Internationalization of optical education

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Abstract: The article is devoted to the problems of internationalization of education in optics. The importance and specific character of internationalization for optical education including its main problems are analyzed. The ways of international integration on the university level are presented through the model of “step by step” solution of education comparability.

Each country has its own “optical school”, with its traditions, history, strong scientific fields, famous teachers and researchers, etc. Internationalization of such national optical schools is one of important ways for improvement of the quality of university graduators in optics. Internationalization gives access to the best world experience, gives education closer connection with the world science and economics, directs toward international exchange of scientific knowledge and achievements. Internationalization in the field of optical education has a number of considerable advantages and features making this process much easier here than in other technical and, especially, humanitarian fields.

At first, it is the high interest to optics and optical education in the countries keeping the high-standards in technical progress.

Secondly, it is uniqueness of optical education itself. Optics in itself is an elite science requiring severe fundamental physical and mathematical background and availability of unique laboratory facilities. As a result of such prerequisites the qualitative optical education may not appear in itself in any technical university. It needs long time period of formation of its own “scientific schools”.

Therefore, in third, the universities of an optical profile are well-known both in international scientific environment and one to another, thereby determining a narrow circle of the potential partners. The specialization of different optical universities is also a positive argument for internationalization of optical education, creating the reasons for academic mobility. It is extremely important to create inter-networks of optical universities, integrating potentials of different countries for development of productive international cooperation in the field of optical education.

Fourth, an important point is the similarity of the contents of optical education programs at different universities in the world. The differences basically exist in techniques of teaching and in quantity of hours in the programs for the practical, laboratory and lecture components.

In fifth, optics and optical education as a consequence has priority at a state level for many advanced countries as a “Science of the 21 Century”. This means that the level reached in the field of optics determines scientific and technological capabilities of a country.

One way of internationalization is the short courses/modules scheme based on the university level, which is the most interesting to practice. The positive results of this approach is based on the experience of the short-courses training students from European universities at St.-Petersburg Institute of Fine Mechanics and Opticians (IFMO University) - the unique optical university in Russia. Short courses are the educational modules with the specific contents, which can be taught independently or supplement each other forming sub-programs and programs. The approach is based on the three-level model: we develop educational short modules as parts of curriculum in foreign universities with their recognition and giving credits, we get certification of the educational courses for foreign students at IFMO University on the basis of already certificated short-courses modules and as a last step we develop and certificate the Education Programs taught at IFMO (degree - bachelor, master, specialist) on the basis of certificated educational courses.

Using such a module-type education scheme we successfully hold at IFMO University short courses on laboratory training and Summer Schools in Laser Physics for Uppsala University students. The regular questioning
of foreign students and teachers participating in optical training in St-Petersburg State IFMO University demonstrates their exclusive interest to such international cooperation in the field of optical education.

References