Module Name
Selected Topics of Applied Analysis

Type of Module	**Module Code**
Advanced Module	AM-STAA

Identification Number	**Workload**	**Credit Points**	**Term**	**Offered Every**	**Start**	**Duration**
MN-CS-STAA	270 Hours	9 CP	1. – 3. Semester	Year (mainly WiSe)	Winter semester	1 Semester

1	**Course Types**	**Contact Time**	**Private Study**	**Planned Group Size**
	a) Lecture	56 h	112 h	b) 30 Students
	b) Exercise	28 h	56 h	
	Exam Preparation		18 h	

2 Module Objectives and Skills to be Acquired

The students have acquired an in-depth range of methods and specialist knowledge that prepare them for a master's thesis and also for a doctorate.

In addition to in-depth specialist knowledge, lectures and exercises also provide advanced skills for classifying, recognizing, formulating and solving problems and training in conceptual, analytical and logical thinking. In addition to deepening the lecture material, the exercises also serve to acquire communication and presentation skills.

3 Module Content

Further topics from: calculus of variations, variation inequalities, theory of viscosity solutions of partial differential equations, Hamiltonian systems, wave equations, dynamics of infinite dimensional systems, geodetic flows, stability theory, elliptical equations, Riemann Surfaces, Complex Geometry, Analysis on Lie-Manifolds.

For topics and other literature see the current annotated course catalog.

4 Teaching Methods

Lectures and Exercises

5 Prerequisites (for the Module)

Formally: none

Regarding the Contents: Solid knowledge of analysis, usually in the scope of at least one of the lectures Partial Differential Equations or Dynamic Systems.

6 Type of Examination

Written or Oral Examination

7 Credits Awarded

The module is passed and credit points are awarded if the 180-minute final exam is passed or the 30-45-minute oral final exam is passed. The prerequisite for admission to the exam is regular successful completion of the exercises. The respective lecturer announces the exact requirements at the beginning of the event. Registration is required to take the final exam; A resit examination is offered at the beginning of the following semester. Repeated participation in the lecture and the exercises to prepare for a repetition of the final examination is possible. The module is graded.

8 Compatibility with other Curricula

None

9	**Proportion of Final Grade** 9/114
10	**Module Coordinator** Prof. Dr. M. Kunze, Prof. Dr. G. Marinescu, Prof. Dr. G. Sweers, Prof. Dr. D. V. Vu
11	**Further Information**