**Abstract Harmonic Analysis**
**Math 684/5, Fall 2019 and Winter 2020**

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| **Class Time:** | MWF 10-10:50a.m. in 206 Deady Hall |
| **Instructor:** | Dr. Marcin Bownik |
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| **Office Phone:** | 541-346-5622 |
| **Office Hours:** | 2-3p.m. Mon., 11a.m.-12p.m. Wed., and 2-3p.m. Thu., or by appointment |
| **Textbook:** | G. Folland, *A Course in Abstract Harmonic Analysis*. |

**Background and goals.** This course introduces students to the subject of abstract harmonic analysis, which is broadly defined as Fourier analysis on groups and unitary representation theory. We will start with basic facts in Banach algebra theory and spectral theory, followed by locally compact groups, Haar measure, and unitary representations. Then we will move to analysis on Abelian groups, compact groups, and induced representations, featuring the imprimitivity theorem and its applications. In the last part of the course we explore some further aspects of the representation theory of non-compact, non-Abelian groups.

**Prerequisites.** Math 616/7/8 Real Analysis.

**Grading.** There will be one homework assignment. There will be no exams.

**Supplementary books:**
H. Führ, *Abstract Harmonic Analysis of Continuous Wavelet Transforms*, Lecture notes in mathematics 1863.
E. Hewitt, K. Ross, *Abstract Harmonic Analysis*, Vol. I and II.
H. Reiter, J. Stegeman, *Classical harmonic analysis and locally compact groups*.