

# Grayson College Mathematics Department

## Faculty Instructor's Syllabus

**Please Note: Due to extenuating circumstances, including public health issues, course and testing delivery methods, instructional schedules, housing contracts, campus procedures and/or operating hours may be altered, interrupted and/or ceased for a limited or extended period of time. Such changes will be posted on the College website.**

<b>Professor's Name:</b>	[Dr. Billye Cheek]	<b>Office Location:</b>	[SSC-202E]	<b>Phone:</b>	[(903) 415-2543]
<b>Email:</b>	[cheekb@grayson.edu]	<b>Office Hours:</b>	[TBD]	Or by appointment	

Your instructor may be reached through the Canvas Inbox, email, or phone. However, the easiest way to contact your instructor will be through the Inbox link in Canvas. You should receive a reply within 24 – 48 hours. Please resend your message should you not receive a reply within that timeframe. If you choose to contact me through [cheekb@grayson.edu], please tell me your name and the class you are enrolled in the subject line of your email message. Please know that I will only respond to messages sent via **Canvas** or your **Viking email** account.

<b>Course Title:</b>	Differential Equations	<b>Course Number:</b> MATH - 2320
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### Course Description:

Ordinary differential equations, including linear equations, systems of equations, equations with variable coefficients, existence and uniqueness of solutions, series solutions, singular points, transform methods, and boundary value problems; application of differential equations to real-world problems.

### Textbook and Required Material:

[A First Course in Differential Equations with Modeling Applications](#), Zill, 10<sup>th</sup> Edition, Brooks/Cole, Cengage Learning, 2013

ISBN-13: 9781111827052

### Remote or Online learners need basic technical skills to succeed.

#### Applications/tools you'll need:

- Access to a computer or laptop (equipped with a webcam and microphone is preferred)
- Grayson email address
- Internet access (high-speed internet connections are best for accessing streamed lecture videos)
  - If access to high-speed internet is a barrier, alternatives to view video content include: viewing in low definition setting, downloading video file to computer for later viewing, or reading lecture transcripts
- Access to word processing software such as Microsoft's Word
- Access to Excel
- Access to PowerPoint is preferred, contact instructor to see if this is needed
- Ability to convert a document to a PDF file format
- Access and ability to navigate Canvas

#### Skills you'll need:

- Ability to use a web browser to navigate the Internet
- Ability to check and disable popup blockers
- Ability to download and upload documents
- Ability to post discussions in Canvas
- Ability to attend Canvas Conferences at scheduled times

**Time Management:**

Take charge of your learning from the beginning of the course; allow no time for procrastination to set in. It is recommended that you:

- Log on to your course at least three or four times per week to stay on top of announcements, assignment due dates, and discussion forums
- Read the syllabus on the first day of the course; print off a hard copy or keep a digital copy on your mobile device to refer to throughout the course
- Record all dates for assignments, exams for the entire course in your calendar and add reminders

**Prerequisite(s):** This course is designed for students who have successfully completed MATH 2414.

**Corequisite(s):** NONE

**Credit Hours:** 3

**Lecture Hours:** 3

**Lab Hours:** 0

**Methods of Instruction:** Lecture/examples of problems, homework Q&A, videos (when applicable), online materials.

**Other Required Course Materials:**

You must have a scientific calculator for this course. Graphing calculators are **NOT** allowed. I recommend the TI-30X IIS. You will **NOT** be allowed to use your cell phone or any other electronic device that can be used for any purpose other than as a calculator.

You are **REQUIRED** to have an access code for WebAssign. The access code can be purchased from the Grayson College Bookstore or from WebAssign directly. **NOTE:** WebAssign grants automatic free access for the first 14 days of the course. After that it will prompt you to enter an access code or give the option purchase directly from the website. The WebAssign Class Key will be provided to you in your Canvas course.

**Student Learning Outcomes:** *(Upon completion of this course, students should be able to do the following.)*

1. Identify homogeneous equations, homogeneous equations with constant coefficients, and exact and linear differential equations.
2. Solve ordinary differential equations and systems of equations using:
  - a. Direct integration
  - b. Separation of variables
  - c. Reduction of order
  - d. Methods of undetermined coefficients and variation of parameters
  - e. Series solutions
  - f. Operator methods for finding particular solutions
  - g. Laplace transform methods
3. Determine particular solutions to differential equations with given boundary conditions or initial conditions.
4. Analyze real-world problems in fields such as Biology, Chemistry, Economics, Engineering, and Physics, including problems related to population dynamics, mixtures, growth and decay, heating and cooling, electronic circuits, and Newtonian mechanics.

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**Method of Evaluation:** *(Grade will be determined by averaging the individual components using the scale shown below.)*

Homework	10%
Quizzes	15%
Exams	75%

**Grading Scale:** A = 89.5 – 100    B = 79.5 – 89.4    C = 69.5 – 79.4    D = 59.5 – 69.4    F = 0 – 59.4

**Grade Posting:** Grades for each assignment will be posted in Canvas under the course Grades tab. These grades will be posted no later than 7 days after the posted due date. Because your quizzes and online assignments are auto-graded in WebAssign, you will receive immediate feedback on those assessments.

**Grading Rubric for Math Problems:**

The following table illustrates the way in which points will be deducted for errors made on assignments and exams.

Percentage of total point value to be deducted	Description of error(s)
0% - 30%	Minor Error <ul style="list-style-type: none"> <li>• Correct mathematical notation was not used.</li> <li>• The sequence of steps was not written in a logical and organized manner.</li> <li>• Variables were not identified.</li> <li>• Units were not designated.</li> <li>• The method of solution is correct, but there is a sign, arithmetic, copying, or similar minor error in the work.</li> <li>• Correct grammar was not used when a verbal response was required.</li> </ul>
30% - 70%	Significant Error <ul style="list-style-type: none"> <li>• The method could have worked; a correct start was made, but a substantial error or errors led to the wrong conclusion.</li> <li>• Poor notation, organization, or handwriting made it difficult to follow and understand for the reader.</li> <li>• A correct method was started, but not completed.</li> </ul>
70% - 100%	Major Error <ul style="list-style-type: none"> <li>• Instructions were not followed.</li> <li>• Method of solution was incorrect.</li> <li>• Problem was left blank.</li> </ul>

**Homework Policy:**

Homework assignments will be completed online via the WebAssign online homework platform. You must register on the WebAssign website using the access code you purchased. You will also need the class key provided by your professor in your Canvas course. When you first register on WebAssign, you will be granted free 14-day access. When that period expires, you will be prompted to purchase an access code or enter the code you purchased. There will be no make-ups for missed homework. Any missed assignments will receive a grade of zero. The lowest homework score will be dropped.

**Please be aware that technical problems do sometimes occur. If WebAssign's website is unavailable, this does not excuse you from completing the assignment by the deadline. Neither your instructor nor Grayson College may be held responsible for technical difficulties you may experience during the course. Complete your assignments in a timely manner to avoid last minute complications.**

Math is a cumulative subject that requires frequent practice in order to develop your skills. If one topic is confusing, then the next topic is likely to be more confusing. The general rule of thumb is to spend two hours studying for every hour spent in class. For a face-to-face class, this translates to six hours per week; however, for online courses, you can expect to spend at least 10-15 hours per week reading, watching videos, and completing assignments and tests. If math is not a strong subject for you, you may be spending more time per week to understand the material and complete the assigned work. Your proficiency with math and your success in this class will depend on active practice.

Textbook homework problems are also posted in Canvas for additional practice, but they are not required to turn in for a grade. Electronic access to the textbook is available in WebAssign. Feedback on non-graded work can be obtained from your professor, the Math Hub, or Upswing Tutoring.

**Syllabus Acknowledgment Assignment**

This is an assignment in which you need to read through the syllabus first. You may print out a copy of the pdf form of your syllabus under the "Syllabus" link on the left side of your screen. Please ask any questions you have about the syllabus. This assignment will count as a homework grade and will not be dropped.

**Quiz Policy:**

Quiz assignments will be completed online via the WebAssign online homework platform. There will be no make-ups for missed quizzes. Any missed assignments will receive a grade of zero. The lowest quiz score will be dropped.

**Please be aware that technical problems do sometimes occur. If WebAssign's website is unavailable, this does not excuse you from completing the assignment by the deadline. Neither your instructor nor Grayson College may be held responsible for technical difficulties you may experience during the course. Complete your assignments in a timely manner to avoid last minute complications.**

**Exam Policy:**

You will have four (4) unit exams and one (1) comprehensive final exam; the final exam will be recorded twice in the Canvas gradebook. At the end of the semester, the **lowest** exam grade will be dropped from the Canvas gradebook automatically. This policy ensures that the comprehensive final exam is a component of your final course grade.

Exams will be available in WebAssign according to the dates in your Canvas course. Exams will have a 2-hour time limit and will be proctored via Canvas Conferences. During exams, you will need a distraction free location. You will be allowed to have your scientific calculator. No textbooks, notes, other websites, or people should be visible. Please follow your instructor's directions regarding scheduling exams. Please see your professor in the case of technical issues.

You will have two (2) attempts on each question, and your best score will be saved.

You will **NOT** be allowed to use graphing calculators on exams. You will also **NOT** be allowed to use your cell phone or any other electronic device that can be used for any purpose other than as a calculator on a test.

**Late Work Policy:**

All online work is due by the listed due dates in WebAssign and Canvas at 11:59PM.

**Make-up Policy:**

Because each exam will be available for three (3) days, makeup exams are generally not granted. Extension of exam availability may be considered for extreme emergencies only (instructor decides what constitutes an extreme emergency).

**Attendance Policy:**

Academic success is closely associated with regular class attendance and course participation. All successful students, whether on campus or online, are expected to be highly self-motivated. All students are required to participate in courses regularly and are obliged to participate in class activities and complete and submit assignments following their faculty's instructions. Students taking courses during compressed semester timeframes such as mini-mester, summer sessions, and 8-week courses should plan to spend significantly more time per week on the course. Responsibility for work missed because of illness or school business is placed upon the student. Instructors are required to include in their syllabi the attendance policy for the courses(s) they teach. The college considers absences equal to or greater than 15% of the course's requirements to be excessive.

In order for students to be counted as having attended a class before the census date, the following guidelines are to be used:

- Physical attendance in class with an opportunity for instructor and student interaction
- Submission of an academic assignment
- Completion of an exam, interactive tutorial, or computer-assisted instruction
- Attendance at a study group assigned by the faculty
- Participation in an online discussion in the class
- Contact with a faculty member to ask a question

Attendance in this course will be taken weekly based on the guidelines mentioned above. You have until 11:59pm on Sunday to complete any of the items above to be counted as attending for that week. Attendance for the week will be recorded on Sundays in Canvas.

**Monitoring Online Activities:**

Student activity will be monitored several times per week using Canvas activity reports, Canvas discussion board activity, and analysis tools in WebAssign.

**Professionalism, Etiquette, and Netiquette:**

Professionalism is a set of behavioral skills that are directly transferable to the workplace and that gives a graduate distinctive value. Professional skills enable a more seamless transition from college life to professional life, and include:

- Respect for all individuals, groups, and people.
- Ability to handle stressful situations with professionalism.
- Punctuality and organizational skills.
- Ability to network and establish new relationships.
- Ability to contribute positively to a diverse team.

When communicating with your instructor or classmates online (e.g. through email, discussion forums, or other applications), be as civil and professional as you would in face-to-face interactions:

- Be respectful to those with whom you may disagree and avoid any language that may be construed as angry, hateful, or inappropriate. Please understand that the use of all capital letters in a message indicates aggressive language.
- Respect the privacy of anything that is communicated to you in confidence (i.e. never forward private emails to others without the sender's consent or understanding).
- Always review your messages for clarity and tone before sending an email or posting in a discussion forum.

**Resource Material:**

Any student enrolled in this class has access to the Math Hub located in the Student Success Center, room SSC-200, and can be reached at (903) 463 – 8663. The lab is staffed with faculty and tutors; in addition, it offers free tutorial help, calculators, and a computer area to watch math videos or work on your online math homework. For more information on the Math Hub (including an orientation video, a video showing how to get to the Math Hub on the Denison campus and hours of operation) go to the following web site: <https://www.grayson.edu/current-students/Academic%20Resources/student-labs/math-hub.html>

Due to COVID-19 precautions, the Math Hub will restrict face-to-face tutoring to occur by appointment only. Virtual tutoring will be available through the Math Hub and UPSWING. Please see the announcement in Canvas for instructions on how to access these resources.

**Disabilities Services:**

The College is committed to meeting the special needs of disabled students and coordinates with agencies such as Texas Department of Assistive and Rehabilitative Services and Texas Department of Human Resources to provide appropriate accommodations.

Students with documented disabilities should contact the Disabilities Services Coordinator in the Success Center preferably before classes start or as early in the semester as possible. Once appropriate documentation for the disability is received, the Disability Services Coordinator will coordinate delivery of approved accommodations with students and their instructors. The College makes the following services available to students with documented disabilities: tutoring, note taking, sign language interpreting, special testing conditions, taped textbooks, scribes, special/modified equipment, and other appropriate services.

**Drop/Withdrawal Regulation:**

Under section 51.907 of the Texas Education Code, "an institution of higher education may not permit a student to drop more than six courses, including any course a transfer student has dropped at another institution of higher education." Please consult your instructor before you drop a course, and check the current Grayson Registration Guide for the last official day to drop/withdraw from a course.

**Drop/Withdrawal Procedure:**

To drop this course, you will need to send me an email in Canvas with the following information:

1. Full name
2. Student ID number
3. Detailed reason for dropping
4. Best way to contact you outside of Canvas (for Registrar's use only)

You may receive an F if you do not finish this class and do not drop prior to the drop deadline.

**Religious Holy Days:**

Grayson College will allow students who are absent from class for the observance of a religious holiday to take an examination or complete an assignment scheduled for that day within a reasonable time after the absence. The form for requesting absence for holy days may be obtained from the Vice President for Student Services. "Religious holy day" denotes a holy day observed by a religion whose places of worship are exempt from property taxation under section 11:20, Tax Code. A student who is excused under this section may not be penalized for the absence, but the instructor may appropriately respond if the student fails to satisfactorily complete the assignment or examination.

**Evaluation of Instruction:**

Grayson College seeks to improve the learning experience of all students. To assist in evaluating courses, students will be requested to complete an online evaluation-of-instruction near the end of the semester.

**Student Responsibility**

You have already made the decision to go to college; now the follow-up decisions on whether to commit to doing the work could very well determine whether you end up working at a good paying job in a field you enjoy or working at minimum wage for the rest of your life. Education involves a partnership that requires both students and instructors to do their parts. By entering into this partnership, you have a responsibility to show up for class, do the assignments and reading, be engaged and pay attention in class, follow directions, and put your best effort into it. You will get out of your experience here exactly what you put into it – nothing more and nothing less.

**Student Code of Conduct**

Students are expected and required to maintain classroom decorum that includes respect for other students and the instructor. Any student not following this rule will be warned in private and if there is no change in the behavior, the student will be asked to leave the class or receive disciplinary actions according to the Student Handbook - <https://grayson.edu/current-students/Docs/Student-Handbook-20-21.pdf>

Students are expected to have prompt and regular attendance, and an attitude that seeks to take full advantage of the educational opportunity.

Any behavior that disrupts the learning environment will not be tolerated. Disruptive behavior includes but is not limited to talking while another student or the professor is speaking. Cell phones should be turned off during class, this includes texting. If you truly have an emergency situation, put the phone in silent or vibrate mode and leave the room to answer if you must.

**Academic Integrity Policy**

The faculty expects from its students a high level of responsibility and academic honesty. Because the value of an academic degree depends upon the absolute integrity of the work done by the student for that degree, it is imperative that a student demonstrates a high standard of individual honor in his or her scholastic work.

Scholastic dishonesty includes but is not limited to cheating, plagiarism, collusion, and the submission for credit of any work or materials that are attributable in whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts. Plagiarism, especially from the web, from portions of papers for other classes, and from any other source is unacceptable, and will be dealt with under the college's policy on plagiarism (see GC Student Handbook for details). Grayson College subscribes to turnitin.com, which allows faculty to search the web and identify plagiarized material.

Academic honesty will be ensured by the fact that 70% of your course grade will be earned while in a proctored and secured environment. If caught cheating (looking at another student's test, using notes within the test, or using an unauthorized software program) while taking a test in a proctored testing center you will be disciplined as follows:

- 1st offense will result in a grade of 0 for the exam in which the offense was committed along with a written letter to be added to his/her academic file.
- 2nd offense will result in a grade of F for the course along with a written letter to be added to his/her academic file and given to the dean of academics for further review.

**Plagiarism Policy**

Plagiarism is a form of scholastic dishonesty involving the theft of or fraudulent representation of someone else's ideas or words as the student's original work. Plagiarism can be intentional/deliberate or unintentional/accidental.

Unintentional/Accidental plagiarism may include *minor* instances where an attempt to acknowledge the source exists but is incorrect or insufficient. Deliberate/Intentional plagiarism violates a student's academic integrity and exists in the following forms:

- Turning in someone else's work as the student's own (such as buying a paper and submitting it, exchanging papers or collaborating on a paper with someone else without permission, or paying someone else to write or translate a paper),
- Recycling in whole or in part previously submitted or published work or concurrently submitting the same written work where the expectation for current original work exists, including agreeing to write or sell one's own work to someone else,
- Quoting or copy/pasting phrases of three words or more from someone else without citation,
- Paraphrasing ideas without citation or paraphrasing incompletely, with or without correct citation, where the material too closely matches the wording or structure of the original,
- Submitting an assignment with a majority of quoted or paraphrased material from other sources, even if correctly cited, when original work from the student is expected,
- Copying images or media and inserting them into a presentation or video without citation,
- Using copyrighted soundtracks or video and inserting them into a presentation or video without citation,
- Giving incorrect or nonexistent source information or inventing source information,
- Performing a copyrighted piece of music in a public setting without permission,
- Composing music based heavily on someone else's musical composition.

**GC Title IX Policy**

GC policy prohibits discrimination on the basis of age, ancestry, color, disability, gender identity, genetic information, nation origin, race, religion, retaliation, serious medical condition, sex, sexual orientation, spousal affiliation and protected veterans status.

Furthermore, Title IX prohibits sex discrimination to include sexual misconduct: sexual violence (sexual assault, rape), sexual harassment and retaliation.

For more information on Title IX, please contact:

- ❖ Dr. Molly M. Harris, Title IX Coordinator (903) 463-8714
- ❖ Ms. Logan Maxwell, Title IX Deputy Coordinator – South Campus (903) 415-2646
- ❖ Mr. Mike McBrayer, Title IX Deputy Coordinator – Main Campus (903) 463-8753
- ❖ Website: <http://www.grayson.edu/campus-life/campus-police/title-ix-policies.html>
- ❖ GC Policy Department: (903) 463-8777 – Main Campus; (903) 415-2501 – South Campus
- ❖ GC Counseling Center: (903) 463-8730
- ❖ For Any On-campus Emergencies: 911

Grayson College campus-wide student policies may be found on our Current Student Page on our website: <http://grayson.edu/current-students/index.html>

**GC ALERT & EMERGENCY MANAGEMENT**

Current students of Grayson College, Faculty, Staff, and the general public can register to receive voice and email messages via GC Alert, the college's emergency notification system. This web-based service sends high-priority messages during urgent situations. Manage your contact profile to the service through GC Alert. You can update your contact information for receiving alerts, and you can add, delete, or update your devices. For more information, please visit the website at <http://grayson.edu/campus-life/campus-police/emergency-management.html>

**Grayson College is not responsible for illness/injury that occurs during the normal course of classroom/lab/clinical experiences.**

**These descriptions and timelines are subject to change at the discretion of the Professor.**

**Grayson College campus-wide student policies may be found on our Current Student Page on our website:**  
<http://grayson.edu/current-students/index.html>

**In case of inclement weather, emergency closings, or other unforeseen disruptions to scheduled classes, student must log onto their Canvas accounts for directions on where or how to continue their coursework.**

### **Course Calendar for MATH – 2320 (Subject to Change)**

<b>Week 1</b>	Introduction Section 1.1: Definitions and Terminology Section 1.2: Initial-Value problems
<b>Week 2</b>	Section 2.1: Solution Curves Without a Solution (read; not on exam) Section 2.2: Separable Equations Section 2.3: Linear Equations
<b>Week 3</b>	Review for Exam 1 <b>Exam 1 (1.1, 1.2, 2.2, 2.3)</b>
<b>Week 4</b>	Section 2.4: Exact Equations Section 2.5: Solutions by Substitutions Section 2.6: A Numerical Method
<b>Week 5</b>	Section 3.1: Linear Models Section 3.3*: Modeling with Systems of First-Order DEs
<b>Week 6</b>	Section 4.1: Preliminary Theory – Linear Equations Section 4.2: Reduction of Order
<b>Week 7</b>	Review for Exam 2 <b>Exam 2 (2.4 – 2.6, 3.1, 4.1, 4.2)</b>
<b>Week 8</b>	Section 4.3: Homogeneous Linear Equations with Constant Coefficients Section 4.4: Undetermined Coefficients – Superposition Approach Section 4.6: Variation of Parameters
<b>Week 9</b>	Section 4.7: Cauchy-Euler Equation Section 5.1: Linear Models – Initial-Value Problems
<b>Week 10</b>	Review for Exam 3 <b>Exam 3 (4.3, 4.4, 4.6, 4.7, 5.1)</b>
<b>Week 11</b>	Section 6.2: Solutions About Ordinary Points Section 7.1: Definition of the Laplace Transform Section 7.2: Inverse Transforms and Transforms of Derivatives
<b>Week 12</b>	Section 7.3: Operational Properties I Section 7.4: Operational Properties II Section 7.6: Systems of Linear Differential Equations
<b>Week 13</b>	Section 8.1: Preliminary Theory – Linear Systems Section 8.2: Homogeneous Linear Systems Section 8.3: Nonhomogeneous Linear Systems
<b>Week 14</b>	Review for Exam 4 <b>Exam 4 (6.2, 7.1 – 7.4, 7.6, 8.1 – 8.3)</b>
<b>Week 15</b>	Review for Final Exam
<b>Week 16</b>	<b>Comprehensive Final Exam</b>

\* The models in Section 3.3 will be covered in detail in coming sections and will be tested over at that time. Read for now, and refer to it when solving them is covered.