



Course and Examination Fact Sheet: Autumn Semester 2022

3,322: Fundamentals of Computer Science

ECTS credits: 4

Overview examination/s

(binding regulations see below)

Central - Written examination (90%, 90 mins.)

Examination time: inter-term break

Decentral - Written examination (with individual examination duration) (10%)

Examination time: term time

Attached courses

Timetable -- Language -- Lecturer

[3,322,1.00 Fundamentals of Computer Science](#) -- Englisch -- [Seiger Ronny](#) , [Mayer Simon](#)

[3,322,2.01 Fundamentals of Computer Science: Exercises, Group 1](#) -- Englisch -- [Grau Marc Christopher](#)

[3,322,2.02 Fundamentals of Computer Science: Exercises, Group 2](#) -- Englisch -- [Sorg Thierry](#)

Course information

Course prerequisites

There are no formal prerequisites for this course.

Learning objectives

Students understand the possibilities and limits of computer algorithms and are able to map real-world problems to algorithmic problems.

Students know the fundamental control and data structures used to construct programs and can apply them when creating programmatic solutions to algorithmic problems. They know and can explain what happens when a program is translated and executed on a computer.

Students have an understanding of programming concepts (both procedural and object-oriented) and are able to apply them when creating these programmatic solutions.

Students know about modern software engineering concepts and practices, understand their role within the software development process, and can apply several of them when creating computer programs.

Students know and can apply basic concepts from the fields of distributed systems (e.g., networking stack, Web architecture), data engineering and data science (e.g., extraction, cleaning, storage of large data sets), and machine learning (e.g., supervised and unsupervised learning).

Course content

The goal of this course is to equip students with **basic theoretical understanding and practical know-how in Computer Science**, equipping them with the (problem-solving) mindset and set of tools required to solve business problems with CS tools. With its setup that includes **graded fortnightly quizzes, exercise assignments, and close support of students** through tutors, we will support students in achieving the stated learning objectives.

Course structure and indications of the learning and teaching design

This course features interactive lectures with short in-lecture exercises in combination with weekly exercise sessions in small groups. During the exercise sessions, students work on and discuss the fortnightly exercise assignments and quizzes with their tutor.



Course literature

Course literature will be announced during the respective lectures.

Additional course information

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Examination information

Examination sub part/s

1. Examination sub part (1/2)

Examination time and form

Central - Written examination (90%, 90 mins.)

Examination time: inter-term break

Remark

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Examination-aid rule

Extended Closed Book

The use of aids is limited; any additional aids permitted are exhaustively listed under "Supplementary aids". Basically, the following is applicable:

- At such examinations, all the pocket calculators of the Texas Instruments TI-30 series and mono- or bilingual dictionaries (no subject-specific dictionaries) without hand-written notes are admissible. Any other pocket calculator models and any electronic dictionaries are inadmissible.
- In addition, any type of communication, as well as any electronic devices that can be programmed and are capable of communication such as notebooks, tablets, mobile telephones and others, are inadmissible.
- Students are themselves responsible for the procurement of examination aids.

Supplementary aids

No further examination aids are permitted.

Examination languages

Question language: English

Answer language: English

2. Examination sub part (2/2)

Examination time and form

Decentral - Written examination (with individual examination duration) (10%)

Examination time: term time

Remark

Fortnightly quizzes during the exercise sessions.

Examination-aid rule

Electronic aids BYOD at HSG - Extended closed book

The use of aids is limited. Any additional aids permitted must be listed exhaustively in the section "Supplementary aids". The following generally applies:

- For this examination, all pocket calculators of the Texas Instruments TI-30 series and mono- or bilingual dictionaries (no subject-specific dictionaries) without marginal notes are admissible. All other pocket calculator models as well as electronic dictionaries are inadmissible.



- In addition, any type of communication is inadmissible, as are all electronic devices that can be programmed and enable communication, such as additional notebooks, tablets, mobile phones and other devices, which have not been explicitly permitted by the faculty member in charge.

The procurement of the electronic aids as well as ensuring their functionality and fulfillment of the technical requirements is the responsibility of the students.

The examination must be carried out on university equipment and using the programs defined in advance by the faculty member in charge. Mastery of the operation of the programs is part of the examination.

Supplementary aids

No further examination aids are permitted.

Examination languages

Question language: English

Answer language: English

Examination content

All contents from lecture and exercise sessions, including the discussions during the lecture and exercise sessions, as well as referenced literature, on the following topics:

- Information Representation and Processing in Computer Systems: bits, bytes, numbers, computer hardware
- Programming: procedural programming, usage of external libraries, object-oriented programming, algorithms and data structures
- Software Engineering: lean software development, agile practices, DevOps
- Distributed Systems, Data Engineering and Data Science, Machine Learning

Examination relevant literature

- Lecture and exercise slides, exercise assignments, provided hand-outs, and referenced literature during the course. All literature will be made available via Canvas before the end of term (at the latest).

Please note

Please note that only this fact sheet and the examination schedule published at the time of bidding are binding and takes precedence over other information, such as information on StudyNet (Canvas), on lecturers' websites and information in lectures etc.

Any references and links to third-party content within the fact sheet are only of a supplementary, informative nature and lie outside the area of responsibility of the University of St.Gallen.

Documents and materials are only relevant for central examinations if they are available by the end of the lecture period (CW51) at the latest. In the case of centrally organised mid-term examinations, the documents and materials up to CW 42 are relevant for testing.

Binding nature of the fact sheets:

- Course information as well as examination date (organised centrally/decentrally) and form of examination: from bidding start in CW 34 (Thursday, 25 August 2022);
- Examination information (regulations on aids, examination contents, examination literature) for decentralised examinations: in CW 42 (Monday, 17 October 2022);
- Examination information (regulations on aids, examination contents, examination literature) for centrally organised mid-term examinations: in CW 42 (Monday, 17 October 2022);
- Examination information (regulations on aids, examination contents, examination literature) for centrally organised examinations: two weeks before the end of the registration period in CW 45 (Monday, 7 November 2022).