

Miniclass projects

To be realized either alone or in a group of two.

Objective: prepare a **mini-class** to be given during the course (last two weeks).

Timing: **10 to 15 minutes** + 5 minutes of questions.

Typical plan:

- ▶ Broader context and overview of known results on this topic (3-4 min)
- ▶ Presentation of a particular algorithm or theorem (5-6 min)
- ▶ If applicable, main open questions in the field (3-4 min)
- ▶ Questions by the audience (4-5 min)

Suggested list of topics

1. Interval graphs (and who killed the duke of Densmore)
2. Graph spanners (geometric)
3. Graph spanners (non-geometric)
4. The graph isomorphism problem
5. Hamiltonian paths/cycles
6. Proof of Euler's formula and that \exists vertex of degree at most 5
7. Geometric routing
8. Cops and robbers games
9. The game of Hex (connections with graph theory)
9. Ramsey theory
10. Graph minors and the Robertson-Seymour theorem
11. Tarjan's algorithm for strongly connected components
12. Expander graphs
13. Perfect graphs
14. Random graph models (and results)
15. Population protocols (distributed algorithms)
16. Linial's lower bound for 3-colouring (dist. algo.)
17. Brook's theorem

+ You can suggest your own topics.

Selection: Send us an email with the names of participants and a ranking of the 6 preferred projects (or another suggestion) by **March 29**.