ERASMUS+

Joint Project 609557-EPP-1-2019-1-LV-EPPKA2-CBHE-JP

DEVELOPMENT OF PRACTICALLY-ORIENTED STUDENT-CENTRED EDUCATION IN THE FIELD OF MODELLING OF CYBER-PHYSICAL SYSTEMS", "CYBPHYS" PROJECT

15/11/2019 – 14/11/2022

Aplicant:

Riga Technical University (Latvia)

Belarusian sub-consortium:

Belarusian State University

Gomel State Technical University

Mozyr State Pedagogical University

Institute for Nuclear Problems of BSU

Activity of the Institute for Nuclear Physics of Belarusian State University in the Project 609557-EPP-1-2019-1-LV-EPPKA2-CBHE-JP "CYBPHYS"

Prof. A.K. Fedotov (INP BSU)

fedotov@bsu.by

INP BSU is Superviser of the activities by WP6 “Dissemination and Exploitation and Sustainability of the results”

In the framework of responsibilities declared in the application form for WP6 implementation, INP BSU is involved to the activities, which are fully in line with the work plan and timetable

1) Description of the activities implemented

INP BSU as a Leader of the activities by WP6, provides:

- **Consultation of the partners relating job market needs;**
- **Consultation on development of curricula and study programs;**
- **Reviewing of the developed/modernised curricula and study programs;**
- **participation in meetings**
- **Supporting of Belarusian partners to arrangement Belarusian stakeholders' events.**
- **Contributing to dissemination and exploitation activities concerning new training programs and courses.**
- **arranging a Final conference for the project stakeholders/participantants.**
- **Collecting of information from partners for Coordinator who will report it to the Agency.**

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The declared activities:

6.1. Development of information and promotional materials

- **INP BSU has developed the Plan on Exploitation of Dissimination and form-table for the monthly *Communication Report,* which was sent to all Partners.**

- **INP BSU also helped to develop the Project Logo and will control the running of arrangement of press-conferences, development of posters and leaflets by Partners as well distribution of promotional materials including regional TV and radio advertising.**

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The declared activities:

6.2. Information sessions for target groups

INP BSU participates in preparation of information sessions and seminars in Minsk for Belarusian stakeholders (professional associations, NGOs, research institutions, students, universities teaching staff, etc.) as well as in organisation of Final conference by the project in 2022.

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The declared activities:

6.3. Project Web Portal and social media

INP BSU controls project participants concerning regular update the portals and partners`websites with actual information, including materials confirming their activities and project deliverable’s (publications about the project and conducted studies, questionnaires, publications and press realizes in mass media, TV, radio broadcasts and joint Newsletter of the Project).

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The declared activities:

6.5. Strengthening the academia – industry network

- **INP BSU has to provide support to RTU in creation of network between universities and enterprises in the first project year with the support of associated partners. It will be used for dissemination and exploitation activities within the industry and research institutions sector.**

- **As research and industrial partner, INP BSU provides consultations of participates relating job marked needs, development of study programs and courses as well as in the reviewing of the developed curricula, supports students practice and master degree thesis preparation. In the framework of these activities INP BSU will organize assessment of developed course curricula, books, lectures and other educational materials by Experts from Research Institutions, NGOs and Industrial partners.**

BSU - Curricula

1-31 80 03 - Mathematics and Computer Science (masters level)

1-31 80 02 - Mechanics and Numerical Simulation (bachelor level)

1-31 80 20 - Applied Physics (bachelor level)

1-31 04 08 – Computer Physics (bachelor level)

BSU - Study Programs

- Internet of Things
- Equation of mathematical physics
- Fundamentals of mathematical modelling
- Mathematical physics
- Mathematical modelling of physical processes
- High-Performance computing for numerical simulations and data analysis
- Mathematical modelling for fluid- and gas dynamics
- Data mining and acquisition
- Applications of computer modeling
- Information Technology
- Programming for supercomputers
- Mobile Operating Systems
- Mathematical analysis

GSU – Study Programs

- Physics. Physical Basic of Mechanics (Bachelor, masters)
- Fundamentals of business and legislation in IT
- Theoretical Mechanics
- Analytical modelling of friction and wear processes
- Simulation of the interaction of electromagnetic waves with DNA-like helices
- Technologies of laser treatment of materials
- Modelling of microwave and THz devices based on metamaterials
- Simulation of surface charge distribution in nanostructured materials
- Practical statistics for physicists
- Hardware and software of networks
- Microprocessors and microcontrollers

MSPU – Study Programs

- Computer simulation of physical systems and processes
- Computer systems of analytical calculations
- Computer modelling of physical systems, processes and phenomena
- Modern integrated packages for analysis and modelling of processes and systems
- Object oriented programming

List of Experts

Organisation Institution	Name	Position	Curricula	Study Program
RANI	Trukhanov A.V.	Executive Director of the Republican Association of Nanoindustry	1-31 80 20 - Applied Physics (bachelor level)	Applications of computer modeling
RANI	Borisenko V.E.	Professor, Head of the Department of Micro- and Nanoelectronics, Belarusian State University of Informatics and Radioelectronics	1-31 80 03 - Mathematics and Computer Science (masters level)	Fundamentals of mathematical modelling
RANI	Iishkevich D.I.	"SPC NAS of Belarus on Materials Science", Ph.D.		Equation of mathematical physics
RANI	Sapeshko V.	Deputy Director of JSC "OnyxEMI"		Mathematical physics
BGUIR	Abramov I.I.	Professor, Dr.S.		Mathematical modelling for fluid- and gas dynamics
BSU	Zhadaeva N.G.	Professor, Dr.S	1-31 80 02 - Mechanics and Numerical Simulation (bachelor level)	Computer systems of analytical calculations Modern integrated packages for analysis and modelling of processes and systems

List of Experts

Organisation Institution	Name	Position	Curricula	Study Program
BPO	Mogilevcev D.	Chairman of the Belarusian Physical Society	1-31 04 08 – Computer Physics (bachelor level)	Modelling of microwave and THz devices based on metamaterials, Practical statistics for physicists, Quantum electronics and holography
BPO	Kurochkin Yu.A.	Vice-Chairman of the Belarusian Physical Society	1-31 80 20 - Applied Physics (bachelor level)	Modelling of microwave and THz devices based on metamaterials
BPO	Ershov-Pavlov I.			Simulation of surface charge distribution in nanostructured materials
BPO	Poklonski V.A.	Vice-Chairman of the Belarusian Physical Society		Applications of computer modeling (laboratory practicum)

List of Experts

Organisation Institution	Name	Position	Curricula	Study Program
Integral	Pilipenko V.A.	Deputy Director of the Center for Scientific Development		Microprocessors and microcontrollers Applications of computer modeling (laboratory practicum)
Integral	Efimenko C.A.	Chief designer of JSC INTEGRAL - the managing company of the holding INTEGRAL, PhD		Internet of Things, Microprocessors and microcontrollers
Integral	Chigir G.G.	Deputy Director of the Center for Technical Expertise		Simulation of surface charge distribution in nanostructured materials
Integral	Pilipenko V.A.	Deputy Director of the Center for Scientific Development		Microprocessors and microcontrollers Applications of computer modeling (laboratory practicum)

List of Experts

Organisation Institution	Name	Position	Curricula	Study Program
INP BSU	Fedotova J.A.	Deputy of Director of Institute for Nuclear Research of BSU	1-31 80 20 - Applied Physics (bachelor level)	Hardware and software of networks
INP BSU	Fedotov A.K.	Chief-Reseacher of Institute for Nuclear Research of BSU	1-31 04 08 – Computer Physics (bachelor level)	Internet of Things
GSU	Semchenko I.A.	Vice-Rector of GSU, professor, Dr.S.	1-31 80 02 - Mechanics and Numerical Simulation (bachelor level)	Physics. Physical Basic of Mechanics (Bachelor, masters) Fundamentals of business and legislation in IT

List of Experts

Organisation Institution	Name	Position	Curricula	Study Program
GSU	Kovalenko D.L.	Dean od Faculty of Physics and Informational Technologies of GSU, PhD	1-31 04 08 – Computer Physics (bachelor level)	Computer systems of analytical calculations Computer modelling of physical systems, processes and phenomena
MSPU			1-31 80 20 - Applied Physics (bachelor level)	Physics. Physical Basic of Mechanics (Bachelor, masters)
MSPU			1-31 80 03 - Mathematics and Computer Science (masters level)	Theoretical Mechanics
MSPU				Information Technology

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The declared activities:

6.7. Strengthening cooperation beyond the project to sustain the outcomes

- **INP BSU should help to connect universities and research institutions to attract investments to labs and for internship of the students and young teachers/researchers.**
- **Successful INP activities in the framework of the project will help to saturate the needs of industry with qualified specialists.**
- **INP BSU will carry out work on informing and expanding cooperation between universities and employers (project partners and association members) for the successful employment of graduates and for further study the needs of the labour market.**

All additional Activities are presented in the 1st Technical Report on progress of the project

A list of deliverables/project products yet realized by INP together with other partners:

1. Press-release to Kick-off Meeting, Minsk(http://old.gsu.by/mundu/Erasmus+.asp)

2. Kick-off Meeting, Minsk (http://physics.rtu.lv/; https://eduphys.bsu.by/mod/folder/view.php?id=2270)

3. Press-release to Management Meeting 1 (http://physics.rtu.lv/; https://eduphys.bsu.by/course/view. php?id=84#section-4)

4. Abstract in IX Republican scientific conference of students, undergraduates and postgraduates "Actual problems of physics and technology" (http://old.gsu.by/physfac/index.php/2010-02-04-14-17-50/2010-02-04-14-21-19/1696.html; http://elib.gsu.by/bitstream/123456789/9442/1/05.05.2020_%d0%90%d0%ba%d1%82_%d0%b2%d0%be%d0%bf%d1%80_%d0%a4%d0%b8%d0%a2_%d0%a7%d0%b0%d1%81%d1%82%d1%8c%201%28%d1%81%d0%b5%d0%ba1-4%29_2020_fin.pdf; http://elib.gsu.by/bitstream/123456789/10352/1/%d0%90%d0%ba%d1%82_%d0%b2%d0%be%d0%bf%d1%80_%d0%a4%d0%b8%d0%a2_%d0%a7%d0%b0%d1%81%d1%82%d1%8c%202.pdf; https://www.youtube.com/watch?v=65gwJDbnv7g&feature=youtu.be)

5. Screenshots of News and Activityies, etc. https://bsu.by/news/1072723-d/ http://earchives.bsu.by/handle/link/7276; https://www.sb.by/articles/v-bgu-razrabatyvaetsya-uchebnaya-programma-po-modelirovaniyu-kiber-fizicheskikh-sistem.html

Проблемы

1. Возмутительно длительная процедура ***регистрации***
2. Серьезная задержка ***закупки оборудования*** из-за неоправданных требований ЦБ, МЭ, МО и др. финансовых институций Беларуси
3. Неотработанность процедуры ***софинансирования***

Thank you for attention