

P3-UKF-Constantine the Philosopher University in Nitra-Slovakia**Annual Report on Project Activities****TEMPUS DESIRE****(1 December 2013– 30 November 2014)****Overall achievements**

A specific feature of the DesIRE project is the cooperation of higher education institutions (HEIs) of the European Union with HEIs in partner countries – the Ukraine, Georgia and Armenia. The main goal of the project is to change the traditional system of engineering study programs development used in the target countries from a theoretical approach towards education of practically oriented competences of the graduates which will be applicable in their future career in accordance with labour market demands. The stated goal will be achieved through carrying out the following tasks: the analysis of current curricula at the HEIs involved (AM, GE, UA), and the development of new curricula and study materials (P3) in embedded systems (P2).

Since the start of the project UKF Nitra (P3) carried out the following activities:

- organization and realization of a retraining course Teaching Technical Studies. This was done in a form of a summer course named *New Teaching Approaches in Engineering* (project activity 4.1) in the period 15 September – 20 September 2014. The ambition was to prepare an educational course programme supporting the development of participants` didactic expertise in the area of e-learning and offering a space for individual performance of the participants through verbal presentations and practical activities. That is why in the course there were included not only lectures but also workshops, discussion forums and practical exercises in the department laboratories where the work with remote experiments, PLC systems and CNC facilities was presented. Annotations were written and submitted in advance for each of the activities. During the course 28 academic teachers from target HEIs were trained. They were given a possibility to share their opinions, as well as to express their critical views. After finishing the course, the written assessment was conducted by the means of a questionnaire. The evaluation of the results gained from the questionnaire is part of the quality survey report.
- development of four modules: Quality Engineering, Learning Management, New Teaching Approaches in Engineering (submodules: Information Technologies in Education; E-learning Methods in Education; Technical Aspects of Remote Experiment Construction), Soft Skills for Engineers (project activity 2.4 Preparation of a set of additional modules to the modules HW for ESD, SW for ESD and CAD/CAM/CAE in ESD which are in charge of the project partners P1 and P2). Each module is supported by syllabi containing the relevant data such as: study cycle, level and type of module, form of delivery, duration, language of instruction, number of credits, total student workload, number of contact and individual hours, aim of the module, learning outcomes, teaching/learning methods, assessment methods, names of themes, list of literature. Syllabi of subjects form an important part of the modules.

- Development of a material named *The Conceptual Approach to the Curriculum Buildings* (project activity 1.3) which was submitted to the target HEIs in AM, GE and UA. It includes a set of annotations and syllabi of the subjects developed by P3.

All the above activities performed in accordance with the project plan and goals significantly contribute to the main project achievements.

Development of programs and courses

Table 1 Developed plan of implementation of Project Modules (P3)

Nr.	Course/Module	Specialty	Responsible teacher (Name, Faculty, department, affiliation, e-mail)
	Additional Modules:		
15	Learning Management – LMS Moodle 60h (2 ECTS)	1. E-learning <ul style="list-style-type: none"> - Principles and concepts of the e-learning - The types of e-learning courses - Portfolio application useful in e-learning - Methodology and basic strategies for e-learning courses 2. Learning management systems <ul style="list-style-type: none"> - Characteristics and summary of LMS systems - Specifics of electronic materials - Creation of e-courses 3. Moodle <ul style="list-style-type: none"> - Create and set up own e-course - Navigation in the Moodle - Use of prepared materials - IMS Content, Captions, text, website, link, adding the resources - Creation of various activities for educational materials: <ul style="list-style-type: none"> - principle of program learning: learning module, - communication tools, - didactic test (calculated task, numerical task, assignment, dichotomous, multiple-choice, short and long-answer questions), - analysis of the test, - mind map, - wiki, - vocabulary, - inquiry, - research, - database, - various kinds of tasks. 	David Vaněček. Czech Technical University in Prague. Masaryk Institute of Advanced Studies. Assoc. professor. david.vanecek@muvs.cvut.cz Support and cooperation : Tomáš Kozík Faculty of Education Constantine the Philosopher University in Nitra. Proffesor. tkozik@ukf.sk

16	<p>Quality Engineering 36 h (1, 5 ECTS) + 18 h (1 ECTS) practical exercises</p>	<ul style="list-style-type: none"> - Introduction to quality management, basic concepts - System of Quality Management, MK System, ISO 9001: 9008 - Documentation and records - Tools for Quality Assurance - Statistical methods and their use in quality education assessment - FMEA, DOE - Cycle improvement, self-assessment - Internal audits - Measurement and Monitoring - TQM, Integrated water quality MS - Model CAF - Building, certification and improvement SMQ - Comparing the education system (schools) to undertakings - Analysis of selected IT and basic didactics methods and their influence on quality education - LMS systems and possibilities of their use - Feedback - one form of increasing the quality of education - Knowledge assessment 	<p>Jaroslav Kultán. University of Economics in Bratislava. Senior lecturer. jkultán@gmail.com Support and cooperation : Tomáš Kozík Faculty of Education Constantine the Philosopher University in Nitra. Proffesor. tkozik@ukf.sk</p>
17	<p>New teaching approaches in Engineering 45h (1,5 ECTS)</p>		<p>Tomáš Kozík. UKF Nitra, Faculty of Education, Department of Technology and Information Technologies. Professor tkozik@ukf.sk</p>
17.1	<p>E-learning methods in education</p>	<ol style="list-style-type: none"> 1. Internet <ul style="list-style-type: none"> - Principles and concepts. - The components of computer networks. - Communication protocols - Network debugging tools - Security aspects of computer networks - Web browser and Internet search service 2. Remote Experiments <ul style="list-style-type: none"> - Principles and concepts of remote experiments - Types of remote experiments - Technology of remote experiments - The searching of remote experiments 3. Remote experiments and a teacher <ul style="list-style-type: none"> - Applications to create presentations - Presentation of the remote experiments - LMS, LMS Moodle - Methodology of remote experiments 	<p>Marek Šimon. University of St Cyril and Methodius in Trnava. Faculty of Natural Science. Lecturer. marek.simon@xmod.sk Support and cooperation : Tomáš Kozík Faculty of Education Constantine the Philosopher University in Nitra. Proffesor. tkozik@ukf.sk</p>

17.2	Information technologies in remote experiments		Miroslav Olvecký. University of St. Cyril and Methodius in Trnava Faculty of Natural Science. Lecturer. miroslav.olvecký@ucm.sk
17.3	Technical aspects of construction remote experiments (RE)	<ol style="list-style-type: none"> 1. Basic block construction diagram <ul style="list-style-type: none"> - The meaning and function of individual parts of the block diagram RE - How physics principles affect design the RE - General technical requirements for construction RE 2. Construction frames for RE <ul style="list-style-type: none"> - Some construction frames special designed for remote experiments - Dedicated technical constructions of RE - Realization of the RE by using industry automation parts - Definition of the Remote Laboratory. Examples of use PLC control systems for construction remote laboratories - Defining the advantages and disadvantages of each design frameworks 3. Present a solution <ul style="list-style-type: none"> - Present physical aspects of suggested RE - Present construction block diagram of the suggested RE and describe basic functionality for each parts of its - Present selection of construct framework and explain the reasons of its 	Peter Kuna. UKF Nitra, Faculty of Education, Department of Technology and Information Technologies. Lecturer. pietro.kuna@gmail.com Support and cooperation : Tomáš Kozík Faculty of Education Constantine the Philosopher University in Nitra. Proffesor. tkozik@ukf.sk
18	Soft Skills for Engineers 36h (1,5 ECTS)	<ol style="list-style-type: none"> 1. Interpersonal Communication Skills <ul style="list-style-type: none"> - Voice Controlling. Careful Listening. - Signs of Body Language. 2. Time Management Skills. <ul style="list-style-type: none"> - Basic Techniques to Master Your Time - Time Management Strategies 3. Problem Solving Skills. <ul style="list-style-type: none"> - Basic Steps in Solving a Problem - Critical Thinking 4. Managerial Skills. <ul style="list-style-type: none"> - Functions and Roles of a Manager - Using Empathy in Managing People 5. Report Writing Skills. <ul style="list-style-type: none"> - Stages of a Successful Report Writing - The Structure of a Report. 6. Presentation Skills. <ul style="list-style-type: none"> - Preparing a Powerpoint presentation - Tips for an Effective Presentation 	Eva Malá. UKF Nitra, Faculty of Education, Department of Language Pedagogy and intercultural Studies. Professor emala@ukf.sk

Development of courses:

In 2014, P3 was a leader of the activity named *New Teaching Approaches in Engineering*. The task was to organize a summer retraining course for participants from the partner institutions in the Ukraine, Georgia and Armenia. To fulfil this task, P3 followed these steps:

- analysis of the project tasks and goals connected with the realization of the course,
- design of the course programme in terms of educational and social activities, and technical and administrative support,
- development of the course agenda (information about the venue, participants, programme),
- technical, organizational and administrative management of the course (transport of the participants, their accommodation, catering, provision of appropriate facilities, access to the Internet, invitation letters, attendance lists, certificates, etc.)
- organization of a guided tour to Bratislava, the capital of Slovakia, and interpreting services,
- compiling and editing the course proceedings,
- other tasks related to the summer course management.

Based on the design of the course educational activities, there were created four educational modules - see the table above. Relevant learning materials will be developed and published in the electronic form (CD).

Restructuring: university management and governance

Not applicable for P3.

Staff (re-)training

Not applicable for P3.

Staff mobility

UKF institutional coordinator Professor Tomáš Kozík appointed two members of the local project team (Eva Malá and Peter Kuna) to take part in the kick-off meeting organized by the grant holder Thomas More College Mechelen (28 January 2014 – 30 January 2014). At this first project consortium meeting, tasks planned for the first year of running the project (1 December 2013 – 30 November 2014) for each project partner were discussed in detail. The UKF project team (P3):

- holds a position of experts in pedagogy and monitors educational and pedagogical quality of new curricula developed for partner universities in the target countries (AM, GE, UA);
- having strong bonds with the former Soviet Union as well as with partners in the European Union, P3 provides language support in the project;
- will assist in the ECTS calculation and quality assurance of newly developed courses;
- will develop four modules: Quality Engineering, Learning Management, New Teaching Approaches in Engineering, Soft Skills for Engineers;
- will prepare, organize and carry out a retraining course (Teaching Technical Studies) in duration of 7 days. During the course 24 academic teachers (3 from each target HEI) will be trained in the framework of the given activity.

At the kick-off meeting the dates of the course were set and relevant questions were discussed. There were also agreed the activities to be carried out in the first year of running the project. P3 recognizes the first mobility to be successful in terms of its organization and its constructive way of dealing with project matters.

As it can be seen from the previous parts of this report, all activities performed by P3 during the reported period followed the conclusions agreed at the kick-off meeting, and were fully completed.

Academic co-ordination and administrative management

1. University Orders concerning DESIRE Project Team establishment and those which deal with the fulfillment of project activities.

Table 2 List of local project team meetings (P3).

Nr.	Date	Theme	Participants
1	3.12.2013	Study the project tasks	Kozík, Malá, Kuna
2	7.1.2014	Prepar. for kick-off meeting	Kozík, Malá, Kuna
3	20.1.2014	Administr. for kick-off meet	Kozík, Malá, Kuna
4	11.2.2014	Processing meet.conclusion	Kozík, Malá, Kuna
5	5.3.2014	Discussing project tasks	Kozík, Malá, Kuna
6	4.4.2014	Discussing project tasks	Kozík, Malá, Kuna
7	6.5.2014	Preparation of the course	Kozík, Malá, Kuna, Šebo, Hašková, Tomková, Sitáš, Valentová, Šimon, Olvecký
8	4.6.2014	Preparation of the course	Kozík, Malá, Kuna, Šebo, Hašková, Tomková, Sitáš, Valentová, Šimon, Olvecký
9	16.6.2014	Preparation of the course	Kozík, Malá, Kuna, Šebo, Hašková, Tomková, Sitáš, Valentová, Šimon, Olvecký
10	1.7.2014	Preparation of the course	Kozík, Malá, Kuna, Šebo, Hašková, Tomková, Sitáš, Valentová, Šimon, Olvecký
11	7.7.2014	Course administration	Kozík, Malá, Kuna, Šebo, Hašková, Tomková, Sitáš, Valentová, Šimon, Olvecký
12	20.8.2014	Course administration	Kozík, Malá, Kuna, Šebo, Hašková, Tomková, Sitáš, Valentová, Šimon, Olvecký
13	21.8.2014	Analysis of course activities	Kozík, Malá, Kuna, Šebo, Hašková, Tomková, Sitáš, Valentová, Šimon, Olvecký

14	29.9.2014	Preparing a course report	Kozík, Malá, Kuna
15	13.10.2014	Assessment of the course	Kozík, Malá, Kuna
16	28.10.2014	Overall assessment	Kozík, Malá, Kuna
17	26.11.2014	Questions of dissemination of course outcomes	Kozík, Malá, Kuna

2. University meetings where the questions of project activities were discussed

The UKF project team (P3) together with the members of project Consortium discussed the questions of project activities at the meeting with the UKF Rector Professor Ľubomír Zelenický and the Vice-Rector for International Relations (Professor Gabriela Miššíková) on 17 September 2014. The topics of discussions also included the areas of common interest of HEIs involved, such as bachelor and master study programmes, process of accreditation, and other relevant information. The meetings with the management of the Faculty of Education (Dean Professor Eva Szórádová, and the faculty vice-deans) were held once a month. The matters discussed concerned the presentation of activities already performed as well as those planned for the next period of the life of the project.

Equipment

Not applicable for P3.

Dissemination

The results of the project activities were published in the university journal *Nový čas* (Our Time) and were also announced on the official UKF website and on the website of the Department of Technology and Information Technologies, thus they were disseminated to the wide public both within the university and outside the university. Photo-documentation of activities performed by P3 is presented in the Department Facebook. Information brochures were delivered to course participants. Presentations on the project activities were discussed at the Department meetings and at the Board meeting of the Faculty of Education UKF in Nitra. Papers related to the project activities were published in technical journals and conference proceedings (see below).

1. List of published articles in journals and conference proceedings (P3).

- Kozík, T. - Arras, P. – Tabunshchyk, G.: *Techniques and Tools for Virtual and Remote Experiments*. In: International Scientific-practical Conference Modern Problems And Achievements of Radio Engineering (electronics), Telecommunications and Information Technologies : Proceedings from International Conference, Zaporizhzhya, Ukraine date: 17-19 September 2014. - Zaporizhzhya : Zaporizhzhya National Technical University, 2014. - ISBN 978-617-529-098-9, P. 112-113.
- Kozík, T. – Kuna, P.: *Vzdialený reálny experiment s využitím prvkov priemyselnej automatizácie*. In: *Edukacja - Technika - Informatyka : wybrane problemy edukacji technicznej i zawodowej*. - ISSN 2080-9069, Roč. 5, č. 2 (2014), s. 581-597.

- Kozik et al: *New Teaching Approaches in Engineering*. Proceeding of Lectures of the Summer Course Nitra 2014. Constantine the Philosopher University in Nitra, Faculty of Education, Nitra, 2014. 292 p. ISBN 978-80-558-0723-2.
- Hašková, A. – Malá, E. – Kozík, T.: *Uplatňovanie interdisciplinarity v nových trendoch vo vzdelávaní /Applying interdisciplinarity in new trends in education/* In *e-TEFL.*, p. 5–12, Nitra: UKF, 2014, ISBN 978-80-5580730-0.

In framework of the project activities, P3 cooperated with the former post-graduate (Ph.D.) students of the Department of Technology and Information Technologies in the study field 1.1.10 *Subject Didactics*, the study programme *Didactics of Special Technical Subjects*, whose Ph.D. topics are related to the issues of the DesIRE project and the training course activities. P3 also cooperated with external partners from University of Economics in Bratislava and Czech Technical University in Prague with whom P3 has a long-term cooperation in the field of education and research.

Sustainability

The positive feedback and satisfaction with the training course organized and carried out by P3 which were expressed by the course participants from the target higher education institutions from AM, GE, UA showed a range of possibilities for further cooperation in different areas of education and research. This will also be applied during the final project conference where links to other non-project higher education institutions and non-university partners will be formalized. All project partners are motivated to continue in mutual cooperation on the basis of exchanges of experience and expertise after finishing the project.

Quality control and monitoring

One of the tasks of the UKF team (P3) in the project is to carry out activities stated in the WP 6 Quality Assurance and Quality Control. As it already results from the above mentioned, in frame of the assurance of the project activities quality, during the reported period P3 administered a questionnaire prepared by the project coordinators to assess the retraining course Teaching Technical Studies held in the form of a Summer course in Nitra (September 14 - 21, 2014).

The questionnaire was administered electronically to all 28 participants of the Summer course in November 2014. It consisted of 10 items to which the course participants responded by means of a 10-point scale. The points of the scale expressed the level of their agreement with the given statements, where point 1 stands for *I totally disagree* and 10 for *I totally agree*.

The total questionnaire return was 50%, per countries: Ukraine 50%, Armenia 63%, Georgia 57%.

The statements to which the respondents expressed their opinions were the following:

- S1: I had the prerequisite knowledge / experience to complete this course.
- S2: The objectives of this course were clear.
- S3: The content of this course is relevant to my job.
- S4: The content of this course was presented at an appropriate educational level.
- S5: Technical support, such as computers and other learning tools, were made available.
- S6: Training staff was highly skilled and professional.
- S7: Administrative support was available when needed.
- S8: Catering was enough and tasty.

S9: Accommodation was of sufficient quality.

S10: Taking this course was an overall positive experience.

Table 3 presents total average assessment of each item (by the whole group of the respondents) as well as average assessments given to each item depending on the country factor (by the particular subgroups of respondents from the Ukraine, Armenia and Georgia).

Table 3 The average assessment of the particular items

	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10
Ukraine	8,6	9,6	9,4	9,8	10,0	10,0	10,0	9,6	10,0	9,8
Armenia	8,6	9,6	9,0	9,6	10,0	9,8	9,8	9,6	9,8	9,8
Georgia	9,0	9,7	9,2	10,0	10,0	10,0	10,0	9,5	8,7	10,0
Totally	8,7	9,6	9,2	9,8	10,0	9,9	9,9	9,6	9,6	9,8

As it is clear from the table 3, the highest evaluation was given to the availability of the adequate technology equipment and learning tools (S5). A very positive finding for P3 is mainly the fact that participants of the course highly assessed (besides the administrative support – S7) also the training staff (S6).

Taking into a consideration only the achieved values, one could indicate the input knowledge or experience of the participants as the weakest point of the course (S1). This was a problem mainly for the participants from the State Engineering University of Armenia. They assessed also the relevance of the course to their jobs a little bit lower than the other participants did (S3). Anyway we do not consider the input knowledge and experience of the participants as really insufficient.

In our opinion the given expressions to this statement (S1) are consequences a variety of participants` backgrounds. Although the organisers of the Summer course (P3) tried to collect some information on the participants before the course, during the preparation period, some reserves can still be found here. That is why it is recommended to find out as much information about the professional background and interests of the course participants as possible in advance, information on the participants` expectations and needs might also be included.

On the other hand, despite the above mentioned problem, the objectives of the course were clear to all participants (also to the participants from the State Engineering University of Armenia, who evaluated clearness of the course objectives equally by the value 9 from the used assessment scale). The same can be stated in relation to the participants` assessment of the questionnaire item S4 – presentation of the course content.

The values of the assessment scale recorded at the questionnaire items S9 and S8 regarding accommodation and catering are influenced by the fact that there were two facilities where the participants stayed (it was on their own choice whether they stayed in a hotel or in a student dormitory) and the catering was not always arranged at the same place (lunches were predominantly served at the student dormitory and dinners in the hotel).

In general, the participants evaluated the Summer course by the values in the range from 9 to 10 (the average values see in the table 3). In addition, they were also given a possibility to express openly their other comments, remarks, suggestions, critics on the course and its organisation.

These notes can be summarized in the following recommendations to improve the project follow-up:

- to organize courses of this kind each year of the project (a remark which is in accordance with the project planned activities),
- to provide samples of courses syllabi which are to be taught (syllabi of the Summer course lectures *Annotations of Lectures* and *Syllabi of Subjects* were delivered to the course participants electronically before the course started; as to the syllabi of the final teaching modules these had still been under development in the time of the Summer course),
- to offer more training time to study new materials,
- to organize webinars on project topics,
- to create opportunities to meet more often,
- to include tours to enterprises and companies (stakeholders) of the host region (a remark expressed due to the original intention of P3 to organise a tour to enterprises using high-tech technologies, excellent research centres and university laboratories cooperating with P3, which was not carried out because of these reasons: the organisers had not at disposal sufficient information about the areas of the course participants' specializations and professional interests as well as about their interest in such kind of program activities, time limitation of the course, financial and organisational aspects of this activity),
- to include more sightseeing tours into the social programme of the course.

P3 highly appreciates participants' interest and active approach to the course activities as well as their involvement in accompanying social events.

Recommendations to further improvement of running the project

On the basis of the annual evaluation of running the project, the UKF project team (P3) has set the following recommendations to ensure, respectively to increase quality of tailor-made educational courses similar to those carried out within the Summer training course in Nitra:

- to find out as much information as possible about professional background and interest of course participants before the start of the course, i.e. during the course preparation phase,
- to discuss ahead the course programme both with the main course guarantor and the representatives of HEIs involved,
- to reinforce practical activities of the participants within the course,
- to offer a space for excursions and visits to relevant laboratories and different facilities working with high-tech technologies,
- to enlarge time devoted to individual presentations of representatives of HEIs involved.

Gender balance

The presence of women involved in the UKF project team forms a fair balance.

Coordinator from Constantine the Philosopher University in Nitra, Slovakia:

Prof. Ing. Tomáš Kozík, DrSc.

29 January 2015