

Spring 2018

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**Instructor:** Sam Payne, LOM 219A, sam.payne@yale.edu

**Office Hours:** By appointment.

**Textbook:** Invitation to Algebraic Geometry, by Smith et al.

**Supplementary Texts:** A First Course in Algebraic Geometry, by Harris  
Basic Algebraic Geometry I, by Shafarevich

**Course Overview:** This course is a seminar for senior math majors. Students will prepare and deliver lectures, assign homework to reinforce the main lessons in the lectures, collect and correct the homework, and give each other feedback related to the lectures, homework, and their own learning experience.

The primary goals for this course include developing familiarity with, and a working knowledge of basic algebraic geometry, including affine, projective, and quasiprojective varieties, Grassmannians, Segre and Veronese maps, Hilbert functions, smoothness, and Bertini theorems. The primary goals also include the development of basic skills in communicating mathematics at the blackboard, and understanding how the organization and presentation of a lecture and its associated homework exercises contributes to the learning experiences of people in the class.

*Warning:* This course will have a higher workload than is typical in Math 480. I believe that this will make the class a richer experience, but it is good to be prepared. See below for details.

**Participant Responsibilities:** **Delivering lectures** is the primary activity of the seminar. Each student will prepare and give at least two lectures, modulo scheduling constraints. A single more in-depth lecture may be substituted, if necessary. Preparation for lectures will include meeting with the instructor. **Attendance** is mandatory. Students must attend every meeting, with at most two absences. **Participation** is also required. It is not enough to be physically present. Students will provide **Peer Feedback** on each lecture, using the provided feedback form, to share details of their own learning experience and offer reflections that might be helpful for future lectures. Lectures will be accompanied by **Problem Sets**. The lecturer must collect and grade the homeworks and then supply a well-written solution set. Students must complete the problem sets in a timely manner (timely means within one week). Up to two late homeworks are allowed (late means within two weeks).

**Grading:** Grades for the course will be based primarily on the quality of lectures delivered, class participation, written homeworks, and feedback provided. Attendance and completion of participant responsibilities will also be factored in.

Numerical student-assigned homework scores will not affect the official grade, but prizes will be awarded at the end of the semester for the two top scores.