The Guidelines for post-graduate education in the Faculty of Natural Sciences

This guideline is meant especially for students who are studying their post graduate studies in 40 cr systems (degree regulation approved in 2013). Other documents which affect to the content of this guideline are decree 1039/2013, degree regulation of TUT and The guidelines for the development of doctoral education at TUT (approved by Academic Board on Monday 28 November, 2011).

A student has to discuss on the study plan with his/her supervisor and the supervisor has to endorse the study plan. The Faculty council decides on the degree requirements that postgraduate students are expected to complete.

If a student takes more courses which are required to complete the degree, the studies cannot delay the graduation.

A student admitted to pursue a postgraduate degree at TUT before 1 January 2013 may complete his/her degree either according to the new Degree Regulations (40 credits, approved on 26.11.2012) or the old Degree Regulations (60/70 credits until end of the year 2015).

Requirements for post graduate education (decree 794/2004, 1039/2013):
§21: Scientific and artistic postgraduate education: Objectives of scientific and artistic postgraduate education

The aim of postgraduate education is that the student:

(1) becomes well-versed in his/her own field of research and its social significance
(2) gains knowledge and skills needed to apply scientific research methods independently and critically and to produce new scientific knowledge within his/her field of research;
(3) becomes conversant with the development, basic problems and research methods of his/her own field of research;
(4) gains such knowledge of the general theory of science and of other disciplines relating to his/her own field of research as enables him/her to follow developments in them.
(5) gains good language and communication skills and other knowledge and skills needed to pursue a challenging career and engage in international collaboration.

Degree regulations (Approved by TUT's Academic Board on 18 March 2013)
Postgraduate studies shall comprise major subject studies and general scientific studies. The minimum scope of major subject studies shall be 25 credits and that of general scientific studies 5 credits. The total scope of postgraduate studies shall be no less than 40 credits. (288)
The Faculty Council may require persons admitted as postgraduate students to complete a necessary amount of supplementary studies to ensure that they attain the competencies needed to pursue postgraduate studies. These studies shall not count towards the degree. (9§)

TUT’s common guidelines concerning studies that may be accepted for credit toward a postgraduate degree are as follows: (The guidelines for the development of doctoral education at TUT approved by Academic Board on Monday 28 November, 2011)

- The field of a student's postgraduate studies must be connected to the research field of his/her dissertation. The studies and the dissertation must form a coherent whole.
- Only postgraduate studies completed at a university may be counted toward the degree. The requirements that are applied to studies completed at TUT also apply to studies completed outside TUT.
- Students completes part of general scientific studies in accordance with the degree regulations by attending the course “Orientation to Doctoral Studies” at TUT. Students must complete the course at an early stage of their studies.
- A maximum of 10 credits worth of studies, which aim at developing transferable skills, may be included in the student’s supplementary studies, provided that the supervisor approves the studies. (in 60 cr degree system)
- Bachelor- and master-level studies can only be included in the student's main subject studies, if there is a justified reason to do so. Further conditions, such as minimum grade requirements, may be imposed on such studies.
- Publications and conference presentations cannot, per se, be counted toward the degree.

Faculty of Natural Sciences: Degree requirements: The content of the general scientific studies

The meaning of the general scientific studies is to prepare the students for scientific work and introduce him/her to applying and conveying scientific knowledge. The studies should also take into account the needs of the personal aims and student’s future career. The minimum extent of the general scientific studies is 5 cr. The course LTT-90006 Orientation to Doctoral Studies, 3 cr (earlier TUT-9006, 5 cr) is compulsory or equivalent knowledge.

The module may contain courses for example from areas:

- research methods
- research methodology
- research ethics
- good scientific practice
- history and philosophy of science
- principles of scientific writing
courses on communication
business operations
leadership
commercialization of business
A maximum of 5 credits’ worth of teacher's pedagogical studies or university pedagogics, with good reason, be counted towards a doctoral degree.
A maximum of 5 credits’ worth of foreign language courses may, with good reason, be counted towards a doctoral degree, provided that the courses are necessary for the successful completion of the doctoral dissertation and related research.

The module may include for example following courses (Curriculum 2014-2015):

- **KIE-34106 Academic Writing in English, 3 op**
- **KIE-34606 International Negotiations, 4 op**
- **KIE-39006 Research Presentation, 1-3 op**
- **KIE-39106 Research Writing, 2-4 op**
- **MAT-82200 Kvalitatiiviset tutkimusmenetelmät, 5 op**
- **MAT-60250 Matemaattisenmallinnuksen peruskurssi, 5 op**
- **MAT-64750 Mallinnus ja optimointi, 4 op**
- **MAT-63506 Scientific Computing, 5 op**
- **KEB-25056 Technological Development and Society, 3 op**
- **TLO-35020 Uuden tiedon luominen ja sen työkalut, 4 op**
- **TRT-28010 Laadulliset tutkimusmenetelmät, 4 op**
- **TLO-35660 Tutkimuksen tiedonhallinta, 1 op**
- **TTA-62040 Teknologian kaupallistaminen, 4 op**
- **TIE-12106 Scientific Papers and Presentation, 6 op** (recommended only for students whose major is computer science)
- **ELT-82200 Tekniikan kehitys eettisenä kysymyksenä, 5 op**
- **FYS-1550 Fysiikan seminaari, 1-3 op**
- **TTA-22010 Organisaatioviestintä, 4 op**
- **TTA-55016 Management of Innovation, 4 op**
- **TLO-35020 Uuden tiedon luominen ja sen työkalut, 4 op**
- **TLO-45010 Tulevaisuusajattelu ja skenaariot, 5 op**

Furthermore, the student may apply Joopas-right to some other university (eg. Tampere University). The webpages of the research school of UTA: http://www.uta.fi/tutkijakoulu/yhteiset/kurssit/index.html (eg. research ethics, the philosophy of science). The supervisor has to endorse the application.

**Faculty of Natural Sciences: Degree requirements: the Content of the Major**

The field of a student’s postgraduate studies must be connected to the research field of his/her dissertation. The faculty supports interdisciplinarity. That's why the major can include courses from other departments and universities besides the courses offered by the own department. The courses have to fulfill general criteria mentioned in the page 2. Studies may include eg. courses, literature, seminars, summer or winter schools. The faculty council always confirms number of credits earned from different study attainments during the approval of degree requirements.