

Module Handbook

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Course INF-14-56-K-6

Optimization in Fluid Mechanics (2V+1U, 4.5 LP)

Course Type

SWS	Type	Course Form	CP (Effort)	Presence-Time / Self-Study
-	K	Lecture with exercise classes (V/U)	4.5 CP	93 h
2	V	Lecture		28 h
1	U	Exercise class (in small groups)		14 h
(2V+1U)			4.5 CP	42 h 93 h

Basedata

SWS	2V+1U
CP, Effort	4.5 CP = 135 h
Position of the semester	1 Sem. irreg. SuSe
Level	[6] Master (General)
Language	[EN] English
Lecturers	Gauger, Nicolas, Prof. Dr. (PROF DEPT: INF)
Area of study	[INF-VIS] Visualisation and Scientific Computing
Lifecycle-State	[NORM] Active

Possible Study achievement

- Verification of study performance: **proof of successful participation in the exercise classes (ungraded)**
- Details of the examination (type, duration, criteria) will be announced at the beginning of the course.

Contents

- State equations in fluid mechanics
- Reynolds-averaging and turbulence modeling
- Finite Volume Method
- Cost functions and constraints in fluid mechanics
- Shape optimization
- Optimal active flow control
- Continuous and discrete adjoint methods
- One-shot methods

Literature

Will be announced in the lecture.

Requirements for attendance (informal)

Module "Grundlagen der Mathematik" of BSc program Mathematics (or similar). Basic knowledge in Partial Differential Equations and Numerics.

Requirements for attendance (formal)

None

References to Course [INF-14-56-K-6]

Module	Name	Context	
[INF-14-56-M-6]	Optimization in Fluid Mechanics	P: Obligatory	2V+1U, 4.5 LP
Course-Pool	Name		
[INF-VIS_V-KPOOL-6]	Lectures of the teaching area Visualization and Scientific Computing		