

## MATHEMATICS PREPARATORY COURSE 2019/2020

This course is intended as a refreshment of mathematical tools of analysis, linear algebra and statistics which will be necessary for the CNS students in the first year.

**Lecturer:** Tilo Schwalger

**Tutors:** Veronika Koren, Negin Zariei, Christina Koß, Bastian Pietras

**Time:** Lecture 9:15 - 12:00 AM, Tutorial 1:00 - 4:00 PM

**Location:** BCCN Berlin, Lecture Hall (lecture) and Seminar Room (tutorial)

Course schedule:

DATE	TOPIC
Mon, Sept 16, 2019	Linear Algebra I: Vectors, Matrices and Linear Systems
Tue, Sept 17, 2019	Linear Algebra II: Determinants, Eigenvalues and Eigenfunctions
Wed, Sept 18, 2019	Analysis I: Elementary functions, Functions and Derivatives
Thu, Sept 19, 2019	Analysis II: Integrals, Series and Expansions
Fri, Sept 20, 2019	Analysis III: Integrals and Functions in several variables
Mon, Sept 23, 2019	Complex numbers and Fourier transform
Tue, Sept 24, 2019	Differential equations I: linear and nonlinear
Wed, Sept 25, 2019	Differential equations II: dynamical systems, stability
Thu, Sept 26, 2019	Probability theory: probability distributions, random variables, central limit theorem
Fri, Sept 27, 2019	Morning: Statistics: basic estimation theory and statistical tests Afternoon: Exam