

Mathematics 1214: Introduction to Group Theory

Dr. Rupert Levene

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(opposite the seminar room/maths helproom)

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Course website: <http://www.maths.tcd.ie/~levene/1214>

Textbook John R. Durbin, *Modern Algebra, An Introduction*, fifth (or sixth) edition.

Syllabus Roughly speaking, we'll cover the first five chapters of the textbook, with additional material as time allows:

- Mappings, composition, invertibility and operations
- Definition of a group, examples, subgroups
- Equivalence relations and \mathbb{Z}_n
- Generators, direct products, Lagrange's theorem, isomorphisms and Cayley's theorem
- Group homomorphisms, quotient groups and the fundamental homomorphism theorem
- Groups and symmetry.

Lectures There are two weekly lectures, on Thursdays at 9am in the ~~Syngé~~ Schrödinger lecture theatre, and on Fridays at noon in the Maxwell lecture theatre. There will be no printed course notes, so you should take notes during the lectures.

Homework Homework assignments will be handed out during Friday's lectures, and will also be posted on the course website. They will be due at the end of Friday's lecture the following week. Solutions will appear on the website after Friday's lecture, so late assignments will not be accepted.

Tutorials You should attend one tutorial each week, either on Monday, Tuesday or Wednesday. This should appear in your timetables. At the start of the tutorial, you'll be given some tutorial exercises. You should have a go at these and discuss them with your tutor (either myself or Michael Barragry) and with one another. The tutorial exercises will be similar to the homework exercises, but they will not be assessed.

Exam There will be a two-hour exam at the end of the year.

Grading Your overall grade is the larger of your final exam result, and the sum of 20% of your homework grade with 80% of your final exam result. So if H is your homework grade and E is your final exam result, then your overall grade will be $\max(E, \frac{1}{5}H + \frac{4}{5}E)$.