University of St.Gallen

Course and Examination Fact Sheet: Autumn Semester 2020

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 - examination paper written at home (individual) (10%)
Examination time: term time

Attached courses

Timetable -- Language -- Lecturer
3,322,1.00 Fundamentals of Computer Science -- Englisch -- Weber Barbara , Mayer Simon
3,322,2.00 Fundamentals of Computer Science: Exercises -- Englisch -- Seiger Ronny
3,322,2.01 Fundamentals of Computer Science: Exercises, Group 1 -- Englisch -- Seiger Ronny

Course information

Course prerequisites

There are no formal prerequisites for this course. However, students who participate in the course need to have worked on and completed an entry assignment by the start of the semester.

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 bi-weekly quizzes, exercise assignments,** and **close support of students through tutors** we will support students in achieving the given learning objectives.

Course structure

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 bi-weekly quizzes with their tutor.

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Course literature
Course literature will be announced during the respective lectures.

Additional course information

In the case of the President's Board having to implement new directives due to the SARS-CoV-2 pandemic in AS2020, the course information listed above will be changed as follows:

- The course is conducted online via the platform Zoom;
- The recordings of the course are available for 30 days;
- The lecturer informs via Canvas about on the changed implementation modalities of the course;
- Coding support sessions are conducted via Zoom;

The examination information listed below would be changed as follows:

- There are no changes necessary to the examination information.

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 - examination paper written at home (individual) (10%)
Examination time: term time

Remark

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Examination-aid rule
Term papers

Term papers must be written without anyone else's help and in accordance with the known quotation standards, and they must contain a declaration of authorship which is a published template in StudentWeb.

The documentation of sources (quotations, bibliography) has to be done throughout and consistently in accordance with the chosen citation standard such as APA or MLA.

For papers in law, the legal standard is recommended (by way of example, cf. FORSTMOSER, P., OGOREK R. et SCHINDLER B., Juristisches Arbeiten: Eine Anleitung für Studierende, newest edition respectively, or according to the recommendations of the Law School).

The indications of the sources of information taken over verbatim or in paraphrase (quotations) must be integrated into texts in accordance with the precepts of the applicable quotation standard, while informative and bibliographical notes must be added as footnotes (recommendations and standards can be found, for example, in METZGER, C., Lern- und Arbeitsstrategien, newest edition respectively.

For any work written at the HSG, the indication of the page numbers is mandatory independent of the chosen citation standard. Where there are no page numbers in sources, precise references must be provided in a different way: titles of chapters or sections, section numbers, acts, scenes, verses, etc.

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, 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

 - Provided lecture and exercise slides

- Exercise assignments

- Quizzes

- Provided hand-outs

- Referenced literature

- Discussions during the lecture and exercise sessions

Please note

Please note that only this fact sheet and the examination schedule published at the time of bidding are is 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, 20 August 2020);
- Examination information (regulations on aids, examination contents, examination literature) for decentralised examinations: in CW 42 (Monday, 12 October 2020);
- Examination information (regulations on aids, examination contents, examination literature) for centrally organised mid-term examinations: in CW 42 (Monday, 12 October 2020);
- Examination information (regulations on aids, examination contents, examination literature) for centrally organised examinations: two weeks before the end of the registration period in CW 44 (Thursday, 29 October 2020).