



Algorithmics for Discrete Data Science

Module title:

Algorithmics for Discrete Data Science

Credits:

6

Responsible person:

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Display language:

Englisch

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Learning Outcomes

Students who have completed this module can design and analyze algorithms for combinatorial data science problems. When facing a concrete computational problem, they are able to choose a strategy to efficiently solve the problem within provable performance guarantees.

This includes strategies for solving problems that are computationally hard in the worst case.

In particular, the students know about algorithmic research topics in discrete data science.

Content

Algorithm design and analysis for the classical computation model as well as alternative models of computation. The various models (including RAM, memory hierarchy, online, streaming, etc.) are employed in several fundamental problem domains.

These domains include:

- Network analysis,
- Sequence analysis, and
- Matrix analysis.

Module Components

Course Name	Type	Number	Cycle	SWS
Algorithmics for Discrete Data Science	IV	0434 L 239	k.A.	4

Workload and Credit Points

Algorithmics for Discrete Data Science (Integrierte Veranstaltung)	Multiplier	Hours	Total
Attendance	15.0	4.0h	60.0h
Pre/post processing	15.0	8.0h	120.0h
			180.0h

The Workload of the module sums up to 180.0 Hours. Therefore the module contains 6 Credits.

Description of Teaching and Learning Methods

The course consists of roughly 3/4 lecture and 1/4 tutorial parts; in the tutorials concrete problems are solved together.

Requirements for participation and examination

Desirable prerequisites for participation in the courses:

- a) obligatory: basic knowledge on algorithm design
- b) desirable: basic understanding of approximation and parameterized algorithmics; participation in the course Advanced Algorithmics

Mandatory requirements for the module test application:

No information

Module completion

Grading:

graded

Type of exam:

Written exam

Language:

English

Duration/Extent:

90 min

Duration of the Module

This module can be completed in one semester.

Maximum Number of Participants

This module is not limited to a number of students.

Registration Procedures

Please register at QISPOS or directly at the Examination Office.

Recommended reading, Lecture notes

Lecture notes:

unavailable

Electronical lecture notes :

available

Recommended literature:

Current research literature related to the course will be made available.

Assigned Degree Programs

This module is used in the following modulelists:

Computer Engineering (Master of Science)

StuPO 2015

Modullisten der Semester: WS 2018/19 SS 2019 WS 2019/20 SS 2020

Computer Science (Informatik) (Master of Science)

StuPO 2015

Modullisten der Semester: WS 2018/19 SS 2019 WS 2019/20 SS 2020

Elektrotechnik (Master of Science)

StuPO 2015

Modullisten der Semester: WS 2018/19 SS 2019 WS 2019/20 SS 2020

Wirtschaftsinformatik / Information Systems Management (Master of Science)

StuPO 2017

Modullisten der Semester: WS 2018/19 SS 2019 WS 2019/20 SS 2020

Wirtschaftsingenieurwesen (Master of Science)

StuPO 2015

Modullisten der Semester: WS 2018/19 SS 2019 WS 2019/20 SS 2020

Miscellaneous

This course is not offered regularly, you will find detailed information on our website: <http://www.akt.tu-berlin.de/menu/teaching/>