

**Description of the appointment process of a tenure track position
(assistant/associate/full professor)****Mechanical Engineering, especially Welding Technology**

Location: School of Energy Systems

The Rector has approved the description and initiated the appointment process on 26 November 2018.

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Applied statutes

Universities Act (558/2009)
Government decree on universities (770/2009)

Regulations of Lappeenranta University of Technology (22 September 2017, amended on 5 June 2018)

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

Additional information

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1 Background

Lappeenranta University of Technology (LUT) has pioneered as a university combining technology and business since 1969. Our international, entrepreneurially minded scientific community consists of 4900 undergraduate and postgraduate students and 860 staff members. There are close to 80 different nationalities at our university. One third of our incoming students are foreign nationals. In 2017, our budget was about 76 million euros, 40 % being supplementary funding. The focus areas of LUT's research and education are clean energy, the circular economy, and sustainable business and entrepreneurship.

LUT's researcher resources are allocated to three Schools: the LUT School of Energy Systems, the LUT School of Engineering Science and the LUT School of Business and Management.

The internationally awarded Green Campus we share with Saimaa University of Applied Sciences will be further developed as a major research infrastructure and a place for piloting and demonstrating our research and innovation. It also functions as a hub for our renewed education and intensified cooperation with enterprises.

LUT School of Energy Systems

The LUT School of Energy Systems (LES) conducts research in energy technology, electrical engineering, sustainability science and mechanical engineering. LES's strengths also include the experimental research unit LUT Voima.

LES carries out research on technologies and systems for energy production, transfer, distribution and consumption – from equipment manufacture and fuels to end-use. The School's areas of strength include understanding of energy systems, the digital design and production of machines and devices, and advanced welded metal structures.

LES's activity is based on life cycle thinking that takes into consideration the design of new applications, material selections, technical solutions and their environmental impacts, manufacturability, usability and energy efficiency. The management of extensive entities is a key factor in LES's research. LES's research has laid a foundation for a number of global hit products and start-up businesses and its tens of patents are a strong indicator of expertise.

LES's Bachelor's and Master's programmes in energy technology, mechanical engineering, electrical engineering and environmental technology have international EUR-ACE and ASIIN quality labels.

The unit employs 25 professors and 330 staff members overall.

Vacant professorship

The professorship in welding technology is situated in the Department of Mechanical Engineering at the LUT School of Energy Systems. Mechanical Engineering also has professors in machine design, machine dynamics, mechatronics, production engineering, laser processing, 3D printing, the design and manufacture of steel structures, and packaging and fibre composite technologies.

Since the beginning of 2018, welding technology, laser processing and steel structures have operated under the Laboratory of Welded Metal Structures (WMS). Combining the strengths of these fields has created a top Finnish cluster of expertise in the design, simulation, testing and production of welded and 3D printed metal structures, which utilises modern digitalised development and production environments. The welding technology professorship is located in WMS.

The welding technology professorship contributes especially to education and research in production engineering and manufacturing technology. Welding technology is relevant in

improving mechanical engineering and metal technology both nationally and internationally. Welding technology combines the design of machine and steel structures with production technology, introducing the most frequently applied joining technique – welding – to the mix. Economical, environmentally friendly, efficient, high-quality welding technology is a factor in the competitiveness of businesses and the safe use and manufacture of products. The professorship responds to LUT's key strategic question: "Will we let Europe degenerate to the world's back yard?"

LUT offers the widest range of academic welding education in Finland at the Bachelor's, Master's and doctoral levels to both Finnish and international students. The degree programmes also offer distance and multimodal courses in the Moodle learning environment in Finnish and English. In addition, LUT is the most important Finnish institution providing international welding engineer (IWE) training certified by the International Institute of Welding (IIW). LUT has awarded over 600 IWE certificates. This is an indicator of the great global and economic importance of welding. Another indicator of the significance of welding is that it has its own international organisation that promotes and coordinates the development of welding technology in collaboration with national actors. The processes are mainly applied by welding technology businesses, and the share of SMEs is especially large.

The focus areas of the professorship's and WMS's research are:

- welding metallurgy
- the management and implementation of a digital, comprehensive design, simulation, testing, manufacturability and production chain for welded metal structures
- the profitability, economy, and quality of welding and related operations
- robotised welding solutions

Applicants are expected to master at least one of the areas above.

The focus areas include carefully selected research questions that highlight the strong industrial interface. Welding technology is also strongly connected to the life cycle design of metal structures and reliability and durability in the use of metal structures.

Welding technology involves the use of a number of methods, which is why its processes can be implemented in different fields and applications. The duties of the professorship emphasise research, which will focus on e.g. sustainable energy systems of strategic importance to LUT, including the manufacture of machines and devices for energy production and consumption. Related products are manufactured in both SMEs and large corporations in Finland. Therefore, national well-being can be increased through welding research and education. Overall, the entire technology industry can benefit from the professor's expertise.

Welding technology is a challenging research area that includes metallurgy, molten pool behaviour, and flame arc phenomena, and offers a fruitful platform for innovations in interfaces of different fields and an opportunity for extensive collaboration with other research groups. Typical collaborating fields are found within mechanical engineering; especially the strength of materials and material technology. Other possible collaborators include the fields of measurement technology, electrical engineering, control engineering, energy technology, nuclear engineering, separation technology, industrial engineering and management, and business studies at LUT and abroad. It is especially important to highlight welded steel structures and their design, which has at length been an important collaborating field for welding technology, accumulating high-level expertise. In addition, LUT's has decades of valued experience in laser processing and especially laser welding, which relate to the professorship's field of research through WMS's collaborative projects.

Currently, WMS's research themes relate especially to robotised welding systems, which cover the entire manufacture chain of welded metal structures – from design to the finished product. The systems combine design data, measurement data of parts, electric manufacture documents, and integrated flexible fastening and gripping systems. The systems developed include digital data related to the products, their parts and production. The data is connected

to actual parts, product dimensions, manufacture data, in situ measurements and monitoring data on a suitable IoT application platform.

The person appointed to the professorship must present strong research achievements in the focus areas above, and proof of successful project work and research collaboration with research institutions and industry – especially the welding industry.

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

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

The position is situated at the associate professor/full professor levels of the tenure track system and it is filled through an open call for a four-year fixed term (assistant/associate professor) or until further notice (full professor). The position starts with a six-month trial period.

2 Qualifications

According to the administrative regulations of Lappeenranta University of Technology, adopted on 22 September 2017 and amended on 5 June 2018, an assistant/associate professor and a 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 his/her field of research, and when relevant to the duties of the position, practical experience in the field of the professorship.

Practical experience in the field in question will be considered an advantage in the appointment. Applicants must demonstrate in their application how they have collaborated with industry.

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 his/her 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. In the appointment, attention will be paid to the applicant's merits which are defined in LUT's tenure track system (Annex).

Under the universities decree (770/2009), a person in a teaching and research position at a university is required to master the language, Finnish or Swedish, in which he or she teaches. According to the university regulations, section 30, a foreign or Finnish citizen who is not a native of Finland may be appointed to a teaching or research position regardless of the fact that he or she has 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 30, professors are required to have the language skills needed for the successful completion of their duties.

In this position, oral 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 person appointed to the professorship and his/her supervisor will together define the required language skill level and the schedule for reaching it.

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. The application must include:

- A curriculum vitae
- 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. In addition, equivalent information from the applicant's Google Scholar profile is required.
- 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 in English of the applicant's vision on the development of education, research and projects in the field of the professorship at Lappeenranta University of Technology (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

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 experts of an international level 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 present 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.

The experts may also discuss the matter amongst themselves and give a collective statement. Expert evaluators may not take part in the appointment process at a later stage.

The statement must be sent or e-mailed to the university (separate instructions issued) by the deadline.

5 Interview and trial lecture

The applicants whom the experts deem qualified 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 assessment of the merits of the applicant takes into account scientific publications and other research results with scientific value, pedagogical expertise, teaching experience and other merits related to teaching and a trial lecture if needed, the number of dissertations supervised, 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 2020), a goal-oriented plan for the work in question, teaching experience and an up-to-date teaching portfolio. Table (at the end of this document) can be applied to the evaluation of teaching merits.

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.

Full professor:

- Proof of successful performance of duties
 1. Scientific research
 - publications: target of 3 publications/year with a national Publication Forum rating; emphasis on recent publications
 - supervised dissertations: approx. one doctorate/year
 - other scientific publications, such as books and chapters
 - citations
 - important keynote/plenary presentations and scientific awards
 - editing work in scientific journals
 2. Academic teaching experience
 - high-quality education proven in different ways, e.g. feedback received
 - up-to-date teaching portfolio
 - development of teaching modules
 - supervision of final theses

3. Academic leadership
 - establishing and heading a research group
 - other leadership experience and feedback received
4. Acquisition of external funding
 - EU, ERC, Academy of Finland and Tekes
5. Work in the scientific community
 - international scientific societies and expert advisory duties
 - duties influencing the scientific community
6. Societal impact
 - visibility in societal dialogue
 - corporate funding and external funding not referred to in point 5 above
 - professional experience beyond universities
 - innovations, patents, support for spin-off companies (e.g. board memberships)
 - activity in the university's stakeholder groups

Taking teaching merits into account

The average value of criteria in Table is calculated to evaluate teaching merits. The evaluation may include five to seven criteria depending on the decision of the tenure track committee – not necessarily all seven criteria.

Evaluation matrix for teaching merits

	Poor	Fair	Good	Very good	Excellent
1. Teaching experience	Only little and limited teaching experience	Some (1-3 years) teaching experience in a university	Good (at least 4 years) teaching experience in a university or continuing professional education	Extensive (over 7 years) and wide-ranging teaching experience in a university or continuing professional education	Extensive (over 10 years) and wide-ranging teaching experience in a university or continuing professional education or beyond the university and experience in pedagogical management
2. Development of pedagogical skills / pedagogical training (all aspects mentioned must be evaluated) OR Student or peer feedback on teaching	Only little pedagogical training or only little proof of interest in developing one's teaching skills or only little proof of interest in developing one's teaching skills OR Student feedback collected, no peer feedback	Some pedagogical training (1-4 ECTS credits) or proof of interest in developing one's teaching skills OR Positive student feedback, no peer feedback	Pedagogical studies 5–24 ECTS credits and systematic development of teaching skills begun OR Positive student feedback on several courses over several years. Also peer feedback.	Pedagogical studies 25 ECTS credits and active participation in pedagogical training and other events related to the development of teaching skills and proof of active development of teaching skills OR	Extensive pedagogical training (over 25 ECTS credits) and proof of active and goal-oriented development of teaching skills and proof of willingness and the ability to share teaching-related knowledge collaboratively and to support colleagues in the

				Excellent student feedback on different courses over a number of years. Positive peer feedback. Pedagogical studies 5–25 ECTS credits	development of teaching skills and Excellent student feedback on different courses over a number of years. Excellent peer feedback
3. Development and updating of teaching, also curriculum work (Documented)	Only little interest in changing or developing one's teaching and only little interest in degree programme development	Some demonstrated interest in learning new teaching methods and/or assessment methods and demonstrated interest in degree programme development	The choice of teaching and assessment methods is based on learning outcomes and participation in degree programme development is consistent with the job description	Learning outcomes, teaching methods and evaluation methods are evaluated and developed systematically and participation in degree programme development is active, constructive and consistent with the job description	In addition to the previous: demonstrated willingness and ability to support other members of the working community in the development of teaching or documented or published results of the development of one's own teaching or demonstrated significant ability to take responsibility for degree programme development
4. Production of teaching materials <i>Definition: teaching material is material which is produced to support learning in addition to possible lecture slides</i>	Only little demonstrated interest in producing teaching materials and the production and use of materials consists of conventional use of material available	Some demonstrated interest in producing teaching and study materials	Explicit demonstrated interest in producing teaching and study materials and the teaching materials and their use support learning and the achievement of learning outcomes	Pedagogically sound material produced for study guidance and to support studying and learning and teaching materials are assessed and developed continuously	Pedagogically sound material produced for study guidance and to support studying and learning and teaching materials are assessed and developed continuously and the teaching materials are also used elsewhere (e.g. published as a textbook)

5. Supervision of final theses	Little experience in the supervision of final theses	Some experience in the supervision and examination of final theses	Some experience in the supervision of final theses, incl. the supervision and examination of dissertations	Extensive experience in the supervision and examination of final theses	Extensive experience in the supervision and examination of final theses and experience as a preliminary examiner or opponent
6. Study guidance, supporting and guiding the progress of studies	Little or no demonstrated interest in study guidance	Some demonstrated interest in study guidance	Proof of careful and responsible study guidance as a part of one's own teaching or demonstrated interest in the development of guidance	Proof of active efforts in study guidance beyond one's own teaching duties, e.g. work as a tutor teacher, career guidance	In addition to the previous: proof of the ability to support other members of the working community in study guidance and its development or documentation and publications on one's own study guidance activities, their results and development
7. Quality of teaching <i>Average score of course feedback (on a scale of 1-5)</i>	Course feedback not collected, or its score is below 2	The average score of course feedback is 2.0 or higher	The average score of course feedback is 3.0 or higher	The average score of course feedback is 3.5 or higher	The average score of course feedback is 4.0 or higher or an honourable mention or award for good teaching