Module Description
MA3001: Functional Analysis

Department of Mathematics

Module Level: Master
Language: English
Duration: one semester
Occurrence: winter semester

Credits:* 9
Total Hours: 270
Self-study Hours: 180
Contact Hours: 90

* Number of credits can vary according to study program. Please see Transcript of Records.

Description of Achievement and Assessment Methods:
Klausur

Type of Assessment: written
Duration of Assessment (min.): 60-90
Assessment Retake: End of Semester

(Recommended) Prerequisites:
MA1001 Analysis 1, MA1002 Analysis 2, MA1101 Lineare Algebra 1, MA1102 Lineare Algebra 2

Content:
Banach and Hilbert spaces; bounded linear operators, open mapping theorem; spectral theory for compact selfadjoint operators; duality, Hahn-Banach theorems; weak and weak* convergence; brief introduction to unbounded operators

Intended Learning Outcomes:
After successful completion of the module students are able to understand and apply basic theoretical techniques to analyze linear functionals and operators on Banach and Hilbert spaces.

Teaching and Learning Methods:
lecture, exercise course, self-study assignment

Media:
blackboard

Reading List:
**Responsible for Module:**
Rupert Lasser, lasser@gsf.de

**Courses (Form of Teaching, Weekly Hours per Semester) Lecturer:**
Exercises for Functional Analysis (Tutorial, 2 SWS)
Brokate M, Kreiner C

Functional Analysis (Lecture, 4 SWS)
Kreiner C [L], Brokate M

For further information regarding the Module please click [www.campus.tum.de](http://www.campus.tum.de) or [here](http://www.campus.tum.de).