

MATH 2306: Ordinary Differential Equations

Summer Semester 2020

Instructor – Andrew McMorran

| CRN | Days | Time | Course Num/Sec | Location |
|-------|------|-----------------|----------------|----------|
| 51017 | TTh | 5.00pm – 7.45pm | MATH 2306/54 | On Line |

Catalog Course Description: 3-0-3

Prerequisite: A grade of “C” or better in Math 2202 (Calculus II)

An introduction to the theory of ordinary differential equations (ODEs), methods of solving first and higher order linear differential equations and linear systems, some applications in the sciences and engineering, the Laplace transform and its application in solving differential equations and linear systems, stability analysis and Euler’s numerical algorithm.

Learning Outcomes:

Upon successfully completing this course students should be able to:

1. Solve special types of first order ordinary differential equations, including separable equations, linear first order equations, Bernoulli's equation, exact equations, etc.
2. Solve second and higher order homogeneous and nonhomogeneous linear equations and linear systems with constant coefficients by using the methods of undetermined coefficients and variation of parameters, and apply the methods to solve problems in applications.
3. Find Laplace transforms and inverse Laplace transforms and apply these to solve linear differential equations and linear systems.

Instructor Information:

Instructor: Andrew G. McMorran

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Instructor Policies for this course

- **Availability**

On Line Office Hours: TTh 2:00pm – 4:45pm

- **Class Meetings**

TTh, 5:00-7:45pm (5:00-6:20pm Lecture, 6:20-6:30pm Break, 6:30-7:45pm Lecture)

- **Communication Rules**

In any classroom setting there are communication rules in place that encourage students to respect others and their opinions. In an online environment the do's and don'ts of online communication are referred to as **Netiquette**. As a student in this course you should:

- Be sensitive and reflective to what others are saying.
- **Avoid typing in all capitals** because it is difficult to read and is considered the electronic version of 'shouting'.
- Don't flame - These are outbursts of extreme emotion or opinion.
- Think before you hit the post (enter/reply) button. You can't take it back!
- Don't use offensive language.
- Use clear subject lines.
- Don't use abbreviations or acronyms unless the entire class knows them.
- Be forgiving. Anyone can make a mistake.
- Keep the dialog collegial and professional, humor is difficult to convey in an online environment.
- Always **assume good intent** and **respond accordingly**. If you are unsure of or annoyed by a message, wait 24 hours before responding.

- **Course assignments requirements**

Your course grade will be determined from the scores on three class tests and a final examination. These items will be weighted as follows:

3 Class Tests – 25% each

Final Examination – 25%

- **Due dates for assignments, exams, laboratory exercises, etc.**

Test 1 (80 mins) – Thursday 4th, June (5:00pm – 6:20pm)

Test 2 (80 mins) – Thursday 18th, June (5:00pm – 6:20pm)

Test 3 (80 mins) – Thursday 2nd July (5:00pm – 6:20pm)

- **Final exam date, time and place**

Final Exam (2 hrs) – Thursday 16th July (5:00pm – 7:00pm)

- **Grading policies and procedures**

A distribution of weighted student scores will be used to determine course letter grades.

W = weighted score as a %
= (T1 + T2 + T3 + F)/4

- **Policies concerning late papers or assignments, missed exams, and quizzes (scheduled and unscheduled)**

No early tests will be administered. In the event that you are unable to take a scheduled test then you must do the following (i) notify the instructor by no later than midnight of the day on which the test is being administered of your absence, and (ii) present sufficient verifiable evidence of acceptable, extenuating, and unavoidable circumstances. If you fulfill both of these requirements then a make-up test will be administered. In the event that these two requirements are not satisfied a penalty test score will be assigned.

- **Required materials (including texts, calculators, and library reserve readings)**

Textbook: “Fundamentals of Differential Equations”, Eighth Edition, by Nagle, Saff, and Snider, Addison-Wesley, ISBN-13: 978-0321747730, ISBN-10: 0321747739

Material covered: Chapters 1, 2, 3, 4, 5, 7 with additions and deletions.

Calculator: Where permitted any device belonging to the TI-83/TI-84 pool of Calculators (or an instructor approved equivalent) may be used. You must be able to calculate derivatives and integrals by hand.

- **Schedule of lectures, keyed to textbook content**

Weekly Schedule of Topics (Approximate)

Week 1 – 1.1, 1.2, 1.4, 2.2, 2.3, 2.4

Week 2 – 2.4, 2.6, Test 1, 3.2

Week 3 – 3.2, 3.4, 3.5, Reduction of Order, 4.2

Week 4 – 4.2, Homogeneous Linear Equations, Test 2, The Method of Undetermined Coefficients

Week 5 - The Method of Undetermined Coefficients, 4.6, 5.2, 4.9

Week 6 – 4.9, 4.10, 5.7, Test 3, 7.2

Week 7 – 7.3, 7.4, 7.5, 7.6

Week 8 – 7.9, Review, Final Exam

- **Student Responsibility**

Distance learning requires more individual discipline than traditional classes, and requires that you have at least some control over your time and schedule. It is not easier or less time than face-to-face courses. During each week, students are expected to:

- Check the D2L course website regularly;
- As instructed, read over class materials prior to on-line class meetings;
- Complete assigned homework prior to taking examinations;
- Complete and submit copies of assigned tests and the final examination on time.

- **Technical Requirements**

D2L Brightspace supports both Chrome and Firefox. Of these two browsers Chrome is preferred when working with Collaborate Ultra. You should allow pop-ups for D2L Brightspace.

Upon the completion of an assignment you will be requested to submit a copy of your work. There is a free app called CamScanner (you only pay if you wish to remove the watermark) that can easily be added to a mobile device. Using CamScanner you will be able to create a copy of a document in the form of a single pdf.

- **Tips for Effective Online Learning**

For an online class, students can really enjoy the benefits of learning at your own pace and in whatever environment that you choose. Below are some tips for effective online learning:

- **Check the D2L course website regularly.** Always be aware of the current status of the course. It might be helpful to subscribe to the RSS feeds within the News Tool, sign up for text message alerts, or subscribe to your posts within the Discussion Tool. By taking advantage of the tools within the environment and the posted learning material, you can maintain an enhanced learning experience.
- **Work closely with your instructor.** If you have any questions, please contact me immediately. The best way to contact me is via email: amcmorra@kennesaw.edu
- **Begin your work early.** If you can start a task early, don't start late. Assuming you spend the same amount of time completing the task, starting later will be much more stressful than starting early. Never wait until the last minute to begin an assignment! You'll have no turn around time if you need help or something happens.

- **Turnitin**

Students agree that by taking this course all required papers may be subject to submission for textual similarity review to Turnitin.com for the detection of plagiarism. All submitted papers will be included as source documents in the Turnitin.com reference database solely for the purpose of detecting plagiarism of such papers. Use of the Turnitin.com service is subject to the Terms and Conditions of Use posted on the Turnitin.com site.

- **What is Plagiarism?**

Plagiarism is defined as the practice of taking someone else's work or ideas and passing them off as one's own. If you are unaware or uncertain on how to properly cite a particular source, please do not neglect to add the citation—that is considered plagiarism.

If you have questions on how to cite your work, please contact me immediately! For more information, please refer to the "Plagiarism Policy" under the *University Policies* section of this syllabus.

Help Resources

- **Contacts to get Help**

Student Help Desk: <http://uits.kennesaw.edu/> or call 470.578.3555

D2L FAQ's: https://apps.kennesaw.edu/portal/prod/app_its_ask_stu_publ/student/

D2L Student User's Guide: <http://uits.kennesaw.edu/support/newstudents.php>

UITS Student Training Workshop Schedule: <http://uits.kennesaw.edu/support/>

- **Additional Resources**

Remote access to Library Resources: <http://library.kennesaw.edu/>

Student Support: <http://learnonline.kennesaw.edu/student-resources/support-resources.php>

Tutoring and Academic Support:

<http://learnonline.kennesaw.edu/student-resources/tutoring.php>

Advising: <http://learnonline.kennesaw.edu/student-resources/advising.php>

Bookstore: <http://bookstore.kennesaw.edu/home.aspx>

- **Online Help**

The internet has a vast array of learning resources. Search for your own help, or try these suggestions:

- Most textbooks have wonderful online resources. You may not have to purchase these online resources (it depends on your instructor's requirements and what your textbook publisher may offer), but you may want to look into at least a 'trial period' if your instructor doesn't require you to purchase it already.
- Khan Academy is a nonprofit organization with the mission of providing a free, world-class education for anyone, anywhere, so you can teach yourself a lot of things if you have the patience and time to do so: <http://www.khanacademy.org> can help you fill in the gaps in your path to learning difficult content.

University Policies

- **Academic Honesty Statement**

“Every KSU student is responsible for upholding the provisions of the Student code of Conduct, as published in the Undergraduate and Graduate catalogs. The Student Code of Conduct addresses the University’s policy on academic honesty, including provisions regarding plagiarism and cheating, unauthorized access to University materials, misrepresentation/falsification of University records or academic malicious/intentional misuses of computer facilities and/or services, and misuse of student identification cards. Incidents of alleged academic misconduct will be handled through the established procedures of the Student Conduct and Academic Integrity department, which includes either an “Informal” resolution by a faculty member, resulting in a grade adjustment, or a formal hearing procedure,

which may subject a student to the Code of Conduct's minimum one semester suspension requirement."

- **Accommodations for students with disabilities (see the website for KSU's Student Disability Services for suggested wording)**

"Any student with a documented disability or medical condition needing academic accommodations of class-related activities or schedules must contact the instructor immediately. Written verification from the KSU Student Disability Services(http://www.kennesaw.edu/stu_dev/dsss/welcome.html) is required. No requirements exist that accommodations be made prior to completion of This approved University documentation. All discussions will remain confidential."

- **Plagiarism**

No student shall receive, attempt to receive, knowingly give or attempt to give unauthorized assistance in the preparation of any work required to be submitted for credit as part of a course (including examinations, laboratory reports, essays, themes, term papers, etc.). When direct quotations are used, they should be indicated, and when the ideas, theories, data, figures, graphs, programs, electronic based information or illustrations of someone other than the student are incorporated into a paper or used in a project, they should be duly acknowledged.

- **Withdrawal**

Students who find that they cannot continue in college for the entire semester after being enrolled, because of illness or any other reason, need to complete an online form. To completely or partially withdraw from classes at KSU, a student must withdraw online at www.kennesaw.edu, under Owl Express, Student Services.

The date the withdrawal is submitted online will be considered the official KSU withdrawal date which will be used in the calculation of any tuition refund or refund to Federal student aid and/or HOPE scholarship programs. It is advisable to print the final page of the withdrawal for your records. Withdrawals submitted online prior to 11.45pm on the last day to withdraw without academic penalty will receive a "W" grade. Withdrawals after 11.45pm will receive a "WF". Failure to complete the online withdrawal process will produce no withdrawal from classes. Call the Registrar's Office at 770-423-6200 during business hours if assistance is needed.

Students may, by means of the same online withdrawal and with the approval of the university Dean, withdraw from individual courses while retaining other courses on their schedules. This option may be exercised up until **11.45 pm of June 18, 2020**.

This is the date to withdraw without academic penalty for **Summer Term, 2020** classes.

Failure to withdraw by the date above will mean that the student has elected to receive the final grade(s) earned in the course(s). The only exception to those withdrawal regulations will be for those instances that involve unusual and fully documented circumstances.

Policies Concerning Changes to the Syllabus

Students will be notified either through an announcement in D2L or via email of any changes to the syllabus.