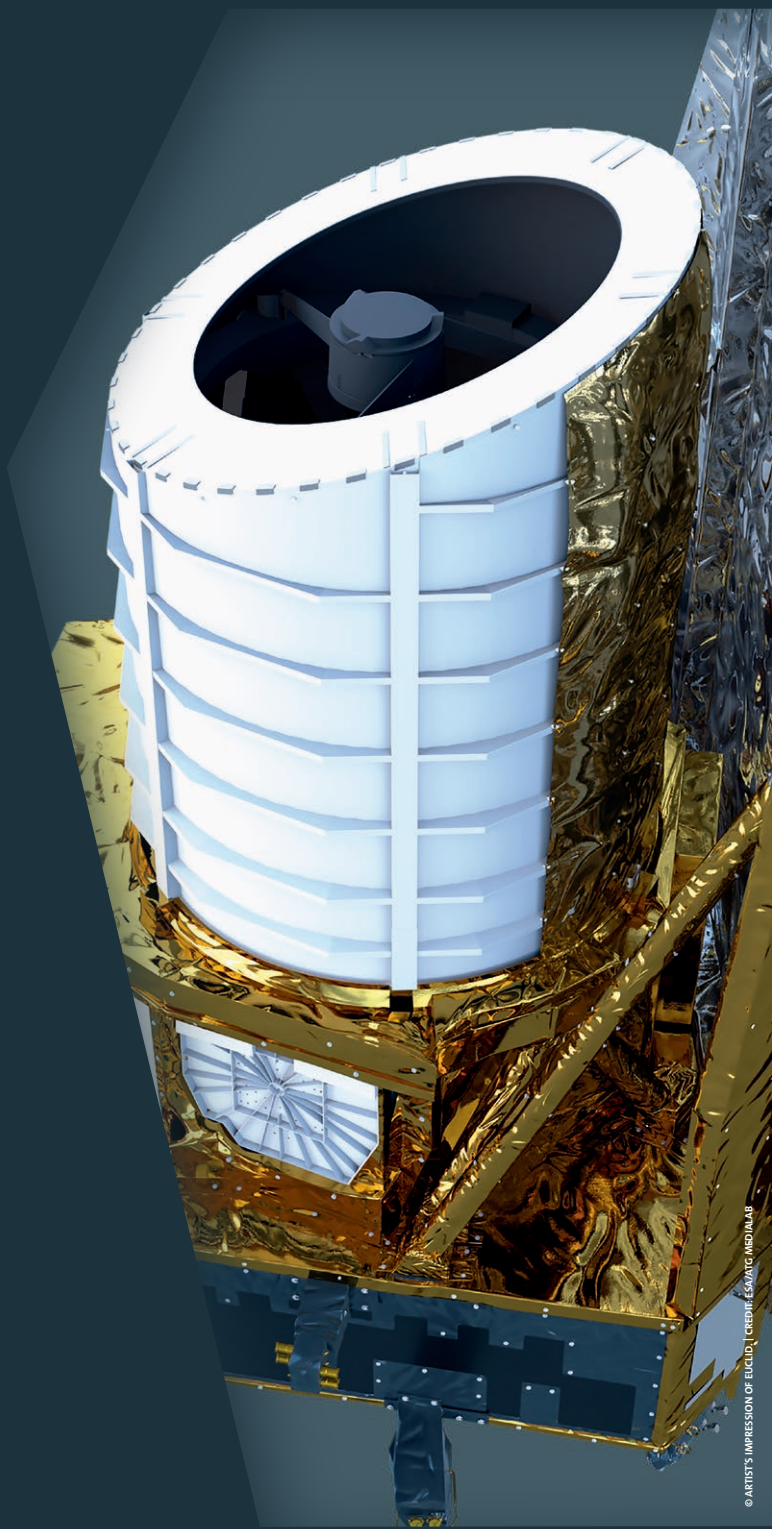
University of Zurich[UZH]

Faculty of Science

COMPUTATIONAL SCIENCE

SPECIALIZED MASTER

The increasing power of computers has made calculations possible that were unthinkable a decade ago. The high level of complexity of scientific problems and industrial modeling can today be surmounted by modern computers and novel computational methods. These skills can now be considered as part of the technical foundation of scientists. We offer an exciting 90 ECTS specialized Master's program to prepare a new generation of such knowledge engineers.



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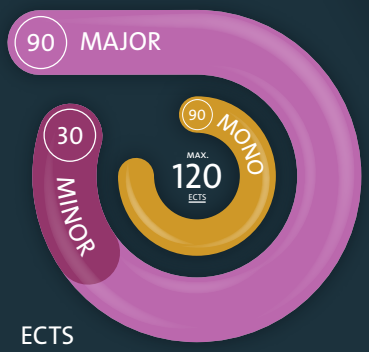
GOALS OF PROGRAM

Graduates of the specialized Master's program acquire the following knowledge:

- Methodological foundations for simulation in the natural sciences
- Numerical methods for differential equations in simulations
- Advanced high-performance computing
- Methods for visualization of simulation data
- Machine learning in the sciences

Additional learning objectives (elective modules) relate to the different application areas:

- Computational Physics and Astrophysics
- Computational chemistry
- Computer Graphics
- Applications in Earth and Environmental sciences



SPECIALIZED MASTER: COMPUTATIONAL SCIENCE

MONO 90 ECTS | MAJOR 90 ECTS | MINOR 30 ECTS

PROFESSIONAL PERSPECTIVES

Graduates are well prepared for careers in academia or scientifically oriented industry. The program is inherently interdisciplinary, allowing students to work across boundaries in a dynamic environment and learn a wide range of numerical methods and their application in various fields. Doctoral studies in one of several disciplines is another obvious option.

MASTER STUDY PROGRAM

The program provides students with the necessary skills and knowledge in computational sciences to conduct independent scientific research. Students are required to attend compulsory courses and seminars worth 15-25 ECTS credits. 35-40 ECTS credits are earned in elective modules. The compulsory master's thesis (30 ECTS credits) and master's examination complete the education.

POSSIBLE SPECIALIZATIONS

- Astrophysics (Cosmology, Planets)
- Hydrodynamics / Fluid dynamics
- Data Science
- Machine Learning
- Quantum Computing

POSSIBLE MINOR COMBINATIONS

30 MINOR ECTS

The specialized Master can also be combined with a 30 ECTS minor either to deepen the knowledge in a related field or to get first insights into a new area. Examples of a range of possible minor combination is given here.

- Physics
- Biology
- Geography
- Chemistry
- Earth System Sciences
- Biodiversity
- Mathematics
- Biochemistry

ADMISSION

The specialized Master's program Computational Science (90 ECTS credits) requires one of the three UZH minor study programs (Computational Science 60, Data Analysis in Natural Sciences, Simulations in Natural Sciences 30) or at least 30 ECTS credits from applied mathematics and programming modules during the Bachelor's. Graduates of Universities of Applied Sciences from Switzerland may be considered with additional requirements. The overall qualification is evaluated by the admission committee.

CONTACT

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TO STUDY PROGRAM PAGE

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