

# Subject module project in Computer Science

## About the course

subject	Fagmodul i Datalogi
Activity type	subject module project
Teaching language	English
Registration	<p>Registration through <a href="#">STADS-Selvbetjening</a> within the announced registration period, as you can see on the <a href="#">Studyadministration homepage</a>.</p> <p>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.</p>
Detailed description of content	<p><b>IMPORTANT:</b> It is strongly recommended that the course Essential Computing is passed before the subject module project is initiated.</p> <p>The main task in a computer science subject module project is to develop a program with a complexity that raises interesting computational issues. All students have to participate in the development of the program and in the program documentation in the form of a report. The project work is supported by the subject module courses, for example the 10 ECTS course Software Development that typically is taken i parallel with the subject module project. Most students use the Java programming language since it is taught in the courses, but also other languages have been chosen, for example Processing, C#, python and C++. As a rule-of-thumb, the program has to comprise 200 lines of code per student, but the actual size depends on the complexity of the code.</p> <p>A wide range of programming projects can be carried out, for example more traditional projects focusing on algorithms and data structures, as well as application oriented projects, to name a few recent ones: Programming of Android apps, simulation of the solar system, Artificial Intelligence projects developing chat bots, neural networks for games, or neural nets for classification tasks or the prediction of the value of bitcoins.</p> <p>Many subject module projects are carried out in collaboration with the Flexlab (<a href="https://flexlab.ruc.dk">https://flexlab.ruc.dk</a>), which is Computer Science and Informatics' laboratory for experimental technology exploration. The Flexlab encourage students to work with new technologies such as Virtual Reality, Internet of Things, Drones and physical computing. The lab is not only a place to work on your project, but a range of lab facilities are offered, as well as technical support from the lab manager. Recent projects involve programming of</p> <ul style="list-style-type: none"><li>• drones for various purposes, for example rescue drones involving image recognition;</li><li>• robots, for example in connection with art installations; and</li><li>• virtual reality (VR), for example for training Danish army soldiers in parachute jumping.</li></ul>
Expected work effort (ECTS-declaration)	<p>Project work will have a total workload of 405 hours. 40 hours are spent on project formation and around 40 hours for the exam and preparation for the exam. During the project period, there are 15 hours of project formation workshops and internal evaluation and groups of 4 students can expect 15 hours of supervision during their project. Students who are granted permission to working alone must expect a reduced number of supervisions.</p>
Course material and Reading list	<p>The project literature and curriculum are determined by the students in consultation with the supervisor and in compliance with requirements and learning goals as specified in the study programme. The students are expected to utilize curriculum from own literature search and reviews, and where possible from existing computer science courses.</p>
Evaluation- and feedback forms	<p>The project is supported by supervision from a project coordinator (at project establishment). The project coordinator is also facilitating establishment of the project groups.</p> <p>After a supervisor has been allocated to the project, the project group will be offered supervision throughout the projects period, i.e. throughout the semester. During the semester, a project group may, depending on how many students the group comprise, expect approximately one meeting per week.</p>

There will also be given feedback in connection with the mid-term evaluation, from supervisors as well as from other student groups.

An electronic evaluation will take place at the end of the project period.

Administration of exams

IMT Studieadministration ([imt-studieadministration@ruc.dk](mailto:imt-studieadministration@ruc.dk))

Responsible for the activity

Torben Braüner ([torben@ruc.dk](mailto:torben@ruc.dk))

ECTS

15

Learning outcomes and assessment criteria

- Knowledge and understanding
- Knowledge and understanding of software development, including programming, algorithms and data structures.
- Skills:
- Proficiency in programming, testing and documenting a program in a higher, general programming language.
- Proficiency in choosing and arguing for the choice of design, data structures and algorithms for the specific project.
- Proficiency in specifying and modelling requirements for the functionality of IT systems.
- Competences:
- Competences to plan, determine the requirements for, manage and complete a small software development process.

Overall content

The subject module is to make the students more proficient in describing and reflecting upon an independently completed task wherein a medium-sized programming job has been planned, implemented, tested and documented and which has used a higher, general programming language.  
The project work is concluded with the preparation of a written project report.

Teaching and working methods

Project work with supervision

Type of activity

Project

Form of examination (p1)

Oral group exam for the participants in the project.

The starting point for the oral exam is the students' project report and additional material. The oral exam takes place as a dialogue between the students and the assessors.  
There may be posed questions related to any part the subject area of the project report.

The assessment is an individual assessment of the project report and additional material and the individual students oral performance.

Permitted group size: 2-6 students.

The character limits of the project report are:

For 2 students: 40,800-180,000 characters, including spaces.

For 3 students: 40,800-192,000 characters, including spaces.

For 4 students: 40,800-192,000 characters, including spaces.

For 5 students: 40,800-204,000 characters, including spaces.

For 6 students: 40,800-204,000 characters, including spaces.

The character limits include the cover, table of contents, summary, bibliography, figures and other illustrations, but exclude any appendices.

Time allowed for exam including time used for assessment is for:

2 students: 60 minutes.

3 students: 75 minutes.

4 students: 90 minutes.

5 students: 105 minutes.

6 students: 120 minutes.

Spelling and communication skills in the project report are part of the assessment.

Permitted support and preparation materials at the oral exam: All.

Assessment: 7-point grading scale.

Moderation: External examiner.

Form of Re-examination (p1)

Samme som ordinær eksamen

Exam code(s)

Exam code(s) : U26631

Course days:

Hold: 1

## Tematisk studiestartsdag - Bæredygtig udvikling for alle

time 31-01-2022 09:00 til  
31-01-2022 15:30

forberedelsesnorm ikke valgt

forberedelsesnorm D-VIP ikke valgt

Content

**Unfortunately this is only in Danish**

Kære studerende

Mandag den 31.1.2022 afholdes tematisk studiestartsdag om "Bæredygtig udvikling for alle" med udgangspunkt i FNs 17 verdensmål.

Du møder eksterne oplægsholdere med vidt forskellige vinkler på bæredygtighed samt kan vælge en klynge med 1-2 temaer med forskere på RUC, der præsenterer og går i dialog med de studerende om bæredygtighed set fra deres faglige forskningsfelt.

Tilmeld dig dagen, klynge og frokost [her senest den 27.1](#)

Reading list

**At skaffe mennesker og miljø det bedste uden at skade fremtidige generationers muligheder**

Institut for Mennesker og teknologi (IMT) inviterer hermed alle studerende og forskere til at deltage i en fælles tematisk studiestartsdag med udgangspunkt i FN 17 verdensmål for bæredygtig udvikling.

Vi vil gerne inspirere studerende til projektarbejde, der bidrager til at opnå FNs 17 verdensmål – og samtidig give de studerende mulighed for at komme tæt på den forskning, der laves på IMT indenfor bæredygtig udvikling. **Program**

**9.00-10.00: Store auditorium**

- Velkomst v. dekan Andreas de Neergaard: Introduktion til dagens formål og tema
- Jesper Theilgaard, Meteorolog og klimaekspert med foredrag om vejret og klimaet. Er uddannet som flyvemeteorolog i 1978 og har fra 2002 til 2018 været fuldtidsansat på Danmarks Radio. Jesper har skrevet ikke færre end 25 bøger om vejret, vejrænomen og klimaet, som henvender sig til både børn og voksne. FN's 17 verdensmål - Bliver de ført ud i livet, vil de ændre verden, og er de overhovedet realistiske?

<https://www.forfatterforedrag.dk>

**10.00-10.15: Kaffepause**

**10.15-11.00: Store auditorium**

- Thomas Bagge Olesen, Ledende partner, forretningsudvikling i Den Sociale Kapitalfond og medlem Rådet for Samfundsansvar og Verdensmål 2021-2025

Hvordan vi investerer i de oversete potentialer i samfundskontrakten mellem samfund, erhvervsliv og det inkluderende arbejdsmarked?

<https://densocialekapitalfond.dk/om-sociale-kapitalfond>

**11.00-11.15: Store auditorium**

- Thomas Theis Nielsen Lektor og Esbern Holmes Lektor: Præsentation af RUCs verdensmålsportal

Link til RUCs verdensmålsportal: <https://sdg.ruc.dk/>

**11.15-11.40: Pause**

- Hent frokost og medbring den til den tilmeldte klynge

**11.40-13.35 (inkl. frokost): Klyngerum**

**Tematiske klyngeaktiviteter med fokus på IMT's forskningsmiljøer. Præsentationer af forskers arbejde med FN's verdensmål og Bæredygtig udvikling for alle:**

**Verdensmål 3 - Sundhed og trivsel**

- Social differentiering i relationer til ulighed i sundhed - relationer mellem sundhedsinstitutioner, sundhedsfelter, professioner, og perspektiver fra patienter, borgere, klienter, pårørende og sundhedsprofessionelle ved Ph.d.-studerende Jonas Thorborg Stage
- Menneskers møde med Sundhedsvæsenet og transitioner i sygdoms- og behandlingsforløb, muligheder og begrænsninger for måder at forstå sygdom og behandling ved Ph.d.-studerende Mai Nanna Schönau

**Verdensmål 4: Kvalitetsuddannelse**

- Situeret ulighed i skolelivet - børn og unges ulige betingelser for deltagelse i skolens fællesskaber ved professor Charlotte Højholt Verdensmål 5 og 8 - Ligestilling mellem kønnene samt anstændige jobs og økonomisk vækst
- "Arenæer for kønsbestemt social innovation og marginaliserede kvinders kollektive handling, ved professor Linda Lundgaard Andersen
- Prekarisering - det usikre arbejdsliv og atypiske ansættelser Lektor Janne Gleerup

**Verdensmål 11 - Bæredygtige byer og lokalsamfund**

- Byplanlægning i en usikker virkelighed ved Ph.d. Ekstern lektor Majken Toftager Larsen
- At lære børn og unge at transformere byer gennem fællesskab ved Maja de Neergaard lektor

**Verdensmål 12: Ansvarligt forbrug og produktion**

a) Cirkulær økonomi, ressourcer, affald og bæredygtig produktion. Reduktion af affald, genbrug og genanvendelse af rest- og affaldsprodukter herunder plastaffald, byggeaffald og organisk affald. Der vil være særlig fokus på forskningsprojektet CityLoops ved lektor Thomas Budde Christensen

Plastmateriale i et Cirkulær Økonomi-perspektiv. Der vil være særlig fokus på forskningsprojektet RePlasti, ved lektor Tobias Pape Thomsen

b) "Digitalisering til reducere af CO2 udledning for maritim transport" Speed optimizations for liner networks with business constraints v. lektor Line Reinhaard.

"IntelliGrid: IoT nudging som vinden blæser" ved lektor Magnus Rotvit Perlt Hansen

**Verdensmål 13 - Klimaindsats**

- De moderne praksisser inden for de komplekse og koblede systemer af aktører og artefakter i landbrug, fødevarer, måltider og gastronomi, udfordringer med at omstille systemer til mere bæredygtige, økologiske og klimavenlige praksisser, ved professor Niels Heine Kristensen
- Fødevareregionen som transitions- og innovationslandskab. Bæredygtighedskoalitioner, -diskurser og råderum i omstillingen – et oplæg til strategisk fødevarer systemisk support. Ved Ph.d.-studerende Pernille Nielsen

**13.35 - 13.45: Pause - retur til store auditorium**

**13.45-15.30: Store auditorium**

Oplæg ved:

- Anne Kipp Nordic head of communications for SiemensMobility og for Siemens A/S Skab forandringer i hverdagen, et teknologi og udviklingsperspektiv, at skabe en ny fremtid set med et virksomhedsperspektiv

<https://new.siemens.com/dk/da/virksomhedsoplysninger/baeredygtighed.html>

- Zakia Elvang - managing partner og strategisk rådgiver We Do Democracy, stifter af Demokrati Garage. Rådgiver i forandring, klimaforandringer, demokratisk udvikling, deliberativt demokrati og læring.

Stærkt og deltagelsesdrevet demokrati er en forudsætning for bæredygtig udvikling

<https://www.wedodemocracy.dk/hvem>

Opsamling på dagen ved prodekan Camilla Schmidt

15.30 - xx.xx: Forhallen – store auditorium

## Subject module project in Computer Science - Project hand-in (DAT)

time 01-06-2022 10:00 til  
01-06-2022 10:00

forberedelsesnorm ikke valgt

forberedelsesnorm D-VIP ikke valgt

## Subject module project in Computer Science - Oral examination period (DAT)

time 13-06-2022 08:15 til  
30-06-2022 18:00

forberedelsesnorm ikke valgt

forberedelsesnorm D-VIP ikke valgt

## Subject module project in Computer Science - Oral reexamination period (DAT)

time 01-08-2022 08:15 til  
31-08-2022 18:00

forberedelsesnorm ikke valgt

forberedelsesnorm D-VIP ikke valgt