

Course Outline for MATH 5580, Seminar

MATH 5580 Seminar (1-3 units)

Prerequisite: Graduate standing in Mathematics and consent of instructor.

Built around topics in advanced mathematics chosen according to the common interests and needs of the students enrolled. Each seminar will have a subtitle according to the nature of the content. The Class Schedule will list subtitle selected. Repeatable up to 9 units. 1 to 3 seminars. Formerly MATH 580.

Course Learning Objectives	
1	Read and analyze proofs in advanced fields of mathematics at the graduate level.
2	Present material in advanced fields of mathematics at the graduate level in written or oral form.
3	Integrate and synthesize knowledge from mathematics to interpret advanced topics in mathematics.

Expanded Course Content

Textbooks, materials, and/or other resources
The following sample 2-unit course is based on the subtitle: Rational Points on Elliptic Curves.
Textbook: "Rational Points on Elliptic Curves", by Joseph H. Silverman and John Tate, Springer, 1992.

Week	Readings	Topics of Discussion
1	Silverman, Tate: Introduction	Introduction to Elliptic Curves
2	Silverman, Tate: Section 1.1	Rational Points on Conics
3	Silverman, Tate: Section 1.2	The Geometry of Cubic Curves

Week	Readings	Topics of Discussion
4	Silverman, Tate: Section 1.3	Weierstrass Normal Form
5	Silverman, Tate: Section 1.4	Explicit Formulas for the Group Law
6	Silverman, Tate: Section 2.1	Points of Order Two and Three
7	Silverman, Tate: Section 2.2	Real and Complex Points on Cubic Curves
8	Silverman, Tate: Section 2.3	The Discriminant
9	Silverman, Tate: Section 2.4	Points of Finite Order Have Integer Coordinates
10	Silverman, Tate: Section 2.5	The Nagell-Lutz Theorem
11 - 12	Silverman, Tate: Section 3.1 - 3.3	Heights and Descent
13	Silverman, Tate: Section 3.4	A Useful Homomorphism
14	Silverman, Tate: Section 3.5	Mordell's Theorem
15	Silverman, Tate: Section 3.6	Examples and Further Developments

Method of Assessment

The possible methods of assessment are written individual examinations, quizzes, in-class worksheets and presentations, projects, and homework. One or more midterms and a cumulative final exam are required.

Instructional Mode

The instructional mode for this class is face-to-face. This designation means that the essential academic standards of the course require in-class student engagement, and thus remote instruction is not appropriate.