Georg-August-Universität Göttingen **Module M.Mat.4512: Specialisation in analysis of partial differential equations**	9 C 6 WLH

Learning outcome, core skills: **Learning outcome:** The successful completion of modules of the cycle "Analysis of partial differential equations" enables students to learn methods, concepts, theories and applications in the area "Analysis of partial differential equations". During the course of the cycle students will be successively introduced to current research topics and able to carry out independent contributions to research (e. g. within the scope of a Master's thesis). Depending on the current course offer the following content-related competencies may be pursued. Students • are familiar with the most important types of partial differential equations and know their solutions; • master the Fourier transform and other techniques of the harmonic analysis to analyse partial differential equations; • are familiar with the theory of generalised functions and the theory of function spaces and use these for solving differential partial equations; • apply the basic principles of functional analysis to the solution of partial different equations; • use different theorems of function theory for solving partial different equations; • master different asymptotic techniques to study characteristics of the solutions of partial different equations; • are paradigmatically familiar with broader application areas of linear theory of partial different equations; • are paradigmatically familiar with broader application areas of non-linear theory of partial different equations; • know the importance of partial different equations in the modelling in natural and engineering sciences; • master some advanced application areas like parts of microlocal analysis or parts of algebraic analysis. **Core skills:** After having successfully completed the module, students will be able to • enhance concepts and methods for special problems and applications in the area "Analysis of partial differential equations"; • prepare substantial ideas of proof in the area "Analysis of partial differential equations".	**Workload:** Attendance time: 84 h Self-study time: 186 h

Courses:	
1. Lecture course (Lecture)	4 WLH
2. Exercise session (Exercise)	2 WLH

Examination: Oral examination (approx. 20 minutes)	9 C

Examination prerequisites:
Achievement of at least 50% of the exercise points and presentation, twice, of solutions in the exercise sessions

Examination requirements:
Proof of the acquisition of special skills and the mastery of special knowledge in the area "Analysis of partial differential equations"

Admission requirements: none	**Recommended previous knowledge:** B.Mat.3312
Language: English	**Person responsible for module:** Programme coordinator
Course frequency: Usually subsequent to the module B.Mat.3312 "Advances in analysis of partial differential equations"	**Duration:** 1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** Master: 1 - 3
Maximum number of students: not limited	

Additional notes and regulations:
Instructor: Lecturers at the Mathematical Institute