



Tempus

Development of Embedded System Courses with implementation
of Innovative Virtual approaches for integration of Research,
Education and Production in UA, GE, AM



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

P09–National University of Architecture and Construction of Armenia
Gohar Avetisyan

21.02.2017-22.02.2017

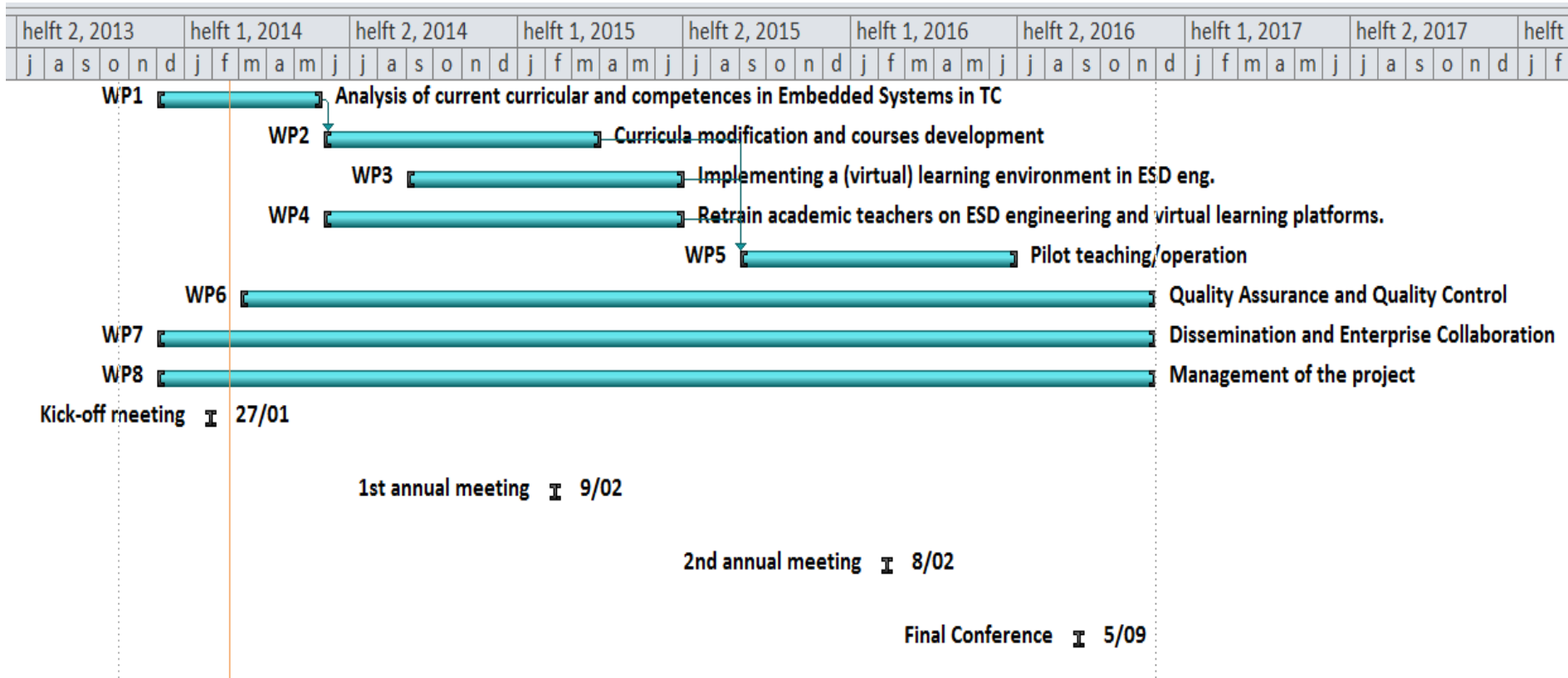


Within the Scope of the Presentation

- Start-up and duration of the program
- Collaboration among partners
- Information collection
- Realization of Working Packages
- Dissemination of information
- Achievements



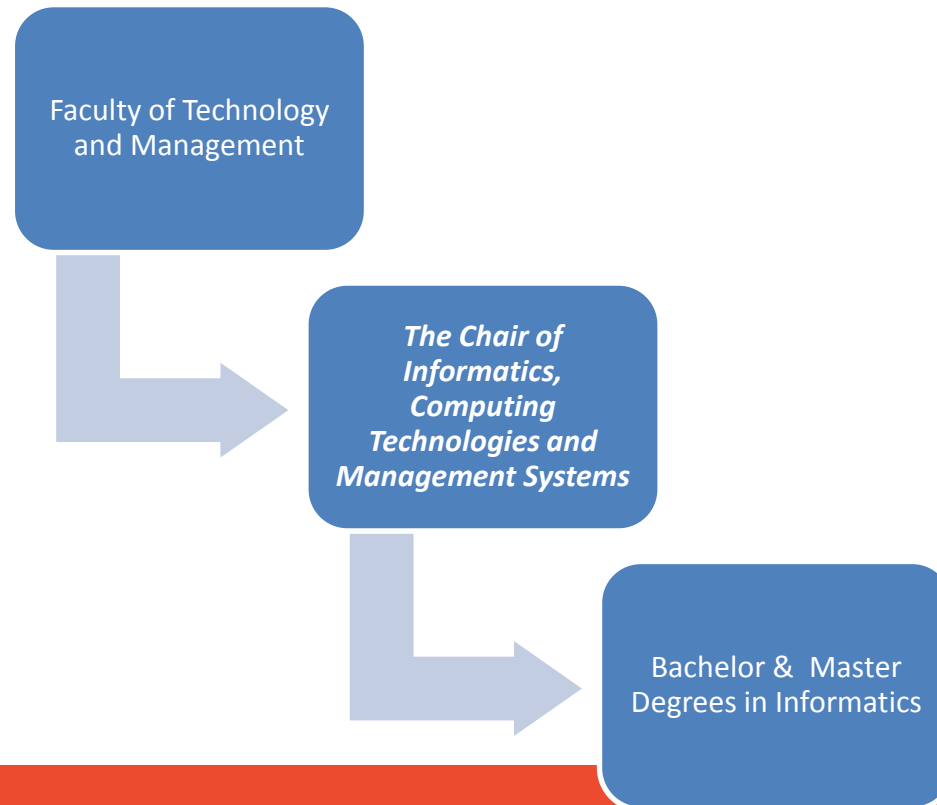
Working Packages 1-8





Tempus

National University of Architecture and Construction





Majors NUACA Currently has for Bachelor and Master Degrees

Informatics (Computer Science)

- Programming of Computing Technologies and Automated Systems
- Computing Machines, Systems, Networks
- Embedded Systems

Management Information Systems

- Financial and Computer Systems
- Information Processing and Management of Automated Systems



Majors NUACA is Going to Have for Master Degree

Informatics and Computing Technologies

- Programming of Computing Technologies and Automated Systems
- Computing Machines, Systems, Networks
- ***Embedded Systems***

Management Information Systems

- Financial and Computer Systems
- Information Processing and Management of Automated Systems



NUACA

		Full-time learning		Correspondence learning		
1.	Students	bachelor	115	bachelor	169	
		master	23	master	7	
2.	Teaching staff	professor: 2	associate prof.: 2	assistant 4	lecturer: 7	Total: 15
3.	FACULTY OF TECHNOLOGY AND MANAGEMENT					
4.	Chair of Informatics, Computing Technologies and Management Systems					
5.	1. Major: Informatics and Computing Technologies					
6.	a/ Minor: Programming of Computing Technologies and Automated Systems		b/ Minor: Computing Machines, Systems, Networks			
7.	2. Major: Management Information Systems					
8.	a/ Minor: Financial and Computer Systems		b/ Minor: Information Processing and Management of Automated Systems			



Main results of curricula analyses:

—

The university has no special curriculum on Embedded Systems

•

The University curriculum related to Embedded Systems has been implemented and modified

—

7 new courses have been developed and introduced into Curriculum at ICTMS Chair



What do we Have at ICTMS Chair that Partially Coincides

NUACA

- Electronic Computing Machines
- Modern Operational Systems

DeSIRE Project

- Digital Electronics and Digital System Design
- Embedded Operational Systems



Students opinion analysis

Within the Tempus project ***“Development of Embedded System Courses with implementation of Innovative Virtual approaches for Integration of Research, Education and Production in UA, GE, AM”*** student opinion analysis questionnaire has been filled in which about 100 students of YSUAC (NUACA) and SEUA (NPUA) participated.



The Coded Questionnaire with answers

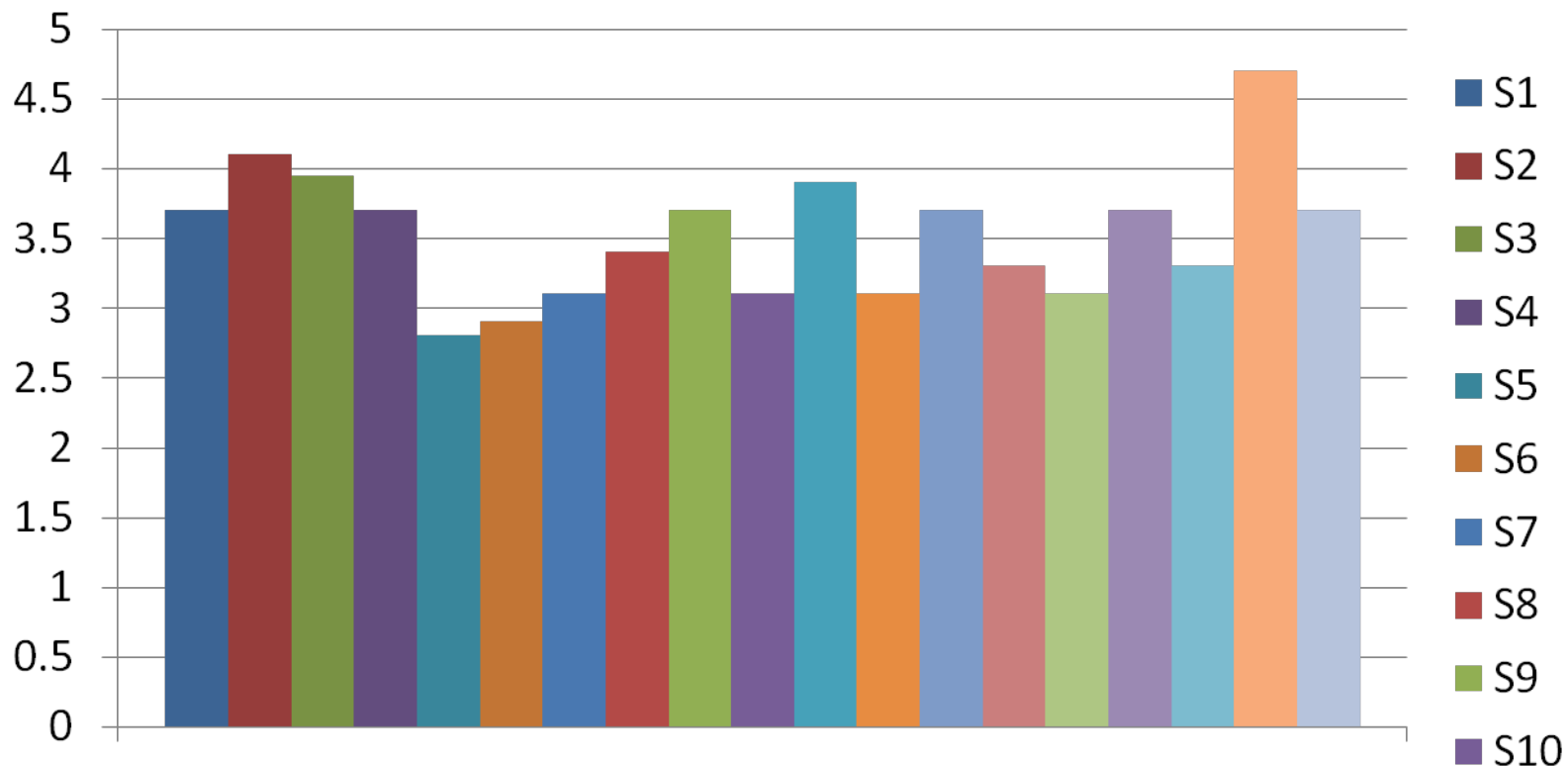
Student questionnaire

Group 1	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
Student A	1	1	5	4	3	7	8	8
Student B	1	1	3	3	3	7	9	9
Student C	1	1	5	5	5	8	9	9
Student D	6	1	5	5	5	7	8	9
Student E	2	1	5	4	3	8	9	7
Student F	1	1	3	5	3	7	9	8
Student G	2	1	3	2	3	7	7	8
Student H	1	1	5	5	3	9	7	8
Student I	2	1	3	5	3	8	9	8
Student J	1	1	5	5	5	8	8	9



The Table of the importance of 19 courses rated by the students and presented in elective way

Course/Module											0
Microcontrollers	5	3	2	3	3	5	1	5	5	5	3.7
Digital Electronics	5	5	3	4	4	4	1	5	5	5	4.1
Digital System Design	3	4.5	1	5	5	5	2	5	5	4	3.95
Embedded Communication	4	3	4	5	5	2	1	5	5	3	3.7
Sensors, Actuators and Interfacing	1	4	0	5	3	5	1	5	0	4	2.8
C for Embedded Systems	2	4	3	5	4	5	1	5	0	0	2.9
Embedded Software Development	2	3	5	3	5	1	2	5	0	5	3.1
Embedded Operating Systems	5	5	1	5	3	3	2	5	0	5	3.4
GUI development	4	5	3	5	3	5	3	4	5	0	3.7
Multicore Programming	4	4	2	0	5	4	3	5	0	4	3.1
Testing	4	5	4	0	5	5	1	5	5	5	3.9
ECAD- electronic design system ALTIIUM designer	2	3	2	0	5	5	0	5	5	4	3.1
MCAD- structural design system PTC CREO	3	4	3	4	5	4	0	5	5	4	3.7
Digital Signal Processing	4	5	4	5	0	4	2	5	0	4	3.3
Remote Labs and Virtualization	5	5	0	5	2	3	2	5	0	4	3.1
Quality Engineering	0	5	4	5	3	4	3	5	5	3	3.7
New teaching approaches in Engineering	0	5	2	5	5	1	3	5	5	2	3.3
Soft Skills for engineers	5	5	5	5	5	5	4	5	5	3	4.7
Management and Marketing for Engineers	0	5	3	5	5	5	2	5	4	3	3.7



The average of the points given by the students, where S=subject

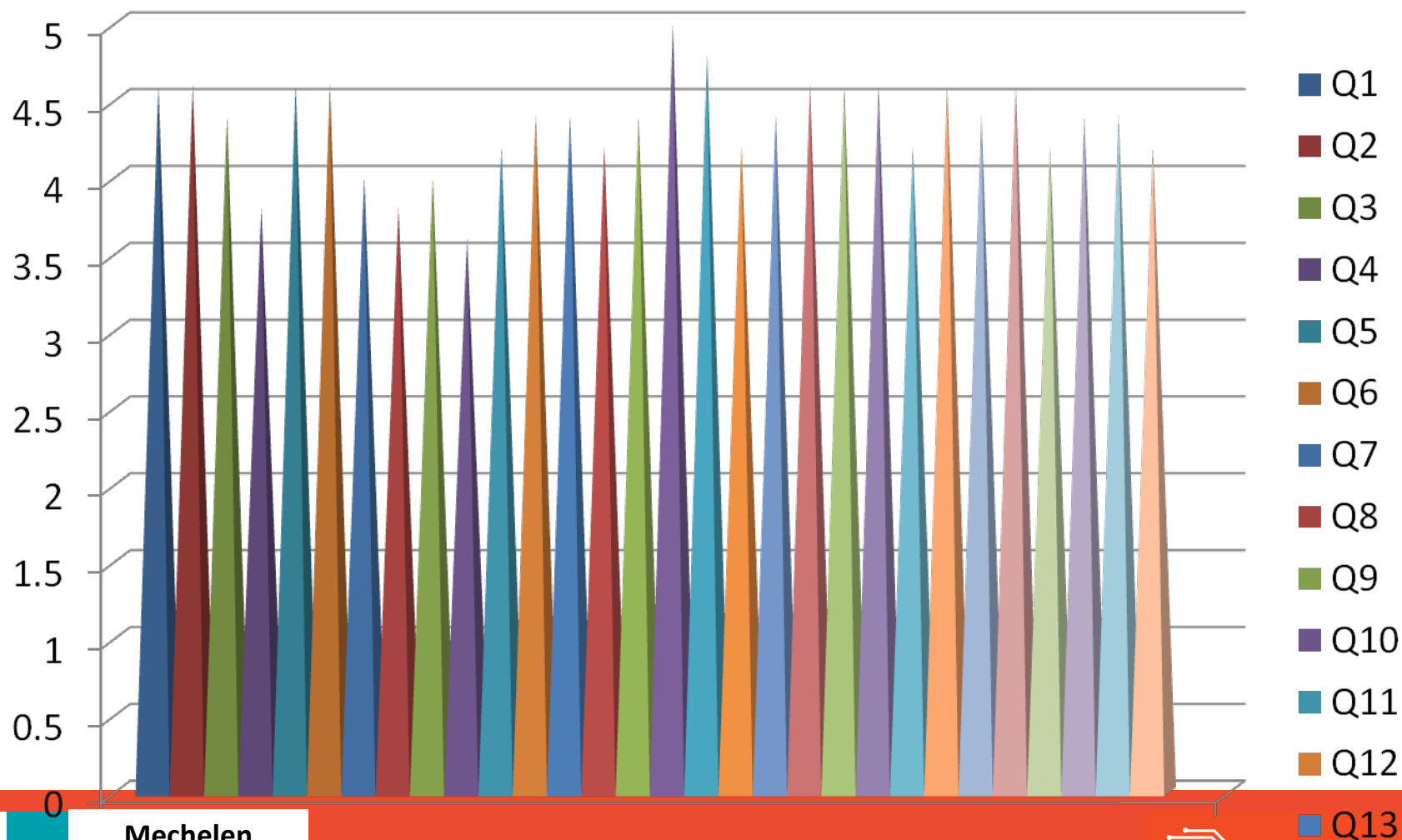


Labor Market Analysis

The chart above shows that companies share the same opinion on several issues connected with ES (Embedded Systems): a) necessity of ES course and b) sufficient specialists in ES about 60%, b) need for ES specialists about 80% and d) cooperation with engineering universities for ES specialists about 100%.



Labor Market Analysis





Labor Market Analysis

The companies and organizations presenting RA labour market which have taken part in the survey mostly answered the 31 questions in a similar way fluctuating from 3.6 to 4.6 points.





What Courses Have Been Changed and Prepared within WP 2

Microcontrollers 30h	Informatics and Computing technologies	Azat Smbatyan, Department of Management and Technologies,
Digital System Design 30h	Informatics and Computing technologies	Gevorg Margaryan, Department of Management and Technologies
Embedded Communication 30h	Informatics and Computing technologies	Gevorg Margaryan, Department of Management and Technologies
Sensors, Actuators and Interfacing 30h	Informatics and Computing technologies	Mkrtich Asatryan, Department of Management and Technologies
ECAD electronic design, ALTIUM, 40 h;	Informatics and Computing technologies	Yelena Aramyan, Department of Management and Technologies



What Courses Have Been Changed and Prepared within WP 2

MCAD structural design, Pro Engineer, 40 h.	Informatics and Computing technologies	Haik Martirosyan, Department of Management and Technologies
C for Embedded Systems 30h	Informatics and Computing technologies	Hasmik Hakobyan Department of Management and Technologies
Embedded Software Development 30h	Informatics and Computing technologies	Mher Markosyan, Department of Management and Technologies
Embedded Operating Systems 30h	Informatics and Computing technologies	Shushan Nigoyan, Department of Management and Technologies
Management and Marketing of Embedded End-Products 60h (2 ECTS),	Informatics and Computing technologies	Gohar Avetisyan, Department of Management and Technologies
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,	Informatics and Computing technologies	Anna Makaryan, Department of Management and Technologies



Curricula on ES at the chair of ICTMS within the Scope of WP 2

At the chair of Informatics Computing Technologies and Management Systems the following curricula have been developed for the ***DEPARTMENT OF MANAGEMENT AND TECHNOLOGY***

- Microcontrollers
- Hardware for Embedded Systems
- “C” for Embedded Systems
- Embedded Operating System
- ECAD electronic design
- Digital Electronics
- Management and Marketing in Engineering (for Engineers)



E-learning and LMS in NUACA within the Scope of WP3

According to the Decree of RA Government 10 February, 2010 HEIs are allowed to implement Distance Learning having the corresponding permission.

NUACA, already having this permission, with ICTMS Chair has retrained 53 members of the teaching-staff for introducing Moodle Sysytem into the Educational System of the university within the scope of DeSIRE TEMPUS Project and now 24 curricula have been designed to be implemented on it beginning with December 2015-February 2016.



Tempus






E-learning and LMS in NUACA within the Scope of WP3

NUACA, already having this permission, with ICTMS Chair has also retrained 18 members of the teaching-staff for introducing Moodle Sysytem into the Educational System of Sisian State College within the scope of DeSIRE TEMPUS Project and about 16 course modules have been designed to be implemented on it beginning with October 2015 -January 2016.



Tempus



Միսիանի Պետական Բոլեջ

Вы зашли под именем Mariana Manusajyan (Выход)

Основное меню

- Новости сайта

Навигация

В начало

- Моя домашняя страница
- Страницы сайта
- Мой профиль
- Мои курсы

Настройки

- Настройки моего профиля
- Администрирование

Мои курсы

- Հիմնական միջոցների հաշվառում
- Հուլանդացյին գործի

Доступные курсы

ՀԱՅ ԳՐԱԿԱՆՈՒԹՅՈՒՆ

Учитель: Nara Hovhannisyanyan

Տեղեկատվական տեխնոլոգիաների հիմունքներ

Учитель: Siranush Sevyanyan

Հայոց լեզու և խոսքի մշակույթի հիմունքներ

Учитель: Գայանե Աթայան

Լեզուն հասարակական երևույթ, ծագումը, զարգացման փուլերը

անգլերեն

Учитель: Հերմինե Հայրապետյան

Hotel information

Հաղորդակցման հմտություններ

Учитель: Կարինե Համբարձումյան

Ուսանողը կարողանում է ճիշտ հաղորդակցվել, ձեռք բերել հաղորդակցման

Календарь

Октябрь 2015

Вс	Пн	Вт	Ср	Чт	Пт	Сб
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31



Equipments Received by NUACA

NUACA within the scope of DeSIRE Tempus Project has received and equipped its virtual laboratory with the following:

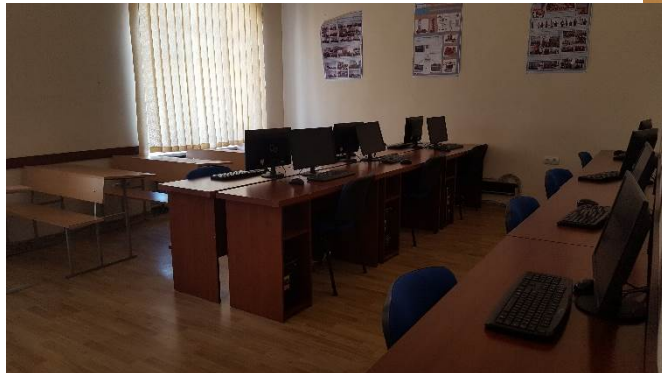
- Arduino Mega 2560 R3
- mSD-Shieldv2
- MI0283QT Adapter v1 (LCD),
- GLCD-Shield with Display and Rotary Encoder
- Ethernet Shield R3 (Arduino)
- Raspberry Pi Model B (512 MB RAM)
- RPI-Shield-Bridge
- ATM32F4DISCOVERY





Equipments Received by NUACA

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Tempus

Two Master Classes held at NUACA and NPUA on Goldi Infrastructure, Raspberry PI, Arduino, VHDL and FPGA Programming, Issues on Technical Education and Evaluation of Teachers Competences

Tempus
Master Classes at NUACA/NPUA, Laboratory of ICTMS Chair
23-27 May, 2016
Yerevan, Armenia

Thomas More University College
Ing. Dirk Van Merode
International Coordinator, Research Engineer
Antwerp, Belgium
The fields of expertise and research interests are digital systems design, printed circuit board design and production, and multi-media production as well as space applications and satellite development. Currently he is the project coordinator of the OCINE Tempus project. Development of Embedded System Courses with implementation of innovative Virtual approaches for integration of Research, Education and Production in UA, GE, AM – 7-144099, TEMPUS-1-2013-1-DE-TEMPUS-JPCR.

Master Classes on VHDL Programming

Chapman University
Associate Professor, PhD
Zaporizhzhya, Ukraine
The fields of expertise and research interests are software engineering, system analysis, testing and system reliability, mobile platforms, as well as Object-oriented programming Design of Information Systems, Software Quality and Testing, Quality Information Systems and Designing Embedded Systems Software.

Master Classes on Raspberry PI

Constantine the Philosopher University
Associate Professor, PhD
Nitra, Slovakia
The fields of expertise and research interests are Modeling and simulation of Optimal Control systems as well as Computer Science, Engineering, Computer Graphics.

Master Classes on Arduino

Constantine the Philosopher University
Prof. Dr. Alena Haskova
Nitra, Slovak Republic
The fields of expertise and research interests are quality assurance, evaluation of teachers, as well as assessment of teachers' competences and issues of Technical Education.

Master Classes on Issues of Technical Education and Evaluation of Teachers' Competences in Slovakia

Constantine the Philosopher University
Prof. Dr. Viera Tomkova
Associate Professor, PhD
Nitra, Slovak Republic
Organizing Committee Member at DesIRE Symposium, which is going to be held 12-15 September 2016 in Nitra, Slovakia

Meeting on the goals, planning and State of the International Symposium

Tempus
Master Classes at NUACA and NPUA
February 08-09, 2017
Yerevan, Armenia
Master Classes on FPGAs and VHDL Programming

Mastering goal:
\$ To explain the use of hardware description languages, like VHDL.
\$ To show the participants how to build basic logic gates, combinatory logic and sequential logic with the use of VHDL on a Xilinx Basy3 FPGA-board.
\$ To introduce the Vivado software.
\$ To develop, test and implement structural systems on chip.

Master Classes (FPGA) Annotation:
FPGAs in embedded systems are omnipresent. They are used in a number of applications, being in ASIC-design for chip-simulation and fast time-to-market, being in high-data-throughput telecommunication and Digital Signal processing. To work and to teach Digital System Design with FPGAs is rather complex, due to the fact that the principles behind describing hardware are somewhat different with traditional programming software. In this view, it is a good idea to start off with basic gates, to get a fundamental knowledge on the way these interesting components work.

Thomas More University College
Ing. Dirk Van Merode
International Coordinator, Research Engineer

In 2002 Dirk Van Merode finished his engineering studies in Electronics to become a Master in Science. His first educational experience was in secondary education in electricity and electronics, to earn his certificate in pedagogical aptitude. Dirk moved to Lessius University College, currently renamed Thomas More University College, in 2007, to take up a teaching assignment and to do research. His field of expertise is in digital systems design, printed circuit board design and production, and multi-media production. Research topics are mainly in European projects, both on curriculum development and student and staff mobility with countries outside the EU. Dirk also did some in-depth research in space applications and satellite development. Currently he is project coordinator of the DesIRE Tempus project. Development of Embedded System Courses with implementation of innovative Virtual approaches for integration of Research, Education and Production in UA, GE, AM – 7-144099, TEMPUS-1-2013-1-DE-TEMPUS-JPCR. For the department electronics – ICT he is the international coordinator.

Master Classes on GOLDI

The course goal:
\$ Presentation of the GOLDI infrastructure
\$ Finite State Machine based Design
\$ Hardware-oriented Design with FPGA
\$ Software-oriented Design with µController
\$ Rapid Prototyping with Digital Demo Board

Master Classes (GOLDI) Annotation:
On The Grid of Online Laboratory Devices IImenau (GOLDI) you can design and test your own control algorithms to control virtual and real physical systems such as an elevator, a warehouse and the like. Control algorithms can be implemented in the form of Boolean equations based on finite state machines or in real hardware (FPGA, CPLD) or software (e.g. Assembler, C) running on a microcontroller in the remote lab.

IImenau University of Technology
Karsten Henke
Dr.-Ing.
IImenau, Thuringia, Germany

IImenau University of Technology
Tobias Feth
M.Sc.
IImenau, Thuringia, Germany

Awarded the apprenticeship prize of the TU IImenau 2010 and 2014 in the category of employees.
Member of the Expertise Committee of the Global Online Laboratory Consortium (GOLC)
The fields of expertise and research interests are Modeling, software and hardware oriented programming Design, Rapid prototyping with DDR

The fields of expertise and research interests are finite-state machine (FSM) as a mathematical model of ... computer, software and hardware oriented programming Design, Rapid prototyping with DDR



Retraining of Academic Teachers in ESD Engineering and Virtual Learning Platforms within WP4

<i>Name of the Event</i>	<i>Place and Date of the Event</i>
<u>Kick-off Meeting</u> at Thomas More University College (1 person)	Antwerp, Belgium January 28-30, 2014
Summer Course “ <u>New teaching approaches in Engineering</u> ” at Constantine the Philosopher University (4 people)	Nitra, Slovakia, September 14-21, 2014
1st Progress Meeting at State Engineering University of Armenia (people)	Yerevan, Armenia, February 01-04 , 2015
Spring Course “ <u>Training sessions on Hardware for Embedded Systems Remote Laboratories</u> ” at Ilmenau University of Technology (5 people)	Ilmenau, Germany, April 14-25, 2015
Summer School on “ <u>C for Embedded Systems, Software, Communication, Multicore Programming</u> ” at Thomas More Michelin (4 people)	Michelin, Belgium, June 07-20, 2015
<u>Coordination Meeting and Master Classes</u> at Georgian Technical University (2 people)	Tbilisi, Georgia, October 27-30, 2015



Activities Carried out within the Scope of DeSIRE Project W7

Dissemination seminars with ICTMS Chair members about the gained knowledge and skills within DeSIRE TEMPUS Project have been held at NUACA and YeTRI





Retraining Carried out at NUACA, Sevan and Sisian

❑ Organization of Retraining within the scope of Desire

Project : <http://ysuac.am/?goto=news&id=394>





Tempus

ysuac.am/?goto=news&id=35



NATIONAL UNIVERSITY OF ARCHITECTURE AND CONSTRUCTION OF ARMENIA



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News

TRAINING COURSES HAVE BEEN ABOUT E-TRAINING

27-01-2015 10:30



On January 22, at the National University of Architecture and Construction of Armenia have been held the "Moodle open-source learning platform" training courses, which aim is to help educators to create an effective online learning.

For this purpose G.Avetisyan, H.Hakobyan, S.Sevyan, M.Manusadganyan and Sh.Nigoyan (NUACA, Chair of Informatics, Computer Engineering and Management Systems) had training courses at the Faculty of Informatics and Management in Constantine the Philosopher University in Nitra (Slovakia). So the same theory courses will be held for our University Lecturers. Up to the period of February 19 already registered 56 participants of NUACA Chairs will attend in 3 groups training courses.

In his welcoming speech to the opening of training courses NUACA Vice Rector for Academic Arkadi Barkhudaryan mentioned that this training was very important for the learning process, because only the basic education can not be enough to specialist providing job in future: *"Today requirements dictate a person to be always informed the problems of modern techniques introducing. Therefore he must constantly widen his enduring teaching educational level. This is what the Bologna Process Clause 7 tells us about."*

Mher Markosyan Head of Chair of Informatics, Computer Engineering and Management Systems the training courses participants urged not to be afraid of innovation and assured, that every difficulty can be overcome based on the basic knowledge: *"When we where Slovakia, at the beginning we could imagine what the project was: Then, each day having the opportunity to organize laboratory works, we understood its character."*

E-learning system is continuous educational project, therefore the participants will be introduced the Moodle system, will carry out practical works, of which the best overcoming will receive certificates. A.Barkhudaryan hoped that at the end of lectures, each participant will get a complete electronic system uses in theoretical and practical knowledge and skills.

Be informed, that e-learning training courses lectures series held in NUACA are still in the primary stage. Teaching training courses for other groups of lecturers will continue consecutively on February 4-11 and 12-19.

INTERNATIONAL COOPERATION

- International Relations
- Events
- Educational process
- International conferences

SPECIALIZED COUNCILS 030

STUDENT COUNCIL

LEGAL ACTS

SCIENCE

OUR PARTNERS

CONTACT WITH THE OUTSIDE WORLD

PHOTO GALLERY

WORKS ARCHIVE

MONTHLY NEWSPAPER

PURCHASING

CAREER CENTER

PRESS ABOUT

HIGH SCHOOL

«ASTGHIK» CLUB

ALUMNI

STUDENTS PROGRESS



Log in mulberry

 Login to email



Tempus

1st Flyer Prepared by NUACA and YeTRI

DeSIRE Tempus Project In and out of NUACA and YeTRI



Development of Embedded System Courses with Implementation of Innovative Virtual Approaches for Integration of Research, Education and Production in UA, GE, AM

DeSIRE




Within the scope of DeSIRE Tempus Project the virtual laboratory of NUACA has been equipped

Documentation seminar has been organized by YeTRI and NUACA in Kiev State College



Documentation training and seminars have been held in NUACA and YeTRI

Documentation training – Organizing the E-learning on Moodle System has been delivered in NUACA training staff members in Kiev State College



The manual "Organizing E-learning on Moodle Platform" is written by the lecturers of ICTMS Chair in National University of Architecture and Construction of Armenia within the scope of DeSIRE TEMPUS Project. The manual, consisting of 6 chapters, covers various topics about E-learning, the principles of working on Moodle Platform, the structure of E-lesson, testing and assessing students electronically.





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of Innovative Virtual approaches for integration of Research,
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*Thank You
for
Your Attention*