) Please have students and employees notify DeEtte Edens, FNP-C if they have tested positive to verify dates before returning to class or work.
 - b.) The home tests are sufficient but students need to submit a photo of the positive result. The date of test must be written on the test result and an ID included in the photo. If tested elsewhere (clinic, pharmacy, etc.), please submit a copy of the doctor's note or email notification. Results may be emailed to DeEtte Edens, FNP-C at dedens@southplainscollege.edu.
 - c.) A student is clear to return to class without further assessment if they have completed:
 - The 3-day isolation period, symptoms have improved and
 - they are afebrile for 24 hours without the use of fever-reducing medication.
 - d.) HEALTH SCIENCE PROGRAMS ONLY: Due to clinical requirements, students in health science programs returning to class or clinical from a positive test will be required to wear a mask in the health sciences areas including offices, hallways, and classrooms, as well as in the clinical setting for a 10-day period from date of positive test.
3. Please instruct students and employees to communicate with DeEtte Edens prior to their return date if still symptomatic at the end of the 3-day isolation.
4. Exposed individuals will not be required to quarantine. If exposed, SPC does request individuals closely monitor themselves. If an individual does become symptomatic, please do not attend class or work and be tested.

B. Diversity:

In this class, the teacher will establish and support an environment that values and nurtures individual and group differences and encourages engagement and interaction. Understanding and respecting multiple experiences and perspectives will serve to challenge and stimulate all of us to learn about others, about the larger world, and about ourselves. By promoting diversity and intellectual exchange, we will not only mirror society as it is, but also model society as it should and can be.

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C. Disability Statement:

Students with disabilities, including but not limited to physical, psychiatric, or learning disabilities, who wish to request accommodations should notify the Disability Services Office early in the semester so that the appropriate arrangements may be made. In accordance with federal law, a student requesting accommodations must provide acceptable documentation of his/her disability to the Disability Services Office. For more information, call or visit the Disability Services Office at Levelland (Student Health & Wellness Office) 806-716-2577, Lubbock Centers (located at the Lubbock Downtown Center) 806-716-4675, or Plainview Center (Main Office) 806-716-4302.

D. Nondiscrimination Policy:

South Plains College does not discriminate on the basis of race, color, national origin, sex, disability or age in its programs and activities. The following person has been designated to handle inquiries regarding the non-discrimination policies: Vice President for Student Affairs, South Plains College, 1401 College Avenue, Box 5, Levelland, TX 79336. Phone number 806-716-2360.

E. Sexual Misconduct:

It is important for you to know that all faculty members are mandated reporters of any incidents of sexual misconduct. That means that I cannot keep information about sexual misconduct confidential if you share that information with me. Dr. Lynne Cleavinger, the Director of Health & Wellness, can advise you confidentially as can any counselor in the Health & Wellness Center. They can also help you access other resources on campus and in the local community. You can reach Dr. Cleavinger at 716-2563 or lclevinger@southplainscollege.edu or go by the Health and Wellness Center. You can schedule an appointment with a counselor by calling 716-2529.

F. Title IX Pregnancy Accommodations Statement:

If you are pregnant or parenting (paternal or maternal) with children under the age of 18 per [Texas Education Code 51.982](#) and Title IX you have a right to reasonable accommodations to help continue your education. To activate accommodations you must submit a [Title IX pregnancy and parenting accommodations request](#), along with specific medical documentation, to the Health and Wellness Center. Once approved, notification will be sent to the student and instructors. It is the student's responsibility to work with the instructor to arrange accommodations. Contact the Health and Wellness Center at 806-716-2529 or email rcanon@southplainscollege.edu for assistance.

G. Campus Concealed Carry:

Texas Government Code 411.2031, et al. authorizes the carrying of a concealed handgun in South Plains College buildings only by persons who have been issued and are in possession of a Texas License to Carry a Handgun. Qualified law enforcement officers or those who are otherwise authorized to carry a concealed handgun in the State of Texas are also permitted to do so. Pursuant to Penal Code (PC) 46.035 and South Plains College policy, license holders may not carry a concealed handgun in restricted locations. For a list of locations and Frequently Asked Questions, please refer to the Campus Carry page at: <http://www.southplainscollege.edu/campuscarry.php>
Pursuant to PC 46.035, the open carrying of handguns is prohibited on all South Plains College campuses. Report violations to the College Police Department at 806-716-2396 or 9-1-1.

H. AI use:

[Artificial Intelligence \(AI\) Policy](#)

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X. Course Outline

STEM Course Outline		
This schedule is tentative and subjective to change. Changes will be announced in class.		
Week	Date	Topics and Sections Covered
1	1/13, Mon	Introduction, Misc 1.1 Linear Equations & Inequalities
	1/15, Wed	1.2 Graphs & Lines
2	1/20, Mon	MLK, Jr.
	1/22, Wed	2.1 Functions
3	1/27, Mon	2.3 Quadratic Functions
	1/29, Wed	2.4 Polynomial & Rational Functions
4	2/3, Mon	2.5 Exponential Functions
	2/5, Wed	2.6 Logarithm Functions
5	2/10, Mon	4.1 <i>Systems of Linear Equations in Two Variables</i>
	2/12, Wed	TEST 1 (Equations & Functions)
6	2/17, Mon	4.2 Systems of Linear Equations & Augmented Matrices 4.4 Matrices: Basic Operations 4.3 Gauss-Jordan Elimination (GJE)
	2/19, Wed	4.3 Gauss-Jordan Elimination (GJE) contd.
7	2/24, Mon	4.3 Cramer's Rule
	2/26, Wed	5.1 <i>Graphing Linear Inequalities in Two Variables</i> 5.2 <i>Systems of Linear Inequalities in Two Variables</i>
8	3/3, Mon	TEST 2 (Systems of Equations)
	3/5, Wed	5.3 Linear Programming in Two Dimensions – A Geometric Approach
9	3/10, Mon	6.2 Simplex Method – Maximizing with Problem Constraints of form \leq
	3/12, Wed	6.3 Simplex Method – Dual Problem: Minimizing with Problem Constraints of form \geq
	3/17 – 3/21	Spring Break
10	3/24, Mon	6.3 Simplex Method – Dual Problem: Minimizing with Problem Constraints of form \geq contd.
	3/26, Wed	6.4 Simplex Method – Maximization & Minimization Problem Constraints
	3/28, Fri	EASTER
11	3/31, Mon	6.4 Simplex Method – Maximization & Minimization Problem Constraints contd.
	4/2, Wed	3.1 <i>Simple Interest</i> 3.2 <i>Compound & Continuous Compound Interest</i>
12	4/7, Mon	TEST 3 (Simplex Method)
	4/9, Wed	3.3 Future Value of an Annuity: Sinking Funds
13	4/14, Mon	3.3 Future Value of an Annuity: Sinking Funds contd.
	4/16, Wed	3.4 Present Value of an Annuity: Amortization
14	4/21, Mon	3.4 Present Value of an Annuity: Amortization contd.
	4/23, Wed	Mixture: Future Value & Present Value
	4/25, Fri	UIL – No office hours
15	4/28, Mon	Final Exam Review
	4/30, Wed	Final Exam Review
Finals	5/6, Wed	FINAL EXAM: 10:15 – 12:15pm

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ACKNOWLEDGMENTS

I owe a debt of gratitude to Charlene Perez, Professor of CIS, at South Plains College for tolerating my incessant number of questions and ideas all the while being at my occasional disposal during the semester I attended BCIS 1305 – Business Computer Applications which primarily aided in the shape and refinement of this syllabus in terms of all its bells and whistles.

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