

Interprofessional Education between Biomedical Engineering and Health Sciences

To the editor

Interprofessional education (IPE) is defined by the World Health Organization (WHO) as occurring “when students or members of two or more professions learn with, from, and about each other” to improve collaboration and the quality of care¹.

Research has shown that IPE, through educational settings, fosters the development of knowledge and skills that support learning and collaboration, strengthening teamwork, effective communication, mutual respect, and awareness of the roles and competencies of each discipline. If implemented throughout professional training rather than as isolated components of the educational curriculum, IPE can strengthen the capacity of human resources in the healthcare sector, improve outcomes, and thereby reinforce health systems², allowing students to “...learn from other professions, respect them, and understand mutual roles in addressing health issues”³.

The collaboration between engineers and healthcare professionals in the development of medical technology is essential for advancing healthcare innovation and improving health outcomes. It allows for the combination of engineers’ technical and analytical knowledge with the practical and clinical experience of healthcare professionals to generate advanced solutions that are both clinical and technological.

In the Biomedical Engineering (IBM) program, we promote educational settings where our students can interact with professionals or students from other disciplines. In the courses *Introduction to Research and Development Practice I and II* and *Quantitative Physiology II*, third-year students work on prototype development, aiming to provide solutions to problems identified by

professionals from the *Institute of Translational Medicine and Biomedical Engineering* (IMTIB-UHIBA-CONICET), the *University Hospital Italiano de Buenos Aires* (UHIBA), or the services of the *Hospital Italiano de Buenos Aires* (HIBA). The solution requires our students to apply all the knowledge acquired throughout their studies, in addition to interacting with healthcare professionals or researchers. This combination of engineers’ technical and analytical knowledge with the practical and clinical experience of healthcare professionals or the scientific-technological expertise of researchers enables the development of advanced solutions, both clinical and technological.

Among the developments, we can highlight the following interdisciplinary integrative projects with technological transfer development: *Ocular adapter for an inverted microscope* (IMTIB), *Real-time continuous temperature and humidity monitoring system with an alarm system for an ultra-freezer* (Biobank), *Real-time continuous temperature and humidity monitoring system with an alarm system for the vivarium* (IMTIB), *CPR mannequin with ECG simulator*, *Mobilization orthosis for passive wrist and finger extension* (HIBA).

From the *Supervised Professional Practice* (PPS) course, the university-company relationship is promoted through the transfer of professional practice to the classroom and the study of how to improve the learning of technical and transversal competencies through real challenges or internships in companies, HIBA Services, or research groups at IMTIB or HIBA. This course’s objective is to introduce IBM students to a professional setting, challenging them to study, discuss, and solve problems in a business context while training in the writing, execution, and presentation of projects over 200 hours.

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Since 2023 and throughout 2024, students from the *Bachelor's Degree in Bioimage Production* and *Biomedical Engineering* programs have been sharing the classroom space, engaging in research activities and practical work within the context of two courses. They engage with shared content through the courses *Techniques for Image Acquisition and Processing I* and *Biomedical Signal and Image Processing*, which are part of the *Bachelor's Degree in Bioimage Production* and *Biomedical Engineering* programs, respectively.

We believe that the interaction between engineers and healthcare professionals during their training is crucial for developing medical technology and improving healthcare services. This synergy can lead to significant innovations in diagnostics, treatment, data management, and remote care, enhancing the quality and efficiency of healthcare. By working together from the training stage, engineers and healthcare professionals are better equipped to face current and future challenges in the healthcare field, benefiting both patients and professionals alike.

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