

Description of the appointment process of a tenure track position (associate/full professor)

Nuclear power engineering

Location: School of Energy Systems, Department of Energy Technology, Lappeenranta campus

The rector has approved the description and initiated the appointment process on 16 April 2024.

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Applied statutes

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

Regulations of LUT University (8 December 2022, amended 5 April 2024)

Rector's decision: Academic career tracks of the Lappeenranta–Lahti University of Technology LUT (20 March 2023)

Additional information

Further information on the duties of the professor is provided by Juhani Hyvärinen, professor, tel. +358 50 524 1512, juhani.hyvarinen@lut.fi

1 Background

Clean energy, water and air are life-giving resources for which we at LUT University seek new solutions with our expertise in technology, business and social sciences. We help society and businesses in their sustainable renewal.

LUT University was established in 1969. Our entrepreneurially thinking scientific and international community comprises approximately 7800 students and 1400 experts engaged in scientific research and academic education. There are more than 100 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 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 promotes energy and resource efficiency and pursues the global decarbonization of energy processes.

The core vision and goal of the school is to deliver leading research on low-carbon energy technologies and the associated complex, net-zero or even carbon-negative energy systems and markets. The research and education at the school cover energy technology, electrical engineering, mechanical engineering and sustainability science. The strategic focus areas of the school's research include sustainable energy technologies, energy conversion and storage, digital production processes in mechanical systems, and sustainability. The school also includes the experimental research unit LUT Voima.

We are internationally recognized as a leading center of energy research, and we have an unparalleled reputation for conducting research that combines academic excellence with close ties to major Finnish industries, especially the Finnish power industry, making a distinct impact on business and society. A key principle in our research is to bridge areas from fundamental theory to empirical work, innovation, advanced technologies and processes, close-to-market products, services and business models that can transform energy systems on industrial scale.

Our school provides bachelor's, master's and doctoral programs and has Finland's largest group of researchers in the field of energy. The school employs 37 assistant/associate/full professors and 400 staff members overall. LUT Nuclear Engineering Master's program is a National Task specifically funded by the Ministry of Education and Culture.

Department of Energy Technology

At the LUT School of Energy Systems (LES), the Department of Energy Technology is responsible especially for research and education in energy technology and energy conversion related processes, covering thermodynamics, fluid dynamics, thermal engineering, biomass processing, industrial energy systems, nuclear power reactors and societal dimensions of energy technologies.

The department's activities have largely focused on energy technologies and the economy of energy production, with deep understanding of the physical fundamentals of energy technologies and their applications in industrial-scale processes and power conversion equipment. Efficiency, economy, safety and sustainability are the guiding principles of the Department of Energy Technology.

2 Vacant professorship

The professorship of nuclear power engineering is located at the Department of Energy Technology of the School of Energy Systems (LES) at LUT University. The position is based in Lappeenranta, Finland.

<https://www.lut.fi/en/about-lut/faculties/lut-school-energy-systems/energy-technology>

The professor is expected to put together and oversee a high-level academic research group.

The focus area of the professorship is engineering of nuclear power generation for electricity, heat and chemicals. Current nuclear engineering research at LUT focuses on nuclear power plant engineering for industrial and municipal purposes and covers all needed engineering disciplines: reactor physics, reactor dynamics, nuclear process systems engineering, nuclear thermal hydraulics, radiation safety, reliability engineering, and nuclear safety analyses.

LUT University's Nuclear Engineering Laboratory has extensive capability for nuclear thermal-hydraulic experimentation and analysis, including advanced measurement technologies and data processing, modern computational facilities, and coupled code development for the modelling of coupled reactor physics – thermal hydraulic – fuel behaviour problems. The university's investment in these experimental capabilities has been significant, and the laboratory has plenty of ongoing academic and contract research, with foreseen continuity for years to come.

The professor of nuclear power engineering is expected to produce high-quality research in one or more of the disciplines above. Relevant applications range from Generation II operating reactors (light-water reactors or LWRs) to Generation III operating or planned reactors (LWRs and SMRs) and select Generation IV technologies (gas-cooled high temperature reactors, liquid metal cooled reactors).

The duties of the professor include giving and/or overseeing basic and advanced education in nuclear technology; the exact educational responsibilities will be agreed on with the head of the degree programme in energy technology. In Finland, teaching duties are divided between professors and other qualified university staff. Teaching in Finnish is not required.

Proof of and potential in high-impact international publishing are expected, as high-impact international research is one of the most important duties of professors at LUT University.

Skills for collaborating both within LUT and with national and especially international partners are crucial to the position, and the candidate is expected to provide evidence of successful international collaboration and the acquisition of research funding. Preparations for national and especially international research and education projects are part of the work of professors at LUT University.

The duties of the professor include the integration of nuclear engineering into other research areas of the Department of Energy Technology and cooperation with colleagues at the department, the School of Energy Systems, and other schools and departments of LUT University. Also included are societal engagement that serves industry, the economy and society, and general administrative work related to the university's operation.

The professorship's fields of research include the following, of which the applicants are expected to master at least one:

- nuclear power plant engineering, including commercial-scale nuclear reactors
- nuclear energy conversion process modelling, design and optimisation
- nuclear safety analysis methodologies
- thermal hydraulics experimentation

The main application areas are:

- safe and economic operation of current industrial-scale nuclear power plants
- resolving emerging issues related to availability or safety
- deployment of novel nuclear technologies beyond the current state of the art

The person appointed to the professorship must present strong research achievements in at least one of the research fields and application areas above as well as proof of successful project work and research collaboration with research institutions and industry. In addition, we require evidence of the management of an organisation and the acquisition of funding from competitive sources.

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

- high-impact international research
- planning and implementation of bachelor's, master's and doctoral education
- supervision of final theses and doctoral studies
- preparation of national and international research and education projects
- acquisition of research funding
- increasing public awareness of nuclear power in a way that benefits society
- taking part in the preparation of projects in other LUT units as an expert
- general administrative work related to the university's operation.
- cost-conscious leadership and project management
- close collaboration and interaction with businesses in the field

The position is at the associate/full professor levels of the tenure track and will be filled through an open call for a fixed term of four years (associate professor) or permanently (full professor). The tenure track system offers researchers a possibility to advance to a full professorship. LUT is committed to providing tenure track researchers the possibility to advance to the next level, provided they meet the requirements in the promotion reviews, are suitable for the position, and conduct research that fits LUT's strategy and operation.

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.

3 Qualifications

According to the administrative regulations of LUT University, adopted on 8 December 2022 (amended 5 April 2024), an 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 considered an advantage in this position. Applicants must demonstrate in their application how they have collaborated with industry.

Applicants must present research and teaching merits and proof of effective research, the acquisition of external research funding and international experience. The appointed applicant will become a 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 even if 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 appointed person is encouraged to acquire the necessary Finnish skills during the employment relationship. For this purpose, LUT offers in-house Finnish language courses to staff members.

Only candidates from countries that have fully implemented the provisions of the international nuclear non-proliferation treaty and its additional protocols can be considered for this position.

4 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).

All application documents 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 applicant's Scopus and Google Scholar details: the Scopus ID and Google Scholar profile URL, the total number of publications, the total number of citations, and h-indices
- a separate list of the 10 publications selected for expert evaluation
- the 10 publications mentioned above
- 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.

5 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 justifies its decision in writing. 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 six weeks. 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 by the deadline. Separate instructions will be issued to the experts to this end.

6 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.

7 Appointment

The selection committee makes an appointment proposal to the tenure track committee, which then makes its own proposal to the dean. 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 considers 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 2022, LUT joined the international Agreement on Reforming Research Assessment, which emphasises qualitative assessment in appointments to specialist positions and in promotions. This is highlighted especially in the evaluation of peer-reviewed scientific publications. We require high-level publications. The quality of publications is evaluated based on their content, such as novelty and impact. High-level publications have also passed a high-level peer review, where only the best manuscripts are accepted for publication. In the tenure track criteria below, we apply the classification of the Finnish Publication Forum (JUFO) as a guiding indicator of high-level publications (ratings 2 and 3), but applicants always select their best publications for a qualitative evaluation by experts.

In international recruitments, the evaluation must take into account that applicants from beyond Finland and Europe may not have been involved in Finnish or European research projects and may not have 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 are the same criteria be applied to them as to Finnish persons.

The following qualifications are to be considered in the recruitment of researchers for different levels.

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 the successful performance of duties
 1. Scientific research
 - publications: target of three publications a year with a national Publication Forum rating; emphasis on recent years' publications
 - supervised dissertations: approx. one doctorate a year
 - other scientific publications, such as books and chapters
 - citations
 - important keynote/plenary presentations and scientific awards
 - editorial 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 Business Finland
- 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, collaboration with companies (e.g. board memberships)
 - activity in the university's stakeholder groups