Local Project Plan

Borys Grinchenko
Kyiv University

DESIRE

Development of Embedded System Courses with implementation of Innovative Virtual approaches for integration of Research, Education and Production in UA, GE, AM
Objectives:
- to create practice-oriented curricular and modules in Embedded Systems;
- to create remote laboratories in Embedded System in Ukraine;
- to form the competences necessary for the Labor Market in Embedded Systems.

Goals for the future work in the project.
- Analysis of student training plans and analysis of the competence of professionals in the field of embedded systems.
- Analysis of the labor market on the need to train professionals in the field of embedded systems.
- Collaboration with IT business structures for the implementation of the course for self-employees of these institutions.
- Fragmented implementation of the course, which is offered for implementation in teaching students of computer science, software engineering.
- Conducting workshops for university teachers to train future engineers in the field of embedded systems (for NULESU and University of Culture, NAU, National Pedagogical Dragomanov University, KPI).
- Training tools for evaluating the implementation of e-learning course and student satisfaction of the learning process.
- Create a wiki portal project to support vocabulary terms on embedded systems (English, Ukrainian and Russian, Armenian and Georgian languages) with video tutorials.
- Training requirements for the electronic structure of the course in Moodle and its evaluation with regard to the dominant learning styles of students.
- Development of video tutorials to learn how to use Moodle to create e-courses (Ukrainian and English).
- Training tools for evaluating a structure of e-course by students and its components, innovative teaching techniques used in the course.
- Development of methods of learning process using electronic courses hosted on Moodle-based learning.
- Analysis of needs and opportunities in the implementation of special school special courses on embedded systems.
- Development of methodology for implementing PTC Creo software for universities and secondary school.
- The introduction of the learning process software PTC Creo, which allows drawing, model verification, visualization and creation of elements that realize the whole process of designing electronic means.
− Development course for teachers in the selection system and teacher training of secondary school for exploring embedded systems, virtual laboratories, software, PTC Creo.
− Development of the special course “The basics of embedded systems” of study for students in high school.
− Create a center-based ESD laboratory for teaching high school students specialized schools, working on multi-programs
− Preparation of scientific guidelines and publications in scientific and methodological journals.
− Development of Project website and updating materials on it.
− Development training programs for teachers in Informatics of secondary school.
PROJECT TEAM
MORZE NATALIA V.

Role:
– coordination of project;
– preparing and sending letters to IT companies on cooperation and cooperation with companies that are interested in training in Embedded Systems;
– analysis of the labor market on the need to train professionals in the field of embedded systems;
– heading in magazine «Informatics and IT in education»;
– dissemination the project and its results through conferences and seminars in educational, scientific and methodological press;
– cooperation with The Association of Information Technology Enterprises of Ukraine;
– cooperation with Microsoft and Intel;
– creation of teams of teachers from NULESU and University of Culture, NAU, National Pedagogical Dragomanov University, KPI, who will introduce courses on embedded system project in the educational process of the university
– training manual for students on additional modules;
– development videos for methods in Moodle teaching;
– training requirements for the electronic structure of the course in Moodle and its evaluation with regard to the dominant learning styles of students;
– development of video tutorials to learn how to use Moodle to create e-courses (Ukrainian and English).
– training tools for evaluating a structure of e-course by students and its components, innovative teaching techniques used in the course.
– training tools for evaluating the implementation of e-learning course and student satisfaction of the learning process.
– master classes for university teachers to train future engineers in the field of embedded systems and teachers in secondary school;
– analysis of needs and opportunities in the implementation of special school special course on embedded systems;
– program development and teacher training science in secondary school;
– development of special course «the basics of embedded systems» for training students in high school;
Local Project Plan

– develop methods of implementing PTC Creo software for universities and secondary school;
– introduction in educational process software PTC Creo, which allows drawing, model verification, visualization and creation of elements that realize the whole process of designing electronic means;
– collaboration with the IT business structures for the implementation of the course for self-employees of these institutions;
– creation of a center-based ESD laboratory for teaching high school students specialized schools, working on multi-programs;
– preparing scientific guidelines and publications in scientific and methodological journals.

Contacts: n.morze@kubg.edu.ua

Activity: Vice-Rector on Informational Technologies, Doctor of Pedagogical Sciences, Professor, Corresponding Member of National Academy of Pedagogical Sciences of Ukraine

BUINYTSKA OKSANA P.

Role:
– analysis of existing programs and plans for training students;
– analysis of the competence of specialists in embedded systems required by the labor market;
– organization survey of students;
– development of modules to modify the curriculum;
– training manual for students on additional modules;
– training for teachers through additional modules;
– monitoring the implementation results;
– preparation of materials for the project site;
– fragmentary introduction course for teaching students of computer science;
– conducting workshops for teachers and teacher education;
– training tools for the evaluation of the electronic structure of the course and its components and innovative pedagogical techniques by students;
– training requirements for the electronic structure of the course in Moodle and its evaluation with regard to the dominant learning styles of students;
– develop methods of implementing PTC Creo software for universities and secondary schools;
Local Project Plan

- introduction in educational process software PTC Creo, that allows drawing, model verification, visualization and creation of elements that realize the whole process of designing electronic means;
- development course for teachers of choice in-service training for teachers in secondary school for exploring embedded systems, virtual laboratories, software, PTC Creo;
- dissemination of project and results at conferences and seminars in educational, scientific and methodological press;
- preparation of financial statements ;
- preparation of accounting documents for the project;
- preparing scientific guidelines and publications in scientific and methodological journals.

Contacts: o.buinytska@kubg.edu.ua

Activity: Head of IT Lab in Education, Associate Professor of Computer Science, Ph.D., associate professor.

HRYTSNELIAK BOHDAN I.

Role:
- analysis hardware for ESD;
- analysis Software for ESD;
- configuration platform of learning management system;
- development laboratory for ESD;
- develop methods of implementing PTC Creo software for universities and secondary schools;
- introduction in educational process software PTC Creo, which allows drawing, model verification, visualization and creation of elements that realize the whole process of designing electronic means;
- development course for teachers of choice in-service training for teachers of secondary school for exploring embedded systems, virtual laboratories, software, PTC Creo;
- technical support and service platforms;
- create a multilingual website, design and constant materials update;
- translation of material in English from Ukrainian and in Ukrainian from English;
- software installation;
- create a virtual laboratory for the design of embedded systems;
Local Project Plan

- disseminate information about the project and results at conferences, seminars, web resources;
- preparing scientific guidelines and publications in scientific and methodological journals.

Contacts: b.hrytseliak@kubg.edu.ua
Activity: Deputy Head of IT Lab in Education, specialist in Computer Engineering (Computer Systems and Networking)

VARCHENKO-TROTSENKO LILIA O.

Role:
- creating and filling multilingual wiki project portal to support vocabulary terms on embedded systems (English, Ukrainian, Russian, Armenian and Georgian languages) with video tutorials;
- training tools created to assess the implementation of e-learning course and student satisfaction with the learning process in exchange for resources;
- development course for teachers of choice in-service training for teachers of secondary school for exploring embedded systems, virtual laboratories, software, PTC Creo;
- development of video lessons to learn how to use Moodle to create courses;
- conducting workshops for teachers and teacher education;
- implementation of additional modules with embedded systems and software in the classroom;
- develop methods of implementing PTC Creo software for universities and secondary schools;
- preparing scientific guidelines and publications in scientific and methodological journals.

Contacts: l.varchenko@kubg.edu.ua
Activity: Methodist of IT Lab in Education, lecturer in information technology and mathematics

HONCHARENKO TETIANA O.

Role:
- developing training programs for fragmented implementation of the course;
- implementation of additional modules in the classroom of secondary school;
- developing Google forms for questionnaire;
Local Project Plan

- monitoring the partial implementation of some modules in the educational process;
- training requirements for the electronic structure of the course in Moodle and its evaluation with regard to the dominant learning styles of students;
- development of video lessons to learn how to use Moodle to create e-courses (Ukrainian and English);
- training tools for evaluating student electronic structure of the course and its components, innovative pedagogical techniques used to date;
- training tools created to assess the implementation of e-learning course and student satisfaction with the learning process in exchange for resources;
- development of training program;
- development of special course «the basics of embedded systems» for training students in high school;
- preparing scientific guidelines and publications in scientific and methodological journals.

Contacts: t.honcharenko@kubg.edu.ua
Activity: Junior researcher of ICT center of competencies of IT Lab in Education.

ABRAMOV VADYM O.

Role:
- developing training programs for fragmented implementation of the course for students in informatics;
- introduction of additional module in the classroom;
- monitoring the partial implementation of some modules in the educational process;
- develop methods of implementing PTC Creo software for universities;
- introduction in educational process software PTC Creo, which allows drawing, model verification, visualization and creation of elements that realize the whole process of designing electronic means;
- preparing scientific guidelines and publications in scientific and methodological journals.

Contacts: ki.is@kubg.edu.ua
Activity: Associate Professor of Computer Science, Ph.D., associate professor.
PLANNED ACTIONS IN THE WORK PACKAGES

WP1  Analysis of current curricula and competences in Embedded Systems

<table>
<thead>
<tr>
<th>Planned actions WP1</th>
<th>Timing</th>
<th>Deliverables</th>
<th>Key Performance Indicators</th>
<th>Identification of possible threats to the WP</th>
<th>Threat Resolution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analysis of competences required at the Labor Market in ES</td>
<td></td>
<td>The end of April</td>
<td>Report</td>
<td>Timely</td>
<td></td>
</tr>
<tr>
<td>Analysis of the labor market on the need to train professionals in the field of embedded systems</td>
<td>March-April</td>
<td>Report</td>
<td>Timely</td>
<td>Employers do not wish to participate in the survey</td>
<td>A survey on own contacts</td>
</tr>
<tr>
<td>Presenting the results of the study of competence required of the labor market of embedded systems</td>
<td>May</td>
<td>Presentation</td>
<td>Quality measures by quantity of participants</td>
<td>Employers do not wish to participate in the survey</td>
<td>A survey on own contacts</td>
</tr>
</tbody>
</table>

WP2  Curricula modification and courses development

<table>
<thead>
<tr>
<th>Planned Actions WP2</th>
<th>Timing</th>
<th>Deliverables</th>
<th>Key Performance Indicators</th>
<th>Identification of possible threats to the WP</th>
<th>Threat Resolution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analysis of needs and opportunities in the implementation of special school special course on embedded systems</td>
<td>June-October</td>
<td>Report</td>
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<tr>
<td>Activity</td>
<td>Start Date</td>
<td>End Date</td>
<td>Deliverables</td>
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<tr>
<td>Development of video tutorials to learn to use Moodle to create e-courses (Ukrainian and English)</td>
<td>June - September</td>
<td>An open electronic course</td>
<td>Timeliness and quality of the resource</td>
<td></td>
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</tr>
<tr>
<td>Training requirements for the electronic structure of the course in Moodle and its evaluation with regard to the dominant learning style of students</td>
<td>June - October</td>
<td>Document</td>
<td>Evaluation with regard to the dominant learning style of students</td>
<td></td>
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<tr>
<td>Analysis of hardware and software for Embedded Systems</td>
<td>June - December</td>
<td>Article</td>
<td>In research-based metric</td>
<td></td>
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</tr>
<tr>
<td>Preparing an educational module «Hardware and Software for ESD»</td>
<td>October - February</td>
<td>Manual + electronic course</td>
<td>Griff + certificate of auth. right</td>
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</tr>
<tr>
<td>Development of methodology for the formation programs of training in Embedded Systems</td>
<td>June - December 14</td>
<td>Issue recommendations for program development</td>
<td></td>
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</tr>
<tr>
<td>Development of the special course «Basics of embedded systems» of study for students in high school</td>
<td>December - February</td>
<td>Handbook + electronic course</td>
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</tbody>
</table>
### Local Project Plan

<table>
<thead>
<tr>
<th>Development of methodology for implementing PTC Creo software for universities and secondary school</th>
<th>June-December 14</th>
<th>Issue recommendations for program development</th>
</tr>
</thead>
<tbody>
<tr>
<td>Development course for teachers in the selection system and teacher training of secondary school for exploring embedded systems, virtual laboratories, software, PTC Creo</td>
<td>December-February</td>
<td>Handbook + electronic course</td>
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</tbody>
</table>

### WP3 Implementing a (virtual) learning environment in ESD engineering

**Establishing remote and ESD labs**

<table>
<thead>
<tr>
<th>Planned Actions</th>
<th>Timing</th>
<th>Deliverables</th>
<th>Key Performance Indicators</th>
<th>Identification of possible threats to the WP</th>
<th>Threat Resolution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Create a wiki portal project to support vocabulary terms on embedded systems (English, Ukrainian, and Russian, Armenian and Georgian languages) with video tutorials</td>
<td>September-December</td>
<td>Wiki project</td>
<td>Availability of key terms</td>
<td></td>
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<tr>
<td>Setting up a platform for system</td>
<td>October</td>
<td>LMS Moodle</td>
<td>Provides stable operation of</td>
<td></td>
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</tbody>
</table>
Local Project Plan

<table>
<thead>
<tr>
<th>Implementation and management training</th>
<th>the system</th>
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</thead>
</table>

Create online laboratory for ESD | December-May | Description of Online Laboratory |

Preparation of teaching materials for online labs use | June | Handbook + electronic course |

Create a center-based ESD laboratory for teaching high school students specialized schools, working on multi-programs | December-May | Center |

**WP4 Retrain academic teachers on ESD engineering and virtual learning platforms**

<table>
<thead>
<tr>
<th>Planned Actions</th>
<th>Timing</th>
<th>Deliverables</th>
<th>Key Performance Indicators</th>
<th>Identification of possible threats to the WP</th>
<th>Threat Resolution</th>
</tr>
</thead>
<tbody>
<tr>
<td>WP4 June 14 June 15</td>
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<tr>
<td>Preparing and sending letters to IT companies on cooperation and cooperation with companies that are interested in training on Embedded Systems</td>
<td>June October</td>
<td>Agreement on Cooperation</td>
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<tr>
<td>Collaboration with IT business structures for the implementation of the course for self-employees of these institutions</td>
<td>November May</td>
<td>Report</td>
<td>Certificates</td>
<td></td>
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<tr>
<td>Development training programs for teachers in Informatics of secondary school.</td>
<td>January March</td>
<td>Training Schedule</td>
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<tr>
<td>Conducting workshops for university teachers to train future engineers in the field of embedded systems (for NULESU and University of Culture, NAU, National Pedagogical Dragomanov University, KPI)</td>
<td>January May</td>
<td>Training Schedule</td>
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<tr>
<td>Creation of teams of teachers from NULESU and University of Culture, NAU, National Pedagogical Dragomanov University, KPI, who will introduce courses on embedded system project in the educational process of the university</td>
<td>September December</td>
<td>Order</td>
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**WP5  Pilot teaching/operation**

<table>
<thead>
<tr>
<th>Planned Actions WP5</th>
<th>Timing</th>
<th>Deliverables</th>
<th>Key Performance Indicators</th>
<th>Identification of possible threats to the WP</th>
<th>Threat Resolution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Development course for teachers in selecting service training for familiarization with embedded systems software</td>
<td>September-October</td>
<td>Electronic course</td>
<td></td>
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<tr>
<td>Conducting workshops on the use of online laboratories and Embedded Systems</td>
<td>November-February</td>
<td>Schedule</td>
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<tr>
<td>Fragmented implementation of the course, which is offered for implementation in teaching students of computer science</td>
<td>February -June</td>
<td>The survey results</td>
<td></td>
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<tr>
<td>Implementing a software PTC Creo in education</td>
<td>February -June</td>
<td>The survey results + report</td>
<td></td>
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<tr>
<td>Development training programs for teachers in Informatics of secondary school.</td>
<td>September May</td>
<td>Program</td>
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**WP6  Quality Assurance and Quality Control**

<table>
<thead>
<tr>
<th>Planned Actions WP6</th>
<th>Timing</th>
<th>Deliverables</th>
<th>Key Performance Indicators</th>
<th>Identification of possible threats to the WP</th>
<th>Threat Resolution</th>
</tr>
</thead>
<tbody>
<tr>
<td>WP6 March 14 - November 16</td>
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<tr>
<td>Training tools for evaluating student e-learning course structure and its components, innovative teaching techniques used</td>
<td>April-August 14</td>
<td>Report + article</td>
<td></td>
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</tr>
<tr>
<td>Training tools for evaluating the implementation of created e-course and learning process with resources satisfaction by students</td>
<td>September – October, 2014</td>
<td>Report + article</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Development of the method of school organization with the use of e-courses, that are posted in the Moodle on base of multi-learning</td>
<td>March – May, 2015</td>
<td>Handbook</td>
<td></td>
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### WP7 Dissemination and Enterprise Collaboration

<table>
<thead>
<tr>
<th>Planned Actions</th>
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<th>Deliverables</th>
<th>Key Performance Indicators</th>
<th>Identification of possible threats to the WP</th>
<th>Threat Resolution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Development a project website</td>
<td>March-April, 2014</td>
<td>Website</td>
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<tr>
<td>Project presentation in BGKU</td>
<td>April, May, 2014</td>
<td>Report</td>
<td></td>
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<tr>
<td>Writing an articles in press and media</td>
<td>December, 2013, November, 2016</td>
<td>Articles</td>
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<tr>
<td>Training seminars for IT workers in Kyiv region</td>
<td>December, 2013, November, 2016</td>
<td>Agenda Report +</td>
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<tr>
<td>Training seminars</td>
<td>December, 2013, November, 2016</td>
<td>Agenda Report +</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Seminars in target HEIs</td>
<td>December, 2013, November, 2016</td>
<td>Agenda Report +</td>
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<tr>
<td>Heading in magazine «Informatics and IT in education»</td>
<td>December, 2013, November, 2016</td>
<td>Articles</td>
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</table>
## WP8  Management of the project

<table>
<thead>
<tr>
<th>Planned Actions</th>
<th>Timing</th>
<th>Deliverables</th>
<th>Key Performance Indicators</th>
<th>Identification of possible threats to the WP</th>
<th>Threat Resolution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Approval of the project team</td>
<td>December, June 2014</td>
<td>Order</td>
<td></td>
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</tr>
<tr>
<td>Establish and approving project plan</td>
<td>April-May, 2014</td>
<td>Plan</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coordination/consortium meetings with Ukrainian partners</td>
<td>May, 2014</td>
<td>Agenda + Report</td>
<td></td>
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<tr>
<td>Project report (quarterly)</td>
<td>Once per 6 months</td>
<td>Report</td>
<td></td>
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<tr>
<td>Monitoring plan and budget</td>
<td>February, 2013 November, 2016</td>
<td>Report</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preparation of final report</td>
<td>October, 2016</td>
<td>Report + Presentation</td>
<td></td>
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