

Randomized Algorithms

Module title:

Randomized Algorithms

Credits:

6

Responsible person:

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Office:

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Contact person:

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Website:
<http://www.akt.tu-berlin.de/menue/teaching>
Display language:

Englisch

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Learning Outcomes

Participants of this module know fundamental randomized methods for design and analysis of efficient algorithms. They can perform simple probabilistic analyses and are aware of the limitations of randomization.

Content

Introduction into the mathematical and algorithmic foundations of algorithm design and analysis using the resource "random bits".

Particular topics are:

- randomized algorithms for graph problems and geometric problems
- the probabilistic method
- randomized complexity classes

Module Components

Course Name	Type	Number	Cycle	SWS
Randomized Algorithms	IV	0434 L 236	k.A.	4

Workload and Credit Points

Randomized Algorithms (Integrierte Veranstaltung)	Multiplier	Hours	Total
Präsenzzeit	15.0	4.0h	60.0h
Vor-/Nachbereitung	15.0	6.0h	90.0h
			150.0h

Course-independent workload	Multiplier	Hours	Total
Prüfungsvorbereitung	1.0	30.0h	30.0h
			30.0h

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

Description of Teaching and Learning Methods

The course material is presented in lectures. The lectures are accompanied by tutorials in which distributed work sheets are solved together.

Requirements for participation and examination

Desirable prerequisites for participation in the courses:

obligatory: Basic knowledge of algorithm design and analysis

Mandatory requirements for the module test application:

No information

Module completion

Grading:

graded

Type of exam:

Oral exam

Language:

English

Duration/Extent:

30 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

Additional information:

Slides will be made available during the lecture period: www.isis.tu-berlin.de

Recommended literature:

Michael Mitzenmacher, Eli Upfal: Probability and Computing, Cambridge University Press, 2005.

Rajeev Motwani, Prabhakar Raghavon: Randomized Algorithms, Cambridge University Press, 1995.

Assigned Degree Programs

This module is used in the following modulelists:

Computer Engineering (Master of Science)

StuPO 2015

Modullisten der Semester: SS 2017 WS 2017/18 SS 2018

Computer Science (Informatik) (Master of Science)

StuPO 2015

Modullisten der Semester: SS 2017 WS 2017/18 SS 2018

Elektrotechnik (Master of Science)

StuPO 2015

Modullisten der Semester: SS 2017 WS 2017/18 SS 2018

Informatik (Master of Science)

MSc Informatik PO 2013

Modullisten der Semester: SS 2017 WS 2017/18 SS 2018

Technische Informatik (Master of Science)

StuPO 2013

Modullisten der Semester: SS 2017 WS 2017/18 SS 2018

Wirtschaftsinformatik / Information Systems Management (Master of Science)

StuPO 2013

Modullisten der Semester: SS 2017 WS 2017/18 SS 2018

StuPO 2017

Modullisten der Semester: WS 2017/18 SS 2018

Wirtschaftsingenieurwesen (Master of Science)

StuPO 2015

Modullisten der Semester: WS 2017/18 SS 2018 WS 2018/19

Miscellaneous

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