

# Math 428 – 1002 Discussion

## Spring 2022

Instructor: Adam Parks

Location: CBC C113

Time: Friday 8:30am – 9:45am Office: CDC 722

Office Hours: Monday/Wednesday 2:00pm – 3:30pm, or by appointment

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Textbook: Elementary Differential Equations and Boundary Value Problems, 11<sup>th</sup> Edition, William E. Boyce & Richard C. DiPrima

Additional Suggestions: Problems in Differential Equations, J.L. Brenner

Elementary Differential Equations, Earl D. Rainville, Phillip E. Bedient, 6<sup>th</sup>, 7<sup>th</sup>, or 8<sup>th</sup> Edition

### Learning Outcomes:

- Further develop algebra skills and reinforce techniques useful for basic manipulation and equation solving.
- Reinforce proper mathematical grammar in regards to showing work and presenting solutions.
- Use First Integrals, Laplace Transform, and other techniques to solve Linear Homogeneous PDEs and Quasilinear PDEs
- Find approximate solutions to Autonomous Non-Linear Systems of ODEs, as well as understand basic ideas of phase planes, stability theory, and critical points.
- Learn the Separation of Variables method for solving various Second-Order PDEs, and understand how to find Kernels and Eigenfunctions.
- Learn how to construct Odd, Even, and Full Fourier Series expansions for periodic continuations of functions.
- Know and understand Fourier Series Convergence Theorems, Parseval's Theorem, and other theorems relating to Fourier Series and Fourier Series Coefficients.
- Learn how to use Fourier Series to find approximate solutions to various Heat, Wave, and Laplace equations in Cartesian and Polar form.
- Understand the basics of Sturm-Liouville Theory and be able to solve some elementary Boundary Value Problems for ODEs and PDEs.

### Class Description:

During discussion, I will collect and return homework, solve and finish problems from homework or problems started in lecture, and answer any questions. I will also have material prepared that is relevant to quizzes. Approximately six quizzes will be administered, which will either be take-home or given roughly 15-20 minutes before the end of discussion. Quizzes will be based on the material covered in the previous one to two weeks of lecture. No calculators, notes, textbooks, or electronic devices of any kind are allowed during in-person quizzes and are expected to be put away, not simply left to the side on the table. Homework will be assigned and collected, approximately every week, at the beginning of each class, and the homework due will be from topics that have been **fully** covered in class.

### Homework/Quizzes:

- Homework will be assigned by your discussion instructor and announced via Canvas and the e-mail registered on MyUNLV and is due during the following week's discussion unless stated otherwise. Information for quizzes will also be given in this manner.
- All homework and quizzes will be announced a minimum of a week in advance, usually after Friday's discussions. It is the student's responsibility to check their e-mail and/or Canvas as to not miss assignments or information about quizzes.
- **All work must be shown to receive credit for a problem. Skipping critical steps and work that cannot be done simply off the top of your head will receive massive point deductions or no points at all.**
- Homework is expected to be neat and orderly and not reminiscent of scratch work. Excessively messy work will not be considered for credit and you will be asked to redo it.

- Various topics will require that students only use methods taught in class, unless stated otherwise or other methods are proven.

**Academic Misconduct** – Academic integrity is a legitimate concern for every member of the campus community; all share in upholding the fundamental values of honesty, trust, respect, fairness, responsibility and professionalism. By choosing to join the UNLV community, students accept the expectations of the Student Academic Misconduct Policy and are encouraged when faced with choices to always take the ethical path. Students enrolling in UNLV assume the obligation to conduct themselves in a manner compatible with UNLV's function as an educational institution. An example of academic misconduct is plagiarism. Plagiarism is using the words or ideas of another, from the Internet or any source, without proper citation of the sources. See the *Student Academic Misconduct Policy* (approved December 9, 2005) located at: <http://studentconduct.unlv.edu/misconduct/policy.html>.

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**Disability Resource Center (DRC)** – The UNLV Disability Resource Center (SSC-A 143, <http://drc.unlv.edu/>, 702-895-0866) provides resources for students with disabilities. If you feel that you have a disability, please make an appointment with a Disabilities Specialist at the DRC to discuss what options may be available to you. If you are registered with the UNLV Disability Resource Center, bring your Academic Accommodation Plan from the DRC to the instructor during office hours so that you may work together to develop strategies for implementing the accommodations to meet both your needs and the requirements of the course. Any information you provide is private and will be treated as such. To maintain the confidentiality of your request, please do not approach the instructor in front of others to discuss your accommodation needs.

**Religious Holidays Policy** – Any student missing class quizzes, examinations, or any other class or lab work because of observance of religious holidays shall be given an opportunity during that semester to make up missed work. The make-up will apply to the religious holiday absence only. It shall be the responsibility of the student to notify the instructor no later than the end of the first two weeks of classes of his or her intention to participate in religious holidays which do not fall on state holidays or periods of class recess. For additional information, please visit: <http://catalog.unlv.edu/content.php?catoid=6&navoid=531>.

**Incomplete Grades** - The grade of I – Incomplete – can be granted when a student has satisfactorily completed three-fourths of course work for that semester/session but for reason(s) beyond the student's control, and acceptable to the instructor, cannot complete the last part of the course, and the instructor believes that the student can finish the course without repeating it. The incomplete work must be made up before the end of the following regular semester for undergraduate courses. Graduate students receiving "I" grades in 500-, 600-, or 700-level courses have up to one calendar year to complete the work, at the discretion of the instructor. If course requirements are not completed within the time indicated, a grade of F will be recorded, and the GPA will be adjusted accordingly. Students who are fulfilling an Incomplete do not register for the course but make individual arrangements with the instructor who assigned the I grade.

**Tutoring** – The Academic Success Center (ASC) provides tutoring and academic assistance for all UNLV students taking UNLV courses. Students are encouraged to stop by the ASC to learn more about subjects offered, tutoring times and other academic resources. The ASC is located across from the Student Services Complex (SSC). Students may learn more about tutoring services by calling 702-895-3177 or visiting the tutoring website at: <http://academicsuccess.unlv.edu/tutoring/>.

**UNLV Writing Center** – One-on-one or small group assistance with writing is available free of charge to UNLV students at the Writing Center, located in CDC-3-301. Although walk-in consultations are sometimes available, students with appointments will receive priority assistance. Appointments may be made in person or by calling 702-895-3908. The student's Rebel ID Card, a copy of the assignment (if possible), and two copies of any writing to be reviewed are requested for the consultation. More information can be found at: <http://writingcenter.unlv.edu/>

**Rebelmail** – By policy, faculty and staff should e-mail students' Rebelmail accounts only. Rebelmail is UNLV's official e-mail system for students. It is one of the primary ways students receive official university communication such as information about deadlines, major campus events, and announcements. All UNLV students receive a Rebelmail account after they have been admitted to the university. Students' e-mail prefixes are listed on class rosters. The suffix is always @unlv.nevada.edu. Emailing within WebCampus is acceptable.

**Final Examinations** – The University requires that final exams given at the end of a course occur at the time and on the day specified in the final exam schedule. See the schedule at: <http://www.unlv.edu/registrar/calendars>.

