Mathematics 666, MWF 3:00, E 204

Lecturer: Alexander Hulpke, Weber \(|SL_2(5)|\)

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Topics

M666 is a course on representation theory which is to some extent a continuation of group theory. We will cover primarily representation theory and character\(^1\) theory (this is the theory of homomorphisms from a group into matrix groups) of finite groups, and – time permitting – extension theory and group cohomology.

If you are interested to work in algebra or combinatorics, or need to work with groups, these are topics you likely will find interesting and useful.

Grades

will be based on homework and course participation; there will be roughly one homework sheet per week.

Prerequisites: In general, you should have taken the M566 or an equivalent course. (There also are a handful of facts from 567 we shall need, but these can be simply taken as given.) In fact we will formally require little material beyond 369 and 466, but proceed at the pace of a 600-level mathematics course.

Textbook: You are not required to have any particular textbook. Three books (each of them nice in their own way) are:

- K.Lux & H. Pahlings: Representations of Groups, Cambridge (Probably the most ambitious one. Also covers modular theory in detail.)
- I.M.Isaacs: Character Theory of Finite Groups, Dover (compact, cheap, few examples)

Computer use

In some of the homework exercises, we will use the program GAP (to avoid having to do lengthy calculations by hand. You won't be examined about the use of the program.). This program is installed on the Mathematics computers, or you can download it from the links on the course web page.

I wish you success with this course and all the best for the coming semester.

\(^1\)After all CSU is proud of its character development – http://www.campusofcharacter.colostate.edu