

Course Summary and Syllabus

*Lecturer: Chris Umans**Date: April 3***Course summary:**

This year's focus will be communication complexity. This is the study of how much communication is needed for multiple interacting parties to jointly solve a problem. It is a rich and beautiful subject with longstanding open problems, and connections to many areas of theoretical computer science.

In this course, we'll cover foundations and key results, and then focus on a few recent lines of work, and progress on open questions.

Course Information:

- Instructor: Chris Umans (umans@cs.caltech.edu)
- Lectures: Tuesdays and Thursdays 1:00 – 2:25 in Annenberg 314
- Office hours: TBD
- Text (not required): Communication Complexity, by Kushilevitz and Nisan (1997).
- Webpage: <http://www.cs.caltech.edu/~umans/cs153/> The webpage contains links to relevant papers, surveys, monographs, and other similar courses with online notes or slides.

Prerequisite: This course is pitched at a beginning graduate level, but both undergrads and grad students are encouraged to attend. Prerequisites are mathematical maturity and curiosity. The course is intended to be largely self-contained, but exposure to elementary probability and linear algebra, as well as material covered in CS21, CS38 and CS151, is helpful.

Course requirements and grading:

Course participants should attend/participate in lectures (20%), complete 2 short problem sets (30%), and read and present a relevant research paper at the end of the term (50%).

Possible topics/papers for presentation will be listed on the webpage.