

## Module Handbook

TUK MODHB Homepage

# Module INF-56-01-M-6

Program Analysis (M, 6.0 LP)

## Module Identification

Module Number	Module Name	CP (Effort)
INF-56-01-M-6	<i>Program Analysis</i>	6.0 CP (180 h)

## Basedata

CP, Effort	6.0 CP = 180 h
Position of the semester	1 Sem. irreg. WiSe
Level	[6] Master (General)
Language	[EN] English
Module Manager	Majumdar, Rupak, Prof. Dr. (PROF   DEPT: INF)
Lecturers	Christakis, Maria, Dr. (WMA   DEPT: INF) Darulova, Eva, Dr. (WMA   DEPT: INF) Neider, Daniel, Dr. (WMA   DEPT: INF)
Area of study	[INF-ALG] Algorithmics and Deduction
Reference course of study	[INF-88.79-SG] M.Sc. Computer Science
Lifecycle-State	[NORM] Active

## Courses

Type/SWS	Course Number	Choice in Module-Part	SL	PL	CP	Sem.
3V+1U	INF-56-01-K-6	P	U-Schein	PL1	6.0	irreg. WiSe

- About [INF-56-01-K-6]: Title: "Program Analysis"; Presence-Time: 56 h; Self-Study: 124 h
- About [INF-56-01-K-6]: The study achievement "[U-Schein] proof of successful participation in the exercise classes (ungraded)" must be obtained.

## Examination achievement PL1

- Form of examination: **written exam (Klausur) (60-180 Min.)**
- Examination Frequency: each winter semester
- Examination number: 65602 ("Program Analysis")

## Evaluation of grades

The grade of the module examination is also the module grade.

### Contents

From [INF-56-01-K-6] Program Analysis:

- Lattice theory and static analysis
- Abstract interpretation
- Predicate abstraction and abstraction refinement
- Interprocedural dataflow analysis
- Deductive verification
- Invariant generation
- Dynamic analysis
- Weakest preconditions
- Automatic test case generation
- Symbolic execution

### Competencies / intended learning achievements

After successfully completing the module, students will be able to

- introduce the key ideas behind program analysis techniques,
- develop an intuition of what kind of problems static and dynamic analysis techniques can or cannot solve,
- explain the trade-offs in, e.g., efficiency and accuracy,
- provide an overview of the application areas of program analysis.

### Literature

From [INF-56-01-K-6] Program Analysis:

Will be announced during the lecture.

### Requirements for attendance of the module (informal)

#### Courses

- [INF-02-04-K-2] Formal Languages and Computability (3V+2U, 6.0 LP)

### Requirements for attendance of the module (formal)

None

### References to Module / Module Number [INF-56-01-M-6]

<b>Course of Study</b>	<b>Section</b>	<b>Choice/Obligation</b>
[INF-88.79-SG] M.Sc. Computer Science	[Specialisation] Specialization 1	[WP] Compulsory Elective
[INF-88.79-SG] M.Sc. Computer Science	[Specialisation] Specialization 1	[WP] Compulsory Elective