

Infra Informatics

/Infraformatik/

SCB-codes: 20105, 20203, 20102

General description of the research area

Infra Informatics deals with issues relating to the planning, design, utilization, management and analysis of infrastructure and systems for the transport of people and goods, and for telecommunications. Many applications concern the areas of intelligent transport systems (ITS). Of particular interest is the information technologies impacts on the systems and how mathematical modeling can be used to represent the systems. The area has a multidisciplinary and technical systems approach where the integration, the dynamics and the complexity of the system, is given special attention, and the topic has its base from both industrial and societal planning processes. Besides the area's technical aspects, even non-technical conditions such as humanistic and behavioral science issues are taken into account.

Eligibility requirements and selection

The basic eligibility requirements as well as the general principles for selection are specified in the faculty's *Study Handbook for PhD Studies*.

Specific eligibility requirements

Admission to PhD Studies in the research area of Infra Informatics requires completion of courses of at least 60 ECTS at the master level in a relevant research area. These 60 ECTS should include an independent project (degree project) of at least 30 ECTS in a field relevant to the subject of PhD studies. The research area's interdisciplinary nature means that the student's background can vary depending on the intended research project.

Degree

PhD studies in Infra Informatics lead to a Degree of Doctor or a Degree of Licentiate. The latter degree can also serve as a stage in the PhD studies. The Degree of Licentiate comprises at least 120 ECTS, of which courses correspond to 60 ECTS and the licentiate thesis corresponds to 60 ECTS. The Degree of Doctor comprises 240 ECTS, of which courses correspond to 90 ECTS and the doctoral thesis corresponds to 150 ECTS.

Goals and implementation of the PhD studies

The general goals and objectives of PhD studies are specified in the introduction to the faculty's *Study Handbook for PhD Studies*, as well as in the Higher Education Ordinance (reprinted in the *Study Handbook's* appendix A).

The PhD studies will endow the student with broad knowledge and understanding of the research area of Infra Informatics as well as the ability to see the greater context over the entire field. The PhD studies will also allow the student to delve further in depth into one of the following topics: Construction Logistics, Quantitative Logistics, Mobile Telecommunications and Traffic Systems.

PhD studies in Infra Informatics will also provide deep knowledge and understanding of the research area as well as familiarity with scientific methodology and project management and insight into advanced engineering work. As a rule the latter is acquired within the framework of an applied research project. The student should acquire good ability to critically and independently plan, lead, carry out and communicate research and development projects.

After completion of PhD studies, the student should be well prepared to make contributions in research and development in industry as well as in the academic world.

PhD students in Infra Informatics acquire skills and competencies by critically and independently planning, leading, carrying out and communicating research and development projects.

The PhD student in Infra Informatics will develop judgement and approach by completing courses in research ethics and participating in seminars/seminar series in the research area. PhD students in Infra Informatics will demonstrate their intellectual autonomy by writing a thesis.

Thesis

The overall rules regarding the format, submission and grading of a thesis can be found in the faculty's *Study Handbook for PhD Studies*.

A licentiate or doctoral thesis can be presented in the form of either a continuous piece of work (monograph thesis) or as a compilation of separate reports.

A licentiate thesis is presented at a seminar with an opponent. It is graded (pass or fail) by an independent examiner appointed by the head of department. A licentiate thesis can consist of a scientific essay or an investigative report conducted on scientific grounds.

A doctoral thesis is to be defended at a public disputation. It is graded (pass or fail) by an examination committee appointed by the Board of PhD Studies. The content of the doctoral thesis should be of such level of quality that it can be accepted for publication in scientific journals of good repute within the research area.

Individual study plan

An individual study plan will be formulated for each PhD student. The detailed planning of courses and other components will be conducted in consultation with the supervisor and documented in the individual study plan (see *Study Handbook for PhD Studies*, section 5.3). The study plan should be established within one month after admission to PhD studies, and it should be revised at least once a year.

Supervision

All PhD students will have at least two supervisors. One of the supervisors will be appointed as the main supervisor (see *Study Handbook for PhD Studies*, section 4.1).

The supervisors should assist the student in the planning of his/her studies and in the selection of research projects, and in general guide the student during the period of study.

The PhD student and the supervisors should have regular meetings to discuss and consult on the progress of the research work. The PhD student should regularly keep the supervisors informed of the progress of his/her work.

Courses

Faculty course requirements

Scientific theory, methodology and ethics

All PhD students admitted as of 1 January 2010 should complete mandatory courses as decided by the faculty in methodology and ethics, or be deemed to have equivalent competencies, in order to receive a degree.

Pedagogic studies

All PhD students who teach should complete a basic course in pedagogy. At least 3 ECTS from this course should be included in the PhD studies, and any remaining credits should be counted as departmental duties (see *Study Handbook for PhD Studies*, section 5.5).

Other courses and activities

During his/her period of study, the student is expected to actively participate in the research work at the department and should regularly report on achieved research results to the department's co-workers at seminars. Research results should also be presented in research reports and at national/international conferences and symposia. Those who continue onwards to pursue a Degree of Doctor should, if possible, allocate 3-6 months of studies at another university in or outside of Sweden.

Transitional provisions

Changes to the general study syllabus do not apply to those who have already been admitted to PhD studies in the research area. A change to the new general study syllabus may however be approved if both the main supervisor and the PhD student agree. In such a case, this should be documented in the individual study plan.