

Vanderbilt University
MATH 5120 — Introduction to Partial Differential Equations
Instructor: Marcelo Disconzi (marcelo.disconzi@vanderbilt.edu)

1. GENERAL INFORMATION

Instructor: Marcelo Disconzi.

Email: marcelo.disconzi@vanderbilt.edu.

Instructor's office: Stevenson Center 1515.

Instructor's office phone: 615-322-7147.

Lecture time and location: Tuesdays and Thursdays, 2:20–3:35pm at Buttrick Hall 206.

Course webpage:

<http://www.disconzi.net/Teaching/MAT3120-Spring-21/MAT3120-Spring-21.php>

Office hours: Tuesdays, 4-5pm, Thursdays, 1-2pm and 5-6pm, or by appointment. Office hours will be held virtually (see below for more information). If you want to meet in person, please schedule an appointment.

2. COURSE INFORMATION

2.1. **Textbook.** No textbook will be adopted. Some suggested references are

- An introduction to partial differential equations, by Yehuda Pinchover and Jacob Rubinstein.
- Partial differential equations: an introduction (2nd edition), by Walter Strauss.
- Partial differential equations (2nd edition), by Lawrence Evans.

2.2. **Prerequisites.** Either MATH 2410, MATH 2600, or MATH 2501 and either MATH 2400, MATH 2420, or MATH 2610.

2.3. **Description.** The course will cover the basic concepts and tools of Partial Differential Equations (PDEs), such as initial- and boundary-value problems, separation of variables, Fourier series and integrals, representation of solutions, maximum principles, and explicit solutions of problems involving the heat equation, the wave equation, and Laplace's equation. Emphasis will be put on both the importance of mathematically sound arguments and on techniques devised to treat common applications. If time allows, more advanced material may be covered.

3. GRADING POLICY

Grades will be assigned based on class participation, homework assignments, and a class project. Students must complete the class project in order not to receive a grade “M” in MATH 5120. Grades will be assigned according to the distribution:

Final grade range (rounded)	Letter grade
95–100	A
90–94	A–
87–89	B+
84–86	B
80–83	B–
77–79	C+
74–76	C
70–73	C–
67–69	D+
64–66	D
60–63	D–
<60	F

3.1. Assignments and schedule. An up-to-date schedule will be maintained on the course webpage. February 23-24 and April 7-8 will be in-class reading days.

4. COURSE POLICIES

4.1. Online classes and participation. This course will be taught through a hybrid online/in-person model. Students will be rotated between in-person and online attendance. An email will be sent to all students detailing the dates they are allowed to attend in-person classes.

Every class will be streamed via Zoom following a link available on Brightspace under the Zoom tab. Students will need access to a microphone and a camera. Online students will join the class virtually via Zoom and will be able to participate as their audio will be broadcasted to the entire class through the sound system. When not speaking, students attending the class virtually must mute their microphones. Students are allowed to join the class virtually on the days they are scheduled for in-person participation.

Office hours will also be held virtually through a link available on Zoom. In-person office hours are allowed by appointment only.

Classes will be recorded and posted on Brightspace. Students are not allowed to download or share the class recordings. The use of such recordings is for personal use only unless permission is expressly granted in writing by the instructor and by other classroom participants. Personal use is defined as use by an individual student for the purpose of studying or completing course assignments.

Because Zoom shows the video of all participants, students who do not wish to appear on the recording are allowed to turn off their video. Everyone is encouraged, however, to consider keeping their video turned on in order to motivate class interaction.

If the instructor needs to quarantine himself, classes will switch to online only.

4.2. Honor Code. All work submitted for credit must be the student's own and is subject to the provisions of the Vanderbilt Honor Code. Details can be found at: https://www.vanderbilt.edu/student_handbook/the-honor-system/.

4.3. Classroom recording policy. The use of technologies for audio and video recording of lectures and other classroom activities is allowed only with the express permission of the instructor. In cases where recordings are allowed, such content is restricted to personal use only unless permission is expressly granted in writing by the instructor and other classroom

participants, including students. Personal use is defined as use by an individual student for the purpose of studying or completing course assignments. When students have permission for personal use of recordings, they must still obtain written permission from the instructor to share recordings with others.

4.4. Accommodation Procedure. A student who needs course accommodations due to a disability, special arrangements in case the building must be evacuated, or has emergency medical information that needs to be shared with the instructor should contact the instructor as soon as possible. Equal Opportunity, Affirmative Action, and Disability Services (<http://www.vanderbilt.edu/ead>) at Vanderbilt provides specific accommodations for students with physical or learning disabilities. Upon receiving appropriate documentation from the student, the EAD will make arrangements with the instructor for the accommodations.

4.5. Attendance. The student who misses a class meeting is responsible for any assignments and/or announcements made. Office hours will not be utilized to re-teach material presented in class. The stated attendance policy of the College of Arts and Science applies in this course: Students are expected to attend all scheduled meetings of classes in which they are enrolled; they have an obligation to contribute to the academic performance of all students by full participation in the work of each class. The faculty of the College of Arts and Science recognizes that occasions arise during the academic year that merit the excused absence of a student from a scheduled class or laboratory during which an examination, quiz, or other graded exercise is given. Examples include participation in sponsored university activities (e.g., debate team, varsity sports), observance of officially designated religious holidays, serious personal problems (e.g., serious illness, death of a member of the student's family), and matters relating to the student's academic training (e.g., graduate or professional school interviews). Conflicts arising from personal travel plans or social obligations do not qualify as excused absences.

4.6. Course enrollment. The last day for students to add a math course or to make other changes in YES is Friday, January 29th. Between January 30th and February 8th, any withdrawals or adjustments in level or in grading status must be completed using the Change of Course Request Form. If only the "DROP" section of the form is filled out, the instructor may "sign" the form. If a student wishes to make any change that involves filling in the ADD section of the form (whether or not it also involves filling in the "DROP" section), then the student must contact the DUS (John Rafter) or the Assistant DUS (Jakayla Robbins). Per Math Department policy, the only change to a math course that will be approved is a change to the level of the course (e.g. switching from Math 1301 to Math 1300 or vice versa).

4.7. Anonymous feedback. Students are encouraged to bring suggestions and discuss with the course instructor any concerns they may have, including something they think is not being properly handled in the course. If you do not feel comfortable doing that, you have the opportunity to send anonymous feedback on the course webpage.