Course MAT-71-11-K-7

Introduction to the Theory of Dirichlet Forms (4V+2U, 9.0 LP)

Course Type

SWS	Type	Course Form	CP (Effort)	Presence-Time	Self-Study
-	K	Lecture with exercise classes (V/U)	9.0 CP		186 h
4	V	Lecture		56 h	
2	U	Exercise class (in small groups)		28 h	
(4V+2U)			9.0 CP	84 h	186 h

Basedata

SWS	4V+2U
CP, Effort	9.0 CP = 270 h
Position of the semester	1 Sem. irreg.
Level	[7] Master (Advanced)
Language	[EN] English
Lecturers	Grothaus, Martin, Prof. Dr. (PROF | DEPT: MAT) (/staff/15/) + further Lecturers of the department Mathematics
Area of study	[MAT-SPAS] Analysis and Stochastics
Additional informations	Informations about the course (https://www.mathematik.uni-kl.de/techno/lehre/)
Livecycle-State	[NORM] Active

Contents

- resolvents, semigroups, generators (Theorem of Hille and Yosida),
- coercive bilinear forms (Stampacchia theorem, characterisation by resolvents, semigroups, generators),
- closed bilinear form,
- contraction properties (Sub-Markov property, Dirichlet operators, Dirichlet forms).

Literature

- Z.-M. Ma, M. Röckner: Introduction to the theory of (non-symmetric) Dirichlet forms,
- M. Fukushima: Dirichlet Forms and Markov Processes,
- M. Reed, B. Simon: Methods of modern mathematical physics I.

Materials

Further literature will be announced in the lecture; Exercise material is provided.

Registration

Registration for the exercise classes via the online administration system URM (https://urm.mathematik.uni-kl.de (https://urm.mathematik.uni-kl.de)).

Requirements for attendance (informal)

Modules:

- [MAT-10-1-M-2] Fundamentals of Mathematics (M, 28.0 LP) (/mhb/modules/MAT-10-1-M-2/)
- [MAT-70-11-M-4] Functional Analysis (M, 9.0 LP) (/mhb/modules/MAT-70-11-M-4/)

Requirements for attendance (formal)

None

References to Course [MAT-71-11-K-7]

Module	Name	Context	
[MAT-71-11-M-7 (/mhb/modules/MAT-71-11-M-7/)]	Introduction to the Theory of Dirichlet Forms	P: Obligatory	4V+2U, 9.0 LP