Mandatory Core Topics: RAWDATA

About the course

Subject	Datalogi / Mathematical Computer Modelling
Activitytype	master course
Teaching language	English
Registration	Tilmelding sker via STADS-Selvbetjening indenfor annonceret tilmeldingsperiode, som du kan se på Studieadministrationens hjemmeside

Når du tilmelder dig kurset, skal du være opmærksom på, om der er sammenfald i tidspunktet for kursusafholdelse og eksamen med andre kurser, du har valgt. Uddannelsesplanlægningen tager udgangspunkt i, at det er muligt at gennemføre et anbefalet studieforløb uden overlap. Men omkring valgfrie elementer og studieplaner som går ud over de anbefalede studieforløb, kan der forekomme overlap, alt efter hvilke kurser du vælger.

Registration through STADS-Selvbetjening within the announced registration period, as you can see on the Studyadministration homepage.

When registering for courses, please be aware of the potential conflicts between courses or exam dates on courses. The planning of course activities at Roskilde University is based on the recommended study programs which do not overlap. However, if you choose optional courses and/or study plans that goes beyond the recommended study programs, an overlap of lectures or exam dates may occur depending on which courses you choose. |
| Detailed description of content | The course is divided in three sections. In each of these, the course and the related portfolio (see below) will be linked such that the course part dominates in the beginning while the project work will be in focus at the end. The three sections will form a coherent whole, and will provide insight into theory and practice related to three highly relevant topics.

The contents of the three sections are outlined below.

Section 1: Data and Databases

In this section we will cover a number of key topics from database theory including the relational model, sql, database design, normalisation, indexing and transactions. We will also cover database programming, developing functionality to be stored in the database (using the procedural language PL/pgSQL) as well as developing applications and services using the database (using ado.net and Entity Framework). The last part will be extended in section 2 by the intro to the Linq query integration approach in connection with coverage of C#. The practical work will include design, implementation, optimization and use of a database for a specific purpose. We will also cover selected topics that relate to data and data visualization with emphasis on textual data as these are in focus in the portfolio project. These include a brief intro to information retrieval including the vector space model and relevance-ranked indexing as well as word clouds and word networks.

Section 2: Data communication and network with focus on web services

This section will include a general introduction to network architecture and distributed systems. There will be a special focus on web services, including context, technology, communications, languages, protocols and architecture related to these. The main development language for server programming will be the object-oriented language c# (similar to java). For the connection to the database we will look at linq, which is an extension of c# specifically directed at simplifying the processing of relational data in an object-oriented context, and for the web services we will use asp.net web api, which is a framework specific for supporting restful web services interfaces.

Section 3: Development of responsive applications

Here we touch on general theory and practice related to user interfaces for human-machine interaction and the development of user interfaces. We will, as far as target applications are concerned, focus on so-called single-page applications (spa) with html5, css and javascript, and with emphasis on responsive applications that can adapt to a wide range of devices, including smartphones, tablets and desktops. In this context we will cover various aspects of advanced scripting, including asynchronous programming, event-driven programming and data binding. We will also introduce "hybrid apps" (mixture between native and web-based) and present approaches that, given an html5, css and javascript-based web app, can create dedicated (and thereby app-store-publishable) versions for devices such as smartphones and tablets. |

Expected work effort (ects-declaration)	The course will have a total workload of 275 hours with 90 hours of lectures and exercises, 155 hours of preparation over a 15 week course period and 30 hours for the exam and preparation before the course.
Course material and reading list	- Database System Concepts 7th Edition Abraham Silberschatz, Henry Korth, S. Sudarshan ISBN: 9781260084504 - Database System Concepts - Information Retrieval https://www.db-book.com/db7/online-chapters-dir/31.pdf - Entity Framework Core Succinctly https://www.syncfusion.com/ebooks/download/entity_frame_work_core_succinctly - PostgreSQL 11.5 Documentation (html) https://www.postgresql.org/docs/11/static/index.html - PostgreSQL 11.5 Documentation (pdf) https://www.postgresql.org/files/documentation/pdf/11/postgresql-11-A4.pdf - PostgreSQL Tutorial http://www.postgresqltutorial.com - PostgreSQL Exercises https://pgexercises.com - Visual Studio 2017 Succinctly https://www.syncfusion.com/resources/techportal/details/ebooks/VS2017_Succinctly .NET Core Succinctly https://www.syncfusion.com/resources/techportal/details/ebooks/NET_Core_Succinctly - ASP.NET Core Succinctly https://www.syncfusion.com/resources/techportal/details/ebooks/ASP_NET_Core_Succinctly - ASP.NET Web API Succinctly Emanuele DelBono https://www.syncfusion.com/resources/techportal/ebooks/webapi - An Introduction to Computer Networks Peter L Dordal http://intronetworks.cs.luc.edu/current/ComputerNetworks.pdf - HTTP Succinctly Scott Allen https://www.syncfusion.com/resources/techportal/details/ebooks/http - C# 6.0 IN A NUTSHELL Joseph Albahari and Ben Albahari ISBN: 978-1-491-92706-9 - http://www.entityframeworktutorial.net/ - Service Design Patterns Robert Daigneau ISBN: 978-0-321-54420-9 - RESTful Web Services Cookbook Subbu Allamaraju ISBN: 978-0-596-80168-7 - Eloquent JavaScript https://eloquentjavascript.net/ - ECMAScript 6 Succinctly https://www.syncfusion.com/resources/techportal/details/ebooks/ECMAScript_6_Succinctly (Minor revisions of the above can be expected. For most readings only selected part will be included in the curriculum. Minor revisions of and additions to the above can be expected.))
Evaluation- and feedback forms	Evaluation form to be filled out (anonymously) plus open discussion on the last course day
Administration of exams	IMT Studieadministration (imt-studieadministration@ruc.dk)
The responsible course lecturer	Troels Andreasen (troels@ruc.dk)
Type of examination	Oral examination without preparation time. The examination will be based on a question that is drawn at the start of the examination. The examination is conducted as a dialogue. During the examination, questions can be asked regarding the entire syllabus. Examination time, including drawing a question and discussion of the examinee's performance: 30 minutes. Permitted support and preparation materials: All. Assessment: 7-point grading scale. Moderation: External examiner.
ECTS	10
Learning outcomes and assessment criteria	- Knowledge and understanding of key theories in the core subject areas. - Knowledge and understanding of the core subject area's techniques for the design and construction of software systems meeting specific requirements - A comprehensive overview of and understanding of the general principles behind the hardware and software systems that are part of modern computers and the users' interactions with these Skills in selecting and applying appropriate methods and techniques from the subject area for the analysis, design and construction of software systems. - Competences in being able to work with IT issues, both independently and in teams. - Competences in being able to critically and systematically learn new approaches to the subject area and thereby independently take responsibility for one's own professional development
Overall content	The core areas of Computer Science are: machine architecture and operating systems, distributed systems, databases and human to machine interactions. The course includes a presentation and critical discussion as well as testing of knowledge and understanding of the core areas in each of these subjects. The specific contents will be listed on study.ruc.dk.

Prerequisites for participation	Currently no data from curriculum.
Prerequisites for participation in the exam	Currently no data from curriculum.
Teaching and working methods	Lectures with exercises or class teaching, etc.
Type of course	Mandatory course
Exam code(s)	Exam code(s) : U40125

Course days:

Hold: 1

Mandatory Core Topics - Computer Science

Time	10-09-2019 08:15 til 10-09-2019 13:00
Forberedelsesnorm	Ikke valgt
Forberedelsesnorm d-vip	Ikke valgt
Location	10.2-049 - teorirum (58)
Teacher	Troels Andreasen (troels@ruc.dk) Henrik Bulskov (bulskov@ruc.dk)

Mandatory Core Topics - Computer Science

Time	12-09-2019 08:15 til 12-09-2019 13:00
Forberedelsesnorm	Ikke valgt
Forberedelsesnorm d-vip	Ikke valgt
Location	10.2-049 - teorirum (58)
Teacher	Troels Andreasen (troels@ruc.dk) Henrik Bulskov (bulskov@ruc.dk)

Mandatory Core Topics - Computer Science - øvelser

Time	12-09-2019 13:15 til 12-09-2019 15:00
Forberedelsesnorm	Ikke valgt
Forberedelsesnorm d-vip	Ikke valgt
Location	10.1-025 - teorirum (32)
Teacher	Troels Andreasen (troels@ruc.dk) Henrik Bulskov (bulskov@ruc.dk)

Mandatory Core Topics - Computer Science

Time	17-09-2019 08:15 til 17-09-2019 13:00
Forberedelsesnorm	Ikke valgt
Forberedelsesnorm d-vip	Ikke valgt
Location	10.2-049 - teorirum (58)
Teacher	Troels Andreasen (troels@ruc.dk) Henrik Bulskov (bulskov@ruc.dk)

Mandatory Core Topics - Computer Science

Time	19-09-2019 08:15 til 19-09-2019 13:00
Forberedelsesnorm	Ikke valgt
Forberedelsesnorm d-vip	Ikke valgt
Location	10.2-049 - teorirum (58)
Teacher	Troels Andreasen (troels@ruc.dk) Henrik Bulskov (bulskov@ruc.dk)

Mandatory Core Topics - Computer Science - øvelser

Time	19-09-2019 13:15 til 19-09-2019 15:00
Forberedelsesnorm	Ikke valgt
Forberedelsesnorm d-vip	Ikke valgt
Location	10.1-025 - teorirum (32)
Teacher	Troels Andreasen (troels@ruc.dk) Henrik Bulskov (bulskov@ruc.dk)

Mandatory Core Topics - Computer Science

Time	24-09-2019 08:15 til 24-09-2019 13:00
Forberedelsesnorm	Ikke valgt
Forberedelsesnorm d-vip	Ikke valgt
Location	10.2-049 - teorirum (58)
Teacher	Troels Andreasen (troels@ruc.dk) Henrik Bulskov (bulskov@ruc.dk)

Mandatory Core Topics - Computer Science

Time	26-09-2019 08:15 til 26-09-2019 13:00
Forberedelsesnorm	Ikke valgt
Forberedelsesnorm d-vip	Ikke valgt

Location	10.2-049 - teorirum (58)
Teacher	Troels Andreasen (troels@ruc.dk) Henrik Bulskov (bulskov@ruc.dk)

Mandatory Core Topics - Computer Science - øvelse

Time	26-09-2019 13:15 til 26-09-2019 15:00
Forberedelsesnorm	Ikke valgt
Forberedelsesnorm d-vip	Ikke valgt
Location	10.1-025 - teorirum (32)
Teacher	Troels Andreasen (troels@ruc.dk) Henrik Bulskov (bulskov@ruc.dk)

Mandatory Core Topics - Computer Science

Time	01-10-2019 08:15 til 01-10-2019 13:00
Forberedelsesnorm	Ikke valgt
Forberedelsesnorm d-vip	Ikke valgt
Location	10.2-049 - teorirum (58)
Teacher	Troels Andreasen (troels@ruc.dk) Henrik Bulskov (bulskov@ruc.dk)

Mandatory Core Topics - Computer Science

Time	03-10-2019 08:15 til 03-10-2019 13:00
Forberedelsesnorm	Ikke valgt
Forberedelsesnorm d-vip	Ikke valgt
Location	10.2-049 - teorirum (58)
Teacher	Troels Andreasen (troels@ruc.dk) Henrik Bulskov (bulskov@ruc.dk)

Mandatory Core Topics - Computer Science -øvelser

Time	03-10-2019 13:15 til 03-10-2019 15:00
Forberedelsesnorm	Ikke valgt
Forberedelsesnorm d-vip	Ikke valgt
Location	10.1-025 - teorirum (32)
Teacher	Troels Andreasen (troels@ruc.dk) Henrik Bulskov (bulskov@ruc.dk)

Mandatory Core Topics - Computer Science

Time	08-10-2019 08:15 til 08-10-2019 13:00
Forberedelsesnorm	Ikke valgt
Forberedelsesnorm d-vip	Ikke valgt
Location	10.2-049 - teorirum (58)
Teacher	Troels Andreasen (troels@ruc.dk) Henrik Bulskov (bulskov@ruc.dk)

Mandatory Core Topics - Computer Science

Time	10-10-2019 08:15 til 10-10-2019 13:00
Forberedelsesnorm	Ikke valgt
Forberedelsesnorm d-vip	Ikke valgt
Location	10.2-049 - teorirum (58)
Teacher	Troels Andreasen (troels@ruc.dk) Henrik Bulskov (bulskov@ruc.dk)

Mandatory Core Topics - Computer Science - øvelser

Time	10-10-2019 13:15 til 10-10-2019 15:00
Forberedelsesnorm	Ikke valgt
Forberedelsesnorm d-vip	Ikke valgt
Location	10.1-025 - teorirum (32)
Teacher	Troels Andreasen (troels@ruc.dk) Henrik Bulskov (bulskov@ruc.dk)

Mandatory Core Topics - Computer Science

Time	15-10-2019 08:15 til 15-10-2019 13:00
Forberedelsesnorm	Ikke valgt
Forberedelsesnorm d-vip	Ikke valgt
Location	10.2-049 - teorirum (58)
Teacher	Troels Andreasen (troels@ruc.dk) Henrik Bulskov (bulskov@ruc.dk)

Mandatory Core Topics - Computer Science

Time	17-10-2019 08:15 til 17-10-2019 13:00
Forberedelsesnorm	Ikke valgt
Forberedelsesnorm d-vip	Ikke valgt

| Location | 10.2-049 - teorirum (58) |
| Teacher | Troels Andreasen (troels@ruc.dk)
Henrik Bulskov (bulskov@ruc.dk) |

Mandatory Core Topics - Computer Science - øvelser

Time	17-10-2019 13:15 til 17-10-2019 15:00
Forberedelsesnorm	Ikke valgt
Forberedelsesnorm d-vip	Ikke valgt
Location	10.1-025 - teorirum (32)
Teacher	Troels Andreasen (troels@ruc.dk) Henrik Bulskov (bulskov@ruc.dk)

Mandatory Core Topics - Computer Science

Time	22-10-2019 08:15 til 22-10-2019 13:00
Forberedelsesnorm	Ikke valgt
Forberedelsesnorm d-vip	Ikke valgt
Location	10.2-049 - teorirum (58)
Teacher	Troels Andreasen (troels@ruc.dk) Henrik Bulskov (bulskov@ruc.dk)

Mandatory Core Topics - Computer Science

Time	24-10-2019 08:15 til 24-10-2019 13:00
Forberedelsesnorm	Ikke valgt
Forberedelsesnorm d-vip	Ikke valgt
Location	10.2-049 - teorirum (58)
Teacher	Troels Andreasen (troels@ruc.dk) Henrik Bulskov (bulskov@ruc.dk)

Mandatory Core Topics - Computer Science - øvelser

Time	24-10-2019 13:15 til 24-10-2019 15:00
Forberedelsesnorm	Ikke valgt
Forberedelsesnorm d-vip	Ikke valgt
Location	10.1-025 - teorirum (32)
Teacher	Troels Andreasen (troels@ruc.dk) Henrik Bulskov (bulskov@ruc.dk)

Mandatory Core Topics - Computer Science

Time	29-10-2019 08:15 til 29-10-2019 13:00
Forberedelsesnorm	Ikke valgt
Forberedelsesnorm d-vip	Ikke valgt
Location	10.2-049 - teorirum (58)
Teacher	Troels Andreasen (troels@ruc.dk) Henrik Bulskov (bulskov@ruc.dk)

Mandatory Core Topics - Computer Science

Time	31-10-2019 08:15 til 31-10-2019 13:00
Forberedelsesnorm	Ikke valgt
Forberedelsesnorm d-vip	Ikke valgt
Location	10.2-049 - teorirum (58)
Teacher	Troels Andreasen (troels@ruc.dk) Henrik Bulskov (bulskov@ruc.dk)

Mandatory Core Topics - Computer Science - øvelser

Time	31-10-2019 13:15 til 31-10-2019 15:00
Forberedelsesnorm	Ikke valgt
Forberedelsesnorm d-vip	Ikke valgt
Location	10.1-025 - teorirum (32)
Teacher	Troels Andreasen (troels@ruc.dk) Henrik Bulskov (bulskov@ruc.dk)

Mandatory Core Topics - Computer Science

Time	05-11-2019 08:15 til 05-11-2019 13:00
Forberedelsesnorm	Ikke valgt
Forberedelsesnorm d-vip	Ikke valgt
Location	10.2-049 - teorirum (58)
Teacher	Troels Andreasen (troels@ruc.dk) Henrik Bulskov (bulskov@ruc.dk)

Mandatory Core Topics - Computer Science

Time	07-11-2019 08:15 til 07-11-2019 13:00
Forberedelsesnorm	Ikke valgt
Forberedelsesnorm d-vip	Ikke valgt

Location	10.2-049 - teorirum (58)
Teacher	Troels Andreasen (troels@ruc.dk) Henrik Bulskov (bulskov@ruc.dk)

Mandatory Core Topics - Computer Science - øvelser

Time	07-11-2019 13:15 til 07-11-2019 15:00
Forberedelsesnorm	Ikke valgt
Forberedelsesnorm d-vip	Ikke valgt
Location	10.1-025 - teorirum (32)
Teacher	Troels Andreasen (troels@ruc.dk) Henrik Bulskov (bulskov@ruc.dk)

Mandatory Core Topics - Computer Science

Time	12-11-2019 08:15 til 12-11-2019 13:00
Forberedelsesnorm	Ikke valgt
Forberedelsesnorm d-vip	Ikke valgt
Location	10.2-049 - teorirum (58)
Teacher	Troels Andreasen (troels@ruc.dk) Henrik Bulskov (bulskov@ruc.dk)

Mandatory Core Topics - Computer Science

Time	14-11-2019 08:15 til 14-11-2019 13:00
Forberedelsesnorm	Ikke valgt
Forberedelsesnorm d-vip	Ikke valgt
Location	10.2-049 - teorirum (58)
Teacher	Troels Andreasen (troels@ruc.dk) Henrik Bulskov (bulskov@ruc.dk)

Mandatory Core Topics - Computer Science - øvelser

Time	14-11-2019 13:15 til 14-11-2019 15:00
Forberedelsesnorm	Ikke valgt
Forberedelsesnorm d-vip	Ikke valgt
Location	10.1-025 - teorirum (32)
Teacher	Troels Andreasen (troels@ruc.dk) Henrik Bulskov (bulskov@ruc.dk)

Mandatory Core Topics - Computer Science

Time	19-11-2019 08:15 til 19-11-2019 13:00
Forberedelsesnorm	Ikke valgt
Forberedelsesnorm d-vip	Ikke valgt
Location	10.2-049 - teorirum (58)
Teacher	Troels Andreasen (troels@ruc.dk) Henrik Bulskov (bulskov@ruc.dk)

Mandatory Core Topics - Computer Science

Time	21-11-2019 08:15 til 21-11-2019 13:00
Forberedelsesnorm	Ikke valgt
Forberedelsesnorm d-vip	Ikke valgt
Location	10.2-049 - teorirum (58)
Teacher	Troels Andreasen (troels@ruc.dk) Henrik Bulskov (bulskov@ruc.dk)

Mandatory Core Topics - Computer Science -øvelser

Time	21-11-2019 13:15 til 21-11-2019 15:00
Forberedelsesnorm	Ikke valgt
Forberedelsesnorm d-vip	Ikke valgt
Location	10.1-025 - teorirum (32)
Teacher	Troels Andreasen (troels@ruc.dk) Henrik Bulskov (bulskov@ruc.dk)

Mandatory Core Topics - Computer Science

Time	26-11-2019 08:15 til 26-11-2019 13:00
Forberedelsesnorm	Ikke valgt
Forberedelsesnorm d-vip	Ikke valgt
Location	10.2-049 - teorirum (58)
Teacher	Troels Andreasen (troels@ruc.dk) Henrik Bulskov (bulskov@ruc.dk)

Mandatory Core Topics - Computer Science

Time	28-11-2019 08:15 til 28-11-2019 13:00
Forberedelsesnorm	Ikke valgt
Forberedelsesnorm d-vip	Ikke valgt

Location	10.2-049 - teorirum (58)
Teacher	Troels Andreasen (troels@ruc.dk) Henrik Bulskov (bulskov@ruc.dk)

Mandatory Core Topics - Computer Science - øvelser

Time	28-11-2019 13:15 til 28-11-2019 15:00
Forberedelsesnorm	Ikke valgt
Forberedelsesnorm d-vip	Ikke valgt
Location	10.1-025 - teorirum (32)
Teacher	Troels Andreasen (troels@ruc.dk) Henrik Bulskov (bulskov@ruc.dk)

Mandatory Core Topics - Computer Science

Time	03-12-2019 08:15 til 03-12-2019 13:00
Forberedelsesnorm	Ikke valgt
Forberedelsesnorm d-vip	Ikke valgt
Location	10.2-049 - teorirum (58)
Teacher	Troels Andreasen (troels@ruc.dk) Henrik Bulskov (bulskov@ruc.dk)

Mandatory Core Topics - Computer Science

Time	05-12-2019 08:15 til 05-12-2019 13:00
Forberedelsesnorm	Ikke valgt
Forberedelsesnorm d-vip	Ikke valgt
Location	10.2-049 - teorirum (58)
Teacher	Troels Andreasen (troels@ruc.dk) Henrik Bulskov (bulskov@ruc.dk)

Mandatory Core Topics - Computer Science - øvelser

Time	05-12-2019 13:15 til 05-12-2019 15:00
Forberedelsesnorm	Ikke valgt
Forberedelsesnorm d-vip	Ikke valgt
Location	10.1-025 - teorirum (32)
Teacher	Troels Andreasen (troels@ruc.dk) Henrik Bulskov (bulskov@ruc.dk)

Mandatory Core Topics - Computer Science

Time	10-12-2019 08:15 til 10-12-2019 13:00
Forberedelsesnorm	Ikke valgt
Forberedelsesnorm d-vip	Ikke valgt
Location	10.2-049 - teorirum (58)
Teacher	Troels Andreasen (troels@ruc.dk) Henrik Bulskov (bulskov@ruc.dk)

Mandatory Core Topics - Computer Science

Time	12-12-2019 08:15 til 12-12-2019 13:00
Forberedelsesnorm	Ikke valgt
Forberedelsesnorm d-vip	Ikke valgt
Location	10.2-049 - teorirum (58)
Teacher	Troels Andreasen (troels@ruc.dk) Henrik Bulskov (bulskov@ruc.dk)

Mandatory Core Topics - Computer Science - øvelser

Time	12-12-2019 13:15 til 12-12-2019 15:00
Forberedelsesnorm	Ikke valgt
Forberedelsesnorm d-vip	Ikke valgt
Location	10.1-025 - teorirum (32)
Teacher	Troels Andreasen (troels@ruc.dk) Henrik Bulskov (bulskov@ruc.dk)

Mandatory Core Topics - Computer Science

Time	17-12-2019 08:15 til 17-12-2019 13:00
Forberedelsesnorm	Ikke valgt
Forberedelsesnorm d-vip	Ikke valgt
Location	10.2-049 - teorirum (58)
Teacher	Troels Andreasen (troels@ruc.dk) Henrik Bulskov (bulskov@ruc.dk)

Mandatory Core Topics - Computer Science

Time	19-12-2019 08:15 til 19-12-2019 13:00
Forberedelsesnorm	Ikke valgt
Forberedelsesnorm d-vip	Ikke valgt

Location	10.2-049 - teorirum (58)
Teacher	Troels Andreasen (troels@ruc.dk) Henrik Bulskov (bulskov@ruc.dk)

Mandatory Core Topics - Computer Science - øvelser

Time	19-12-2019 13:15 til 19-12-2019 15:00
Forberedelsesnorm	Ikke valgt
Forberedelsesnorm d-vip	Ikke valgt
Location	10.1-025 - teorirum (32)
Teacher	Troels Andreasen (troels@ruc.dk) Henrik Bulskov (bulskov@ruc.dk)

Rawdata: Exam

Time	16-01-2020 08:15 til 20-01-2020 17:00
Forberedelsesnorm	Ikke valgt
Forberedelsesnorm d-vip	Ikke valgt
Location	06.2-077 - mødelokale (10)

Re-exam

Time	11-02-2020 08:15 til 11-02-2020 17:00
Forberedelsesnorm	Ikke valgt
Forberedelsesnorm d-vip	Ikke valgt
Location	09.1-023 - mødelokale (8)