MATH 2320 - DIFFERENTIAL EQUATIONS

INSTRUCTOR: Ruth Seidel
Office: L228 (Library Building)
Office hours: MW 2:00 - 3:00 pm, 5:30 - 6:00 pm
TT 1:30 - 5:00 pm
MTWT after 6:00 pm and Fridays by appointment only

CONTACT INFORMATION:
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e-mail: rseidel@blinn.edu

During the week (Monday - Thursday), response to e-mail messages will take at least 48 hours. Messages left on voice-mail usually receive a response within 24 hours. If you leave your phone number in a voice-mail message please speak the number slowly and then repeat it to insure that I can return your call. E-mail and voice-mail messages left any time after 6:00 pm on Thursday through Sunday evening will receive no response until Monday evening. Information concerning grades cannot be given out over the phone or by e-mail. If you miss class for any reason and wish to obtain information concerning class activities or homework assignments, you must speak with me in person during office hours, not by phone or by e-mail.

COURSE INFORMATION

1. Course Description: Differential equations; study of linear ordinary differential equations, solutions using series, LaPlace’s transforms, and systems of differential equations. Three class hours per week. Credit: Three semester hours.

2. Prerequisites: MATH 2415 with a grade of ‘C’ or better.

3. Core Course: This is a Core Course in the 42-hour Core of Blinn College. As such, students will develop proficiency in the appropriate Intellectual Competencies, Exemplary Educational Objectives and Perspectives. The URL for the Blinn College Core Curriculum web site is www.blinn.edu/corecurriculum.

4. Course Objectives: The student should perform at a 70% or better average on homework, quizzes, and exams covering the topics listed in the course description and those topics included in the daily schedule.

5. Course Content: Introduction
   First-Order Differential Equations and Mathematical Models
   Linear Second-Order Equations
   Laplace Transforms
   Series Solutions and Matrix Methods

CALCULATOR POLICY AND ADDITIONAL RESOURCES

1. No graphing calculators may be used on exams or quizzes but the student will need a graphing calculator for course homework or a scientific calculator on some exams. I will use the TI-83 in class when required. Students may use other graphing calculators, however each student is responsible for learning how to operate them. Symbolic calculators such as the TI-89 and TI-92 are not allowed.

2. The course packet (available in the copy center, first floor of the G building) and a stapler are required. A three-ring binder or folder is suggested.

3. Additional material for this course, including textbook, solutions manual, and other items, are available on line or in the library at the reserve shelf. All reserve material must be used in the library.

EXAM SCHEDULE

<table>
<thead>
<tr>
<th>Exam</th>
<th>Date</th>
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<tbody>
<tr>
<td>Exam 1</td>
<td>Feb. 11</td>
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<tr>
<td>Exam 2</td>
<td>March 4</td>
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<tr>
<td>Exam 3</td>
<td>March 27</td>
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<tr>
<td>Exam 4</td>
<td>April 15</td>
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<tr>
<td>Exam 5</td>
<td>April 29 or April 30 from 6:30 to 9:30 pm</td>
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<tr>
<td>Final</td>
<td>May 6, 12:45 pm</td>
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All material and dates are subject to change.

GRADING

5 exams @ 80 points each  400 points  Tentative grade assignments:
Homework, in-class work and attendance, quizzes (2 lowest grades dropped)  100 points  A: 585 - 650 pts
Final (comprehensive)  150 points  B: 520 - 584 pts
Total  650 points  C: 455 - 519 pts
  D: 390 - 454 pts
  F: less than 390 pts

EXAMS AND QUIZZES

1. All exams and quizzes must be taken in class during the regularly scheduled class time. Students will be allowed one hour and 15 minutes for major exams and, unless otherwise stated, no more than 10 minutes for in class quizzes.

2. On exams and quizzes, students will be held responsible for all material covered in the text assignments, class lectures, and homework.

3. Samples of exams given during previous semesters are available online through eCampus.
4. All exams will be closed book and closed notes.

5. Grading on exams, quizzes, and homework will be based on the work shown for each problem. Partial credit may be assigned at my discretion and only if I feel that a sufficient understanding of the material has been demonstrated by the student.

6. All papers submitted must be neat, legible and properly formatted. Problems must be submitted in the order they are assigned. If I cannot read your writing, if you fail to use correct mathematical notation for all work and answers, or if the sequence of steps required to solve a problem is incomplete or disorganized, you will receive zero credit for the problem, regardless of whether the answer is correct or not.

7. Each student is responsible for looking over all returned, graded assignments. If the student believes that an error has been made on any grade for a homework assignment, quiz, or exam, the student has two class days from the day on which the paper is returned to the entire class to identify these errors or problems to the instructor. If the student does not discover an error or chooses not to discuss the grading of any paper within two class days, then the grade will stand and will not be changed under any circumstances.

**CLASS ATTENDANCE**

1. The College District believes that class attendance is essential for student success; therefore, students are required to promptly and regularly attend all their classes. Each class meeting builds the foundation for subsequent class meetings. Without full participation and regular class attendance, students shall find themselves at a severe disadvantage for achieving success in college.

2. If a student has one week’s worth of absences during the semester, he/she will be sent an e-mail by the College requiring the student to contact his/her instructor and schedule a conference immediately to discuss his/her attendance issues. If the student accumulates a total of two weeks worth of absences, he/she will be administratively withdrawn from class.

3. The only excused absences are college sponsored activities, religious holy days, military service, and a high school student representing the independent school district at an official institutional function. The student must notify the instructor in writing not later than the 15th day of the semester concerning the specific date(s) that the student will be absent for any religious holy day(s). If a student must miss a class, it is the students responsibility to learn the missed material -- it will not be covered again during class time.
4. Illness and/or emergency (even with a doctor’s note) does not constitute an excused absence: I retain the right to determine whether an absence is authorized as far as make-up work is concerned, and will note in writing if the absence is authorized (see make-up policy). If a student must miss a class, it is the student’s responsibility to obtain all class notes from a fellow student and learn the missed material. Once a student has obtained and reviewed the class notes from the missed class day he/she may use scheduled office hours to receive additional help with the missed material.

5. Any student who chooses to “Q-drop” the course must withdraw by contacting the enrollment services office on or before April 12, 2013. Any student dropping after this date will receive a grade of “QF”. In order to receive a “QF” the student must drop the class by 5:00 pm, May 1, 2013.

6. The roll will be taken every class meeting at the beginning of class and/or at the end of class. Any student who is not in attendance at both the beginning of class and at the end of class when roll is taken will be counted as absent. Any student who misses class will still be held responsible for all the material covered at that class meeting, including all assignments given out that day. All changes to the syllabus and daily schedule will be announced during regularly scheduled class times. Without exception, all students are held responsible for every announced change.

7. If you leave before class is dismissed or leave the classroom at any time during the lecture for any reason, it will be counted as a zero grade on the daily homework and/or quiz grade unless you can demonstrate that the reason for leaving class was an emergency.

8. Use of cell phones is prohibited in the classroom. If you use your cell phone any time during the class period, you will receive a zero grade on the daily in-class exercise, homework, and quiz grade. In addition, since you are not fully participating in class while using a cell phone, you will be counted as absent on that day. If four such violations of cell phone use are recorded, you will be dropped from the course.

9. Habitual tardiness will affect your attendance grade. If you come in after roll is taken, you will be marked as absent unless you speak with me immediately after class. If you are less than 5 minutes late and you speak to me before I leave the classroom, you will be marked as “tardy”. Three tardies will constitute one absence. If you are more than 5 minutes late, it is your responsibility to convince me that you should not be marked as absent. If you do not discuss the reason for being late before I leave the classroom, you will be marked as absent.
MAKE-UP POLICY

1. For missed exams, a single, comprehensive make-up exam will be allowed for absences that include, but are not limited to, official Blinn activities, observance of religious holy days (the student must submit a written letter within the first 15 class days of the semester), illness (the student must be under a doctor’s supervision), and death in the family. An absence on the day of an exam will result in a grade of zero for that exam regardless of the reason unless the following procedure is completed: Any student who is absent on the day that an exam is administered and who wishes to receive a nonzero grade must: (i) speak with me directly, either in person or by phone within 24 hours from the time that the exam is officially scheduled (a voice-mail or e-mail message is not acceptable); and (ii) provide a written, verifiable explanation of the absence within two class days from the scheduled date of the exam. Upon verification, the student will be scheduled for a makeup exam to be given in the Learning Center on May 1, 2013.

2. No student will be allowed to make-up more than one missed exam.

3. Short quizzes, homework, and in class work will be administered frequently. Since two of the lowest homework/quiz grades will be dropped, no make-ups for these will be given under any circumstances. A missed quiz, homework assignment, or in class work grade due to an absence receives a grade of zero and may be used as one of the “dropped” grades.

4. Unless otherwise stated, course packet homework will be due at the beginning of the class period. This means that all assignments must have been placed on the front desk by the time I start class. I will not ask for these assignments; it is the student’s responsibility to be sure that they are submitted on time. Homework assignments from the course packet that are submitted after class has started will not be graded and will receive a grade of zero, regardless of circumstances.

5. Unexcused absences or scheduled excused absences do not excuse a student from turning in assignments on time. In these cases, assignments should be submitted early, or arrangements made to have them delivered to me on time. If you miss class for any reason and wish to obtain information concerning class activities or homework assignments, you must contact me in person during office hours, not by phone or by e-mail. Once an assignment is made, every student is responsible for due dates; I will not be responsible for reminding you when assignments are due.
**CLASSROOM POLICY**

1. Members of the Blinn College community, which includes faculty, staff and students, are expected to act honestly and responsibly in all aspects of campus life. Blinn College holds all members accountable for their actions and words. Therefore, all members should commit themselves to behave in a manner that recognizes personal respect and demonstrates concern for the personal dignity, rights, and freedoms of every member of the College community, including respect for College property and the physical and intellectual property of others.

2. If a student is asked to leave the classroom because of uncivil behavior, the student may not return to that class until he or she arranges a conference with the instructor; it is the student’s responsibility to arrange for this conference.

3. Please do not make a habit of being late or make a habit of taking breaks (leaving and entering the classroom) during the lecture period. It disrupts class and is a disservice to your classmates. I will count habitual tardiness against your attendance as well as your participation grade on in-class assignments and your grade on quizzes. If you come in after roll is taken, it is your responsibility to convince me why you should receive any grade other than zero on the daily participation grade on in-class work. **If you leave before class is dismissed or leave the classroom during the lecture for any reason, it will be counted as a zero grade on the daily in-class exercise or quiz grade** unless you can demonstrate that the reason for leaving class was an emergency.

4. If a quiz or exam has already begun and you come in late, you will not be allowed to take or make up the quiz, nor will you be allowed to make up the lost time on the exam.

5. Please ask questions if you do not understand the material being discussed during the lecture. If you need clarification on a particular topic, the chances are someone else in the class does as well. The only dumb question is the one that you know you should have asked and didn’t. In general, questions should be directed to the instructor and not other students. Discussions between students that occur during the lecture are distracting to fellow students and may prevent them from deriving maximum benefit from the lecture.

6. All students are expected to behave courteously to both instructor and fellow students. Students displaying disruptive behavior such as talking loudly and out of turn, making rude or unwarranted comments, or holding conversations with other students during lecture, will be required to meet with me after class to discuss appropriate classroom behavior.
7. Turn OFF all cell phones, pagers, or other electronic devices (PDAs, iPods, MP3 players, Walkmans, PSPs, Gameboys, laptops etc.) and put them out of sight BEFORE entering class:
   a. This does not mean to turn your phone on "silent" or "vibrate" - turn it OFF.
   b. You may not take any of these devices out while in the classroom. You may not have them out before class or during any breaks.
   c. You may not receive a call during class (even if you excuse yourself), you may not check to see if you have received a call, and you may not text-message.

If any electronic device is taken out while you are in the classroom, you will receive a grade of zero for the daily work, the homework submitted that day, any quiz, or test. In addition, each violation will count as one of the four absences you are allowed for the semester.

8. Any student's pager or phone that goes off during a quiz or exam will receive a grade of zero on the quiz (usually a loss of five points) and will be penalized one letter grade (usually a loss of ten points) on the exam.

9. **No food, drink or tobacco products are allowed in the classroom.**

**POLICY FOR HOMEWORK AND IN-CLASS WORK**

1. Graded homework assignments and in-class work will be assigned throughout the semester. Due dates will be given when the assignments are announced in class. If you are absent from the classroom when problems are assigned, you are still expected to submit the assignment on the given due date.

2. Since the homework will account for a portion of the final grade in the course, you must do your own work. While it is acceptable to consult with each other on these assignments, it is **not** acceptable to copy another student’s work or to allow other students to copy your work. This is a form of plagiarism and will result in a penalty that includes (but is not limited to) a grade of zero on that assignment for all parties involved.

3. **Homework Assignments from the course packet**

The homework assignments from the course packet are due at the beginning of class, no exceptions. These assignments must be placed on the front desk prior to the start of class. Any assignment submitted after class has begun, will receive a grade of zero. Assignments not submitted on time due to car trouble, illness, tardiness or any other reason will receive a grade of zero. There is **no** make up for a homework assignment.
Often the results from these homework assignments will be used during the class lecture on the day that they are due so you must keep a copy of the completed assignment with you for use during the lecture. Therefore, you will submit a xerox copy of the completed assignment at the beginning of class unless otherwise instructed. You may not submit the original; only the xerox copy will receive a grade. If an original is submitted, it is given a grade of zero.

4. Textbook Assignments from the Daily Schedule

The text assignments given on this daily schedule must be done on loose leaf paper (not spiral bound notebooks) and brought to every class meeting. All the pages containing the solutions to the assigned problems for a particular day must be stapled together before class begins. All work and answers must be given in proper mathematical notation. Failure to use correct mathematical notation will result in a loss of credit, regardless of the final answer.

These problems will be graded based on the work you show, not just on the answers, so every solution must be legible and have enough work shown in correct mathematical notation to demonstrate the mathematical and inductive reasoning you use to solve the problem. Zero credit will be given for problems that do not include written work. The due date for these homework assignments will be announced in class. Any assignment submitted after the due date will receive a grade of zero.

SCHOLASTIC DISHONESTY

Students caught cheating on any assignment, quiz or exam in this course will be assessed a penalty that will range in severity from an F (or zero) on the particular activity involved to an F for the course. Any student assigned an F for cheating has one week from the time that the assignment, quiz or exam is returned to the class to dispute the grade. After one week, it will be assumed that the student has accepted the grade, and no changes will be made in the grade. Grades received as a penalty for cheating will not be dropped or replaced.

For the purpose of this course, cheating will be defined as (but not limited to) access or use of unauthorized material during exams and quizzes, collaboration between students during exams, quizzes, and assignments for which group work is not allowed, frequent perusal of another student's work during exams and quizzes, copying other student's work or allowing other students to copy your work on any assignment, quiz or exam, and having unauthorized programs or other information stored on calculators when these calculators are accessible during an exam or quiz. Students who cheat and students who facilitate cheating when they allow other students access to their own work when it is not allowed will be subject to the same penalty.
ACCOMMODATIONS FOR STUDENTS WITH DISABILITIES:

Blinn College is dedicated to providing the least restrictive learning environment for all students. Support services for students with documented disabilities are provided on an individual basis, upon request. Requests for services should be made directly to the Office of Disability Services serving the campus of your choice. For the Bryan campus, the Office of Disability Services (Administration Building) can be reached at (979)209-7251. The Brenham, Sealy and Schulenburg campuses are served by the Office of Disability Services on the Brenham campus (New Administration Building Room 104) and can be reached at (979)830-4157. Additional information can be found at www.blinn.edu/disability.

In order to receive accommodations on exams or assignments, students must provide an accommodations request from Disability Services, make an appointment to meet with the instructor during posted office hours, and discuss what accommodations are appropriate for the course. Proper documentation should be provided to Disability Services so that this can be done in a timely manner. Accommodations are not retroactive and no accommodations will be granted until all paper work is completed.

Student Learning Outcomes: At the completion of the course, the student will:

On a written exam, a student will be able to approximate the solution to an IVP for a first order differential equation using numerical methods.

On a written exam, a student will be able to identify and solve separable, linear, and exact first order differential equations and construct and solve the first order differential equations for population models, mixing problems, heating and cooling, Newtonian mechanics, and electric circuits.

On a written exam, a student will be able to solve homogeneous second order linear equations with constant coefficients when the roots of the characteristic equation are real and distinct, repeated, and complex, analyze the relationship between linearly independent functions, fundamental solutions of differential equations and the Wronskian, solve non-homogeneous second order linear equations with constant coefficients when the roots of the characteristic equation are real and distinct, repeated, and complex and solve non-homogeneous second order linear equations using the methods of undetermined coefficients and variation of parameters.

On a written exam, a student will be able to compute the Laplace transform and the inverse Laplace transform of a function and solve initial value problems using the Laplace transform method.

On a written exam, a student will be able to find series solutions of second order linear equations and analyze series solutions near ordinary and regular singular points.

On a written exam, a student will be able to determine whether vectors are linearly independent or linearly dependent, compute eigenvalues and eigenvectors of a matrix and find the general solution of homogenous linear systems with constant coefficients.