University of St.Gallen

Course and Examination Fact Sheet: Autumn Semester 2023

3,322: Fundamentals of Computer Science

ECTS credits: 4

Overview examination/s

(binding regulations see below)
central - Analog written examination, Analog, Individual work individual grade (90%, 60 Min.)
Examination time: Lecture-free period
decentral - Digital written examination, Digital, Individual work individual grade (10%, 75 Min.)
Examination time: Term time

Attached courses

Timetable -- Language -- Lecturer
3,322,1.00 Fundamentals of Computer Science -- English -- Seiger Ronny , Mayer Simon
3,322,2.01 Fundamentals of Computer Science: Exercises, Group 1 -- English -- Zimmermann Lisa
3,322,2.02 Fundamentals of Computer Science: Exercises, Group 2 -- English -- 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.

University of St.Gallen

Course literature

Course literature will be announced during the respective lectures.

Additional course information

--

Examination information

Examination sub part/s

1. Examination sub part (1/2)

Examination modalities

Examination type	Analog written examination
Responsible for organisation	central
Examination form	Written exam
Examination mode	Analog
Time of examination	Lecture-free period
Examination execution	Synchronous
Examination location	On Campus
Grading type	Individual work individual grade
Weighting	90%
Duration	60 Min.

Examination languages

Question language: English
Answer language: English

Remark

--

Examination-aid rule

Closed Book

The use of aids is prohibited as a matter of principle, with the exception of pocket calculator models of the Texas Instruments TI-30 series and, in case of non-language exams, bilingual dictionaries without any handwritten notes. Any other aids that are admissible must be explicitly listed by faculty members in the paragraph entitled “Supplementary aids” of the course and examination fact sheet; this list is exhaustive.

Procuring any aids, as well as ensuring their working order, is the exclusive responsibility of students.

Supplementary aids

No further exam aids are permitted.

---

2. Examination sub part (2/2)

Examination modalities

Examination type	Digital written examination
Responsible for organisation	decentral
Examination form	Written exam
Examination mode	Digital

University of St.Gallen

Time of examination	Term time
Examination execution	Synchronous
Examination location	On Campus
Grading type	Individual work individual grade
Weighting	10%
Duration	75 Min.

Examination languages
Question language: English
Answer language: English

Remark
5 problem sets

Examination-aid rule
Open Book

Students are free to choose aids, apart from the following restrictions:

- pocket calculator models which are not part of the Texas Instruments TI-30 series, as well as any programmable electronic devices that are capable of communication such as electronic dictionaries, notebooks, tablets, smartphones, headsets, additional screens, etc. are not admissible;
- there is an option for faculty members to explicitly define exceptions under supplementary aids.

Procuring any aids, as well as ensuring their working order, is the exclusive responsibility of students.

Supplementary aids

The examination will be conducted as a digital examination with the following admissible media:

- **Private notebook** (compulsory) – no tablets!
- **Mains adapter** (compulsory)
- External computer mouse (optional)
- External computer keyboard (optional)

We would like to point out explicitly that the examination cannot be taken with tablets/iPads.

You will need the following for the examination:

- Appliance and system requirements: cf. StudentWeb
- Special software: LockDown Browser
- HSG log-in including access modalities
- WLAN – operational access to Eduroam

Please make sure that

- all the updates have been carried out before the examination.
- In the run-up to digitally conducted examinations, technical tests (mock examinations without grades) are carried out. Participation is urgently required!
- You yourself are responsible for the perfect working order of your appliance, cf. also StudentWeb.
- Keyboard stickers in the language in which the examination is conducted (such as English, German, as well as Arabic, Chinese, Russian, Japanese, etc. in language examinations) are permitted. The stickers must be identical with the original characters of the language concerned.

Any use of additional appliances that are not listed above will be strictly prohibited throughout the examination.

Any necessary actions with another software or additional appliances require the express prior approval of the persons in charge of the examination and are only permitted under supervision.

Any infringement of these rules of conduct may be sanctioned as an infringement of the rules of the University.

University of St.Gallen

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, 24 August 2023);
- Examination information (supplementary aids, examination contents, examination literature) for decentralised examinations: in CW 42 (Monday, 16 October 2023);
- Examination information (supplementary aids, examination contents, examination literature) for centrally organised mid-term examinations: in CW 45 (Monday, 06 November 2023);
- Examination information (regulations on aids, examination contents, examination literature) for centrally organised examinations: two weeks before the end of the de-registration period in CW 45 (Monday, 06 November 2023).