This quarter continues with Chapter 2 of Hartshorne’s book (aside from §9 on formal schemes that is best learned from the book “FGA Explained” later), finishing the general features of scheme morphisms and (quasi-)coherent sheaves, and takes initial steps into sheaf cohomology in Chapter 3. We will also explore further into Matsumura’s book, especially with the homological technique of regular sequences (leading to the notions of Cohen-Macaulay and Gorenstein rings that play a special role in Serre duality). There will be a variety of handouts to supplement the topics in the text.

Once again, it is permissible (and even encouraged) for students to discuss the exercises with each other, but please write up proofs in your own words. The schedule for weekly homeworks will be determined based on everyone’s schedule.