



# Algorithm Coding Club (Winter)

**Module title:**

Algorithm Coding Club (Winter)

**Credits:**

3

**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

On successful completion, students know:

- advantages and disadvantages of different data structures to represent graphs, in particular adjacency lists and matrices.
- implementations of fundamental graph algorithms, in particular various variations of breadth-first search.
- approaches to solve showcase problems like computing paths, finding separators, and identifying important subgraphs.

Furthermore, students will be able to:

- model given tasks with graphs in a mathematical and formal way.
- design efficient algorithms to solve the given computational graph problems with adequate data structures and basic algorithms.
- work in teams.
- successfully participate in programming contests such as the ACM Programming Contest.

## Content

The course

- gives an introduction to modelling problems especially focussing on graphs,
- gives an overview on standard techniques in algorithm design for challenging computational problems on graphs,
- teaches to design and implement algorithms, and
- teaches effective team work.

## Module Components

Course Name	Type	Number	Cycle	SWS
Algorithm Coding Club	PJ		WS/SS	2

## Workload and Credit Points

Algorithm Coding Club (Projekt)	Multiplier	Hours	Total
Präsenzzeit	15.0	2.0h	30.0h
Vor-/Nachbereitung	15.0	4.0h	60.0h
			90.0h

The Workload of the module sums up to 90.0 Hours. Therefore the module contains 3 Credits.

## Description of Teaching and Learning Methods

Wöchentliche praktische Übungen und Diskussion von Lösungsansätzen.

Weekly practical exercises and discussion of approaches to solve the problems.

## Requirements for participation and examination

**Desirable prerequisites for participation in the courses:**

Grundkenntnisse zu Algorithmen, Datenstrukturen und Programmierung sind hilfreich.

Basic knowledge in algorithms, data structures, and programming is helpful.

**Mandatory requirements for the module test application:**

*No information*

## Module completion

**Grading:**

graded

**Type of exam:**

100 points in total

**Language:**

English

**Grading scale:**

Note:	1.0	1.3	1.7	2.0	2.3	2.7	3.0	3.3	3.7	4.0
Punkte:	95.0	90.0	85.0	80.0	75.0	70.0	65.0	60.0	55.0	50.0

**Test description:**

Die Gesamtnote gemäß §47 (2) AllgStuPO wird nach dem Notenschlüssel 2 der Fakultät IV ermittelt; wir behalten uns jedoch vor, ihn zugunsten der Studierenden anzupassen.

Programmieraufgaben: Geprüft wird die Lauf- und Funktionsfähigkeit von Programmen, die innerhalb spezifizierter Zeitlimits vorgegebene Funktionen berechnen sollen.

Schriftlicher Test: Am Ende des Projekts wird die Teilnahme an einem Programmierwettbewerb durch einen 60-minütigen Test simuliert.

According to §47 (2) AllgStuPO the grade will be calculated applying grading key 2 of Fakultät IV, it may however be altered in favour of the students.

Programming Tasks: It is checked whether the submitted programs fulfill given specifications within given time limits.

Written Test: At the end of the term participation in a programming contest is simulated within a 60-minute test.

Test elements	Categorie	Points	Duration/Extent
(Ergebnisprüfung/Deliverable assessment) Programmieraufgaben/Programming Tasks	practical	75	5 Abgaben à 15 Punkte
(Punktuelle Leistungsabfrage) Schriftlicher Test/Written Test	written	25	60 min

**Duration of the Module**

This module can be completed in 1 semesters.

**Maximum Number of Participants**

This module is limited to maximum capacity of 40

**Registration Procedures**

Die Anmeldung erfolgt über QISPOS (für BSc Informatik) bzw. direkt beim Prüfungsamt.

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](http://www.isis.tu-berlin.de)

**Assigned Degree Programs**

This module is used in the following modulelists:

<b>Informatik (Bachelor of Science)</b>
StuPO 2015
Modullisten der Semester: WS 2017/18

**Miscellaneous**

Bei ausreichenden Kapazitäten auch als Wahlpflichtmodul in anderen Studiengängen wählbar.