Algebra 2 (2013)-Aalborg University
Lecture 1, February 5th

Welcome to "Algebra 2" for Mat 4. Semester. We will follow the book: [Lau] Niels Lauritzen, "Concrete abstract algebra", Cambridge University Press, 2003. ISBN: 978-0-521-53410-9. We will focus on the third and fourth chapters. We will also use this book: [Kle] Israel Kleiner, "A history of abstract algebra", Birkhäuser, 2007. ISBN 978-0-8176-4684-4.

You may find the information about the course, lecture sheets, exercises, etc, ... in Moodle and in the course's webpage: http://people.math.aau.dk/~diego/Algebra22013.html

The shedule for today is:

1st Lecture (A): Tuesday February 5th, 8:15-12:00 at room G5-112.

- 8:15-10:00 Lecture: Rings, basic definitions and examples. Ideals (pages 112–116).
- 10:00-12:00 Work in groups. Exercises from [Lau], 3.6 (page 138)+ 5 other exercises: 1, 4, A, B, C, 5, 6, 3, D, 8 (i) to (iii), E.

  Exercise A: In a field F the only ideals are $\{0\}$ and F.

  Exercise B: Is $\mathbb{Z}[i]$ a domain?

  Exercise C: Compute $d \in \mathbb{Z}$ such that $\langle 9, 15, 21\rangle = \langle d\rangle \subset \mathbb{Z}$.

  Exercise D: Check that the two definitions of ideal (in the slides) are equivalent.

  Exercise E: Compute the zero divisors and the units of $\mathbb{Z}/6\mathbb{Z}$.

There will be three different kinds of lectures in this course:

- 9 Lectures (A type) where the teacher will lecture and will supervise the work in groups (3 hours, 45 minutes).
- 5 Lectures (B type) where the teacher will only lecture (1 hour, 45 minutes) but will not be available during the 2 hours of self-study.
- 11 Lectures (C type) consisting of self-study without supervision.

Next week I will inform you about how we are going to use [Kle] and how it will be evaluated.

Best regards,

Diego