

# Algebra 2 (2013)-Aalborg University

## Lecture 8, February 28th

**8th Lecture (A):** Thursday February 28th, 8:15-12:00 at room G5-112.

- 8:15-8:45 Repetition from last lectures (pages 126–133).
- 8:45-10:45 Work in groups: Exercises from [Lau], 3.6 (page 138): 28, A, 29, 24, B, 23, C, D, 16, 13, 15, 8 (i and ii), 9, 10, 26, 24, 31.  
Exercise A: Prove that  $\mathbb{Z}[i]$  is a Euclidean domain (see pages 132 and 133).  
Exercise B: Let  $R$  be an integral domain. Prove that for  $a, b \in R$ :  $ab \in R^*$  if and only if  $a, b \in R^*$ .  
Exercise C: Check that the relation defined in page 123 is an equivalent relation and the two operations are well defined.  
Exercise D: Let  $R$  be a ring. Prove that  $R$  is a field if and only if  $\langle 0 \rangle$  is a maximal ideal.
- 10:45-12:00 Lecture: Fermat's two-square theorem, The Euclidean algorithm strikes again, (pages 133–135)

Best regards,

Diego