



## Table of contents

<b>GUIDELINES FOR EMPLOYMENT AS, AND PROMOTION TO, PROFESSOR AT THE FACULTY OF ENGINEERING, LUND UNIVERSITY- scientific basis .....</b>	<b>3</b>
<i>Introduction.....</i>	<i>3</i>
<i>Eligibility requirements.....</i>	<i>3</i>
<i>Grounds of assessment.....</i>	<i>4</i>
<i>Criteria.....</i>	<i>5</i>
<i>Personal suitability .....</i>	<i>5</i>
<i>Potential.....</i>	<i>6</i>
<i>Definitions.....</i>	<i>6</i>
<b>Grounds of assessment, criteria and clarifying examples .....</b>	<b>6</b>
<i>Grounds of assessment 1.....</i>	<i>6</i>
Criteria.....	6
Clarifying examples .....	9
<i>Grounds of assessment 2.....</i>	<i>10</i>
Criteria.....	10
Clarifying examples .....	13
<i>Grounds of assessment 3.....</i>	<i>14</i>
Criteria.....	14
Clarifying examples .....	15
<i>Grounds of assessment 4.....</i>	<i>16</i>
Criteria.....	16
Clarifying examples .....	16
<i>Grounds of assessment 5.....</i>	<i>16</i>
Definitions:.....	17

Criteria.....	17
Clarifying examples .....	17
<b>Recruitment as an adjunct professor .....</b>	<b>18</b>
<i>Eligibility and assessment</i> .....	18
Additional examples for the assessment of adjunct professors .....	19
<b>Employment as a visiting professor .....</b>	<b>20</b>
<i>Eligibility and assessment</i> .....	21

# **GUIDELINES FOR EMPLOYMENT AS, AND PROMOTION TO, PROFESSOR AT THE FACULTY OF ENGINEERING, LUND UNIVERSITY- scientific basis**

## **Introduction**

Employment of teachers at colleges and universities is regulated by the Higher Education Ordinance (SFS 2010:1064). Those who have demonstrated both scientific and pedagogical skills are eligible for appointment as a professor in accordance with Chapter 4, Section 3 of the Higher Education Ordinance. Each higher education institution otherwise decides for itself which grounds of assessment are to be applied. In its employment regulations (STYR2022/1843), Lund University has decided on the eligibility requirements and grounds of assessment that shall apply to employment as professor, promotion to professor and employment as adjunct professor and visiting professor.

This document, Guidelines for employment as, and promotion to, professor at the Faculty of Engineering, Lund University, states how the eligibility requirements and grounds of assessment specified in Lund University's employment regulations and LTH's decision on Guidelines for promotion to professor are to be interpreted and applied at LTH. The criteria that must be fulfilled are listed together with clarifying examples for the interpretation of the various criteria. Some of the criteria specify different levels for recruitment and promotion.

## **Eligibility requirements**

According to Lund University's employment regulations, the following eligibility requirements apply for employment as a professor:

- Demonstrated scientific/artistic excellence.

- Demonstrated pedagogical skills, which also includes having completed higher education pedagogical training or otherwise acquired equivalent knowledge of at least five weeks, unless there are special reasons.

According to Lund University's employment regulations, the completed higher education pedagogical training must relate to SUHF's national goals.

## Grounds of assessment

According to Lund University's employment regulations, the following grounds of assessment must be met for employment as a professor. The grounds of assessment specify what must be considered and what level must be achieved in order for the qualification requirements to be considered fulfilled.

1. Very good national and international level as a researcher or as an artistic practitioner/researcher, where the requirement for international merit shall be assessed taking into account the nature and tradition of the subject specialisation.
2. Very good pedagogical skills, which means very good ability to conduct, develop and lead teaching and other pedagogical activities at different levels and with varying teaching methods.
3. Good ability to supervise doctoral students towards a doctoral degree and/or students in artistic programmes towards artistic independence.
4. Good ability to interact with the surrounding community and to communicate about one's activities.
5. Good ability to otherwise manage and develop the organisation.

The meaning of very good ability is to be understood on the basis of tradition and conditions in the subject in question. With regard to the focus and content of the position, a person who is deemed to have excellent pedagogical skills and good scientific skills or the reverse, excellent scientific skills and good pedagogical skills, can be employed as a professor.

## Criteria

Through these guidelines, LTH has decided how the grounds of assessment are to be understood and applied within the faculty. The assessment must take into account the nature and conditions of the subject.

For Grounds of assessment 1 and 2, three levels are indicated for each criterion. This should be understood as an aid to the overall assessment of the applicant's merits. In order for Grounds of assessment 1 and 2 to be considered fulfilled, the applicant must, after a weighted assessment, achieve predominantly at least B-level and not below C-level on any individual criterion. If the applicant's proficiency for either of these grounds of assessment are judged to be predominantly at an A-level and not below a B-level on any criterion, the proficiency can be considered to be exceptionally good. It is then sufficient to achieve a C-level on all criteria under the second of these two grounds of assessment for both to be considered fulfilled.

For other grounds of assessment, it is an overall assessment of all the criteria for each ground of assessment that determines whether the ground of assessment is to be considered achieved.

Each criterion is accompanied by a clarification.

In the case of recruitment from a non-academic environment, other merits may be taken into account in the assessment of pedagogical and scientific skills, such as professional experience and specialised knowledge.

## Personal suitability

For both recruitment and promotion, the applicant must have personal suitability for the position. The personal qualities to be considered, for example ability to co-operate, independence, organisational skills, initiative, are stated in the requirement profile at recruitment. In the case of promotion, the assessment of personal suitability is included in the strategic assessment by the head of department.

## Potential

The applicant should demonstrate potential for the future by describing how they can contribute to the organisation and its development.

## Definitions

**Publication:** refers to all written, peer-reviewed fora for the dissemination of scientific findings, such as scientific journals, conference publications, books, report series and anthologies. It also refers to authorised patents.

## Grounds of assessment, criteria and clarifying examples

Below is the interpretation LTH has decided should apply in order for the grounds of assessment according to Lund University's employment regulations to be considered fulfilled.

### Grounds of assessment 1

Very good national and international level as a researcher or as an artistic practitioner/researcher, where the requirement for international merit shall be assessed taking into account the nature and tradition of the subject specialisation.

### Criteria

- I. The applicant is a nationally leading and internationally recognised researcher.
  - a. The applicant is an international leader in their field and regularly initiates and leads international scientific collaborations.

- b. The applicant has very good international visibility, is a national leader in their field and regularly initiates and leads scientific collaborations.
  - c. The applicant has a good international visibility in their field and interacts regularly with other researchers in the field.
- II. The applicant's scientific work is of high quality and significant scope.
- a. The applicant's reviewed work is of outstanding quality and very significant scope. The work has been published almost exclusively in leading publications in the field.
  - b. The applicants' reviewed work is of very high quality and in most cases has been published in reputable publications in the field.
  - c. The applicant's peer-reviewed scientific work is of good quality and has usually been published in reputable publications in the field.
- III. The applicant is scientifically independent, and conducts documented current research activities of very high quality and of importance for the development of the research field.
- a. The applicant has developed and runs an internationally leading line of research of great importance to the development of the research field, and from this line has regularly and extensively published peer-reviewed work of outstanding quality in leading publications in the field.
  - b. The applicant has developed and maintains an internationally prominent line of research of importance to the development of the research field and has regularly published peer-reviewed work of very high quality based on this line.
  - c. The applicant has developed and operates a clear line of research with some significance for the development of the research field and has published several peer-reviewed papers based on this line, without the involvement of previous supervisors.

- IV. The applicant demonstrates a good ability to obtain external research grants.
- a. The applicant has successfully built up or renewed a well-functioning research environment by being the main applicant for granted applications that strengthen the environment.
  - b. In particular, the applicant, as lead applicant, has obtained external funding sufficient to maintain a group size appropriate to the subject matter.
  - c. The applicant has received external funding sufficient to maintain an independent research activity.
- V. The applicant can present plans for the future. A research plan must therefore be included in the application.
- a. The applicant demonstrates very well-developed ideas and concrete plans with clear objectives for their future research activities.
  - b. The applicant demonstrates well-developed ideas and plans with clear objectives for their future research activities.
  - c. The applicant demonstrates realistic plans for their future research activities.
- VI. For promotion, the applicant must be admitted as a docent.

Demonstrating scientific excellence means conducting independent research of good quality. Good quality research can be demonstrated by scientific publications in high quality journals and conferences, by the citation of the applicant's published articles by other researchers, and by the impact of the research results on the development of the research field. Scientific excellence also means taking an active part in the scientific community and being recognised by it, for example by being invited to participate in various scientific activities and acting as a reviewer or editor of scientific journals. Scientific excellence also means having a reflective approach to one's own research activities, as well as being able to contextualise them and show how society is affected by one's research. Scientific expertise also means contributing to the development of the research environment through active participation in seminars, supervision, etc.



### **Clarifying examples**

- I. The applicant's national and international standing as a researcher is assessed on the basis of the researcher's recognition in the scientific community. Very high levels of recognition are demonstrated, for example, by publications in reputable high quality scientific journals, invitations as author of review articles or as speaker at more significant international conferences, and participation in scientific committees at conferences. A very high level of recognition can also be demonstrated by review assignments in reputable journals or major conferences, editorship, membership of editorial boards, opponent assignments, scientific awards and the ability to obtain renewed research grants from established research funding organisations in competition, where the applicant is the main applicant.
- II. The high quality and quantity of the applicant's publications will be assessed, for example, on the basis of work published in established international scientific journals and/or at major peer-reviewed conferences, published books and book chapters, approved patents and exhibited artistic works or research results. The extent to which the work is cited by other researchers will be taken into account.
- III. The applicant's scientific independence is assessed on the basis of demonstrated ability to lead and develop an internationally recognised research field in the long term. This can be demonstrated, for example, by the applicant being the principal of current research grants at a level corresponding to grants from a government research council, which have been obtained in national or international competition, or having a prominent leadership role in major national or international research programmes. Another example of demonstrated scientific independence is that the applicant has over time built up a research group around a clear research field.
- IV. Having successfully and competitively obtained their own external research funding, for example as main applicant in national contexts and/or in larger international contexts.

- V. The research plan should cover the next five years and include both short-term and long-term objectives.
- VI. For employees with a docentship or equivalent from countries other than Sweden, an individual assessment is made.

## Grounds of assessment 2

Very good pedagogical skills, which means very good ability to conduct, develop and lead teaching and other pedagogical activities at different levels and with varying teaching methods.

### Criteria

- I. The applicant has higher education pedagogical training, at least 5 weeks for recruitment and 10 weeks for promotion.
- II. The applicant has relevant subject knowledge and the ability to translate this into pedagogical practice.
  - a. The applicant uses very well-thought-out strategies and working methods to support students' work with the subject in relation to the objectives of the programme.
  - b. The applicant uses well-considered strategies and working methods to support students' work with the subject in relation to the course objectives.
  - c. The applicant relates subject content and working methods in their pedagogical activities to the objectives of the course.
- III. The applicant demonstrates very good pedagogical skills and has extensive teaching experience.
  - a. The applicant has extensive teaching experience from all levels of education and can problematise it, show a very clear learning perspective and work very well in their relationship with students.
  - b. The applicant has extensive teaching experience from different levels of education, demonstrates a clear learning perspective and works well in their relationship with students.

- c. The applicant has teaching experience, demonstrates a learning perspective, and works well in their relationship with students.

IV. The applicant demonstrates educational leadership and organisational skills.

- a. The applicant demonstrates very good pedagogical leadership both in their own teaching practice and in wider contexts. The applicant regularly organises and leads external peer-to-peer exchanges of knowledge about teaching and learning.
- b. The applicant demonstrates good pedagogical leadership both in their teaching practice and in the wider context and regularly participates in collegial exchanges of experience on their pedagogical practice and knowledge of teaching and learning.
- c. The applicant demonstrates good pedagogical leadership in their teaching practice. The applicant participates in collegial exchanges of experience regarding their pedagogical practice and knowledge of teaching and learning.

V. The applicant demonstrates a good capacity for pedagogical innovation and development.

- a. The applicant develops both their own and their organisation's pedagogical activities to consciously and systematically support and develop students' learning.
- b. The applicant develops their pedagogical activities to consciously and systematically support and develop students' learning.
- c. The applicant continuously develops their pedagogical activities with a focus on student learning.

VI. The applicant demonstrates a reflective approach to teaching and learning.

- a. The applicant is internationally recognised in their role as an educator and has internationally published peer-reviewed work in educational publications of very high quality.

- b. The applicant examines, reflects on and creates knowledge about their pedagogical activities with the support of relevant theory.
  - c. The applicant reflects on their pedagogical activities with the support of relevant theory.
- VII. The applicant can present plans for the future.
- a. The applicant demonstrates very well-developed ideas and concrete plans with clear objectives for their own and the organisation's future educational activities.
  - b. The applicant demonstrates well-developed ideas and concrete plans with clear objectives for their future pedagogical activities.
  - c. The applicant demonstrates realistic plans for their future pedagogical activities.

Demonstrating pedagogical skill means fulfilling the teacher's pedagogical task in the best possible way. A well-thought-out basic pedagogical vision with clear goals is a key component in the assessment of pedagogical skills. An important basis is the applicant's own pedagogical reflection, i.e., a critically reflective analysis of their own teaching practice. This reveals the ability to focus on students' learning when planning, implementing, and evaluating teaching, thereby stimulating the students' work and ability to see the subject in a broader perspective. The teacher's capacity for mutual communication with students, a holistic approach and a willingness to innovate are also of great importance. The development of pedagogical skills over time should be visible and the teacher's ability to consciously and systematically develop their own pedagogical competence as well as that of the organisation should be apparent.

If, upon promotion, the applicant has obtained the ETP<sup>1</sup> (Excellent Teaching Practitioner) rating, the criteria for very good skill are

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<sup>1</sup> LTH invites its teachers (not doctoral students) to apply to have their pedagogical merits assessed and be admitted to LTH's Pedagogical Academy. All admitted teachers receive the pedagogical competence grade Excellent Teaching Practitioner (ETP).

considered to be met. However, the achievement of ETP is not sufficient to be considered as having achieved outstanding excellence.

### **Clarifying examples**

- I. When recruiting, the requirement is at least five weeks of higher education pedagogical training (related to SUHF's national goals), unless there are special reasons or if equivalent knowledge has been acquired in another way. If there are special reasons, such as when the applicant in their previous employment, for example in the business sector, has not had the conditions to acquire such knowledge, employment can still take place. The employee must then undergo higher education pedagogical training during the first two years of employment. Corresponding knowledge may have been acquired in another way. In these cases, an assessment of equivalency must be made. For promotion to professor, at least ten weeks of higher education pedagogical training are required.
- II. Relevant subject knowledge means a broad, solid, and up-to-date knowledge of the subject being taught and strategies to support students' mastery of the subject as they move towards increasingly complex and useful knowledge.
- III. Pedagogical skills and experience are assessed on the basis of the applicant's own practice and experience from different teaching situations, teaching levels, teaching and examination forms, and their ability to reflect on these matters. The applicant's pedagogical practice is based on the students' learning, and the applicant uses their knowledge of teaching and learning to develop pedagogically and function well in their pedagogical work in relation to the students. Furthermore, the applicant's ability to structure and organise a body of knowledge and to convey commitment and interest in the subject is important.
- IV. Educational leadership can be formal, for example in the form of an assignment as director of studies or programme director, or informal. Crucial to its importance for pedagogical competence is the extent to which leadership leads to an impact on the pedagogical development of individuals as well as the whole or

parts of the organisation. Educational leadership includes promoting educational discussion and systematic quality development as well as working from overall goals and frameworks.

- V. The applicant demonstrates in their pedagogical practice over time, conscious and systematic development of their way of supporting student learning. The applicant participates in collegial exchanges of experience regarding their pedagogical practice and their knowledge of teaching and learning through co-operation and interaction with others. This is demonstrated, for example, through the sharing of pedagogical knowledge, research and methods or the ability to develop educational materials to stimulate and enhance learning. The applicant has credible ideas and concrete plans for the further development of their pedagogical work.
- VI. The candidate reflects on their pedagogical practice using knowledge of teaching and learning relevant to their subject. The applicant reflects on the students' learning in their own subject. The pedagogical reflection should demonstrate competence, maturity, and responsibility in their own pedagogical practice. The applicant participates in collegial exchanges of experience regarding their pedagogical practice and their knowledge of teaching and learning, for example by participating in pedagogical conferences or writing pedagogical reports.
- VII. The applicant has credible ideas and concrete plans for the further development of their pedagogical work.

### Grounds of assessment 3

Good ability to supervise doctoral students towards a doctoral degree and/or students in artistic programmes towards artistic independence.

#### **Criteria**

- I. The applicant is an active doctoral supervisor, demonstrates a good ability to supervise doctoral students and has extensive experience of doctoral supervision. For promotion, the applicant must have been the main supervisor of doctoral students at all

stages of the doctoral programme, from admission up to and including the public defense. The total supervisory experience as principal supervisor, which shall amount to at least one doctoral student's doctoral education, may be divided among several doctoral students. At least one of these doctoral students must have defended their thesis with the applicant as principal supervisor. For promotion, the applicant must also be the principal supervisor of at least one active doctoral student.

- II. The applicant demonstrates a reflective approach to doctoral student supervision.
- III. The applicant has documented doctoral education activities in addition to doctoral supervision.

### **Clarifying examples**

- I. When assessing good supervisory skills, consideration may be given, at the time of recruitment, to whether the applicant has been a de-facto principal supervisor. This means a registered assistant supervisor who has acted as principal supervisor. Proof of this is required. If the applicant, upon recruitment, comes from an organisation outside academia, other experience may be taken into account, for example mentoring, supervision of new employees, etc.
- II. In their reflection, the applicant demonstrates a conscious and systematic approach to supervising doctoral students towards scientific independence. The applicant reflects on their supervision practice using knowledge of supervision and learning and their own practical experience.
- III. Activities within doctoral education in addition to doctoral supervision are demonstrated by the applicant having developed and implemented doctoral education courses, organised graduate schools and doctoral education programmes, participated in seminars aimed at doctoral students or participated in examinations within doctoral education, or the equivalent if the applicant comes from outside academia.

## Grounds of assessment 4

Good ability to interact with the surrounding community and to communicate about one's activities.

### Criteria

- I. The applicant has actively participated in various types of collaborations between universities, industry and society.
- II. The applicant has actively disseminated and raised awareness of research and development.

### Clarifying examples

- I. Information to and interaction with actors outside the university world refers to things that concern the applicant's subject area. The applicant has taken the initiative and/or been involved in making research results practically useful or had a leading role in collaboration with external organisations in joint projects with common issues and objectives. Experience of innovation processes and entrepreneurship, as well as the ability to identify and address relevant problems and issues in society are taken into account. Interactions with the business community may involve developing a structured collaboration with companies, obtaining patents and/or developing products/processes or starting companies with activities related to their own research. Participation in different types of scientific societies, interest groups, trade organisations, etc. is also taken into account.
- II. The applicant has communicated research results, for example by participating in popular science contexts, public lectures, or debate articles relevant to the research topic. The applicant has participated in activities that increase interest in their subject's research and education at various levels in primary and secondary schools and among the general public.

## Grounds of assessment 5

Good ability to otherwise manage and develop the organisation.



**Definitions:**

Management: Management requires a formal appointment, budgetary responsibility, and direct supervisory responsibility. Management always includes leadership. Academic management refers to assignments as, for example, head of department/director.

Leadership: This refers to a leadership role such as coordinating, communicating, and raising issues. A good leader is sensitive to the needs of the organisation and shows skill in adapting leadership to the situation and environment.

**Criteria**

- I. The applicant demonstrates organisational skills.
- II. The applicant demonstrates good leadership skills.
- III. For promotion, the applicant must have undergone management training or have equivalent knowledge.

**Clarifying examples**

- I. Organisational capacity involves an active and leading role in the development and administration of one's own organisation. This can be demonstrated, for example, by taking a leading role in boards, committees and working groups within one's own organisation, as well as contributing to its activities by regularly organising and leading departmental activities and seminars.
- II. Leadership is demonstrated by the ability to plan and adapt activities according to given regulations and financial frameworks, and to show commitment to the long-term strategic work of the organisation. Leading and developing research groups and mentoring younger colleagues (for example in supervision) are additional ways of demonstrating leadership. Academic leadership can be demonstrated through academic directorship, but also includes being a member of faculty and university boards and committees or holding positions representing one's own organisation in national and international organisations and

working groups. Administrative training in areas such as finance and health and safety will be considered.

- III. Completed management training should be a course in management. Equivalent knowledge can be considered as acquired after several years of documented experience as a manager.

## **Recruitment as an adjunct professor**

The purpose of an adjunct professor is to add specialist expertise that is not available within the regular organisation. The applicant is expected to be a leading specialist who can actively reinforce or complement existing research and educational activities.

According to the Higher Education Ordinance, an adjunct professor shall be employed until further notice, but not indefinitely. An appointment as an adjunct professor may be renewed, but the total period of employment may not exceed twelve years. For an adjunct professorship to be possible, the applicant must have their main activity outside academia. This means that a person can be co-opted up to 50% of a full-time position.

### **Eligibility and assessment**

In accordance with Lund University's employment regulations, an adjunct professor must fulfil the eligibility requirements and grounds of assessment for employment as a professor. However, deviations from the eligibility requirements may be made if the applicant has a unique competence of particular importance for the organisation in question, or to strengthen the organisation's connection to the surrounding society. Skills other than teaching and scientific skills may be given special weight in the assessment of overall skills, such as work experience and specialist knowledge. The requirement for pedagogical skills must be seen in the context of the organisation from which the applicant comes.

## **Additional examples for the assessment of adjunct professors**

It is important that all qualifications, including those beyond the traditional academic, are presented in a way that allows them to be assessed by recruitment boards and experts.

When assessing expertise, it is also important to have access to documentation that shows the applicant's ability to reflect on their activities and how the potential adjunct can contribute to a stronger exchange between the university and industry/society. It should be stated how the applicant has developed their expertise in the subject area in question over time.

In addition to the grounds of assessment, criteria and clarifying examples provided earlier in this document, the following examples are specifically designed for adjunct professors:

### ***Scientific excellence, see Grounds of assessment 1***

Scientific excellence can be demonstrated by success in research and development projects where the applicant has played a key specialist role. Experience from industrial contexts that complement academic activities and have made documented contributions to the development of technology may be taken into account. In addition to traditional documented scientific production, the documentation may consist of reports, patents, internally developed research and development contributions or standards, as well as various types of evaluations or investigations where the applicant's specialised competence has been a prerequisite.

### ***Pedagogical skills, see Grounds of assessment 2***

Pedagogical skills may be demonstrated in an academic environment or in society and industry. Pedagogical skills can be demonstrated through different types of leadership, supervision/mentoring, training, communication, and knowledge transfer aimed at different stakeholders and target groups in business, organisations, etc.

Employment as an adjunct professor requires at least five weeks of higher education pedagogical training or the equivalent. If there are special reasons, for example when the applicant has not been able to acquire such knowledge in their previous employment, employment can still take place. The applicant must then undergo higher education pedagogical training during the first two years of employment. If the period of employment is a maximum of one year or if the scope does not exceed 20%, the requirement of five weeks of higher education pedagogical training need not be applied. In these cases, the employee must undergo a customised higher education pedagogical training programme based on the tasks included in the employment.

***Supervision of doctoral students, see Grounds of assessment 3***

Experience of supervision other than supervision of doctoral students may be taken into account, such as mentoring, supervision of new employees, etc.

***Collaboration and information, see Grounds of assessment 4***

As with the recruitment of professors, the applicant must be active nationally and/or internationally, for example through participation in industrial or other industry/society-related networks.

***Leadership, see Grounds of assessment 5***

The applicant is expected to have a leadership role within the company/organisation.

Certificates attesting to the applicant's business experience according to the above examples should be attached to the application.

## **Employment as a visiting professor**

According to the Higher Education Ordinance, a visiting professor shall be employed until further notice, but not indefinitely. An appointment as a visiting professor may be renewed, but the total

period of employment may not exceed five years. Normally, a visiting professor's main employment is in higher education.

### **Eligibility and assessment**

A visiting professor must fulfil the eligibility requirements for employment as a professor. The person must also have specific expertise of value to the organisation in question.