Data Science Programming 7.5 credits D7054E

Data Science programmering

Course syllabus admitted: Autumn 2023 Sp 1 - Autumn 2024 Sp 2

DECISION DATE
2021-11-03

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Data Science Programming 7.5 credits D7054E

Data Science programmering

Second cycle, D7054E

Education level	Grade scale	Subject	Subject group (SCB)
Second cycle	U G VG	Datateknik	Computer Technology

Main field of study

Information Systems Sciences, Computer Science and Engineering

Entry requirements

In order to meet the general entry requirements for the course, you must have accomplished a minimum of 180 ECTS of university studies, out of which 60 ECTS in the areas of computer or system science. The studies shall have included Introductory Programming (for example D0009E or D0007N) and Fundamentals of Databases (for example D0004N or D0018E). The Data Science Programming course also requires the course D7043E Advanced Data Mining as well as the course D7044E Business Intelligence.

Good knowledge in English equivalent to English 6.
More information about the English language requirements [http://www.ltu.se/edu/bli-student/Application-process/English-language-requirements-1.109316?l=en]

Selection

The selection is based on 30-285 credits

Course Aim

The objective of the course is for the student to develop their knowledge and skills in Data Science Programming. After passing the course, the student should be able to:

1. Explain why and how we program
2. Install the programming language, together with its packages & libraries
3. Understand how to write programming code, and optimize it.
4. Learn how to retrieving, processing, and visualizing Data with data science programming languages.
5. Understand how to solve business problems using data science programming languages
6. Analyze and reflect on the programming code
7. Plan and execute a data science programming project

Contents

The Data Science Programming course introduces students to programming in the data science domain, using the two most popular programming languages: R & Python, with more focus on Python. Students will learn how to conduct analytics using fundamental machine learning libraries such as NumPy & SciPy. However, basics of the programming using Python should be within the scope of the course, such as: variables & expressions, functions, loops & iteration, conditional cases, classes, and file input/output.

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Realization

Each course occasion´s language and form is stated and appear on the course page on Luleå University of Technology's website.

Lectures, labs, assignments, case studies and/or project work. During the course, the students work with individual tasks and/or group work. Some assignments or case studies in the course might contain work in contact with or about the industry. The student uses different methods and techniques, and it is important to choose the right method, technique or computer support for each task. Before and after the tasks are solved, there are lectures to present and discuss different solutions.

Teaching is in English and on the Internet for distance students or on campus for students living here. IT support: Learning management system, e-mail and phone. The learning management system is used for delivering course material, information and submissions. Knowledge is shared and created within the course through virtual meetings with teachers and other students for discussions, supervision, teamwork and seminars. For students on campus, there will be meetings on campus.

Examination

If there is a decision on special educational support, in accordance with the Guideline Student's rights and obligations at Luleå University of Technology, an adapted or alternative form of examination can be provided.

The examination consists of a written exam and written assignments, individual and group assignments to evaluate the ability to explain and use computer science programming languages and the ability to solve business problems with computer science programming languages individually and in groups.

Unauthorized aids during exams and assessments

If a student, by using unauthorized aids, tries to mislead during an exam or when a study performance is to be assessed, disciplinary measures may be taken. The term "unauthorized aids" refers to aids that the teacher has not previously specified as permissible aids and that may assist in solving the examination task. This means that all aids not specified as permissible are prohibited. The Swedish version has interpretative precedence in the event of a conflict.

Remarks

 Technical Requirements: access to computer with administrative rights, web camera, microphone and Internet connection.

Course offered by

Department of Computer Science, Electrical and Space Engineering

Modules

Code	Description	Grade scale	Cr	Status	From period	Title
0002	Individual task	U G#	1.5	Mandatory	S21	
0003	Group-/Project work	U G#	2	Mandatory	S21	
0004	Written exam	U G VG	4	Mandatory	S22	

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Study guidance

Study guidance for the course is to be found in our learning platform Canvas before the course starts. Students applying for single subject courses get more information in the Welcome letter. You will find the learning platform via My LTU.

Last revised

by Jonny Johansson, HUL SRT 2021-11-03

Syllabus established

by Jonny Johansson, HUL SRT 2020-02-21

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