Master program in Computational Science at the University of Oslo

Why choose this program

Planned start: Fall 2018

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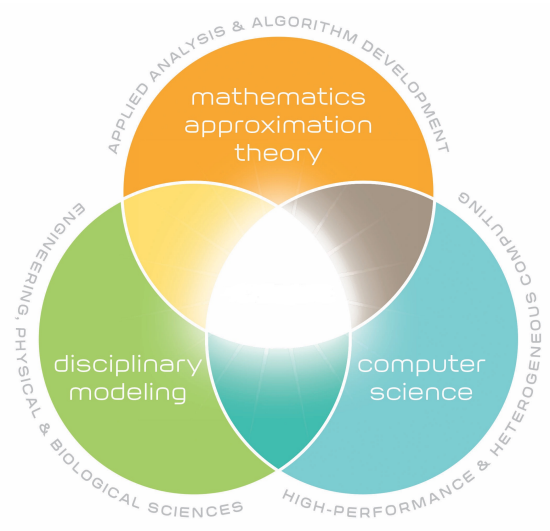
The program will educate the next generation of cross-disciplinary science students with the knowledge, skills, and values needed to pose and solve current and new scientific, technological and societal challenges.

It is the first educational program to comprehensively treat computation as the *triple junction* of algorithm development and analysis, high performance computing, and applications to scientific and engineering modeling and data science. This approach recognizes computation as a new discipline rather than being decentralized into isolated sub-disciplines.



Why Computational Science in four points

- This program aims at educating the next generation of cross-disciplinary science students with the knowledge, skills, and values needed to pose and solve current and new scientific, technological and societal challenges.
- Complex systems involving many scales pose a great challenge to our present understanding of problems in Science. This program allows you explore the theory needed to understand complex systems with the tools of the 21st century.
- All disciplines in the Sciences are represented in this program and you can thereby explore and design thesis projects that cover a large range of topics and own interests, from Mathematics and Computational Science to the Physical Sciences and Life Sciences.
- Combining machine learning and data analysis with quantum computing is an exciting topic which can change totally the future of computer simulations and the way we study physical systems.

Possible thesis topics

- Simulations of complex quantum mechanical systems using novel algorithms, with applications spanning from quantumchromodynamics on the lattice and subatomic physics, via materials to the equation of state of stars.
- Exploring algorithms from quantum computing in order to solve complicated quantum mechanical problems
- Study complex materials or the DNA using large-scale molecular dynamics simulations
- Using machine learning to solve complicated problems, from neuroscience (our brain), physiology to strongly interacting quantum mechanical systems
- Using machine learning to develop new tools for learning physics

Special topics

- Only program where you learn how to use machine learning to study complex physical systems
- Emphasis on the tools and knowledge which will prepare you for the scientific challenges of the 21st century
- Several exchange possibilities with leading universities and laboratories in Europe, Asia and Northern America.