



THE UNIVERSITY OF BRITISH COLUMBIA

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[Contact Info](#)
[Research and Papers](#)
[Teaching](#)
[Putnam](#)
[Curriculum Vitae](#)
[Other Math Links](#)
[Non-math Links](#)

Teaching

[MATH 592 \(Fall 2018\)](#)
[Past courses](#)
[My students](#)

Other Links

[UBC Number Theory group](#)
[NT seminar schedule](#)
[\(edit number theory events\)](#)
[UBC Math Department](#)
[Math faculty directory](#)

MATH 592A (reading seminar): Comparative Prime Number Theory

Note: this course is listed as "Topics in Automorphic Forms" in the official registration system, but this is simply a misleading bureaucratic detail.

There will be an **organizational meeting** for this seminar on **Tuesday, September 11 at 3:30 PM** (lasting up to an hour) in room **MATH 102**. At that meeting, the topic of the seminar will be introduced, and the regular weekly meeting day/time will be determined.

Credits for the seminar: 2 per semester

Meeting day/time and location: to be determined

Office hours: by appointment or drop in

Office: room MATH 212 ([Mathematics Building](#))

Email address: gerg@math.ubc.ca

Course description: MATH 592A is a reading seminar on the topic of comparative prime number theory (including research done on "prime number races"), much of which is a fine-scale examination of the distribution of primes in arithmetic progressions. The ultimate purpose of the seminar is to create an annotated bibliography of every paper written in comparative prime number theory in the 20th century (the number of such papers is around 80–100); to this end, the seminar is planned to run in both semesters of the 2018/19 academic year.

Registered students will select papers from the bibliography in turn, digest their contents, give talks of 15–20 minutes on their contents, and write up (in LaTeX) a brief description of the papers' results and possibly the methods. Along the way, students will also check the papers' references and (when available) the list of papers referring to them, to ensure that no research in comparative prime number theory has been left off the list. (Feedback on this procedure and methodology will be welcome along the way; I will happily incorporate suggestions that improve the quality of the eventual annotated bibliography and/or make its creation easier.) Note that this goal will reward a big-picture approach to understanding each given paper; however, along the way students will become increasingly able to understand the methods used, as they will be repeated and reinforced from paper to paper. Indeed, students who complete the seminar are likely to be well prepared for undertaking research in this area, if they so choose.

Students who complete the course will earn co-authorship credit for the resulting annotated bibliography. Note that the more students register for the course, the fewer papers each individual student will end up being responsible for—a critical mass of registered students will make everybody's life better!

Audience: Anyone who is interested in classical analytic number theory is welcome in this seminar. **Students who took MATH 539 this past winter are perfectly positioned for this reading seminar;** other backgrounds in analytic number theory are also reasonable. Anybody is welcome to attend informally, to just listen to the talks or even to participate in various capacities. Those students who register in the course will be expected to fulfill the expectations described above.

Resources (in preparation):

- [static bibliography](#) (including papers before and after the 20th century)
- Google sheet (logistics for the course)
- [PDF versions of papers](#)
- evolving document with example summaries
- helpful example: [an annotated bibliography \(on Sidon sets\) by Kevin O'Bryant](#)