CCNM17-102: Mathematics
Course Description

Aim of the course

Aim of the course: The goal of this course is to gain a better understanding of those branches and fundamental concepts of mathematics that are needed most frequently in cognitive science-
In addition to well-applicable mathematical ideas I also plan to include some fun ideas and proofs that connect to those with practical importance.

Learning outcome, competences
knowledge:

- knows the introductory theories of mathematics

attitude:

- Interest for theoretical issues

skills:

- understanding literature that contains mathematical formulas and terminology
- using mathematical knowledge in building computer models (well, at least some, but the more the better).

Content of the course

Topics of the course

- combinatorics,
- probability theory,
- linear algebra,
- the basics of analysis, and differential equations, accompanied by examples of psychological and biological applications.

Learning activities, learning methods:
Lectures and interactive discussions
For numerical solutions when we need them, we will use Matlab or R-Studio.

Evaluation of outcomes

Learning requirements, mode of evaluation, criteria of evaluation:
requirements

- Reliable basic knowledge in the domain of mathematics
- written midterm test
- essays based on the required readings for the course

mode of evaluation: practical course mark
criteria of evaluation:

- Knowledge on basic concepts and the skill of utilizing the modells of the big mathematics topics

Reading list

Compulsory reading list

- Crilly, T. (2007). 50 mathematical ideas you really need to know. London: Quercus.
- Strang, G. (2009). Introduction to linear algebra. Wellesley, MA: Wellesley Cambridge Press

- Holzner, S. (2008). Differential equations for dummies. New York: Wiley.