

Peter Sin

Department of Mathematics

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# Introduction to Representation Theory (MAS7397- Advanced Topics in Algebra)

## Instructor

Prof. Peter Sin

## Time and Location

MWF Per. 7, Little 205

## Office Hours:

TBA, Little 432, and by appointment.

## Description and Goals

Prerequisites: MAS6331-2 (MAS5311-12 may be enough with a firm grasp of linear algebra and readiness to do some extra reading).

This course will provide a general introduction to representation theory of groups and Lie algebras. We will begin by developing the general theory from a module-theoretic point of view.

The second part of the course will focus on representations of finite groups and their character theory.

We will study many examples and prove some classic theorems of Burnside and Frobenius.

The third part of the course will look at the representation theory of finite-dimensional semisimple complex Lie algebras. Again, we will study concrete examples to understand general concepts, such as the classification of simple modules by highest weights.

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