UiT
NORGES ARKTISKE UNIVERSITET

STUDIEPLAN

Computer Science – master
Sivilingeniør Data/IT

120 **studiepoeng**

Narvik

Based on the document "Vilkår for bruk av tilleggsbetegnelsen Sivilingeniør (siv.ing.)" approved by The Norwegian Association of Higher Education Institutions spring 2016.

Studieplanen er godkjent av styret ved Fakultet for Ingeniørvitenskap og Teknologi (IVT) den <1.12.2017>

Navn på studieprogram	Bokmål: Computer Science - master Nynorsk: Computer Science - master Engelsk: Computer Science – Master
Oppnådd grad	Master of Science
Målgruppe	Alle personer som oppfyller opptakskrav
Opptakskrav	To be applicable for the master program in Computer Science, you must have a relevant undergraduate **bachelor in engineering in computer science** or equivalent. There is also a requirement of 30 points with preliminaries in mathematics/statistics, equivalent to the Norwegian courses Mathematics 1, 2, and 3, as well as Statistics. Knowledge in Physics (7,5 - 10 ects) on a higher level is recommended to be able to follow different courses on the master programme. Some of the courses in the bachelor programme have a certain amount of physics included and can be accepted.
Faglig innhold og beskrivelse av studiet	The Master in Computer Science is founded on the "conditions for use of the protected title Sivilingeniør" enacted by "Nasjonalt råd for teknologisk utdanning (NRT), 2016". The programme specializes within advanced technical programming, applied mathematics, numerical methods, simulations, geometric modeling, computer graphics, virtual reality (VR) and artificial intelligence (AI). The study is provided over two years on full-time at Campus Narvik. There are four semesters pr. year. Each semester lasts for nine weeks and gives 15 ects., which typically consist of three 5 ects courses. An overview of the programme structure can be found in the table below. Up-to-date course description can be found online.

Termin			
1. termin Aug-Okt	SMN6190 Linear algebra 2	STE6274 Computer Game Design	SMN6191 Numerical Methods
2. termin Okt-Des	SMN6192 Game- and Graph Theory / Discrete maths	SMN6203 PDE and the finite element method	STE6245 Advanced Game- and Simulator Programming
3. termin Jan-Mar	STE6238 Geometric modelling	STE6291 FEM programming	
4. termin Mar-Jun	STE6249-001 VR, graphics and animation – theory	SAD6210 Innovation and economics	STE6246-001 Knowledge-based systems -theory
5. termin Aug-Okt	STE6246-002 Knowledge-based systems	SAD6211 Innovation and management	STE6249-002 VR, graphics and animation
6. termin Okt-Des	SMN6200 Fluid mechanics	STE6239 Simulation	STE6247 Applied geometry and special effects
7. termin Jan-Mar	SHO6264 Diploma Thesis - M-IT		
8. termin Mar-Jun			

Tabell: oppbygging av studieprogram

Læringsutbytte-beskrivelse

Etter bestått studieprogram har kandidaten følgende læringsutbytte:

Kunnskaper:
• The candidate will have necessary basic knowledge as well as expertise knowledge to challenging jobs in research, industrial development and other areas. It follows that the knowledge is on a level such that the candidate can analyse problems and apply the knowledge at new areas.
• The candidate will have thorough knowledge of the different theories and methodologies of software development and especially computer programming. It is advanced object oriented programming and meta-programming, based on knowledge of mathematics and technology applicable to both general-purpose programming and especially to technical applications on different platforms.
• The candidate will have special knowledge in the field of combination of geometric modelling and programming, geometry

	combined with artificial intelligence and programming, simulations/computations and programming, geometry and computer graphics. **Ferdigheter**: • The candidate will work independently with problems, by analysing the problem and make plans for solving them. • The candidate will be able independently to make big and/or complex computer programs running on different platforms. • The candidate can carry out an independent, research or development project within the field of computer science under supervision and in accordance with applicable norms for research ethics. • The candidate can find, analyse and deal critically with various sources of information and use them in development and in argumentation. • The candidate will be able to write a longer continuous report and present research clearly in written work and in general communicate knowledge orally and in writing. **Generell kompetanse:** • The candidate is influenced to maintain and develop curiosity and values such as openness, precision and the importance of separating between knowledge and opinions. • The candidate can communicate about academic issues, analysis and conclusions in the field of computer science by using the relevant terminology to communicate with specialists and also with the general public. • The candidate can contribute to new thinking and innovation processes in cooperation with experts from other fields.
Studiets relevans	The candidates are attractive to companies developing advanced computer games, animations/movies, learning systems, visualization, virtual reality and simulators. Former students have generally found employment in the most technologically advanced companies. The degree qualifies to start as a PhD-student within relevant ph.d.-areas (i.e. geometric modeling, applied mathematics, computational methods, machine learning). UIT Campus Narvik has a ph.d. education within the field of Applied mathematics and engineering science, which students from Computer science are qualified to get a position at, if the grades are sufficient (for instance for acceptance as a doctoral student), and if there are available positions.

Arbeidsomfang og læringsaktiviteter	The students shall expect to work 45 hour pr. week with their studies, including lectures, seminars and self-studies, as stated by the European higher education area (EHEA) and Bologna process. The program utilizes problem-based learning. This means that theoretical instruction is followed by projects, in which students learn by applying the theory. Throughout the program various forms of evaluation methods are used in connection to the different subjects. In some cases individual written examinations are used as the subject grading. Some subject-evaluations are based on project works in which the grades are determined based on written reports, program codes and resulting computer programs together with an oral examination where the students makes a demonstration, describes why and what they have done and answer questions about syllabus in general. The grading of the final master thesis is based only on the written report. and the material delivered together with it. Further information about the evaluation method of each subject is defined in the respective course description. However, the grading is normally based on the ECTS system with grades A, B, C, D, E and F, where F is "not passed".
Eksamen og vurdering	Specified in the individual course descriptions.
For masteroppgaver/ selvstendig arbeid i mastergradsprogram	Mandatory written Master's thesis corresponding to 30 ects.
Undervisnings- og eksamensspråk	English
Internasjonalisering og utveksling	It is possible to study parts of the master program at other universities. An individual plan must be made in accordance with the program coordinator.
Praksis	
Administrativt ansvarlig og faglig ansvarlig	Studiet er underlagt Fakultet for Ingeniørvitenskap og Teknologi (IVT), Institutt for datateknologi og beregningsorienterte ingeniørfag (IDBI)
Kvalitetssikring	Studieplanen er underlagt revisjon og kvalitetssikring i samsvar med kvalitetssystemet til IVT ihht. gjeldende vilkår for bruk av den beskyttede tittelen Sivilingeniør vedtatt av NRT.
Andre bestemmelser	