

# High Education in Biomedical Engineering in Republic of Moldova

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**Abstract—** The ubiquitous aspiration to health and life propels healthcare industry as the world's biggest industrial sector. Biomedical engineering (BME) occupies a central place in healthcare industry and it is one of the few areas of engineering that, as a whole, is expected to continue to grow for many years. In Republic of Moldova considering the need to prepare of specialists in Biomedical Engineering field, since 2005 "Biomedical Systems Engineering" specialty was created, which provides the basic and specialized training of specialists in biomedical engineering field, and since 2010 master's studies have been launched in this field. Two universities, Technical University of Moldova and State University of Medicine and Pharmacy currently participate in a TEMPUS IV project "Biomedical Engineering Education Tempus Initiative in Eastern Neighboring Area" (BME-ENA) with a main objective the Master educational program creation and harmonization in field of Biomedical Engineering and elaboration of a new curriculum for Master studies in Moldova.

**Keywords—** biomedical engineering, medical devices management, healthcare industry, education, licentiate's studies, master's studies.

## I. INTRODUCTION

The worldwide medical devices industry with a turnover of over 226 billion dollars in 2011 will reach a volume of over 434 billion dollars in 2017, with a growth rate of 7.1% per year: it is one of the few areas that is expected to grow continuously for long while. The medical devices industry includes 13600 registered manufacturers, about 10000 generic devices and over 500000 products and brands.[1,2]

Today about 50% of all treatment and diagnostic used methods did not exist 10 years ago. Biomedical Engineering (BME) occupies a central place in healthcare industry and it is one of the few areas of engineering that, as a whole, is expected to continue to grow for many years. The US Bureau of Labor Statistics projects a 21 percent growth for biomedical engineers, with an estimated of 15,000 new careers created in the industry through 2018 [3].

At present the Health System in Republic of Moldova includes 912 medical institutions of which 278 public medical institutions (59 hospitals with 19840 beds), in which 12 794 doctors and 27 407 medical staff with

secondary education operate. The degree of medical devices wear is high both in rayon and republican institutions.

The evaluation of global experience in the field demonstrated that the advanced medical devices are an indispensable part of the medical act in the prevention, correct diagnosis and treatment of diseases that take the first positions in the mortality and morbidity structure.

Medical devices management has become a priority in health policy of many countries, many studies proving that by coherent policies in this field, the improve of the cost / efficiency rapport of advanced medical technology use, advance of patient safety and not least, increase the quality of the medical act, were obtained. The degree of endowment of medical institutions with medical devices / performing apparatus and ensuring of an appropriate level of professionalism of medical staff are key tools in ensuring the proper functioning of the health system and exert a direct impact on the operational effectiveness of the system, on the quality of service and satisfaction degree of the beneficiary.

## II. HIGHER EDUCATION IN REPUBLIC OF MOLDOVA

The higher education in Republic of Moldova, except for medical and pharmaceutical education, is realized in two cycles:

- The first cycle – the Licentiate's higher studies with a duration of studies 3-4 years contains 60 credits for one year of study;
- The second cycle – the Master's higher studies with a duration of studies 1-2 years contains 60-90-120 study credits.
- The third cycle – the Doctor's higher studies with a duration of studies 3-4 years.

In Republic of Moldova 31 universities (17 public and 14 private) activate, whereon about 100 000 students study.