

# Seminar – Discrete Mathematics I

## (WS 2014)

**Instructor:** Juanjo Rué  
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**Place:** First meeting: the 8th September 2014, 15:00 at SR 025/026, Arnimallee 6.  
**Office Hours:** By appointment.

**Requirements:** A basic background in discrete mathematics is required (similar to the course of DM I). Students should come in order to plan the seminar, and schedule the talks. If for some reason an student could not come (but interested on attending the seminar), then should write an e-mail to Jun. Prof. Rué before the first meeting.

The seminar will cover the book Béla Bollobás: *Combinatorics* (Sets systems, Hypergraphs, families of vectors and combinatorial probability), Cambridge University Press. Each participant will have to read and prepare a presentation of 1 or 2 chapters of the book. Additionally to this, she or he must solve 3 problems of the chapter she/he has to prepare, and write a 2-4 pages abstract of the scientific material, joint with the solution of the problems. The participant can choose which problems prefer to work with.

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There will be the possibility of long papers, that can be splitted among several participants (2 or even 3). In case of a double/triple presentation of a topic, students work closely with her/his partner(s), adjust your lectures to each other, help each other with the understanding of the papers and advise each other with the planning of the individual lectures.

There will be at least **two** meetings between the instructor and each student before the oral presentation: one meeting approximately 3 weeks before the talk, where the student should present possible precise questions concerning the scientific material. The student should have read the material already at this point. The student should take care of writing the instructor in order to make an appointment. The goal of the meeting is to clarify the unclear points in the understanding of the proofs. For this, the student should prepare the questions concerning the proofs.

The second meeting will be approximately 1 week before the talk, where the student should show the structure and the main ideas of the talk. Again, in the second meeting the participant should contact with the instructor in order to make the appointment. This will be practically a rehearsal talk. In case of a beamer presentation, all the pages must be completed (it is not acceptable to have a picture or a slide still missing). In case of a blackboard presentation all what all that is planned to be written on the blackboard should be written on paper (the blackboard images, one after another) The goal of the meeting is that your advisor can give suggestions to improve the presentation ("this slide is too dense", "here maybe you should rearrange the order of things", etc...).

The students should prepare a 3-6 page abstract of the seminar to help the rest of the people attending the seminar to understand the seminar. Additionally to this, each student should solve and write 4 problems of the corresponding chapter. The student have freedom to choose the problems she/he wants to take in order to be evaluated.

**Attendance and activity:** To get credit, students must attend at least 90 per 100 of the lectures and ask the speaker with questions demanding more clear explanations (if necessary). The goal of the seminar is NOT that the speaker can repeat his/her rehearsed talk in an undisturbed manner, rather that the audience understands and learns some new mathematics.

**Grading:** the evaluation will be on the exposition, on the written abstract prepared for the seminar and on the problems associated with the corresponding chapter. Students will be graded based upon four criteria (both equally important)

- the understanding of the topic.
- the quality of the presentation.
- the abstract prepared for the seminar.
- the 4 problems solved.

A failing in either of these will result in a failing grade for the seminar.

**Bibliography:** the main reference is the book of Béla Bollobás *Combinatorics* (Sets systems, Hypergraphs, families of vectors and combinatorial probability), Cambridge University Press.