

Information about the professorship (W2) "PHYSICS AND CHEMISTRY OF WOOD"



The HNEE was founded in 1992 in the tradition of the forestry college (since 1830) and the Faculty of Forestry at Humboldt University in Berlin. Since its renaming to the "Eberswalde University for Sustainable Development" in 2010, it has developed a distinctive profile focused on issues and challenges of sustainable development and environmental protection. Since 2010, it has developed a distinctive profile that focuses on issues and challenges of sustainable development and environmental protection. What sets HNEE apart is its holistic sustainable orientation, its unique range of courses focused on future-relevant topics, its strength in the field of applied sustainability research, and its practice-oriented and practical teaching.

HNEE students are trained to become sustainability pioneers and are specifically equipped with the necessary design skills. The approximately 2,300 students from around 60 countries study one of 20 degree programmes, two of which are dual programmes, dealing with issues of sustainable development in a decidedly problem-solving approach. HNEE offers degree programmes that enable applicants with and without a school-leaving qualification to successfully graduate. The portfolio of consecutive Bachelor's and Master's programmes (including dual programmes) offers a range of internationally oriented study programmes in addition to nationally focused programmes. A wide range of opportunities for student participation and engagement, for example in the context of service learning and project workshops, create space for personal development and a learning-friendly atmosphere in the university environment.

In its research, HNEE focuses on current issues in the context of sustainable development as specified by the 17 global goals for sustainable development of the 2030 Agenda and their concretisation in the German Sustainability Strategy. In line with the application-oriented approach fundamental to universities of applied sciences, it addresses theory-driven, problem-solving-oriented, disciplinary, interdisciplinary and transdisciplinary research questions in equal measure. In the three main areas of research, "Sustainable Development in Rural Areas", "Sustainable Production and Use of Natural Resources" and "Sustainable Management of Limited Resources", over 100 externally funded projects are currently being worked on in national and international alliances.

In sustainability transfer, the university actively seeks partnerships from the field, incorporating the relevance and success criteria of social actors. HNEE works closely with regional, national and international partners in its areas of expertise – in a concrete context and oriented towards their needs. Together with its partners, HNEE identifies problems, sets goals and develops viable solutions. Through sustainability transfer, the university provides different societal groups access to new scientific findings, thereby strengthening the future viability and development potential of society.

The university is also committed to the principle of sustainability in its actions as an institution and takes this into account in all its activities in the spirit of a whole-institution approach. The university has received numerous national and international awards for its commitment to sustainable development. It is closely linked with partners from science and practice, both regionally and globally, and is an active member of sustainability-oriented networks.

WHAT WE OFFER YOU AT THE DEPARTMENT OF FORESTRY, WOOD AND ENVIRONMENT



Flat hierarchies



Family-friendly



Exciting tasks



Exchange on an equal footing



Meaningful work



Collegial support culture



Dynamic environment



Opportunities for development

At the Department of Forest, Wood and Environment

The Department of Forest, Wood and Environment covers the entire wood value chain in research and teaching —from raw wood to the industrial processing of solid wood and wood-based materials to finished products and solutions for new areas of application. Sustainability, resource efficiency and technological innovation are central guiding principles in all degree programmes and research activities.

The degree programmes in Wood Engineering (B.Eng.), Dual Wood Engineering (B.Eng.) and Wood Engineering (M.Sc.) impart engineering, manufacturing and sustainability-related expertise. Graduates have a broad range of qualifications and work nationally and internationally in all areas of the wood and materials industry.

The department's research profile focuses on the sustainable production, use and processing of natural materials, especially wood and wood-based materials. Materials science, manufacturing technology, digitalisation, sustainable construction and production technologies, and circular value creation are closely interlinked. Close cooperation within the department enables interdisciplinary and transdisciplinary projects that combine ecological, technical and economic issues.

WHAT YOU CAN EXPECT

The *Professorship for Physics and Chemistry of Wood* is located at the interface between materials science, wood biology and process engineering. In an international context, close links to relevant research networks and professional associations (e.g. IAWS – International Academy of Wood Science, SWST – Society of Wood Science and Technology) and thematic positioning in current research programmes on sustainable raw materials, bioeconomy and resource-efficient production processes are appropriate.

The professorship makes a central contribution to the profile building and strategic development of the department and wood engineering through close cooperation with existing professorships – in particular the *Professorship for Forest Utilisation and Wood Market* (Prof. Dr. Cremer), the *Professorship for Applied Wood Biology* (Prof. Dr. Lautner), the *Professorships for Design, Construction and Manufacture of Wood Products* (Prof. Dr.-Ing. Schwarz) and the *Professorship for Process and Manufacturing Technology in Wood Engineering* (Prof. Dr.-Ing. Wenderdel). This thematic and methodological bundling strengthens research expertise in the field of sustainable material use of renewable raw materials from forests and agroforestry as well as the fundamentals of wood technology and increases the visibility of the department in the national and international arena.

In addition, the professorship is part of a current reform process within the professional community that aims to improve professional networking and strengthen interdisciplinarity in wood research. The planned professorship is intended to serve as a bridge – both within the university and with external research partners. This is intended to promote interdisciplinary research on wood-based materials and other renewable raw materials and the determination of their properties.

The above-mentioned interdisciplinary, department-wide research cooperation is also to be further developed and expanded on the basis of existing research structures. In combination with the aforementioned related professorships in the department and the *Professorship for Wood Physics and Chemistry*, the entire value chain from the forest to the finished product will be covered at all scientific levels, from basic scientific research to application-oriented industrial research.

In the area of teaching, the professorship plays a key role in the basic engineering courses of the Bachelor's and Master's programmes in wood engineering, with a focus on the physics and chemistry of wood and other renewable raw materials. In terms of content, teaching focuses on imparting an in-depth understanding of the chemical-physical structure and anisotropic material behaviour of wood and lignocellulosic materials, the associated structure-property relationships and the resulting implications for processing, product development and application. The professorship thus makes an integral contribution to the training of highly qualified specialists for the wood sector and related fields, both in research and in industry and development.

In addition, it is intended to be particularly effective in the currently planned Master's programme at the Department of Forest, Wood and Environment. Furthermore, an interdepartmental course offering is being considered with regard to the physics and chemistry of renewable raw materials, e.g., from agriculturally cultivated annual plants. The teaching capacities allow for a reorientation towards new, current topics:

This gives you the opportunity to design new transdisciplinary courses that could cover topics such as: sustainable methods of modifying wood and other renewable raw materials (up to 6 SWS), as well as the (further) development of testing methods for characterising the chemical or physical properties of wood and other renewable raw materials (up to 6 SWS) or the development of process steps for the sustainable extraction of green base polymers from renewable raw materials. These modules are to be open to Master's students in the Master's programmes of the Department of Forest, Wood and Environment as well as across departments and will include didactic and curricular coordination with related disciplines.

Laboratories with existing equipment are available for both teaching and research. The equipment includes various devices for sample preparation (e.g., microtome, laboratory presses, thermowood and laboratory impregnation systems, weathering systems, universal and climate chambers), as well as for the analysis and testing of wood and other materials (e.g., SEM and digital microscopy, MIR, NIR and UV/Vis spectrometers, DSC and DMTA, modal analysis and universal testing machines).

The construction of a new central laboratory building at the Forest Campus site will create modern laboratories that the Forest-Wood-Environment Department will be able to use in future, particularly for teaching but also for research. The possible requirements of *the Professorship for Physics and Chemistry of Wood* were taken into account extensively in the planning of the building and the individual laboratories. At the same time, the concentration of all the department's laboratories in one building will provide opportunities for close cooperation and a good place for exchanging experiences and developing new joint teaching and research ideas.

The interdisciplinary focus of the professorship appeals to a broad range of applicants: wood scientists/wood technologists/forest scientists with a focus on chemistry or physics/physicists or chemists with a focus on phytochemistry or polymer chemistry/materials scientists/materials physicists or individuals with comparable degrees are eligible to apply. All potential applicants should have a focus on the physics and chemistry of nature-based materials, with extensive expertise in the chemical-physical structure and anisotropic material behaviour of wood and lignocellulosic materials.

Depending on the applicant, a wide range of additional qualifications, skills and expertise may be brought to bear that are relevant to the teaching requirements and allow for an individual focus on the above-mentioned module development.

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