



Programme description

Reference number:  
V-2023-0327

Doctoral Programme

Valid from: 2010-11-19

Revised as of: 2023-05-09

## Programme description: Doctoral Programme in Applied and Computational Mathematics

### Programme name in English

Applied and Computational Mathematics

### Indicate the third-cycle subjects included in the programme.

The programme covers applied and computational mathematics and has three specialisations: mathematical statistics, numerical analysis, optimisation theory and system theory.

### Programme organisation

*Describe the programme council (indicate which functions are included, not persons), the programme director and indicate in particular how student representation is ensured.*

The programme has a programme director and a programme council. The programme council consists of at least one doctoral student responsible for the programme, the programme director, at least three supervisors from the department who together represent research in mathematical statistics, numerical analysis, optimisation theory and systems engineering, and preferably at least one representative from industry. The student representatives are elected according to the procedure of the student union at KTH. The programme council meets at least once per semester.

### Courses

#### *Range of courses offered*

*Describe the range of courses in the programme in general and the subject areas to be covered. Current courses are listed [write where].*

The programme has six core courses, two in each of mathematical statistics, numerical analysis and optimisation and systems theory. These courses are taught regularly and form a common base for the programme. In addition, several advanced courses are offered within the three specialisations. The programme has a compulsory course in ethics, sustainability, gender equality, diversity and equal opportunities (5 credits).

A list of third-cycle courses in mathematics and applied mathematics can be found at the website Courses SCI/Mathematics <https://www.kth.se/utbildning/forskarutbildning/kurser/org/SF?l=en>.

Courses offered and taught are listed by year on the website "Graduate level courses " <https://www.kth.se/sv/math/studies/graduate/applied-and-computat> and

<https://www.kth.se/sv/math/studies/graduate/matematik>, linked to from the website of the Department of Mathematics/Education

#### *Quality assurance and monitoring of programme courses*

*State how the programme's courses are monitored and how quality assurance of the courses is carried out.*

Course analyses are carried out in each course. The course analyses are discussed in annual meetings with the teachers involved, student representatives and the programme director. Reports on these meetings are presented in programme council meetings.

#### **Other programme content and support for the programme's doctoral students**

*Organised activities other than courses, such as seminar series and workshops.*

The Department of Mathematics at KTH, together with Stockholm University, has more than ten regular seminar series. Doctoral students are expected to follow some seminar series, such as the doctoral seminar that is shared with the doctoral programme in mathematics. The programme regularly organises alumni meetings and programme-wide activities, such as introductory meetings and boarding.

#### **Description of the continuous, systematic quality-enhancement activities of the programme**

*Describe the regular monitoring, analysis, evaluation and development activities. This can be done, e.g., through course analyses, programme analyses or the means for ensuring a relevant range of courses offered.*

The programme director has an annual meeting with each doctoral student and their supervisor to evaluate the study plan. Before this meeting, each doctoral student gives a presentation on their current research.

The programme council, together with the programme director, reviews and evaluates course analyses and course offerings. The programme council and the programme director use these evaluations to develop the course offerings.

The programme directors for doctoral programmes at the School of Engineering Sciences meet regularly, at least once per semester, to continuously analyse and help each other develop the doctoral programmes, for example based on work with programme analyses.