Master program in Computational Physics, Mathematics and Life Science

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Overarching description of the CPMLS program

Students of this program learn to use the computer as a laboratory for solving problems in science and engineering. The program offers exciting thesis projects from many disciplines: biology and life science, chemistry, mathematics, informatics, physics, geophysics, mechanics, geology, computational finance, computational informatics, bid data analysis, digital signal processing and image analysis – the candidates select research field according to their interests.

A Master's degree from this program gives the candidate a methodical training in planning, conducting, and reporting large research projects, often together with other students and university teachers. THe projects emphasize finding practical solutions, developing an intuitive understanding of the science and the scientific methods needed to solve complicated problems, use of many tools, and not least developing own creativity and independent thinking. The thesis work is a scientific project where the candidates learn to tackle a scientific problem in a professional manner. The program aims also at developing a deep

Description of learning outcomes

The power of the scientific method lies in identifying a given problem as a special case of an abstract class of problems, identifying general solution methods for this class of problems, and applying a general method to the specific problem (applying means, in the case of computing, calculations by pen and paper, symbolic computing, or numerical computing by ready-made and/or self-written software). This generic view on problems and methods is particularly important for understanding how to apply available, generic software to solve a particular problem.

Computing competence represents a central element in scientific problem solving, from basic education and research to essentially almost all advanced problems in modern societies. Computing competence is simply central to further progress. It enlarges the body of tools available to students and scientists beyond classical tools and allows for a more generic handling of problems. Focusing on algorithmic aspects results in deeper insights about scientific problems.

A candidate with a Master of Science degree from this program

Admission critera

The following higher education entrance qualifications are needed

- A completed bachelor's degree (undergraduate) comparable to a Norwegian bachelor's degree in one of the following disciplines
  1. Biology, molecular biology, biochemistry or any life science degree
  2. Physics, astrophysics, astronomy, geophysics and meteorology
  3. Mathematics, mechanics, statistics and computational mathematics
  4. Computer science and electronics
  5. Chemistry
  6. Materials Science and nanotechnology
  7. Any undergraduate degree in engineering
  8. Mathematical finance and economy
  9. Economy
- For international students, an internationally recognised English language proficiency test is required.

The above undergraduate degrees have some minimal requirements