Curriculum
for
Licentiate Degree in Engineering 2020-2022

March 16, 2020
In accordance with the Aalto University General Regulations on Teaching and Studying, the curriculum is a confirmed overall description of the learning outcomes of a licentiate programme, the goals and contents of its study modules and the courses offered as well as the organisation of teaching within a given period of time as indicated in the Aalto University General Regulations on Teaching and Studying (Section 2). When the curriculum is being designed, at least the following details must be specified for each course: name, scope in credits, timing, learning outcomes, implementation method, language of instruction, assessment methods, grading scale, prerequisites (if any), the unit responsible for and the teacher-in-charge of the course.

### Contents

1. **Basic information about the degree** ................................................................. 3
   1.1. Name of the degree ......................................................................................... 3
   1.2. Language of the degree .................................................................................. 3
   1.3. Research fields ............................................................................................... 3
   1.4. Scope of the degree ......................................................................................... 3
   1.5. Timetable of the degree .................................................................................. 3
   1.6. Admission to the licentiate degree .................................................................. 3
   1.7. Licentiate degree director ............................................................................... 3

2. **Learning outcomes of the Licentiate Programme in Engineering** ...................... 4

3. **Structure of the programme** ............................................................................. 5

4. **Content of studies** .......................................................................................... 5
   4.1. TECH Scientific principles and practices ....................................................... 5
   4.2. Research field studies .................................................................................... 6
   4.3. Licentiate thesis ............................................................................................. 6
   4.3.1. Examination and approval of the licentiate thesis ...................................... 6
   4.3.4. Evaluation and grading .............................................................................. 6
1. Basic information about the degree

1.1. Name of the degree

Licentiate of Science (Technology)

1.2. Language of the degree

Finnish, Swedish, or English

1.3. Research fields

The Aalto Doctoral Programme in Engineering comprises 8 research fields. The programme is a joint effort of the Departments of Mechanical Engineering (ME), Civil Engineering (CE), and Built Environment (BE).

The licentiate candidate chooses a research field when applying to the programme. The professor supervising the doctoral/licentiate studies is agreed upon at the same time.

Research fields are available on the doctoral programme’s pages: https://into.aalto.fi/display/endoctoraleng/Degree+structure+and+coursework

1.4. Scope of the degree

The degree should be able to be studied in two years, if studied full time. It consists of general research studies including optional transferable skills and studies of the research field, in addition to the thesis itself.

1.6. Admission to the licentiate degree

Doctoral students can, if desired, to take out the licentiate degree during the studies. In this case, this curriculum is to be followed.

1.5. Timetable of the degree

2 years of full-time study

4 years of part-time study

1.6. Licentiate degree director

Professor Risto Lahdelma

The doctoral programme director is in charge of the execution of the programme.
2. Learning outcomes of the Licentiate degree in Engineering

Aalto University’s strategic objectives is to educate game changers — professionals with the knowledge and capabilities to build a sustainable society and to increase well-being through disruptive change\(^1\). These capabilities need to be rooted in disciplinary excellence augmented by art, creativity, multidisciplinary collaboration and entrepreneurship.

Each licentiate candidate makes a study plan, research plan, supervision plan, financial plan, and an optional career plan; the implementation of all of which is followed up by the supervising professor. The supervising professor is also responsible for the supervision arrangements of the licentiate candidate.

Graduates will have the ability to work in a multidisciplinary and international environment together with various actors.

They will also have the competence to search for and apply knowledge, and the ability to use scientific research methods and to create new scientific knowledge.

They will be able to publish scientific results in peer-reviewed publications and disseminate the results on scientific forums.

They will work responsibly in the light of ethical and sustainable considerations and their work in the scientific community will follow good scientific practice.

---

\(^1\) Aalto University Policies on Curriculum Design for 2020-2021 and 2021-2022, section 1.2.
3. Structure of the programme

Licentiate studies at Aalto University consist of an approved licentiate thesis and study modules. In the field of science and technology, the study modules comprise research field studies as well as scientific principles and practices in total of 40 ECTS. The completion of a licentiate degree equals two years of full-time studies.

<table>
<thead>
<tr>
<th>Licentiate thesis</th>
<th>TECH: Scientific principles and practices (5-20 ECTS)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>TECH: Research field studies (20-35 ECTS)</td>
</tr>
</tbody>
</table>

4. Content of studies

To earn the licentiate degree, students shall:

1. complete the doctoral studies specified in curriculum in accordance with the study plan and
2. write a licentiate thesis.

4.1. TECH Scientific principles and practices

Every doctoral student plans together with his/her supervising professor, which studies should be included in this part of the personal study plan. Thereafter, the personal study plans are confirmed. The studies might include, for example, transferable skills as part of scientific principles and practices/ common doctoral studies/general research studies.

Aalto University communication courses

Nationally jointly developed courses, offered via findocnet.fi
- Research Ethics for Doctoral Students D, LC-L1010 (1-2 ECTS)
- Open Science for Doctoral Students D, LC-L1011 (1 ECTS)
- Business Skills for Doctoral Students D, LC-L1012 (1 ECTS)
- Career Course for Doctoral Students D, LC-L1013 (1 ECTS)
- Interactive Leadership Skills for Doctoral Students D, LC-L1014 (1 ECTS)
- Project Management for Doctoral Students D, LC-L1015 (1 ECTS)
- Writing Research Grant Applications for Doctoral Students D, LC-L1016 (1 ECTS)
Further details are available on the doctoral programme’s pages
https://into.aalto.fi/display/endocorlaleng/Engineering

4.2. Research field studies

These studies are the core element of the licentiate studies, decided jointly by the licentiate candidate and her/his supervising professor.

The departments at are responsible for planning, organizing and teaching the theoretical courses. The teacher responsible for the course (together with the programme director) defines the level of the course, whether it is aimed for bachelor, master or doctoral students.

Further details are available on the doctoral programme’s pages:
https://into.aalto.fi/display/endocorlaleng/Degree+structure+and+coursework

4.3. Licentiate thesis

A licentiate thesis shall demonstrate good conversance with the field of research and the capability of independently and critically applying scientific research methods.

The licentiate thesis is written on a topic related to the research field that the licentiate candidate has chosen and that has been approved by the doctoral programme committee of the School of Engineering and the supervising professor. The accepted forms of theses in the School of Engineering are monographs and article-based licentiate theses. A licentiate thesis is a public document and is kept for viewing at the university. All theses works are public in Finland (law 621/1999).

4.3.1. Examination and approval of the licentiate thesis

The licentiate thesis is presented at the school. For the thesis to be examined, the student shall submit it and an application for its examination to the school. The application for examination must be approved by the supervising professor. The school appoints one or two examiners for the licentiate thesis and obtains statements from all of them. The student is provided with an opportunity to reply to the statements. After this, the school decides on the approval of the thesis.

Without reasonable grounds, the examination of a licentiate thesis shall not take more than two months from the date of the appointment of the examiners.

4.3.4. Evaluation and grading

No overall grades are assigned for individual study modules. Licentiate degrees are graded on the following scale:

Field of technology:
Licentiate thesis are evaluated on a scale of Pass/Fail.

---

2 Appendix ‘Section 43A Degree regulations on doctoral education’ in the Aalto University General Regulations on Teaching and Studying (OOS).