MATH 485/585: Topics in Analysis for Teachers
Winter 2015 Syllabus
Meeting Time and Place: Thursday 4:00 - 6:30 pm; 307 Neuberger Hall

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<th>Instructor</th>
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<td>Steve Boyce</td>
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<td>325 Neuberger Hall</td>
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<td>Office Hours: Mon and Wed 3:15 – 4:15 pm; Thurs 2:45 – 3:45 and by appointment</td>
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<th>Text and Resources</th>
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Occasionally, there will be readings from sources such as the NCTM Principles and Standards, http://standards.nctm.org/, or the Common Core State Standards for School Mathematics http://corestandards.org .

Assignments, class notes, and other important information will be regularly posted to D2L. Each student should check D2L at least once per week.

Purpose of the Course
The purpose of the course is to challenge you to explore ideas of analysis, including understandings of limits, continuity, and convergence encountered in upper secondary or early post-secondary mathematics courses. Some topics might appear familiar to you and others less familiar. Whichever the case, our explorations will often approach course ideas in a new way. Three central aspects of the course are:

1) To focus on important mathematical processes, such as problem solving and reasoning, and to investigate how these processes support meaningful learning of mathematical content.

2) To draw on real examples of students’ reasoning, taken from the mathematics education research literature and reform curricula, to leverage our explorations, reflections, and discussions.

3) To model teaching practices emphasizing sense-making (rather than answer-getting).

Abridged Description of Course Assignments
Detailed descriptions for all assignments will be discussed in class, at a later time. Documents describing the assignments will be available through D2L.

- **Problem Sets:** You will be assigned weekly problem sets. Some problems will require you to break down advanced mathematical ideas and explain them in a way that students could understand; others will involve reflections on readings from the mathematics education literature, and others will be extensions of problems introduced in class. All solutions should be typed, using Equation Editor or similar tools, where appropriate. You are encouraged to work with other students in the class on these assignments. Each individual must submit their own work and credit must be given to collaborators or other resources providing help on an assignment.

- **Midterm Exam:** An in-class midterm exam will assess your knowledge of all main ideas introduced in class and/or problem sets during the first several weeks of the semester. Tentatively scheduled for February 19.
• **Interview Project (MATH 585 only):** You will design and conduct a 15-20 minute interview to explore another’s thinking regarding an analysis topic. You will submit a 4 page paper describing your results. *Tentatively due February 12.*

• **Teaching Project:** In groups of 2-3, you will prepare and present a 45-minute lesson relating to an exploration of an analysis topic that interests you. The lesson should draw upon technology and other resources to extend ideas and provide conceptual challenges for your peers. You will submit a 4-page paper describing your exploration, including its relationship with curricular goals. *Signup for teaching slots will be available toward the middle of the term.*

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**Course Grades**

- MATH 485: Problem Sets: 40%; Mid-term: 30%; Teaching Project: 30%
- MATH 585: Problem Sets: 35%; Mid-term 25%; Interview Project: 15%; Teaching Project: 25%

Letter grades will be assigned in the traditional 10-point increments, with +’s for final grades ending in 7, 8, or 9, and -’s for final grades ending in 0, 1, or 2.

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**Policies**

- **Policy on Late Assignments:** I expect that assignments will be turned in by the announced due dates. Assignments may be submitted in class, or by email before class. In special circumstances, I will consider accepting late assignments with penalty.

- **Attendance:** Attendance is required for all class sessions. Attendance is important for the following reasons. First, as a teacher it is important to develop the sense of responsibility needed to meet your class every day. Second, most classroom activities should yield experiences and learning that cannot be substituted with out-of-class assignments.

- **Attendance and Course Grades:** Participation in class is an important factor for me in determining final grades. Students who actively participate in class discussions, while respecting and engaging ideas of their peers, will get special consideration in determining borderline grades. Of course, you can’t actively participate if you aren’t in class. Please try to email me ahead of time if you need to miss a class.

- **Academic Misconduct:** University policies concerning academic misconduct apply to this class and can be found at [http://www.pdx.edu/dos/codeofconduct](http://www.pdx.edu/dos/codeofconduct).

- **Accommodations:** Please contact me as soon as possible if you need adaptations or accommodations because of a documented disability, if you have emergency medical information to share with me, or if you need special arrangements in case the building must be evacuated.