

Randomized Algorithms - 2014

Prof. Flávio Keidi Miyazawa

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- [Knuth talking about Randomized Algorithms](#) (made available by [Hsueh-I Lu](#))
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• Links about randomized algorithms

- [Wikipedia](#)

• Topics

- Basic concepts in probability.
- Moments and Deviations.
- Tail Inequalities.
- Ball, Bins and Random Graphs.
- The Probabilistic Method.
- Markov Chains and Random Walks.
- Applications in graphs, data structures, optimization, game theory, etc.

• Office Hours

Monday: 13-14hs, room 30, building IC1.

• Evaluation

The grade T is the average score of seven small tests (one for each chapter). The grade A is the average grade for the oral presentation (one by student) and class participation in other seminars. The grade L is the average score of seven lists of exercises. To obtain the score of a list of exercises, the professor will correct the same exercise of the list (randomly selected) for all students.

The value N is equal to $(2T+A+L)/4$. Students of the course MC738 can perform an additional exam (E), only if $N < 5,0$. In this case, the final grade is equal to $(N+E)/2$.

For graduate students, the final grade is computed using the following table conversion.

| | |
|--|--|
| | |
|--|--|

| Value of N | Final grade |
|--------------------|-------------|
| $N \geq 8.5$ | A |
| $7.0 \leq N < 8.5$ | B |
| $5.0 \leq N < 7.0$ | C |
| $N < 5.0$ | D |

● List of Exercises

- [List 1.](#)

● Important dates

- Tests: next class after the deadline of the corresponding list of exercises.
- Lists of exercises: at least one week for each list.

● Bibliography

- M. Mitzenmacher and E. Upfal. Probability and Computing : Randomized Algorithms and Probabilistic Analysis. Cambridge University Press, New York (NY), 2005. [Errata of the first printing](#), [second printing](#).
 - R. Motwani and P. Raghavan. Randomized Algorithms, Cambridge, 1995.
 - J. Michael Steele. Probability Theory and Combinatorial Optimization, SIAM, 1997.
 - V. Vazirani. Approximation Algorithms. 2001. Springer-Verlag.
 - D.S. Hochbaum (ed). Approximation Algorithms for NP-Hard Problems, PWS Publishing Company, 1997.
 - Papers on the subject.
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