

Review of the Educational Program “Biomedical Engineering” at NULES of Ukraine

The “Biomedical Engineering” program at the National University of Life and Environmental Sciences of Ukraine (NULES) is a modern interdisciplinary initiative aimed at training specialists capable of working in the design, servicing, and enhancement of complex biomedical systems and equipment. Launched in 2021, the program quickly gained popularity among applicants due to its relevance and high-quality instruction.

Program Structure

The curriculum integrates foundational natural sciences, technical courses, and specialized subjects to build a robust knowledge base in biomedical engineering. The key components of the program include:

- **Core Disciplines:** Anatomy, Physiology, Biochemistry, Physics.
- **Technical Courses:** Fundamentals of Electrical Engineering, Programming, Robotics, Automated Control Systems.
- **Specialized Subjects:** Biotechnical Systems, Diagnostic Equipment, Biomaterials.

The program also incorporates contemporary technologies, such as 3D printing in medicine, machine learning for medical data analysis, and robotic systems for surgery.

Practical Training

A significant aspect of the program is its practical training, which includes:

1. **Educational Laboratories:** The university is equipped with state-of-the-art labs enabling students to work with biomedical devices and simulation models.
2. **Clinical Practice:** Students gain hands-on experience in medical institutions and veterinary clinics to apply their knowledge in real-world settings.
3. **Project Work:** Throughout their studies, students undertake projects focused on developing and testing medical devices, fostering engineering problem-solving skills.

International Collaboration

The Department of Automation and Robotic Systems actively collaborates with international partners, allowing students to participate in internships and joint research abroad. This exposure helps them familiarize themselves with cutting-edge technologies and integrate into the global professional community.

Career Prospects

Graduates of the program have a broad range of employment opportunities, such as:

- Biomedical equipment service engineers in hospitals and private clinics.
- Designers of biomedical systems.
- Specialists in testing and certification of medical devices.
- Researchers in the field of biomedical sciences.

Student Feedback

Students praise the program for:

- Integrating theoretical knowledge with practical skills.
- Providing access to modern equipment during training.
- Offering a unique combination of biomedical engineering and veterinary medicine.

However, some students suggest increasing hours for programming and data analysis to better prepare for careers in medical IT solutions.

Recommendations for Improvement

1. **Expand Programming Modules:** Introduce courses on Python, MATLAB, and machine learning into the curriculum.
2. **Increase Access to International Internships:** Broaden agreements with foreign universities and companies.
3. **Enhance Collaboration with Medical Institutions:** Provide more opportunities for internships in leading hospitals across the country.

Conclusion

The “Biomedical Engineering” program at NUBiP of Ukraine is a promising and well-structured initiative emphasizing interdisciplinarity, practical training, and international cooperation. It meets modern labor market demands, offering students the chance to obtain high-quality education in a sought-after field. Further development of the program, including the adoption of advanced technologies and strengthening international integration, will make it even more competitive.

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