Lectures and exercises "Computer Science and Mathematics"

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Summer term 2013, Tuesday, 14:15-16:00 h (FSR 1.2) and Wednesday, 10:15-12:00 h (FSR 2.7), additional class: Friday, April 11, 11 a.m. - 5 p.m.

Outline of the syllabus and estimated time schedule

9./10./11. 4.	Basic definitions for mathematics and computer science. Computer science: Introduction, representation of information, number systems, bits, bytes, measurement of information, databases, geographical information systems. The World Wide Web; foundations of programming. Introduction to rule-based simulation
16./17. 4.	Notations from logic and set theory, relations, functions. Numbers, powers, roots, logarithms, intervals.
23./24. 4.	Vectors, linear combinations, linear independence, inner product of vectors, norm, angle, cross product, linear transformations, matrices, rank of a vector system / of a matrix
30. 4.	Determinants, systems of linear equations, matrix product, inverse matrix
7./8. 5.	Leslie matrix, eigenvalues, eigenvectors, stochastic matrices, attractors of age classes dynamics
14. / 15. 5. 21. / 22. 5. 28. / 29. 5. 4./ 5. 6.	Basic calculus: Sequences, limits, limit of a function, differentiation, partial derivatives, extreme values, integration
11. / 12. 6. 18. / 19. 6. 25. / 26. 6.	Basics in statistics: scale levels of variables, histrograms and scatterplots, measures of location, dispersion and correlation, linear regression, probability, expected value, basics on sampling, basics on statistical testing