

# New Study Program: Interdisciplinary Postgraduate Specialist Study in Medical Informatics

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**Abstract.** Paper presents an overview of the EU funded Project of Curriculum Development for Interdisciplinary Postgraduate Specialist Study in Medical Informatics named MEDINFO to be introduced in Croatia. The target group for the program is formed by professionals in any of the areas of medicine, IT professionals working on applications of IT for health and researchers and teachers in medical informatics. In addition to Croatian students, the program will also provide opportunity for enrolling students from a wider region of Southeast Europe. Project partners are two faculties of the University of Zagreb - Faculty of Organization and Informatics from Varaždin and School of Medicine, Andrija Štampar School of Public Health from Zagreb with the Croatian Society for Medical Informatics, Croatian Chamber of Economy, and Ericsson Nikola Tesla Company as associates.

**Keywords:** Postgraduate Specialist Study, Medical Informatics, Curriculum

## Introduction

The overall objective of the project is to contribute to the development and implementation of the Croatian Qualification Framework through development of a new qualification standard for university specialist in medical informatics. The development of a new postgraduate specialist study program is based on learning outcomes and the proper analysis of student workload and ECTS (European Credit Transfer and Accumulation System).

Specifically, the qualification standard will provide prospective employers (in e.g. health service, IT, public administration, and education sectors) with a well defined framework of knowledge, skills and competences that will improve all aspects of human resource management (needs analysis, recruitment, skills gap analysis, training and development). When the new study program becomes available, health care institutions will benefit from engaging skilled employees, thus increasing capacity to implement sophisticated health information systems. IT sector will benefit from access to skilled workers with complementary skills and competences necessary for implementation of IT solutions in health sector, but also from increased capacity of the health sector market to

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absorb their products and services. Institutes of public health and national and local authorities responsible for health system will also benefit from both the access to skilled workforce and the health care institutions' increased capacity to implement the national eHealth program. Medical informatics lecturers/teachers with appropriate knowledge and skills can improve medical informatics education at different levels of medical/health education. Finally, the citizens will benefit from the increase in quality and efficiency of health care system due to the successful implementation of eHealth projects.

## **1. Description of the Project**

### *1.1. Target groups*

The target group for the new postgraduate specialist programme in medical informatics is formed by professionals in any of the areas of medicine: nursing, health care management, dentistry, pharmacy, public health, health record administration, informatics/computer science and others who work in health sector, in public authorities responsible for health, and in IT sector designing and developing ICT solutions for health. Due to the introduction of the health information systems, they have a need to attain additional specific skills and competences in medical informatics. Most health professionals who attained their degree at Croatian universities have had a single course in medical informatics during their study program. Most IT professionals who attained their degree at Croatian universities had no exposure to health specific issues in ICTs. Additionally, professionals from other disciplines like mathematics, physics, biology etc. often provide support for informatics in health care institutions. Implementation of health information systems requires that they take part in reengineering the processes in health service institutions, modeling, defining and capturing health data, searching and using different sources of information in decision making, defining business and functional requirements for procurement of information and communication equipment and solutions etc.

Another target group is formed by researchers and teachers in medical informatics. The project will contribute to the development of capacity for implementation of student centered learning and recognition of prior learning through the training of academic staff of participating institutions and targeted study visits to European institutions of higher education with recognized and successful study programs in health/medical (bio)informatics. However, there is a lack of capacity for developing methodology for assessment and recognition of non-formal and in-formal prior learning. The proposed life-long-learning program targets working population who have attained some skills and competences through on-the-job training, work experience or self-learning. It will provide more value to students and their employers if it includes well defined procedures and criteria for assessing and recognizing prior learning, thus focusing on filling the skills gap and increasing effectiveness and efficiency of delivery for both students and their employers. During the implementation of the Bologna process and drafting new study programs Faculty of Organization and Informatics has developed and implemented an application for describing and managing entry competences, prerequisites and learning outcomes of a study program, modules and courses that is used for developing and managing currently offered curricula. Defining the functional requirements and designing the upgrade of the application to include prior learning (formal, in-formal and non-formal) will require practical implementation of knowledge attained through the training. Upgraded and improved application will enable more efficient development and management of the

new curriculum, ascertaining consistency of different study paths.

While our primary target is Croatian workforce, the program will also provide opportunity for enrolling students from a wider region of Southeast Europe. Now no similar graduate level program is available in the region. For students from countries in the region Croatian language does not pose a barrier, and for others the program will initially provide a limited offer of study paths in English, with plan to develop all courses / modules in English within two years of the beginning of the program implementation.

### 1.2. Project Partners and Associates

**Faculty of Organization and Informatics (FOI)** has extensive experience with managing and participating in EU funded projects, and in particular projects related to defining learning outcomes, training needs assessment and development of study programs. FOI also has strong research, teaching and practice track record in organization, information systems, and e-learning. FOI has participated in a large number of Tempus projects that supported implementation of Bologna process, introduced new student centered study programs and developed capacity for quality assessment.

**School of Medicine, Andrija Štampar School of Public Health (ŠNZ)** has a strong track record of research, teaching and practice of health/medical informatics. Within its organizational structure there is a Department of Medical Statistics, Epidemiology and Medical Informatics with a Division for Medical Informatics. In the period from 1987 to 1998 ŠNZ offered a postgraduate scientific master program in Health Information System leading to the Master of Science degree.

**Croatian Society for Medical Informatics (CSMI)** was established in 1989. Since 1992 it is a member of the European Federation for Medical Informatics (EFMI) and the International Medical Informatics Association (IMIA). Their membership comprises health and ICT professional, as well as researchers, representatives of health care and public health institutions and private sector providers of ICT equipment and solutions. Biannual, 10<sup>th</sup> conference Medical Informatics 2011 held in Varaždin and co-organized by FOI and ŠNZ was an opportunity for discussion of needs for continuing education in medical informatics with all stakeholders.

**The Croatian Chamber of Economy (CCE)** is an independent professional and business organisation of all legal entities engaging in business. It was established in 1852, organised in the European tradition and on the so-called continental model of Austrian and German chambers with compulsory membership. Every company registered with the Commercial Court is a member of the Chamber. CCE, as a representative of employers, has a strong interest in development of the Croatian Qualification Framework and qualification standards.

**Ericsson Nikola Tesla (ENT)** is the provider of the national Healthcare Networking Information System that implements Electronic Healthcare Records, Electronic Patient Records, Healthcare Resources Records and Messaging and business processes. Users in healthcare and administration, as well as developers of new health information systems have to know how to interact with this infrastructure. Through implementation and maintenance of the system, ENT has gained the first-hand experience and had to address lack of skills and competences in the health sector. ENT employs research staff who will take part in developing and implementing specific parts of the curriculum, and they can help in dissemination through their extensive contact network.

### 1.3. Project organization

The project (The duration of the action will be 18 months.) will be organized in eight work-packages (WP) with 21 activities:

- WP-01 Needs Analysis: Systematic literature review; Development of a questionnaire and brainstorming framework and data collection; Data analysis and drafting the Needs Assessment Report.
- WP-02 Building staff capacity: Trainings; Study visits.
- WP-03 Logistics: Improving and updating the existing software; Installation and maintenance of software and hardware; Public procurement and subcontracting.
- WP-04 Development of the study program and the qualification standard of postgraduate specialist in medical informatics: Drafting the study program; Drafting the guidelines for recognition of prior learning; Drafting the documents on quality assurance; Drafting the qualification standard; Workshop and consultations with stakeholders on draft documents.
- WP-05 Developing course content, teaching and e-Learning materials: Development of course content; Development of teaching and e-Learning materials.
- WP-06 Pilot implementation: Piloting and evaluating the study program.
- WP-07 Dissemination: Establishing a project web site; Establishing an online collaboration space; Presenting project results at professional and research conferences; Publishing a book.
- WP-08 Project management.

## 2. Conclusion remarks

Introduction of qualification standard of medical informatics specialist and the study program in medical informatics with well-defined core competencies will help human resource management in health care, ICT and health administration sectors, increase the capacity of health care organizations to design, develop, implement and use ICT solutions, and consequently increase health care quality, improve patient safety and reduce costs.

Project partners and associates will use the following channels for dissemination: Workshops and conferences, Web site and special web services (FAQ, discussion forum, mailing list, electronic newsletter, blog, collaboration tool etc.), Press releases, radio, TV, promotional activities in local and regional community, Promotional materials (Project leaflet and brochure, banner), Word of mouth (by experts in medical informatics), Book compiling project methodology, training materials and results.

Dissemination plan is scheduled over three phases that roughly cover 6 months each. The first phase comprises activities focusing on building partners' capacity for developing the study program and qualification standard. Dissemination activities planned for this phase include the kick-off meeting, Project Steering Committee meetings, and publishing documents on the project collaboration site targeting the project consortium with the purpose of internal dissemination and coordination; press release(s) targeting media and general public with a purpose of announcing the EU support; project leaflet and brochure, web site and special web services targeting stakeholders and general public with the purpose of awareness raising; workshops with stakeholders with the purpose of awareness raising and feedback; and conference presentations targeting professionals and academics in

medical informatics and their potential employers with the purpose of awareness raising and feedback.

The second phase covers drafting the main documents. Dissemination activities planned for this phase include the Project Steering Committee meetings and publishing documents on the project collaboration site targeting the project consortium with the purpose of internal dissemination and coordination; project reports, web site and special web services targeting stakeholders and general public with the purpose of providing information on project status and the awareness raising; workshops with stakeholders with the purpose of awareness raising and feedback; and conference presentations targeting professionals and academics in medical informatics and their potential employers with the purpose of awareness raising and feedback.

The third phase involves piloting and finalization of the project. Dissemination activities planned for this phase include the Project Steering Committee meetings and publishing documents on the project collaboration site targeting the project consortium with the purpose of internal dissemination and coordination; project reports, web site and special web services targeting stakeholders and general public with the purpose of providing information on project status and the awareness raising; conference presentations targeting professionals and academics in medical informatics and their potential employers with the purpose of awareness raising and feedback; the book and a press release targeting general public, stakeholders and wider academic community with the purpose of informing about the project results and promoting their reuse.

Both partners FOI and ŠNZ are determined to certify the program as a joint study program, and are open to participation of other institutions and experts in further development, maintenance and implementation of the qualification standard and the study program.

### Acknowledgement

This project is funded by the European Union through the national IPA BGUE 04 06 – Human Resources Development, under the grant number IPA4.1.3.1.06.01.c12.

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