

# MA5460 – Transformation Techniques

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**IN AN INITIATIVE TO SAVE PAPER, ALL HANDOUTS AND COMMUNICATIONS REGARDING THIS COURSE WILL BE DIGITAL! AS SOON AS POSSIBLE, PLEASE SEND AN EMAIL TO THE ADDRESS AT THE TOP OF THE PAGE WITH SUBJECT AS MA5460.**

**About the course.** This is a course that will concentrate on Integral Transforms. This subject is interesting both for the perspective of pure mathematics as well as having plenty of applications; especially in the solutions of differential equations. Apart from a complete treatment of the theory, we will explore several applications. As this is an advanced elective, I will assume that you have mastered Measure Theory, Functional Analysis and Differential Equations. However, I will recall, whenever possible, the facts that are needed in order to make the course more accessible.

**References.** I will closely follow the outstanding textbook listed below written by one of the foremost experts in the subject.

*Fourier Analysis and Its Applications* by Gerald B. Folland.

Chapters one and three of this book are left as reading assignments. They mostly recall material that has already been covered in previous courses.

**Assignments.** You will be required to solve assignments as part of your grading. As this is an elective, I plan to give only three assignments but I intend them to be very *challenging*. You are always welcome to discuss the problem with me. You are also allowed to freely discuss the problems with your classmates but the **solutions you turn in must be written entirely by you and not COPIED!** If you used assistance in solving a problem, you are required to mention the name of the person/s who helped you next to the question when you turn in the assignment. There will be no penalty for discussing solutions. I take academic integrity very seriously and I shall deal with academic dishonesty in the strictest possible manner.

**Office hours.** If you have questions or want to discuss the assignment problems, you are free to meet me on Mondays, Tuesdays and Fridays between 2 and 3 PM in my office (NAC 642). You can also ask your questions via email using the address the top of the page. Please **do not** use my IITM email address for questions regarding this course.

**Evaluation.** You will be evaluated based on your performance in the assignments, a mid- semester examination and a final. As per institute norms, you are expected to spend approximately **five hours** a week outside the classroom on this course. The assignments and exams will be designed keeping this in mind.