REVIEW

of the Master's educational and professional programme «Engineering of Optical Information and Laser Systems», specialty G6 Information and Measurement Technologies, Kharkiv National University of Radio Electronics

Scientific and educational cooperation between Kharkiv National University of Radio Electronics (NURE) and the European research infrastructure Extreme Light Infrastructure (ELI ERIC) provides valuable foundation for training specialists in laser technologies, photonics, and modern optical measurements. This cooperation includes international educational activities, project meetings, and participation by university representatives in ELI scientific initiatives.

Against this background, the Master's educational and professional programme «Engineering of Optoinformation and Laser Systems», offered within specialty G6 Information and Measurement Technologies, is relevant to the training of specialists capable of investigating, designing, and applying modern optical, laser, and information-measurement systems. The 90-ECTS programme combines fundamental physics, engineering, and research-oriented training.

The compulsory courses «Nanophotonics» and «Nonlinear Applied Optics» are particularly noteworthy. They provide a theoretical foundation in electromagnetic-wave propagation, photonic structures, nonlinear optical phenomena, and laser–matter interaction. Such knowledge is important for experimental work, including research environments involving ultrashort-pulse and ultrahigh-intensity laser systems.

The courses «Information and Measurement Systems and Complexes», «Theory of Measurement Quality Evaluation», and «Design of Intelligent Information and Measurement Systems and IoT» develop competencies in measurement-chain design, monitoring of experimental-system parameters, measurement-data analysis, and assessment of the reliability of results. Accuracy, reproducibility, and measurement reliability are essential in advanced laser research infrastructure.

Elective courses such as «Computational Photonics», «Optical Spectroscopy», «Quantum Optics of Micro- and Nanostructures», «Optical and Quantum Processors», and «Engineering of Fibre-Optic Information Systems» enable students to tailor the scope of studies to their research interests. Professional practical training and the Master thesis also provide opportunities to apply acquired knowledge to solving experimental and engineering problems.

The experience of international interaction between NURE and ELI ERIC merits particular recognition, including university representatives' participation in educational events and working meetings and students' involvement in international learning initiatives, including ELISS 2025 summer school and online lecture course on laser science and laser-based technologies for Ukrainian students and young scientists. The development of the experimental facilities of NURE's Department of Physical Foundations of Electronic Engineering, equipped with modern laser and

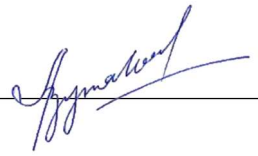
optical instrumentation, further supports research-based education and potential collaborative initiatives.

A promising direction for the programme's further development is closer integration of education and research through Master's students' participation in specialised scientific schools, international educational activities, internships and thesis projects involving modern experimental methods. Continued cooperation between NURE and ELI ERIC in laser technologies, nonlinear optics, photonics, and high-precision optical measurements could support information exchange and the professional development of early-career researchers.

Based on this assessment, the educational and professional programme "Engineering of Optoinformation and Laser Systems" has a relevant scientific and technological focus, a coherent structure, and content aligned with current developments in laser, optical, and information-measurement technologies. It provides a sound basis for preparing graduates for professional work in high-technology industries, research institutions, and international research environments. The programme merits a positive assessment and is recommended for continued implementation at Kharkiv National University of Radio Electronics.

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