

Master Computational Science



Computational Science in Amsterdam

Computational Science is an area of science which spans many disciplines, but at its core it involves the development of models and simulations to understand natural systems. Our Master's programme is designed with this in mind.

Computational Science

Computational Science seeks to explain the complex world we live in through modelling and simulations. By collecting data from various sources and creating computer models, computational scientists can address questions such as how to influence the flow of traffic, how global climate change and the calcification of coral reefs are connected, or how to design virtual patients for personalised medicine.

In the Master's programme you will:

- Learn to build models from real-life data and observations.
- Develop skills for turning these models into large-scale simulations using supercomputers.
- Learn theory that will give you the basis for analysing complex systems.
- Learn to analyse the results of your simulations in a virtual laboratory using advanced numerical algorithms.



Study programme

The Master's is highly interdisciplinary and includes students with wide ranging interests. The programme is structured in a way which allows you the freedom to explore your interests and ambitions. Three course types are defined: compulsory core courses, restricted-choice courses and free-choice elective courses. A complete programme consists of 14 courses and a seven-month graduation project.

1. The core compulsory courses reflect the central body of knowledge in Computational Science.
2. The restricted-choice courses offer breadth and depth, allowing students to either deepen their knowledge on core topics or broaden their scope.
3. Finally, free-choice elective courses offer students the option to take courses in application domains. These are especially intended for students who would like to do a research graduation project in one of the application domains as described below.

Graduation in different domains

Not only do you graduate with knowledge of the core concepts of Computational Science like complex network simulation, but you can also specialise in one of the application domains, such as Computational Biology or Computational Finance. You can use the elective courses to take specific courses in application domains and perform your research in helping solving domain-specific problems in collaboration with domain experts.



Career prospects

As a graduate of Computational Science, you will be highly valued for your knowledge and skills in this new field of science. You will be ready to start a career in any professional environment where computation is the core business.

Graduate Swetta Jansen about MSc Computational Science

'What I especially like about this programme, is that in most courses you get assignments in which you have to program a model or an algorithm with a group. This is a very nice way to learn practical skills like programming and soft skills like collaboration.'



Application & Admission

Entry requirements

Applicants should have sufficient mathematical skills and demonstrable programming skills. All students should have a good grade point average. A statement of motivation is required as part of the admissions procedure. There is also an intake meeting before the Master's programme begins to identify the applicant's level of knowledge and, in the event of knowledge gaps, make recommendations regarding self-study.

Pre-Master's programme

If the Admissions Board has decided that you don't meet the admissions requirements for the Master's programme, Dutch-speaking students can enrol in the Minor Computational Science (30 EC) at the UvA. This minor programme is the pre-Master's programme and will train you in mathematics and programming in preparation for the Master's programme. The minor programme runs from September to January. Courses are taught in Dutch. If you successfully complete the minor, you will receive confirmation of admission to the Master's programme in the subsequent academic year.

Application

To apply, follow the online application procedure at:

uva.nl/msc-computational-science

This is a joint Master's degree programme of the University of Amsterdam and Vrije Universiteit Amsterdam. Courses are taught at locations of both universities. UvA and VU jointly issue a degree certificate in Computational Science to graduates.

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