



Programme description

Reference number:
V-2023-0330

Doctoral Programme

Valid from: 2014-06

Revised as of: 2023-09-19

Programme description: Doctoral Programme in Solid Mechanics

Programme name in English

Solid Mechanics

Indicate the third-cycle subjects included in the programme.

Solid Mechanics

Programme organisation

Programme council

The programme council coincides with the management group of the Unit of Solid Mechanics in the Department of Engineering Mechanics. The council consists of the doctoral programme director (PA), a doctoral student representative, the head of unit, the unit's director of studies and the person responsible for the solid mechanics track in the Engineering Mechanics master's programme. Changes to the course syllabus or general syllabus, and the registration of new courses, must be approved by the programme council before being decided.

Courses

Range of courses offered

The doctoral programme shall offer its doctoral students a regular and varied range of third-cycle courses. Teacher-led courses (with lectures, take-home assignments/examinations and sometimes lab work) must, in total over a five-year period, provide sufficient credits for the course component of the doctoral degree. The compulsory courses must be given regularly at least every three years, and in most cases more often.

Current courses are listed on the School of Engineering Sciences' main page for third-cycle education

<https://intra.kth.se/en/sci/phd>

Quality assurance and monitoring of programme courses

Doctoral programme courses are evaluated fully in accordance with the principles that apply to first- and second-cycle courses. After each major teacher-led course, a course evaluation is carried out, which the programme director evaluates and discusses with teachers and doctoral students, and in the programme council, if necessary.

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

The main research strategy of the unit, and thus of the doctoral programme, is to conduct basic research in different generic areas and to use this basic research for different types of applied research. In the latter case, immediate industrial applications are an obvious goal. For example, applied research in the field of structural reliability is largely based on basic research in fatigue.

There is close collaboration in this area with the automotive industry. Further examples include research in paper mechanics, where there is collaboration with large parts of the Swedish paper and packaging industry, in biomechanics, where the healthcare sector and various medical technology companies are natural partners, and in materials and fracture mechanics, where there is collaboration with the energy sector and, especially, the nuclear power industry. Many of the programme's doctoral projects are funded by companies in the industrial sectors mentioned above. This provides the programme's doctoral students with valuable contacts in Swedish industry, not only during their studies but for the future.

Doctoral students participate in the unit's regular seminar activities and present their work at national and international conferences. The doctoral programme aims to ensure that each doctoral student participates in (and presents results at) at least one national or international conference per year. The programme's doctoral students regularly organise study visits to Swedish companies and other universities as well as weekly doctoral seminars. Small research-group meetings are held regularly.

The unit has an extensive international contact network that also benefits the doctoral programme. Doctoral students are encouraged to undertake short or long research periods at universities abroad. The unit is regularly visited by international researchers. It is the unit's policy that such visiting researchers must be involved in doctoral student research.

The unit has a very well-equipped laboratory, ensuring the experimental resources of the doctoral programme. One goal is that all doctoral theses presented within the programme shall contain experimental elements.

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

Nearly all theses in the programme are compilation theses. The doctoral programme explicitly requires that all scientific articles making up the doctoral theses must be publishable in reputable international journals. In the case that unpublished articles, or conference papers, are included in the thesis, the principal supervisor shall decide whether they fulfil this requirement.

Licentiate and doctoral theses must always be reviewed in detail by a senior researcher in the unit (in addition to the principal supervisor) prior to application for a certificate. It is also a tradition in the unit that each thesis, and the articles included in the thesis, are studied more or less carefully by most of the teachers.

As mentioned above, the explicit goal of the programme is for each doctoral student to participate in, and present their research at, one national or international conference per year. This provides doctoral students with knowledge of current research front in the field. It also gives doctoral students practice in defending their research results in a broader context.

The programme council is important for discussion and monitoring of the various quality aspects of the programme. The results of KTH's overall continuous quality monitoring are also analysed, as well as how these can be taken into account in the programme.

The annual update of the individual study plan is an important part of the evaluation and development process. The update is carried out jointly by the doctoral student and supervisor in consultation with the programme director. Monitoring takes place in connection with the annual interviews that the programme director holds with the programme's doctoral students.