Algebra 2010-Aalborg University

13th Lecture: Tuesday November 2nd, 8:15-12:00 at room G5-112.

During this lecture, we should fix a date for the mini-project exam.

- 8:15-8:45 Repetition from last lecture. Rings, basic definitions and examples. Ideals (pages 112–116).

- 8:45-10:45 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 $\mathbb{Z}/6\mathbb{Z}$.

- 10:45-12:00 Lecture: Quotient rings (with Appendix A). Prime and maximal ideals. Ring homomorphisms (pages 116-120 and Appendices A1 and A2).

Best regards,

Diego Ruano