

**MATH 497 INTRODUCTION TO APPLIED ALGEBRAIC
GEOMETRY
HOMEWORK 4**

Assigned 9/14, due 9/18 in class.

Reading this week is page 81-121 (we won't cover Chapter 2 Section 9 though) in your book, Cox, Little, and O'Shea's *Ideals, Varieties, and Algorithms*. We will probably start Chapter 3 on Friday.

Problem 1. *Working with your group, implement the division algorithm (Chapter 2, Section 3, Theorem 3 in CLO).*

In Chapter 2 Section 3, do Exercises 1 and 2 with your division algorithm implementation. These are easy enough to check by hand that you get the right answer. Do Section 3, Exercises 5 and 6 with your division algorithm as well.

In Chapter 2 Section 4, do Exercise 12. Note there is a typo, it should say "or $u \cdot \alpha = u \cdot \beta$ and $\alpha >_{\sigma} \beta$."