

[P04-ZNTU-Ukraine ]

**Annual Report on Project Activities**  
**TEMPUS DESIRE**  
**(1 December 2013– 30 November 2014)**

**Development of programmes and courses**

**1. Main results of curricula analysis (WP1):**

*1.1. Development of Curricula Analysis Technique by ZNTU.*

*1.2. Analysis of the current curricula/subjects in ZNTU for Master degree according to 8 specialties/49 disciplines related to Embedded Systems:*

- Electrical machines and apparatus;
- Electromechanical automation systems and electric drive;
- Radio electronic devices and tools;
- Micro-and nanoelectronic devices and equipment;
- Computer systems and networks;
- Specialized computer systems;
- Software Systems;
- Information technologies of design.

*1.3. Analysis of the existing E-learning resources of ZNTU.*

*1.4. Development of questionnaires for the survey of employers and students by ZNTU*  
*(<http://serv-peter.no-ip.org:8000/questions/> )*

*1.5. Participated in the survey 92 students of following directions of training:*

- Software Engineering
- Computer Science
- Electromechanics
- Electrical engineering and electrotechnology
- Computer Engineering
- Radio-electronic devices

*List of the main important disciplines from the students point of view:*

- GUI development;
- New teaching approaches in Engineering;
- Multicore Programming;
- Soft Skills for engineers;
- Digital Electronics;
- Digital System Design;
- Embedded Operating Systems;
- Management and Marketing for Engineers;
- Quality Engineering;

- Embedded Software Development;
- Testing;
- Microcontrollers;
- ECAD- electronic design system ALTIUM DESIGNER;
- MCAD- structural design system PTC CREO.

1.6. Participated in the survey 15 representatives from 11 companies – employers:

- NPP Hartron-Yukom,
- JSC ZTR,
- KP NPK Iskra,
- "Brig-Retail" Ltd,
- Bmuse,
- Cupid
- LLC "Prohservys",
- Energoavtomatizatsia,
- LynxInnovation and others.

List of most important competences from their point of view:

- To use potentials of local networks and the Internet - technologies in systems design.
- To implement and test software components of ES.
- To use modern software tools for modeling and studying production systems ;
- To create programs in high level programming languages to build and use models of modern manufacturing systems.
- To analyze, theoretically and experimentally investigate the methods, algorithms, programs of hardware and software complexes and systems.
- To analyze and choose the computational methods for solving problems of embedded systems design by criteria minimizing the computational cost, resistance and complexity.
- Modern means of design automation for enterprise problems solving.

## 2. Developed plan of implementation of Project Modules.

Table 1 Responsible for the development and introduction of new disciplines

Nn	Course/Module	Specialty	Responsible teacher (Name, Faculty, department, affiliation, e-mail)
	<b>Module “Hardware for Embedded Systems”(150h (5 ECTS) + 120h (4 ECTS) practical exercises with new equipment):</b>	"Software systems"	Anatoliy Pritula, Faculty of Computer Science and Technology, Software Tools Department, PhD, professor, kafedra_pz@zntu.edu.ua
1	Microcontrollers 30h		
2	Digital Electronics 30h		
3	Digital System Design 30h		
4	Embedded Communication 30h		
5	Sensors, Actuators and Interfacing 30h		
	<b>Module „CAD/CAM/CAE for Embedded Systems“ (80h (3 ECTS) + 80h (3 ECTS) practical exercises with new equipment):</b>	"Information Technology of Design"	Anzhelika Parkhomenko, Faculty of Computer Science and Technology, Software Tools

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6	ECAD electronic design, ALTIUM, 40 h;		Department, PhD, associate professor, parhom@zntu.edu.ua
7	MCAD structural design, Pro Engineer, 40 h.		
	<b>Module “Software for Embedded Systems” (180h (6 ECTS) + 150h (5 ECTS) practical exercises with new equipment):</b>	"Software systems"	Galyna Tabunshchik, Faculty of Computer Science and Technology, Software Tools Department, PhD, associate professor, galina.tabunshchik@gmail.com
8	C for Embedded Systems 30h		
9	Embedded Software Development 30h		
11	Software Testing 30h		
12	Multicore Programming 30h		
10	Embedded Operating Systems 30h	"Software systems"	Sergiy Serdiyk, Faculty of Computer Science and Technology, Software Tools Department, PhD, associate professor
13	GUI development 30h		
	<b>Seven additional Modules:</b>		
14	Digital Signal Processing 60h (2 ECTS),	"Software systems"	Anatoliy Pritula, Faculty of Computer Science and Technology, Software Tools Department, PhD, professor, kafedra_pz@zntu.edu.ua
15	Remote Labs and Virtualisation (60h (2 ECTS) + 45h (1,5 ECTS) practical exercises in the remote labs)	"Software systems"	Anzhelika Parkhomenko, Faculty of Computer Science and Technology, Software Tools Department, PhD, associate professor, parhom@zntu.edu.ua
16	Legislation on and Certification of Embedded End-Products 30h (1 ECTS),	"Information Technology of Design"	Alexander Andriyenko, Faculty of Electrical Engineering, Department of electrical machines, Ph.D, professor, interdep@zntu.edu.ua
17	Management and Marketing of Embedded End-Products 60h (2 ECTS),	"Information Technology of Design"	Tatiana Yur, Faculty of Computer Science and Technology, Software Tools Department, PhD, associate professor, tetyana.yur@gmail.com
18	Quality Engineering (36 h (1, 5 ECTS) + 18 h (1 ECTS) practical exercises): Quality management incl. ISO 9000 family, 18 h (MA); Quality Engineering, 18 h + 18 h practice,	"Software systems"	Galyna Tabunshchik, Faculty of Computer Science and Technology, Software Tools Department, PhD, associate professor, galina.tabunshchik@gmail.com
19	New teaching approaches in Engineering 45h (1,5 ECTS)	"Information"	Andriy Parkhomenko, Engineering

		Technology of Design"	Physics Faculty, Deputy Head of Teaching department, PhD, associate professor, parhom@zntu.edu.ua
20	Soft Skills for engineers 45h (1,5 ECTS)	"Software systems"	Anna Nelasa, Faculty of Radio Electronics and Telecommunications, Department of Information Protection, PhD, associate professor, annanelasa@gmail.com

Table 2 Modules implemented in curricula in 2014/2015

	Discipline	Specialty	Responsible
	MCAD structural design, Pro Engineer	Software Engineering	Assoc. Prof. Anzhelika Parkhomenko
	Embedded Software Development	Software Engineering	Assoc. Prof. Galyna Tabunshchik
	GUI development	Software Engineering	Assoc. Prof. Sergiy Serduik
	Remote Labs and Virtualizations	Software Engineering	Assoc. Prof. Anzhelika Parkhomenko
	Soft Skills for engineers	Software Engineering	Assoc. Prof. Anna Nelasa
	Quality Engineering	Informational Technology of Design	Assoc. Prof. Galyna Tabunshchik
	ES Software Testing	Artificial Intelligence	Assoc. Prof. Galyna Tabunshchik

### **Restructuring: university management and governance**

#### **1. Setting expert Panel:**

- Galyna Tabunshchik - ZNTU Project Manager, Ph.D., associate professor of Software tools department;
- Alexander Andriyenko - Assistant of rector for International Cooperation, Quality Manager, Ph.D, professor of Electrical Apparatus department;
- Anatoliy Pritula - Ph.D, Professor of Software Tools Department;
- Anzhelika Parkhomenko - Manager of UECG, Ph.D., associate professor of Software tools department;
- Larisa Duiko - leading specialist of International relations department.

#### **2. Setting University-Enterprise Contact Group:**

- Mykola Iefymenko - Manager of research-and-production enterprise "Khartron-Yukom"
- Andrii Spakhy-Manager of Automation Department of public joint-stock company "Zaporozhtransformator"
- Olexii Basov - Manager of technical documentation division of public joint-stock company "Motor Sich"

- Mykola Artem'yev - General director of "Sterling Group Ukraine" Ltd
- Olexandr Kuznetsov - Manager of bureau of Internet technology and industrial design of automated production control system department of research-and-production trust "Iskra"
- Oleg Pozdnyakov - Consulting director, "Brig-Retail" Ltd.
- Olena Zhytova -Head of the Department of professional orientation of Zaporizhzhya region placement service.

**3. Creating a new laboratory of embedded systems and remote engineering (room 53a, 3 building of ZNTU)**

**Staff (re-)training**

1. **Summer course «New teaching approaches in Engineering»** in UKF, Nitra, Slovak Republic (September, 2014, <http://www.zntu.edu.ua/?q=node/2464>) (WP4: Retrain academic teachers on ESD engineering and virtual learning platforms)

List of participants:

- Galyna Tabunshchyk, Faculty of Computer Science and Technology, Software Tools Department, PhD, associate professor,
- Anzhelika Parkhomenko, Faculty of Computer Science and Technology, Software Tools Department, PhD, associate professor,
- Andriy Parkhomenko, Engineering Physics Faculty, Deputy Head of Teaching department, PhD, associate professor.

2. **Results of WP5 Organizing courses for the teachers and researchers in ZNTU** by those who passed the retraining in UKF, Nitra (<http://zntu.edu.ua/seminar-metody-dystanciynogo-elektronno-go-navchannya-v-osviti>)

List of participants:

- Galyna Tabunshchyk, Faculty of Computer Science and Technology, Software Tools Department, PhD, associate professor;
- Anzhelika Parkhomenko, Faculty of Computer Science and Technology, Software Tools Department, PhD, associate professor;
- Olga Gladkova, Faculty of Computer Science and Technology, Software Tools Department, assistant;
- Tatiana Bragina, Faculty of Computer Science and Technology, Software Tools Department, assistant;
- Natalia Shcherbak, Faculty of Computer Science and Technology, Computer systems and networks Department, assistant;
- Anna Nelasa, Faculty of Radio Electronics and Telecommunications, Department of Information Protection, PhD, associate professor;
- Maxim Andreev, Faculty of Computer Science and Technology, Software Tools Department, Head of Laboratory;

3. **Participation in the webinars by PTC "How to Change Traditional Approach for Designing of products?"** (October 23, 2014) **and by Altium Limited "New opportunities Altium Designer 15.0»** (December 9, 2014).

List of participants:

- Galyna Tabunshchyk, Faculty of Computer Science and Technology, Software Tools Department, PhD, associate professor,

- Anzhelika Parkhomenko, Faculty of Computer Science and Technology, Software Tools Department, PhD, associate professor,
- Olga Gladkova, Faculty of Computer Science and Technology, Software Tools Department, assistant.

4. **Participation in webinars "The creation of modern eLearning course in system Moodle», conducted by the Boris Hrinchenko Kiev University (<http://zntu.edu.ua/do-uvagy-vykladachiv-zntu>)**

List of participants:

- Galyna Tabunshchik, Faculty of Computer Science and Technology, Software Tools Department, PhD, associate professor,
- Anzhelika Parkhomenko, Faculty of Computer Science and Technology, Software Tools Department, PhD, associate professor,
- Olga Gladkova, Faculty of Computer Science and Technology, Software Tools Department, assistant;
- Tatiana Bragina, Faculty of Computer Science and Technology, Software Tools Department, assistant;
- Mikhail Polyakov, Faculty of Electrical Engineering, Electrical and Electronics Apparatuses Department, PhD, associate professor;
- Ludmila Vasilieva, Faculty of International Tourism and HR management, HR management and Labor Economics Department, PhD, Dean of the Faculty;
- Andrey Karpenko, Faculty of International Tourism and HR management, HR management and Labor Economics Department, PhD, associate professor.

5. **Criteria for teacher's selection for the re-training:**

- English proficiency of "conversational" level;
- Teaching related disciplines;
- Scientific interests in embedded systems field.
- Preliminary study of the materials submitted.

6. **Planned trainings in IUT and TMM (April, August 2015)**

**Staff mobility**

1. **Desire Kick-off meeting** (Antwerpen, January 28-30, 2014) <http://tempus-desire.thomasmore.be/meetings.php>:

- Galyna Tabunshchik, Faculty of Computer Science and Technology, Software Tools Department, PhD, associate professor,
- Anzhelika Parkhomenko, Faculty of Computer Science and Technology, Software Tools Department, PhD, associate professor.

2. **Regional meeting** (Kiev, May 2014) <http://www.zntu.edu.ua/?q=node/2392>, [http://www.zntu.edu.ua/uploads/tempus/DesIRE/20140603/DesIRE\\_may\\_2014.pdf](http://www.zntu.edu.ua/uploads/tempus/DesIRE/20140603/DesIRE_may_2014.pdf)

- Galyna Tabunshchik, Faculty of Computer Science and Technology, Software Tools Department, PhD, associate professor,
- Anzhelika Parkhomenko, Faculty of Computer Science and Technology, Software Tools Department, PhD, associate professor.

3. **Summer course «New teaching approaches in Engineering»** in UKF, Nitra, Slovak Republic (September, 2014, <http://www.zntu.edu.ua/?q=node/2464>)

**Academic co-ordination and administrative management**

1. University Orders according DESIRE Project Team establishment and those which are deals with the fulfillment of project activities.
2. List of project team meetings

Theme	Date
1. Discussion of project goals and objectives. Development of measures to disseminate information about the TEMPUS DESIRE.	23.12.2013
2. Preparation of the project presentation for Kick-off meeting. Setting University-Enterprise Contact Group.	13.01.2014
3. Discussion the results of Desire Kick-off meeting.	03.02.2014
4. Discussion and approval of methods of analysis of existing curricula/ subjects in the training of masters at ZNTU.	17.02.2014
5. Appointment of responsible persons for reviewing and updating of curricula. Preparation of the ZNTU dissemination meeting.	03.03.2014
6. Discussion of the results of the analysis. Development of recommendations for updating existent curricula, as well as for introduction of the updated curricula in the educational process for Masters.	17.03.2014
7. Development of questionnaires for the survey of students and employers.	07.04.2014
8. Discussion of the results of students' and employers' survey.	21.04.2014
9. Preparation of presentation materials on the Regional projects' meeting .	05.05.2014
10. Discussion of the results of the Regional projects' meeting .	19.05.2014
11. Appointment of persons for further development new modules.	06.2014
12. Criteria for selection of lecturers to participate in the training in EU universities in 2014.	16.06.2014
13. Preparation to Summer course «New teaching approaches in Engineering» in UKF, Nitra.	01.09.2014
14. Discussion the results of Summer course	29.09.2014
15. Preparation to Seminar «Teaching for teachers»	13.10.2014
16. Discussion of floor plans of ESD Laboratory and Remote Laboratory (room 53a, 3 building of ZNTU).	27.10.2014
17. Discussion works on creating e-learning environment.	10.11.2014
18. Development of the project report on the activity carried out within 12 months (from December 2013 to November 2014).	24.11.2014

3. **University Meeting**, where the questions of project activities were discussed:

- March, 2014 (<http://zntu.edu.ua/vzaiemodiya-proektiv-tempus-u-zntu/>)
- December, 2014 (<http://zntu.edu.ua/synergiya-proektiv-desire-ta-engitec>).

**Equipment**

1. **Work on installation of achieved software** PTC Creo (500 licenses) and Altium Designer (20 licenses) (responsible for administration Maxim Andreev, Faculty of Computer Science and Technology, Software Tools Department, Head of Laboratory room 57, 3 building of ZNTU).

Table 2 - Course/Module for implementation achieved software and responsible lectures.

N	Course/Module	Speciality	Responsible teacher (Name, Faculty, department, affiliation, e-mail)
1	Computer-aided design technologies	"Information Technology of Design"	Anzhelika Parkhomenko, Faculty of Computer Science and Technology, Software Tools Department, PhD, associate professor, parhom@zntu.edu.ua
2	CAD systems	"Software systems"	Anzhelika Parkhomenko, Faculty of Computer Science and Technology, Software Tools Department, PhD, associate professor, parhom@zntu.edu.ua
3	Theory computerized design of complex objects and systems	"Information Technology of Design"	Anzhelika Parkhomenko, Faculty of Computer Science and Technology, Software Tools Department, PhD, associate professor, parhom@zntu.edu.ua
4	Modern intelligent systems design automation	«Artificial intelligence systems»	Anzhelika Parkhomenko, Faculty of Computer Science and Technology, Software Tools Department, PhD, associate professor, parhom@zntu.edu.ua
5	Computer circuitry	"Information Technology of Design"	Anatoliy Pritula, Faculty of Computer Science and Technology, Software Tools Department, PhD, professor, kafedra_pz@zntu.edu.ua
6	Computer architecture	"Software systems"	Alexander Stepanenko, Faculty of Computer Science and Technology, Software Tools Department, PhD, associate professor, alex@zntu.edu.ua
7	Verification and Validation of Digital Systems	Artificial Intelligence	Galyna Tabunshchik, Faculty of Computer Science and Technology, Software Tools Department, PhD, Associate Professor, galina.tabunshchik@gmail.com

2. Analysis of existing facilities for Remote Laboratory and ESD Laboratory (room 53a, 3 building of ZNTU).
3. Works on creating e-learning environmental (Implementation of LMS Moodle) <http://dl.zntu.edu.ua/>
4. First part of ESD laboratory was received

### Dissemination

#### 1. Activities and dissemination materials:

1.1 ZNTU Project web-page ( <http://zntu.edu.ua/?q=node/2198>);

1.2 Information *bulletin*, *Posters*, *Flyers*  
([http://zntu.edu.ua/uploads/tempus/DesIRE/20141015/Informational\\_Bulletin\\_1.pdf](http://zntu.edu.ua/uploads/tempus/DesIRE/20141015/Informational_Bulletin_1.pdf);  
<http://tempus-desire.thomasmore.be/promotion.php>);

1.3 *Inter TEMPUS coaching* (REV2014 XI International Conference on Remote Engineering and Virtual Instrumentation (REV2014), Porto, Portugal, February, 2014);

1.4 *XII International Conference “Modern Problems of Radio Engineering, Telecommunications and Computer Science”* (Lviv-Slavske, Ukraine, February– March, 2014);

1.5 *Dissemination meeting* (ZNTU, March, 2014) (<http://zntu.edu.ua/vzaiemodiya-proektiv-tempus-u-zntu>);

1.6 *Annual scientific conference «Science Week ZNTU-2014»*, (Zaporizhzhya, Ukraine, April, 2014) (<http://www.zntu.edu.ua/naukovi-konferenciyi>);

1.7 *The 18th International Youth Forum «Radio electronics and youth in the XXIst century»* (Kharkiv, Ukraine, April, 2014);

1.8 *Xth International Conference «PERSPECTIVE TECHNOLOGIES AND METHODS IN MEMS DESIGN»*, (Lviv, Ukraine, June, 2014);

1.9 *Scientific-practical conference «Modern Problems and Achievements of Radio Engineering, Telecommunications and Information Tecnology»*, (Zaporizhzhya, Ukraine, September, 2014);

1.10 *International scientific-practical Conference «Internet-Education-Science-2014»*, (Vinnitsa, Ukraine, October, 2014);

1.11 *Dissemination meeting* (<http://zntu.edu.ua/synergiya-proektiv-desire-ta-engitec>).

## 2. List of published articles and thesis in conference proceedings

(<https://drive.google.com/folderview?id=0B3i442bAT7rBRETzdVRMemjpb2s&usp=sharing>)

### 2.1 *XI International Conference on Remote Engineering and Virtual Instrumentation:*

- Parkhomenko A.V. Virtual Tools and Collaborative Working Environment in Embedded System Design / A.V. Parkhomenko, O.N. Gladkova // Proceedings of XI International Conference on Remote Engineering and Virtual Instrumentation (REV2014) (26-28 February, 2014, Porto, Portugal) Porto: Polytechnic, 2014. - P. 91-93;
- Tabunshchuk, G. Architectural Characteristics and Educational Possibilities of the Remote Laboratory in Materials Properties/ P. Arras, G. Tabunshchuk, Ye. Kolot, B/Tanghe // Proceedings of XI International Conference on Remote Engineering and Virtual Instrumentation (REV2014) (26-28 February, 2014, Porto, Portugal) Porto: Polytechnic, 2014. - P. 94-97;
- Henke, Karsten Using Interactive Hybrid Online Labs for Rapid Prototyping of Digital Systems / Karsten Henke, Galyna Tabunshchuk, Heinz-Dietrich Wuttke, Steffen Ostendorff, Tobisa Vietzke:// Proceedings of XI International Conference on Remote Engineering and Virtual Instrumentation (REV2014) (26-28 February, 2014, Porto, Portugal) Porto: Polytechnic, 2014. - P.

### 2.2 *XII International Conference “Modern Problems of Radio Engineering, Telecommunications and Computer Science”:*

- Anzhelika Parkhomenko Investigation of peculiarities software development for embedded systems / Anzhelika Parkhomenko, Olga Gladkova // Proceedings of XII International Conference “Modern Problems of Radio Engineering,

Telecommunications and Computer Science” (February 25 – March 1, 2014, Lviv-Slavske, Ukraine), Lviv: 2014. - P. 382-383

2.3 *Annual scientific conference «Science Week ZNTU-2014»*

- Tabunshchik G.V. Prospects of virtual engineering implementation to the ZNTU learning process / G.V.Tabunshchik, A.V.Parkhomenko // Proc. of Annual scientific-practical conference ZNTU «Science Week-2014» (Zaporizhzhya, April 15–19, 2014)./ Resp. editor. M. Vnukov. - Zaporizhzhya: ZNTU, 2014. - P.132-134;
- Parkhomenko A. Analysis of the specialized platforms application features in the embedded systems design / A.Parkhomenko, O.Gladkova // Proc. of Annual scientific-practical conference ZNTU «Science Week-2014» (Zaporizhzhya, April 15–19, 2014)./ Resp. editor. M. Vnukov. - Zaporizhzhya: ZNTU, 2014. - P. 121-122
- Kagitina O.N. Automated system of radiator for cooling RADIO ELECTRONIC EQUIPMENT construction optimization / O.N.Kagitina, A.V. Parkhomenko // Proc. of Annual scientific-practical conference ZNTU «Science Week-2014» (Zaporizhzhya, April 15–19, 2014)./ Resp. editor. M. Vnukov. - Zaporizhzhya: ZNTU, 2014. - P. 144-145
- Smirnov A.V. Development of services for web-oriented systems component interaction / E.G.Kolot, A.V.Smirnov // Proc. of Annual scientific-practical conference ZNTU «Science Week-2014» (Zaporizhzhya, April 15–19, 2014)./ Resp. editor. M. Vnukov. - Zaporizhzhya: ZNTU, 2014. - P. 146-147
- Bragina T.I. Analysis of Information Systems Integration Templates / T.I. Bragina, U.S. Goncharov // Proc. of Annual scientific-practical conference ZNTU «Science Week-2014» (Zaporizhzhya, April 15–19, 2014)./ Resp. editor. M. Vnukov. - Zaporizhzhya: ZNTU, 2014. - P. 140-142
- Bragina T.I. Risk analysis when selecting templates of integration / T.I. Bragina, V.O. Starovyrov // Proc. of Annual scientific-practical conference ZNTU «Science Week-2014» (Zaporizhzhya, April 15–19, 2014)./ Resp. editor. M. Vnukov. - Zaporizhzhya: ZNTU, 2014. - P. 142-144

2.4 *The 18th International Youth Forum «Radio electronics and youth in the XXIst century»:*

- Shcherbak N.V. Analysis of e-learning and m-learning means for conducting testing / N.V. Shcherbak, G.V. Tabunshchik // Radioelectronics and young people in the XXI century: Proc. of 17th Intern. young. Forum KhNURE 2014 (April, 14-16, 2014). Vol.6 - Kharkiv: KhNURE. 6. T. P. 180-181.
- Kolot E.G. Implementation of program system for remote lab management / E.G.Kolot, G.V.Tabunshchik // Radioelectronics and young people in the XXI century: Proc. of 17th Intern. young. Forum KhNURE 2014 (April, 14-16, 2014). Vol.6 - Kharkiv: KhNURE. 6. T. P.C. 182-183

2.5 *IX-th International Conference «PERSPECTIVE TECHNOLOGIES AND METHODS IN MEMS DESIGN»:*

- Gladkova O. Development and practical application of requirements model for designing embedded systems / A. Parkhomenko, O. Gladkova // Proceedings of IX-th International Conference «PERSPECTIVE TECHNOLOGIES AND METHODS IN MEMS DESIGN (MEMSTECH 2014)», Lviv: Lviv Polytechnic, 2014. - P.20-22

2.6 *Scientific-practical conference «Modern Problems and Achievements of Radio Engineering, Telecommunications and Information Tecnology»:*

- Parkhomenko A.V. Investigation of the features of creation and application of remote laboratory for solving tasks of embedded systems design / A.V.Parkhomenko, O.N.Gladkova, E.V.Ivanov // Proceedings of the VII International Scientific Conference «Current problems and achievements in the field of radio,

- telecommunications and information technology» (17-19 September, 2014). - Zaporizhzhya: ZNTU, 2014.- P. 205-207
- Kagitina O.N. Automated system of radiator for cooling RADIO ELECTRONIC EQUIPMENT construction optimization / O.N. Kagitina, A.V.Parkhomenko G.N.Shylo, E.V.Ohrenych // Proceedings of the VII International Scientific Conference «Current problems and achievements in the field of radio, telecommunications and information technology» (17-19 September, 2014). - Zaporizhzhya: ZNTU, 2014.- P. 283-285
  - Prytula A.V. Practically oriented teaching methods in the field of embedded systems / A.V.Prytula, G.V.Tabunshchyk, A.V.Parkhomenko // Proceedings of the VII International Scientific Conference «Current problems and achievements in the field of radio, telecommunications and information technology» (17-19 September, 2014). - Zaporizhzhya: ZNTU, 2014.- P.216-218
  - Kozik T., Techniques and tools for virtual and remote experiments/ Kozik T., Arras P., Tabunshchyk G. // Proceedings of the VII International Scientific Conference «Current problems and achievements in the field of radio, telecommunications and information technology» (17-19 September, 2014). - Zaporizhzhya: ZNTU, 2014.- P.112-113.

#### *2.7 International scientific-practical Conference «Internet-Education-Science-2014»:*

- Parkhomenko A. Interactive remote laboratory of hardware and software platforms research/ A.Parkhomenko, O.Gladkova // Proceedings of the International Scientific Conference "Internet-Education-Science-2014" "IES-2014" (October 14 – 17, 2014 Vinnitsa).-P.111-113;
- Tabunshchyk G.V. New technologies in the training of embedded systems' specialists / G.V. Tabunshchyk, A.V. Parkhomenko // Proceedings of the International Scientific Conference "Internet-Education-Science-2014" "IES-2014" (14 - 17 October 2014, Vinnitsa).- P.248-250.

### **Sustainability**

#### **1. Agreements on cooperation ZNTU-Enterprises in the framework of the project**

(<http://www.zntu.edu.ua/zustrich-studentiv-z-robotodavecyami-predstavnikami-grupi-kompaniy-aktiv>)

#### **2. Diploma by ZNTU students related to project theme:**

- Oleksiy Smirnov (supervisor G. Tabunshchyk) «Development services for interaction of web-oriented systems»;
- Sergiy Kurson (supervisor G. Tabunshchyk) «Simulator of industrial robot»;
- Rodion Byelka (supervisor G. Tabunshchyk) «iOS GUI development for remote laboratory»;
- Arthur Perepelytsya (supervisor A. Parkhomenko) «Software of mathematical models formation for the tasks of tolerances design»;
- Olexandr Drin (supervisor G. Tabunshchyk) «Development of web-oriented context of on-line course»;
- Olga Kahytyna (supervisor A. Parkhomenko) «Automated system for radiators structural optimization for cooling radioelectronic devices»;
- Jaroslav Zalyubovskiy (supervisor A. Parkhomenko) «Information system for distance learning and support of staff knowledge»;
- Olga Gladkova (supervisor A. Parkhomenko) «Methods and tools of embedded systems computer-aided design»;

- Eugen Ivanov (supervisor A. Parkhomenko) «Research and development of embedded systems' design remote laboratory»;
- Bogdan Paketa (supervisor A. Pirozhok, associate professor of "Electric drive and automation of industrial installations") «Development and research of DC electric drive simplified structure to create the laboratory stand with variable two-mass structure» .

**3. Creating a new laboratory of embedded systems and remote engineering (room 53a, 3 building of ZNTU)**

**Quality control and monitoring**

- 1 Regional meeting with a representative of the TEMPUS Office Elena Orzhel (Kiev, May 2014)**<http://www.zntu.edu.ua/?q=node/2392>,  
[http://www.zntu.edu.ua/uploads/tempus/DesIRE/20140603/DesIRE\\_may\\_2014.pdf](http://www.zntu.edu.ua/uploads/tempus/DesIRE/20140603/DesIRE_may_2014.pdf)
- 2 Participation in survey by Project coordinator Dirk Van Merode.**
- 3 Participation in survey by Nitra Project Team.**

**Gender balance**

The gender correlation between the lecturers involved in the project is 50% - female, 50% - male.