

PMATH 950: Induced Representations

Fall 2018

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Content. I will cover all of the basic topics:

- locally compact groups, Haar measure;
- unitary groups, unitary representations
- abelian harmonic analysis, dual group, Plancherel theorem;
- induced representations: case of open subgroups; quasi-invariant measures on homogeneous spaces, general induction;

and more advanced topics:

- Imprimitivity theorem (determining when a representation is induced from a subgroup);
- Mackey analysis (determining when all irreducible representations have been found).

Prerequisites. Every student should have a course in functional analysis (PM 753, or equivalent), and exposure to abstract measure theory (PM 651, or equivalent). I will try to design the course to accommodate concurrent enrollment in these courses.

Grading scheme. Assignments: 80%, Talk 20%.

Texts. The course will be self-contained and no text is required. However, beyond introductory material the course will be built around:

[1] E. Kanuith and K. F. Taylor. *Induced Representations of Locally compact Groups*

I will also draw on material from the general texts:

[2] G. B. Folland, *A Course in Abstract Harmonic Analysis*, CRC Press, 1995.

[3] E. Hewitt and K. A. Ross, *Abstract Harmonic Analysis I*, Springer, 1963.

[4] W. Rudin, *Fourier Analysis on Groups*, Wiley, 1962.