Instructor: Eric Towne, etowne@fas.harvard.edu, 207-345-3645.

Website: http://www.people.fas.harvard.edu/~etowne/mathe15fall2016.html

Meetings: The first four meetings will be streamed live Thursdays 4:25-5:25 p.m. and also recorded and posted on our Canvas site for on-demand viewing.

During the live stream, off-campus students can post comments and ask questions during these first four meetings by logging in to Canvas and clicking on the Chat item in the left column.

Videos of these first four meetings will be posted within 24 hours.

Future meetings will be arranged based on availability of distance students. Students who live within 50 miles of Cambridge, MA are considered local students and will attend the seminar in person unless special circumstances apply. Students who live more than 50 miles from Cambridge, MA may choose whether to attend in person or participate online.

Topics: The notion of the limit is at the core of both of the main topics of calculus – differentiation and integration. However, most calculus courses give only a vague definition of what is meant by a limit. This is perhaps not surprising when one considers that calculus was practiced with great success for nearly two hundred years before mathematicians finally developed a satisfactory definition of the limit (using ideas formulated independently by Bolzano in 1816 and Cauchy in 1821, which were refined by Weierstrass in the 1830s). In this seminar, we will take a close look at this definition and explore how it is used.

Goals: To learn about the theory behind limits so that you (as a current or future math teacher or interested calculus student) can answer the student who says, “But what does it really mean when we say h goes to zero?”

To practice teaching and get constructive feedback.

To observe others’ teaching methods to see some new techniques and ideas.

Format: We will spend the first four weeks studying an intuitive and then a formal definition of the limit of a function. The accompanying handouts are posted on our course website.

The main focus of the seminar will be student presentations. Either individually or in pairs, you will design and present (to me and your classmates via the online learning platform Zoom) one or two 45-minute lessons on a topic of limits we have not covered (see Lesson Ideas file). The number of lessons each person does will depend on the number of students in the seminar.

I will be available by email, phone, and through Zoom to help you with any questions you have as you prepare your lesson.

Please see our course website for the link to our Zoom site.

Grading: Completion of doodle scheduling poll by September 15 5%
Submission of your lesson preferences by September 22 5%
Participation* 30%
Lesson Presentation 60%

*The participation portion of the grade includes your on-time and active participation in the lessons taught by your classmates via Zoom.