Instructor: Ming Hao Quek (mhquek@math.harvard.edu)

Course assistant: Daishi Kiyohara (dkiyohara@math.harvard.edu), Science Center 428b, Office hours TBD

Meeting: Every Monday & Wednesday, 3-4:15pm, at Science Center 304

Office hours: Every Tuesday 1-2pm, and by appointment, at a location TBD

Brief course description: This is an introductory course to schemes in algebraic geometry. The goal of the course is to get you sufficiently familiar with the language of schemes, so that you can pursue further courses/reading within algebraic geometry.

Some major topics that I am hoping to cover include: basic properties of schemes and of morphisms between schemes, fibered products and base change, quasi-coherent/coherent sheaves, line bundles, divisors, morphisms to projective space, relative Spec and Proj construction, blow-ups, resolution of indeterminacies, and finally if time permits, differentials.

Prerequisites: A good background in commutative algebra. Some background in varieties will be desirable, but not necessary.

Texts: I will not strictly follow one book, but I intend to mostly use the following references (which I have found useful over the years):

- [Vak] Ravi Vakil, "The Rising Sea: Foundations of Algebraic Geometry".
- [GW] Ulrich GÃ¶rtz & Torsten Wedhorn, "Algebraic Geometry I: Schemes, with Examples and Exercises".
- [Hart] Robin Hartshorne, "Algebraic Geometry".

I may assign some reading before each class, and will indicate (in the table below) the relevant references for each class.

Evaluation: Fully based on homework sets. One homework set will be issued every two weeks, and will be due when the next homework is issued. The first homework set should be issued on Wednesday, September 11 at 12 noon.

TIMELINE:

Week	Date	Topic and References	Notes
1	Wed, Sept 4	Some category theory [Vak, Chapter 1]	
2	Mon, Sept 9		
	Wed, Sept 11		