

Clemson University
Department of Mathematical Sciences

MATH 4340-241 / 6340-241, Advanced Engineering Mathematics
Summer Session II, 2017

Instructor: Matthew Macauley, Martin O-325, 656-1838 (no voicemail)

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Course Description:

Prerequisite: Math 2080 (Differential Equations).

Office Hours & Communication Strategy:

“Office hour meetings” can happen by appointment through Adobe Connect. Please send an e-mail for an appointment time, giving me block(s) of time in which you are available. These meetings could be individual or group. To log on to a meeting, go to <https://connect.clemson.edu/math4340/>

Email is the best way to reach me. I have not set up voicemail on my phone (as a way to encourage you to use email instead!), and I may be physically in my office during parts of the class. I strongly recommend that you put Math 4340 in the subject line of any email – I will set up a Gmail filter for this. Do not expect a response from me to emails sent after 10pm on weeknights until the next morning.

Students are responsible for checking their Clemson email regularly, as that address will be the one subscribed to the class email list. I am not responsible if you miss important messages because you use a different email account.

Useful websites:

Course webpage: http://www.math.clemson.edu/~macaule/classes/m17_math4340/ (all relevant links posted here)

Canvas: <https://clemson.instructure.com/> (homework will be submitted through Canvas)

Text: *Linear Partial Differential Equations and Fourier Theory*, by Marcus Pivato. [Free pdf online.]

Required technology:

A computer on which you can watch the YouTube lecture videos and view pdf files.

Access to Canvas at <https://clemson.instructure.com> is required.

Adobe Connect - recommended for ‘office hour meetings’.

Hardware - a scanner that can scan to pdf is required. All homework MUST be submitted as pdf files with multiple pages in one document (not one document per page).

Hardware – headset microphone - recommended, not required for meeting through Abode Connect.

Calculators/Other Technology: A calculator is not required nor needed for this course.

Schedule: This course is being offered in an entirely ONLINE asynchronous format through Blackboard. The course calendar can be found on the course website.

Lectures: There will be about 40 lectures, ranging in length from 10 to 50 minutes, that are available on YouTube. Students will be required to watch approximately 2 lectures each day. The lecture schedule is listed on the course calendar.

Homework: Homework assignments are posted on the course webpage. Students will be required to upload and submit each assignment on Canvas as a single pdf file with multiple pages (*not* one document per page). Students can either hand-write and scan their assignment, or typeset them using L^AT_EX. Homework assignments must be submitted by 11:59pm on the day they are due. Late assignments will NOT be accepted.

Course Format: This course is being offered in one summer semester so EVERYTHING GOES QUICKLY.

You should expect to spend *at least* 4 hours per day on this course:

Listening to (usually) two online lectures.

Working written homework problems.

You will prepare for two tests and a cumulative Final Exam.

Because this is an online course, our chief means of communication is through Canvas and e-mail.

It is important that you check your Clemson e-mail on a regular basis - at least once a day.

Attendance: Because this is an asynchronous online course, a zero on a written homework assignment that is not turned in will be counted as 2 missed class. Any student who accumulates 4 'missed classes' before Mon. Jul 3 (the last day to drop the course without a *W* grade) is subject to being dropped from the course.

Exams: There will be 2 exams (closed book and notes) during the semester and a cumulative final exam: Midterm 1 on Wed. July 12, Midterm 2 on Wed. July 26, and the Final Exam on Fri. August 4. All three exams must be taken either at Clemson or at an approved proctored test facility. Guidelines for administration of these exams are given in the separate write-up under the heading Proctored Tests Policy. These guidelines must be followed by all students.

Grading: Your final grade will be computed as follows:

Homework	25%
Midterm 1	25%
Midterm 2	25%
Cumulative Final Exam	50%

I will drop either your lowest midterm grade, OR half of the weight of the final exam; whichever is lowest. Also, if you get at least an A or B on the final exam, then you get at least that grade in the course, *assuming you have a passing grade on the homework*.

Make-Up Policy: No make-up exams will be given. I will drop your lowest midterm, which means that if you miss a midterm, then your final exam grade will replace it. The homework deadlines will not be extended for individual students, and assigned homework must be turned in by the deadline. **PLAN AHEAD:** If you submit assignments minutes before the deadline, you take the risk of bad luck, e.g., a power outage, computer freeze or crash, personal emergency, zombie attack, etc., that could make you miss the deadline.

Student Learning Outcomes: Upon successful completion of MATH 4340, students will be able to

Understand the basic theory of differential operators and linear ordinary differential equations (ODEs) from a high-level perspective. In particular, understand the beautiful linear algebra hiding behind the scenes.

Solve ODEs whose solutions are generalized power series and understand the convergence of these solutions.

Derive the Fourier series expansions of periodic functions, and understand the theory behind the construction in terms of inner product spaces.

Understand boundary value problems of ODEs and solve the corresponding Sturm-Liouville equations.

Construct, interpret, and utilize solutions to one-dimensional partial differential equations (PDEs), such as the heat and wave equation. Understand the difference between different boundary and initial conditions.

Solve the standard PDEs (heat, wave, and Laplace's equation) in two-dimensions, both in rectangular and polar coordinates.

Explain in simple terms, e.g. to grandparents or to younger siblings, how ordinary and partial differential equations are relevant to several familiar settings in your major.

Key Dates

June 28 (Wed)	Classes begin; late enrollment fee applies
June 29 (Thu)	Last day to register or add a class
July 3 (Mon)	Last day to drop a class or withdraw from the University without a W grade
July 4 (Tue)	Holiday
July 12 (Wed)	Midterm 1
July 21 (Thu)	Last day to drop a class or withdraw from the University without final grades
July 28 (Wed)	Midterm 2
Aug 2 (Tue)	Last day of class
Aug 4 (Fri)	Final Exam
Aug 8 (Tue)	Deadline to submit grades

Academic Integrity: "As members of the Clemson University community, we have inherited Thomas Green Clemson's vision of this institution as a 'high seminary of learning'. Fundamental to this vision is a mutual commitment to truthfulness, honor, and responsibility, without which we cannot earn the trust and respect of others. Furthermore, we recognize that academic dishonesty detracts from the value of a Clemson degree. Therefore, we shall not tolerate lying, cheating, or stealing in any form."

Special Accommodations: Students with disabilities who need accommodations should make an appointment with Dr. Arlene Stewart, Director of Disability Services, to discuss specific needs within the first week of classes. Students should present a Faculty Accommodation Letter from Student Disability Services when they meet with instructors. Student Disability Services is located in Suite 239 Academic Success Building (656-6848; sds-l@clemson.edu). Please be aware that accommodations are not retroactive and new Faculty Accommodation Letters must be presented each semester.

Copyright Statement: Some of the materials in this course are possibly copyrighted. They are intended for use only by students registered and enrolled in this course and only for instructional activities associated with and for the duration of the course. They may not be retained in another medium or disseminated further. They are provided in compliance with the provisions of the Teach Act. Refer

to the Use of Copyrighted Materials and “Fair Use Guidelines” policy on the Clemson University website for additional information: <http://clemson.libguides.com/copyright>

Statement Included for Certification Purposes: In this online course, you will interact with the content, instructor and classmates on at least a weekly basis through course assignments, asynchronous discussions and/or synchronous sessions as indicated in this syllabus.