

**Description of the appointment process of a tenure track position
(assistant/associate professor)****Mechanical engineering, especially steel structures**

Location: School of Energy Systems

Lappeenranta campus

The rector has approved the description and initiated the appointment process on
14 March 2023.

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Applied statutes

Universities Act (558/2009)

Government decree on universities (770/2009)

Regulations of LUT University (8 December 2022)

Decision on the tenure track system of LUT University (11 May 2016)

Additional information

Further information on the duties of the professor is provided by Professor Aki Mikkola, tel.
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1 Background

Clean energy and water, a circular economy, and sustainable business and entrepreneurship are the key questions to which LUT University seeks solutions through expertise in technology and business with a trailblazer attitude.

LUT University was established in 1969. Our entrepreneurially thinking scientific and international community comprises approximately 7 500 students and experts engaged in scientific research and academic education. There are 94 nationalities present on our modern campuses in Lappeenranta and Lahti.

In our schools – the LUT School of Energy Systems, the LUT School of Engineering Sciences and the LUT Business School – we conduct research and provide education that are internationally recognised and relevant to both society and business.

LUT School of Energy Systems (LES)

The LUT School of Energy Systems focuses systematically on the direct and indirect electrification of all energy systems, which includes the utilisation of CO₂ to meet hydrocarbon demands. Therefore, the school promotes the global defossilisation of energy.

The core vision and goal of the school is to deliver leading research on low-carbon energy technologies and the associated complex, net-zero carbon energy systems and markets. The research and education in the school cover energy technology, electrical engineering, mechanical engineering and sustainability science. The strategic focus areas of the school's research are solar economy and smart grids, energy conversion and storage, digital product processes in mechanical systems, and sustainability. The school also includes the experimental research unit LUT Voima.

We are internationally recognised as a leading centre of energy research, and we have an unparalleled reputation for conducting research that combines academic excellence with an impact on business and society. A key principle in our research is to bridge areas from fundamental theory to empirical work, innovation and close-to-market products, technologies, processes, or services that may transform energy systems and improve people's lives globally.

Our school provides bachelor's, master's, and doctoral programmes and has Finland's largest group of researchers in the field of energy. The unit employs 25 full professors and 330 staff members overall.

Department of Mechanical Engineering

The professorship of steel structures is located at LUT University's Lappeenranta campus at the Department of Mechanical Engineering of the LUT School of Energy Systems. The department also has professors in virtual design, machine dynamics, mechatronics, welding technology, laser processing, material modelling, production engineering, packaging technology and fibre composites. The professor of steel structures collaborates with all laboratories at LUT, but especially with welding technology, laser processing (incl. AM technologies), material modelling and professors in machine design.

Current activities in the professorship of steel structures

The professorship enables producing innovative, energy-efficient, high-quality steel structures for demanding structural applications that are competitive in terms of performance and economy. This is achieved through research and education in the design, analysis, and manufacture of steel structures. The professorship's research focuses on design, reliability analysis and lifetime evaluations of welded metal structures. For example, based on the publication ranking of Scopus-indexed research outputs, LUT is one of the world's leading research institutes in the field of welded high- or ultra-high-strength steel structures.

The professorship of steel structures is the only one of its kind in Finland, and it is relevant in improving this field and metal technology both nationally and internationally. It combines the design of mechanical engineering constructions with materials and production technology, where welding is the key technology. The area is important for Finnish industry and especially for export, which is pivotal for the Finnish economy. Studies in steel structures appeal to students, and master's and doctoral graduates specialising in the field are highly desirable professionals in industry.

The professor of steel structures leads a research group that consists of post-doctoral researchers, doctoral students, master's thesis students, laboratory engineers and technicians.

The research methods are based on good theoretical understanding, which is supported by numerical simulations and experimental testing. Numerical simulations are carried out especially for welded connections, where the focus is on analysing and predicting joint capacities as well as determining residual stresses and distortions and their effect on the performance of joints and structures. The Laboratory of Steel Structures has modern experimental testing equipment that enables high-level international collaboration in the field of experimental research. Read more about the Laboratory of Steel Structures [here](#).

The laboratory operates on funding from the Ministry of Education and Culture and external research funding from the EU, Business Finland and industry (contract research). Research funding from the Academy of Finland should increase in the future.

The Laboratory of Steel Structures collaborates closely with the Finnish metal industry by coordinating the HRO (Optimization of Welded Structures) Design Forum. The forum includes about 50 Finnish industrial partners, many of them global market leaders in their own field. Read more about the forum [here](#).

A typical research project of the laboratory involves applications of ultra-high-strength steel in demanding structural components subjected to fluctuating load conditions in service. The focus of such projects is to assess the performance of structures and to enhance it through improved design and fabrication techniques, which are usually linked by weld quality. The research projects include theoretical analyses, numerical simulations, and experimental testing, are carried out in collaboration with industry and are funded by Business Finland, contract research and/or other sources.

The professorship offers the widest range of academic bachelor's, master's and doctoral education in the field in Finland to both Finnish and international students. The related degree programmes also provide distance learning and multimodal courses in the Moodle learning

environment in Finnish and English. The professor of steel structures is responsible for courses that can be found [here](#).

The new professor will undoubtedly recreate the professorship's profile. However, the overall concept of the professorship has proved fruitful, and its most functional aspects should be maintained in the future.

Requirements for the vacant professorship

The three main specialisation and focus areas of the professorship are:

- the design and analysis of structures for demanding machinery applications
- the capacity of welded joints
- the numerical simulation of metal structure performance concerning material, manufacturing processes, and operation

The secondary focus areas are:

- the digitised production of steel structures (material, design, fabrication, end-use and recycling)
- designing with high-strength steels
- numerical and analytical methods for fracture mechanics
- the performance of structures fabricated using AM techniques (3D metal printing and/or DED)
- structures subjected to a hydrogen environment

Applicants are expected to have mastered at least one of the main focus areas. Expertise in any of the secondary areas is an advantage. In addition, practical experience in the design of metallic structures is desirable.

The focus areas will include selected research questions that highlight both scientific challenges and industrial advancement. The duties of the professorship will emphasize research that concerns sustainable energy systems of strategic importance to LUT involving the design of machines, devices, and structures for energy production and consumption. The steel structures professorship should also contribute to the growth of the metal industry both in Finland and globally.

The successful applicant presents strong research achievements in the focus areas above and provides proof of successful project work and research collaboration with research institutions and industry – especially the metal industry. In addition, evidence of effective management of an organisation and the acquisition of competitive external funding is expected.

The duties related to the field of research will also include:

- high-impact international research
- the planning and implementation of undergraduate and postgraduate education
- supervision of final theses and postgraduate studies
- the acquisition of research funding
- cost-conscious leadership and project management
- the preparation of national and international research and education projects
- increasing awareness in a way that serves industry
- close collaboration and interaction with businesses in the field
- taking part in the preparation of projects of other LUT units as an expert
- general administrative work related to the university's operation

The position is situated at the assistant/associate professor levels of the tenure track and will be filled through an open call for a fixed term of four years. The tenure track system offers

researchers a possibility to advance to the next level, provided they meet the requirements in the promotion reviews.

More information on the LUT tenure track system:

<https://www.lut.fi/en/research/research-career-lut/tenure-track>

The position starts with a six-month trial period.

2 Qualifications

According to the administrative regulations of LUT University, adopted on 8 December 2022, an assistant/associate/full professor is required to have a doctorate, high-level scientific qualifications, experience in heading scientific research, the ability to acquire funding, the ability to provide high-level instruction based on research, the ability to supervise final theses, proof of international cooperation in the field of research in question, and when relevant to the duties of the position, practical experience in the field of the professorship.

Practical experience in the field is not a requirement in this position, but strong evidence of industrial research and development projects is considered an advantage.

The applicant must have research and teaching merits, proof of effective research and the acquisition of external research funding, and international experience. The appointed applicant will be the immediate supervisor of a research group and may need to perform other demanding management duties assigned by the university. Therefore, related skills will be taken into consideration in the appointment and attention will be paid to the applicant's merits as defined in LUT's tenure track system (Annex).

Under the universities decree (770/2009), persons in teaching and research positions at universities are required to master the language, Finnish or Swedish, in which they teach. According to the university regulations, section 28, foreign or Finnish citizens who are not natives of Finland may be appointed to a teaching or research position regardless of the fact that they have not demonstrated skills in Finnish and/or Swedish. Applicants for professorships may demonstrate their language skills with a language certificate accepted by the academic council and/or in an interview.

According to the university regulations, section 28, professors are required to have the language skills needed for the successful completion of their duties.

In this position, spoken and written fluency in English is required. The applicant must also be prepared to acquire Finnish skills sufficient for carrying out the duties within a reasonable amount of time. The required language skill level is defined by the professor's supervisor together with the person appointed to the professorship.

3 Applying for the position

Application

The application must specify the tenure track level applied to. The deadline for applications is indicated in the vacancy announcement. The application and material for expert assessors should primarily be submitted through the online recruitment system mentioned in the vacancy announcement or e-mailed to the university (recruitment@lut.fi).

The application and its appendices must be **in English** and **in PDF format**. The application must include:

- a curriculum vitae (max. 10 pages)
- a copy of the applicant's doctoral diploma
- a full list of publications, including the total number of publications in the Scopus database, the total number of citations, the h-index and Scopus ID, and equivalent information from the applicant's Google Scholar profile
- a separate list of the publications submitted for expert evaluation
- publications for evaluation by experts (max. 10)
- a teaching portfolio or an equivalent account of the applicant's teaching qualifications
- an account of the applicant's merits and activities of significance to the vacancy (max. 3 pages)
- an account of the applicant's vision on the development of education, research and projects in the field of the professorship at LUT University (max. 3 pages)

Contact information

Applicants must give the university an e-mail address at which they can be reached. Applicants who do not wish to be contacted by e-mail must give a postal address at which they can be reached during the appointment process. The university prefers e-mail.

4 Expert evaluators

Selection of experts

The experts must be impartial. Before the selection of expert evaluators, the applicants must be provided the possibility to comment on their possible disqualification.

Based on the proposal of the selection committee, the dean invites at least three internationally recognised experts to submit a statement on the qualification of the applicants. The university's staff members may not be invited as expert evaluators. To the extent possible, the experts should be chosen with the applicants' fields of specialisation in mind and with a view to impartiality.

Sections 27–29 of the Administrative Procedure Act (434/2003) apply to the disqualification of an expert evaluator.

Applications forwarded to expert evaluators

The selection committee may limit the number of applications forwarded to expert evaluators if there are four applicants or more. At least three applications must be forwarded to the experts. The applications may be limited to the most suitable candidates for the position in the view of the person making the decision. The selection committee must state the grounds for its decision. The applicants will be informed if any applications are excluded from the evaluation.

Expert statements

The expert evaluators must give their statements in writing within two months. More specific dates will be sent to the evaluators along with instructions. In their statement, the experts must evaluate especially the scientific qualification of the applicant, and if possible, also other merits related to the professorship, and rank the applicants in order of preference.

Expert evaluators may not take part in the appointment process at a later stage.

The statement must be submitted to the university (separate instructions issued) by the deadline.

5 Interview and trial lecture

Applicants deemed qualified for the position by the experts will be invited to an interview. The selection committee may ask the applicants to give a public trial lecture.

6 Appointment

The tenure track committee makes a proposal to the dean concerning the appointment. The dean then makes a proposal to the rector on filling the position or leaving it vacant. The proposal shall be based on the merits presented by the applicants, expert statements, possible trial lectures and other related matters.

The evaluation of the applicant's qualifications takes into account scientific publications and other research results with scientific value, pedagogical expertise, teaching experience, teaching-related merits, a trial lecture if needed, the number of supervised dissertations, and management and leadership skills. In addition, the applicant's activity in the scientific community, success in raising research funding, scientific work abroad and international positions of trust are considered.

The rector decides either to appoint an applicant or to leave the position vacant.

The appointment proposal may be made or let lapse even if all of the experts have not submitted their statements, provided that the time limit for the statements has expired, at least three experts have submitted their statements, and the impartial treatment of the applicants is not compromised by doing so.

After the rector has made the appointment decision, an employment contract is concluded with the appointed person. If no employment contract is concluded, the rector may, based on the proposal by the dean, make a new decision and appoint another applicant. The rector may also leave the position vacant. When the employment contract is concluded with the person appointed, the final decision is made known to all applicants.

Tenure track appointment criteria

The positions below require a doctorate in an applicable field, a research field that fits the LUT strategy (see LUT Strategy 2030), a goal-oriented plan for the work in question, teaching experience and an up-to-date teaching portfolio.

In international recruitments, the evaluation must take into account that applicants from outside of Finland and Europe may not have been involved in Finnish or European research projects and have thus not taken into consideration the Finnish Publication Forum classification. Such applicants are evaluated in terms of their success in acquiring competitive funding through their own national channels or through international ones, and in terms of impact factors of scientific journals in their own field. Only in promotion and tenure reviews can the same criteria be applied to them as to Finnish persons.

The following merits of the applicant must be taken into account in the appointment:

Assistant professor:

- Scientific publications in journals with a national Publication Forum rating.
- Contacts with one's own international scientific community.
- Potential to take part in the acquisition of external funding in the research group and apply for post-doctoral researcher posts of the Academy of Finland.
- Potential to take part in teaching and the supervision of final theses.

Associate professor:

- Successful publication history after the doctoral defence, target of 3 publications/year with a national Publication Forum rating.
- Proof of participation in international cooperation.
- Successful acquisition of external funding and acting as e.g. a project manager in externally funded projects.
- Applying for post-doctoral researcher posts of the Academy of Finland.
- Participation in the supervision of doctoral students.
- Participation in the commercialisation of research results.
- Participation in teaching, the development of teaching and the supervision of final theses.