## Module title

**Introduction to Functional Analysis**

### Abbreviation

10-M-FAN-072-m01

### Module coordinator

Dean of Studies Mathematik (Mathematics)

### Module offered by

Institute of Mathematics

### ECTS

5

### Method of grading

Only after succ. compl. of module(s)

### Method of grading

5 numerical grade

### Duration

1 semester

### Module level

undergraduate

### Other prerequisites

Certain prerequisites must be met to qualify for admission to assessment. The lecturer will inform students about the respective details at the beginning of the course. Registration for the course will be considered a declaration of will to seek admission to assessment. If students have obtained the qualification for admission to assessment over the course of the semester, the lecturer will put their registration for assessment into effect. Students who meet all prerequisites will be admitted to assessment in the current or in the subsequent semester. For assessment at a later date, students will have to obtain the qualification for admission to assessment anew.

### Contents

Banach spaces and Hilbert spaces, bounded operators, principles of functional analysis.

### Intended learning outcomes

The student knows the fundamental concepts and methods of functional analysis as well as the pertinent proof methods, is able to apply methods from linear algebra and analysis to functional analysis, and realises the broad applicability of the theory to other branches of mathematics.

### Courses

(type, number of weekly contact hours, language — if other than German)

V + Ü (no information on SWS (weekly contact hours) and course language available)

### Method of assessment

(type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

- written examination (approx. 90 minutes); if announced by the lecturer, the written examination can be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups (groups of 2, approx. 30 minutes)
- Language of assessment: German, English if agreed upon with the examiner

### Allocation of places

--

### Additional information

--

### Referred to in LPO I

(examination regulations for teaching-degree programmes)

§ 73 (1) 1. Mathematik Analysis

### Module appears in

- Bachelor’ degree (1 major) Mathematics (2008)
- Bachelor’ degree (1 major) Mathematics (2007)
- Bachelor’ degree (1 major) Technology of Functional Materials (2009)
- Bachelor’ degree (1 major) Technology of Functional Materials (2010)
- Bachelor’ degree (1 major) Economathematics (2009)
- Bachelor’ degree (1 major) Economathematics (2008)
- Bachelor’ degree (1 major) Mathematical Physics (2009)
- Bachelor’ degree (1 major) Computational Mathematics (2009)
- Master's degree (1 major) Technology of Functional Materials (2010)
- Master's degree (1 major) Technology of Functional Materials (2009)
Master's degree (1 major) Functional Materials (2012)
Bachelor's degree (1 major, 1 minor) Mathematics (Minor, 2008)
First state examination for the teaching degree Gymnasium Mathematics (2009)
Bachelor's degree (1 major) Technology of Functional Materials (2006)