



COMPUTATIONAL SCIENCE AND ENGINEERING

Computer simulation has revolutionized the research tools of engineers and is nowadays besides theory and experiments, essential to many scientists. While the development of high performance computing (HPC) started many decades ago and has provided many scientists with powerful computing capabilities, it has recently been recognized that integrating HPC to mathematical modeling, numerical algorithms and large scale data bases of observations will lead to a new paradigm in science and engineering.

The new **master in Computational Science and Engineering (CSE)** at EPFL aims at educating Bachelor degree holders in Basic Sciences and Engineering in the interdisciplinary field of simulation based engineering and sciences. This master constitutes the educational part of a vigorous initiative at EPFL to develop a world leading center in CSE.

The presence of the CECAM (*Centre Européen de Calcul Atomique et Moléculaire*) the new joint initiative between the University of Lausanne, Geneva and EPFL for a Center for Advanced Modeling System (CADMOS) constitute an exiting environment for the future master student in Computational Science and Engineering.

The curriculum of the Master is designed to provide students with basic skills in computational sciences. It is divided in core courses and courses oriented towards applications in Science and Engineering.

Core courses include scientific computing, numerical methods, algorithmic and software engineering, advanced tools for HPC, image processing, visualization and multiscale-multiphysics modeling. Application courses in various area of science and engineering such as Chemistry, Biology, Civil, Environmental or Mechanical Engineering with a strong HPC component will be offered.

The student will complete an industrial internship and the Master's program will be concluded by a scientific thesis in one of EPFL's research lab or in collaboration with an industrial partner.

The Master in CSE opens the doors to industry in software engineering, environmental engineering, financial services, chemical and pharmaceutical R&D. It is also a strong asset for a PhD in computational science.

An advisory board comprising professors from the various schools at EPFL as well as professors from Lausanne and Geneva Universities is responsible for the scientific program of the master in CSE.