Syllabus MATH299A: Mathematics Seminar Class

Instructor Fall 2020: Olivier Bernardi

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Course description and objective: MATH299A is a seminar class for graduate students in mathematics. It is targeted primarily to Master students in mathematics.

The requirement for the class is a regular attendance at seminars in the mathematics department, such as the Everytopic seminar, Topology Seminar, Combinatorics seminar, etc. Students are encouraged to ask questions and engage with the speakers. In addition, students will be required to write a short reflection on a seminar talk of their choosing.

To satisfy this requirement, students may choose to attend talks from the seminars offered by the mathematics department, at the exception of the Graduate Student Seminar which does not count toward the requirement for this class. In the Fall 2020, the following mathematics seminars will be available on a regular basis:
- Everytopic seminar
- Topology seminar
- Dynamics and Number Theory seminar
- Brandeis-Harvard-MIT-Northeastern Colloquium
- Mathematical Biology seminar
- New Directions Lecture Series

The links to these seminars and further information can be found on the math department website at:


The Combinatorics seminar and the Eisenbud Lectures in Mathematics and Physics may also run occasional sessions. Students are free to choose different seminars every week, and also to attend several seminar some weeks and none some other weeks, based on their interests.
Learning goals: There are two major learning goals for this class.

- Expose students to mathematical research over a diverse set of topics, which are subject of active research in the mathematical community.
- Train students to absorb and discuss ideas and concepts pitched at a higher level of abstraction than in typical graduate classes. These are ideas, intuition, and general strategies, which are best presented without the weight of complete mathematical rigor.

Exam: There is no exam for this class.

Grading: The assessment of a satisfying participation to the class will be based on the following criteria:

- Students should attend at least 7 seminar talks during the semester. Students are free to choose different seminars every week, attend several seminars some weeks and none some other weeks. A student attending less than 7 seminar talks will not get a passing grade for the class.
- The students need to keep a log of their research seminar attendance and communicate weekly with the instructor: at the end of each week the student should indicate the seminar talks they attended and indicate the seminar series, the date, the speaker, the title and a short abstract for each talk attended. The abstracts should typically by 4 lines longs and include your own perspective on the content of the talk (what was important, or striking to you).
- At the end of the semester (or before), students should write a report summarizing of one of the seminar talks attended (to be chosen by the student). The report should be between 1 and 2 pages in length. The report should aim to convey the ideas of the talk to a mathematician who was not present to the talk, and has no specific knowledge about the field of research. The report should aim to cover the following points:
  1. Context of the results presented: mathematical field, related classical results and motivation.
  2. Summary of the primary results and methods used.
  3. Key concepts and ideas that learned from the talk. This could include concepts or technique they did not understand or have the background to follow.
  4. Questions and inspiration that the talk inspired to you: whether the talk piqued your interest and curiosity in a particular area, and any ideas you may have on future directions or related ques-
The seminar abstracts will account for 50% of the grade and the final report will account for 50% of the grade.

**Prerequisites:** There is no prerequisite for this class (except being enrolled in a Math graduate program: MA/MS/PhD).

**Disabilities:** If you are a student who needs accommodations as outlined in an accommodations letter, please talk with the instructor and present your letter of accommodation as soon as you can. If you have questions about documenting a disability or requesting accommodations, please contact Student Accessibility Support at 781-736-3470 or access@brandeis.edu.

**Credit hours:** Success in this two-credit course is based on the expectation that students will regularly attend some mathematical seminars, will try to engage with the speakers in order to grasp the main ideas of the talks. On average, students are expected to spend 1.5 hours per week of seminar attendance, and 3 additional hours per week trying to assess and explore the talks’ content in collaboration with their peers.

**Academic Integrity:** You are expected to be familiar with, and to follow, the University’s policies on academic integrity. Please consult Brandeis University Rights and Responsibilities for all policies and procedures. All policies related to academic integrity apply to in-class and take home projects, assignments, exams, and quizzes. Students may only collaborate on assignments with permission from the instructor. Allegations of alleged academic dishonesty will be forwarded to the Director of Academic Integrity. Sanctions for academic dishonesty can include failing grades and/or suspension from the university.