





TEMPUS-project 544091-TEMPUS-1-2013-1-BE-TEMPUS-JPCR

P04-ZNTU report on activities from 1.12.2013 till 1.12.2014





<u>D</u>evelopment of <u>E</u>mbedded <u>System</u> Courses with implementation of <u>I</u>nnovative Virtual approaches for integration of <u>R</u>esearch, <u>E</u>ducation and Production in UA, GE, AM

Overall achievements







competences in Embedded Systems in TC

Performed curricula analysis

technique

Considered 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



Erevan 3 02 February, 2015





competences in Embedded Systems in TC

Performed analysis of the existing E-learning

resources



















competences in Embedded Systems in TC

 Developed questionnaires for the survey of employers and students by ZNTU

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http://serv-peter.no-ip.org:8000/questions/

Erevan 02 February, 2015





WP3 Implementing a (virtual)

learning environment in ESD eng.

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Established LMS platform



Система дистанційного навчання Запорізького національного технічного університету

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			Мова курсу: англійська/українська							

Moodle – Learning Management System in ZNIU

http://dl.zntu.edu.ua/







<u>D</u>evelopment of <u>E</u>mbedded <u>System</u> Courses with implementation of <u>I</u>nnovative Virtual approaches for integration of <u>R</u>esearch, Education and Production in UA, GE, AM

Development of programmes and courses





Responsible of implementation of Project

Modules

Galina Tabunshchyk - ZNTU Project Manager, Ph.D., associate professor of Software Tools Department;

Alexander Andrivenko - 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;

Andriy Parkhomenko, Engineering Physics Faculty, Deputy Head of Teaching department, PhD, associate professor,

Anna Nelasa, Faculty of Radio Electronics and Telecommunications,

Department of Information Protection, PhD, associate professor,

Tatiana Yur, Faculty of Computer Science and Technology, Software Tools Department, PhD, associate professor/







<u>Development of Embedded System Courses with implementation</u> of Innovative Virtual approaches for integration of <u>R</u>esearch,

Education and Production in UA, GE, AM

Modules implemented in curricula in 2014/2015

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



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Restructuring: university management and governance





New laboratory of embedded systems and remote engineering was established









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Staff training





engineering and virtual learning platforms

•Criteria for teachers selection for the re-training

- 1) English proficiency of "conversational" level
- 2) Teaching related disciplines
- 3) Scientific interests in embedded systems field
- 4) Preliminary study of the materials submitted by partner countries.







engineering and virtual learning platforms

 Summer course «New teaching approaches in Engineering» in UKF, Nitra, Slovak Republic (September, 2014)







http://www.zntu.edu.ua/?q=node/2464







engineering and virtual learning platforms

• Organizing courses for the teachers and researchers in ZNTU





http://zntu.edu.ua/seminar-metody-dystanciynogo-elektronnogo-navchannya-v-osviti







engineering and virtual learning platforms

Participation in the webinars by PTC (October 23, 2014), by Altium Limited (December, 2014) and by the Boris Grinchenko Kyiv University (November, December, 201

PTC° Creo° 3.0

ЗАРЕГИСТРИРОВАТЬСЯ

Онлайн-семинар: «Как изменить традиционный подход к проектированию изделий?»





PTC PRODUCT & SERVICE



(http://zntu.edu.ua/do-uvagy-vykladachiv-zntu)







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Staff mobility





<u>D</u>evelopment of <u>E</u>mbedded <u>System</u> Courses with implementation of <u>I</u>nnovative Virtual approaches for integration of <u>R</u>esearch, <u>E</u>ducation and Production in UA, GE, AM

Kick-off meeting





Representatives: Assoc. Prof. Galyna Tabunshchyk Assoc. Prof. Anzhelika Parkhomenko





Enterprise Collaboration

• Regional meeting (Kiev, May 2014)





Representatives: Assoc. Prof. Galyna Tabunshchyk Assoc. Prof. Anzhelika Parkhomenko

http://www.zntu.edu.ua/?q=node/2392,







engineering and virtual learning platforms

 Summer course «New teaching approaches in Engineering» in UKF, Nitra, Slovak Republic (September, 2014)

Representatives: Assoc. Prof. Galyna Tabunshchyk Assoc. Prof. Anzhelika Parkhomenko

http://www.zntu.edu.ua/?q=node/2464







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Academic co-ordination and administrative management





competences in Embedded Systems in TC

Expert Panel



Galina Tabunshchyk - 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. Anatoly 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







engineering and virtual learning platforms

•Departments involved in the project

- Software Tools
- Information Technologies of Electronic Devices Design
- Electrical Apparatus
- Electrical Machines
- Computer Systems and Networks
- Electric drive and automation of industrial plants



Erevan 02 February, 2015





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Equipment



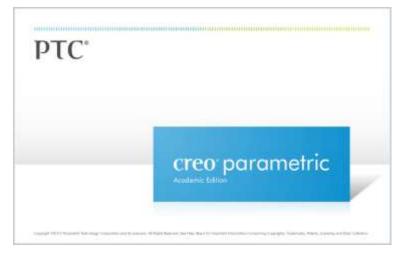


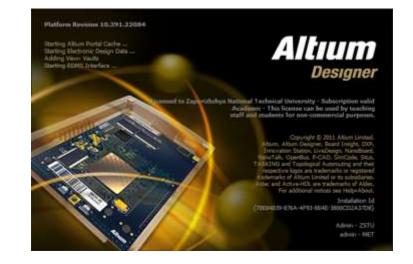
WP3 Implementing a (virtual)

learning environment in ESD eng.

Software, purchased by the project March-May, 2014

PTC Creo 2.0 (500 licenses)





ALTIUM Designer (20 licenses)







Equipment for ESD Laboratory arrived 14.01,2015



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Erevan 02 February, 2015



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Dissemination





Enterprise Collaboration

• Best Job Fair, ZNTU, April, 2014



http://www.zntu.edu.ua/best-job-fair-2014







Enterprise Collaboration

• Dissemination meeting, Porto, February, 2014









Enterprise Collaboration

• Dissemination meeting, ZNTU, March, 2014



http://zntu.edu.ua/vzaiemodiya-proektiv-tempus-u-zntu







Enterprise Collaboration

• Dissemination meeting, ZNTU, April, 2014













Enterprise Collaboration

• Dissemination meeting, December, 2014





http://zntu.edu.ua/synergiya-proektiv-desire-ta-engitec







Enterprise Collaboration

Signed agreements on cooperation ZNTU-Enterprises in the framework of the project



http://www.zntu.edu.ua/zustrich-studentiv-z-robotodavcyami-predstavnikami -grupi-kompaniy-aktiv

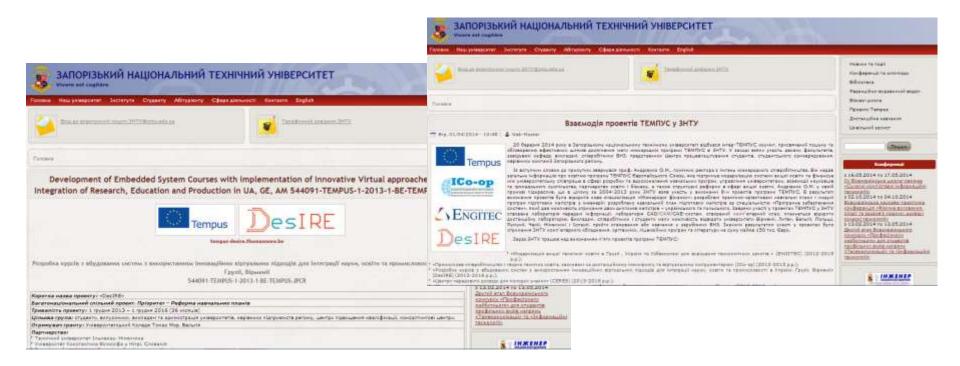






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Dissemination through web resources



http://www.zntu.edu.ua/?q=node/2198

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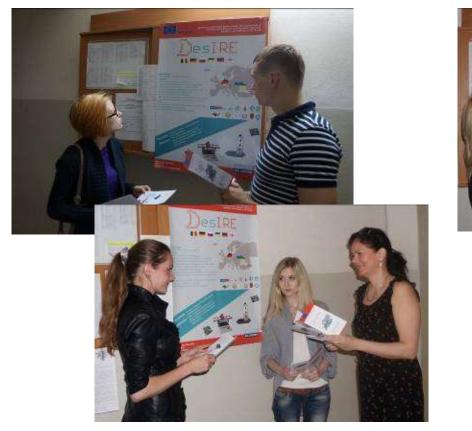


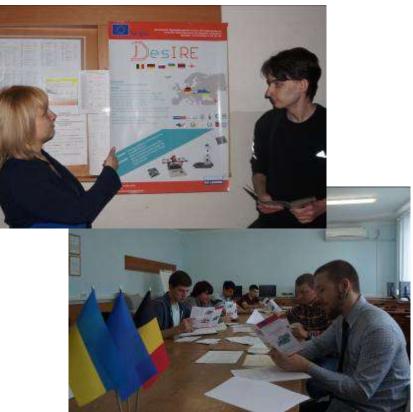




Enterprise Collaboration

Dissemination through posters and flyers











Informational bulletin prepared



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Enterprise Collaboration



• Publications of project results

1) XI International Conference on Remote Engineering and Virtual Instrumentation (REV2014), Porto, Portugal, February, 2014

2) XII International Conference "Modern Problems of Radio Engineering, Telecommunications and Computer Science" (TCSET'2014), Lviv, Ukraine, February- March, 2014













• Publications of project results

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

4) Annual scientific conference«Science Week ZNTU-2014»,(Zaporizhzhya, Ukraine, April, 2014)

5) Xth International Conference «PERSPECTIVE TECHNOLOGIES AND METHODS IN MEMS DESIGN", (Lviv, Ukraine, June, 2014)



Erevan 02 February, 2015



Enterprise Collaboration



• Publications of project results

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

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











<u>D</u>evelopment of <u>E</u>mbedded <u>System</u> Courses with implementation of <u>I</u>nnovative Virtual approaches for integration of <u>R</u>esearch, <u>E</u>ducation and Production in UA, GE, AM

Sustainability





Enterprise Collaboration

• University-Enterprise Contact Group

Mykola lefymenko	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







Sustainability: MSc and Specialist Diploma works by ZNTU students

•legor Borodai (supervisor G. Tabunshchyk) «Investigation and development of real-time multimedia tools for iOS»

•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»







Sustainability: Bachelor Diploma by ZNTU students, spring 2014

•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»

•Maxim Shilo (supervisor A. Parkhomenko) «Development of information environment for business processes optimize project»







<u>D</u>evelopment of <u>E</u>mbedded <u>System</u> Courses with implementation of <u>I</u>nnovative Virtual approaches for integration of <u>R</u>esearch, <u>E</u>ducation and Production in UA, GE, AM

Quality control and monitoring





competences in Embedded Systems in TC

Students opinion analysis

Participated in the survey 90 students of following directions of training: Software Engineering Computer Science Electromechanics Electrical engineering and electrotechnology

 Computer Engineering Radio-electronic devices

sis	DesIRE Tempus
	Home About DexIRE Consortium Project Course material Dissemination Contact
11. Do your teachers use on-line testing for knowledge of You, often	" Dear students!
Please rate the importance of each following course for (For evaluation use the following assessment scale, se matter, 1 - a minimum score, 5 - the maximum score)	Within the Tempus project 544091-TEMPUS-1-2013-1-BE-TEMPUS-JPCR Development of Embedded System Courses with implementation of Longerthing Victoral approaches for Longerthing of Research Education and Reprinting in U.S. CE
12. Microcostrollers: 0 0 1 0 2	You are kindly invited to answer our survey!
13. Digital Electronics : 0 0 0 1 0 2	Sursame :
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15. Embedded Communication : 0 0 0 1 0 2	
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18. Embedded Software Development : 0 0 0 1 0 2	Serivane Engineering 🖤
19. Embedded Operating Systems : 0 0 0 1 0 2	3. Year of study : symrof hash-forstudy
20. GUI development : ○ 0 ○ 1 ○ 2	4. Do you know what is embedded systems? :
21. Multicore Programming : 0 0 0 1 0 2	Yes, know
22. Testing : 0 0 0 1 0 2	5. Do you know what is distance learning : Yea, know
23. ECAD- electronic design system ALTIUM DESIGN	
© 0 © 1 © 2 24. MCAD- structural design system PTC CREO :	Yes, used it during my shudy T
© 0 © 1 © 2 25. Digital Signal Processing :	7. Do you kaou what is virtual laboratory? : Yea, undit datageny study
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0 0 0 1 0 2	8. Do you know what is remote laboratory? : Yes, usedstdatngmy study
27. Quality Engineering : 0 0 0 1 0 2	9. Do your teachers use innovative technologies during lections ((multimedia, virtual tools) :
28. New teaching approaches in Engineering : 0 0 0 1 0 2	Yes, eften 🖤
29. Soft Skills for engineers : 0 0 0 1 0 2	10. Do your teachers use innovative technologies during lab-sessions (virtual, remote laboratories, LMS Moodle) : Yes, eften
30. Management and Marketing for Engineers :	
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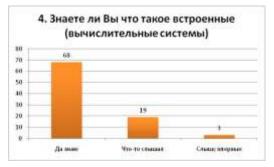
Zaporizhzhya National Technical University



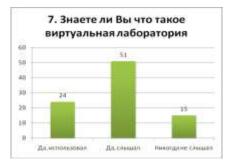


competences in Embedded Systems in TC

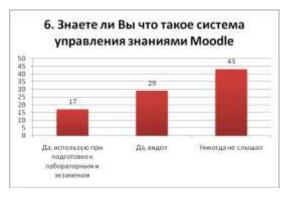
Students opinion analysis



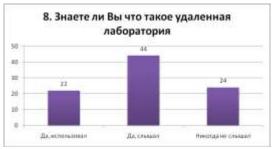
What is embedded systems



What is a Virtual Laboratory



What is LMS Moodle



What is a Remote laboratory

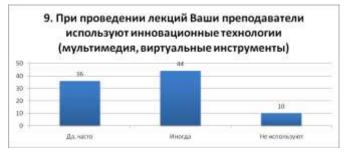




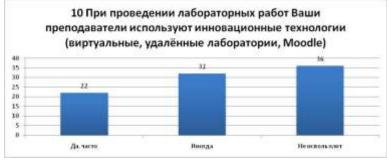


competences in Embedded Systems in TC

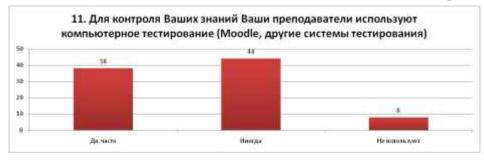
Students opinion analysis



The use of innovative technologies in the lectures



The use of innovative technologies in the labs



Using computer-based testing







competences in Embedded Systems in TC

•Students opinion analysis

The most important disciplines in the opinion of students

- •GUI development
- •New teaching approaches in Engineering
- Multicore Programming
- Soft Skills for engineers
- Digital Electronics
- Digital System Design







competences in Embedded Systems in TC









competences in Embedded Systems in TC

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Employers opinion analysis

Participated in the survey:

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

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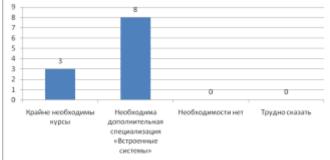
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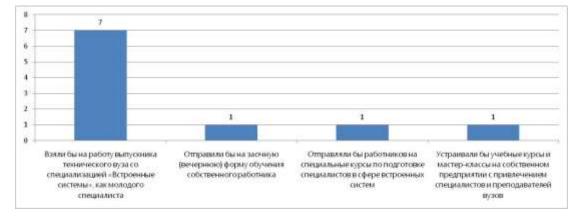
competences in Embedded Systems in TC

Employers opinion analysis



Necessity of specialists in the field of embedded systems

Necessity of additional specialization "Embedded Systems"









competences in Embedded Systems in TC

• Employers opinion analysis

Key competencies:

- «Using of opportunities of local networks and the Internet - technologies in systems design»
- The implementation and testing of ES software components»







Gender balance









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Thank You for Your Attention





