

# MA 562: Methods of Applied Mathematics 2

This course will introduce techniques of applied mathematics and the theoretical sciences, focusing on topics complementary to those of 561.

## Contact info

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Office	CCDS 443
Office hours	Mon/Wed 11a.m.-12p.m., Tues 10-11a.m.
Class meetings	Mon/Wed/Fri 1:25-2:15p.m., in PSY B43
Class website	<a href="http://math.bu.edu/people/gkocker/ma562.html">http://math.bu.edu/people/gkocker/ma562.html</a>

## Grading

Item	Weight	Schedule
Problem sets	40%	Every 1-2 weeks
Midterms	20% each	Feb 23, April 15
Final project	20%	April 26

## Problem sets

Problem sets will be assigned every 1-2 weeks. I encourage you to work together on these. Make sure, however, that you write your submitted solutions on your own.

## Exams

There will be two midterm exams and a final project. There will be no final exam. For the final project, you will pick a topic related to the course, research it, and prepare a written paper (approx. 5-10 single-spaced pages) summarizing your research. You will also give a ~20 minute presentation on your topic during the last weeks of class.

The dates of the midterms are in the Grading table above. A draft of the final paper will be due April 26. I'll return it to you, with feedback and a preliminary grade, before the end of the semester. You will then have the opportunity to revise and resubmit it.

## Topics

1. algebraic treatment of linear differential and integral operators
2. calculus of variations/functional calculus
3. Green's functions for linear operators
4. Fourier transforms
5. numerics for PDEs
6. perturbative and asymptotic expansions

## **Textbook / resources**

Some of these topics are covered in Strauss; “Partial Differential Equations: An Introduction.” Other relevant online material will be available on the course website.

## **Extra help**

If you have a question about something, please get help from me or any other appropriate source. I highly encourage you to come to office hours if you have *any* questions about the course. If you would like to meet but can't make office hours, please let me know and we can schedule an alternate time. Some other free ways to get help:

- Use the posted materials.
- Go to the tutoring room (CCDS 261) to get help from a math graduate student. Since this is a 500 level course, not every graduate student will be able to help you. Feel free to ask them, or me, for advice.

## **Make-up exams**

If you have a serious illness, family emergency, or other legitimate reason for needing an alternate exam time, please let me know in writing as soon as possible.

## **Accessibility**

I take the responsibility to foster an inclusive environment seriously. Please let me know if there are aspects of the course that impede your participation. The Office of Disability and Access Services can be contacted at 617-353-3658 or by email at [access@bu.edu](mailto:access@bu.edu).

## **Academic conduct**

Plagiarism and cheating will not be tolerated. All BU students are expected to maintain high standards of academic honesty and integrity. It is your responsibility to be familiar with the academic conduct code, which describes the ethical standards to which BU students are expected to adhere and students' rights and responsibilities as members of BU's learning community. Boston University's academic conduct code can be found online at <https://www.bu.edu/academics/policies/academic-conduct-code/>.