

Course Name	Hilbert space methods
Contents and Objectives	<p><u>Content:</u></p> <ul style="list-style-type: none"> • Definition of spaces with inner product, pre-Hilbert spaces, Hilbert spaces. • Orthogonality, orthonormal systems. • Operators on Hilbert spaces. • Spectral theory of compact operators on Hilbert spaces. • Reproducing kernel Hilbert spaces (RKHS). <p><u>Objectives of the course:</u> The students learn basic concepts of classical Hilbert space theory. In addition, they will become sensitive for the analogies and differences to the (finite dimensional) linear algebra. Finally, students will become familiar with the notion of a reproducing kernel Hilbert space.</p>
Teaching	<p>This course consists of lectures and exercise classes.</p> <ul style="list-style-type: none"> • Lecture: Hilbert space methods (4h/week) • Exercise class: Hilbert space methods (2h/week) <p>This class can be taught remotely.</p>
Prerequisites	Basic notions of Analysis, Linear Algebra.
Verwendbarkeit des Moduls	-
Examination	Oral exam (30 minutes)
Credits	8 ECTS points
Frequency	This course is given at least every second year.
Workload	The estimated total working time for this course in 240 hours.
Duration	This course is given during one semester.