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Erasmus+ Programme Key Action 2 Cooperation Partnerships for Higher Education (KA220-HED)
Project No: 2023-1-RO01-KA220-HED-000155412
Project title: European Network for Additive Manufacturing in Industrial Design for Ukrainian Context – Acronym: AMAZE

Minutes of Summer School event in the field of *Virtual e-Learning platform for Additive Manufacturing in Industrial Design*

Hosted by: **National University of Science and Technology Politehnica Bucharest, Romania**
Date: 8-17 July 2024, hall A4.2, Building Politehnica Bucharest Central Library,
Address Splaiul Independenței, nr. 313. Bucharest, 060042, Romania
Contact: baila_d@yahoo.com; diana.baila@upb.ro

Participants:

At the Summer School event, hosted by National University of Science and Technology Politehnica Bucharest, Romania, in the period 8-17 July 2024, on the field of "Virtual e-Learning platform for Additive Manufacturing in Industrial Design" participated **14 students and 11 staffs,** from consortium partners: National University of Science and Technology POLITEHNICA Bucharest, Romania (UNSTPB) – 5 staffs and 4 students (3 students from Politehnica Bucharest Romania and one from High School George Călinescu Bucharest), Poznań University of Technology, Poland (PUT) – 5 students and 2 staffs, Yuriy Fedkovych Chernivtsi National University, Ukraine (YFCNU) – 5 students and 2 staffs and EDIBON International S.A. Madrid, Spain (from Romanian Branch from Craiova and Bucharest) and on-line MS Teams – Mr. Sergio Vizcaino, and Mr. Researcher Eng. Bibiș Adrian, from research center COMOTI Bucharest, Romania.

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This Summer School was organized in the frame of the project- Agreement number 2023-1-RO01-KA220-HED-000155412, Acronym: AMAZE with the title "*European Network for Additive Manufacturing in Industrial Design for Ukrainian Context",* Erasmus+ Programme Key Action 2 Cooperation Partnerships for Higher Education (KA220-HED).

The Opening and Welcome ceremony began with an introduction from each partner involved (UNSTPB, PUT, EDIBON International S.A., YFCNU), followed by different courses, workshops and research laboratories visits based on the meeting agenda. The students' participants completed the initial test.

National University of Science and Technology POLITEHNICA Bucharest, Romania (UNSTPB) was represented to this Summer School by AMAZE project coordinator Mrs. Assoc.Prof. Diana Băilă, Mr. Prof. Nicolae Ionescu, Mr. Prof. Dumitrescu Andrei, Mr. Prof. Zaharia Cătălin, and Mr. Prof. Radu Cristian that presented next courses: Additive Manufacturing used in industrial design of complex parts, new materials used in industrial design – sensors and electronics, exploring polymeric materials: innovations and uses in 3D Printing, Modelling and Simulation using Enterprise Dynamics – laboratory, Architectural design CAD in industrial products.

Mr. Adrian Popescu and Mr. Sergio Vizcaino from EDIBON International S.A. company presented to the students AR/VR applications realized for industrial equipment's for different laboratories on-line, using virtual platform (ARISE software), that were used in COVID period by the Spanish universities and research centers, and the industrial products of EDIBON company in Romania.

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Agenda for Summer School on "Virtual e-learning platform for Additive Manufacturing in Industrial Design", hosted by National University of Science and Technology POLITEHNICA Bucharest, Romania, 8-17 July 2024, Politehnica Central Library, hall 4.2.

h	Monday 8.07.2024	Tuesday 9.07.2024	Wednesday 10.07.2024	Thursday 11.07.2024	Friday 12.07.2024	Saturday 13.07.2024	Sunday 14.07.2024	Monday 15.07.2024	Tuesday 16.07.2024	Wednesday 17.07.2024
10	Opening ceremony and project presentation	CAD – Lecture (UPB+YFCNU)	Smart (Intelligent) Materials used in architecture (YFCNU)	Enterprise dynamics (workshop)	CAE – lecture (YFCNU)	Progress report (preparing of the interim report for Monday - working on smaller groups)	Progress report (preparing of the interim report for Monday - working on smaller groups)	General progress of W1 and W2	Finalizing progress report, preparing final presentation	Presentations made by students for companies involved in the summer school - evaluation and feedback on behalf of the companies, defining of common ideas of future diploma projects
11	Participants' presentation and program guidelines for summer school	Industrial Design (UPB)	Reverse Engineering (PUT)	Presentation of Leykom Bucharest and Admasys Targu Mures companies from Romania	Developing of VR/AR applications (EDIBON)			Presentation of NUTechnologies company from Timisoara, Romania	Final test, final questionnaires and feedbacks	
12	Lunch & free time	Lunch & free time	Lunch & free time	Lunch & free time	Lunch & free time	Lunch & free time	Lunch & free time	Lunch & free time	Lunch & free time	Lunch & free time
13	Introduction in Additive Manufacturing (UPB)	Workshop 3D / Launching of case studies	Sensors and Electronics (UPB)	Trip at Bran Castle/ Sinaia Castle	Precision and control used for industrial parts	Trip at Black Sea	Trip at Black Sea	Workshop Additive Manufacturing	Finalizing work on assembly, preparing final presentation	Closing and awarding ceremony, future perspectives of AMAZE project
14	Visiting UPB laboratories	Smart (Intelligent) Materials used for industrial products (PUT)	Workshop 3D CAD		Workshop 3D CAE				Final student presentations, live demonstrations, test corrections	
15	Visiting CAMPUS laboratories	Computer Programming (EDIBON)						Case studies particularities and specific tests for the industrial parts		Free time, sightseeing
	Week 1							Week 2		

The Yuriy Fedkovych Chernivtsi National University, Ukraine (YFCNU), represented by Mrs. Prof. Mariana Borcha, Mr. Prof. Igor Fodchuk, Mrs. Prof. Nataliia Vatamaniuk presented the steps necessary for CAD/CAE software (Autodesk Revit) and the smart (intelligent) materials used in architecture to realize the reconstruction model of the Brewery from Chernivtsi, using Additive Manufacturing technologies. The students worked in small groups, mixed groups of students from each AMAZE project partner, and presented as Team their printed 3D products. They were presented the Romanian companies' (Admasys, Leykom and Nutechnologies) from Additive Manufacturing domain.






To the Summer School, Poznań University of Technology, Poland (PUT) was represented by Mr. Remigiusz Łabudzki, Mrs. Natalia Wierzbicka, that presented the Reverse Engineering course, and Smart (Intelligent) Materials realized concerning materials used in industry.

Finally, some general conclusions concerning the obtained results of the Summer School and about the virtual e-learning platform for AMAZE project were drawn, and participants completed feedbacks on Summer School and completed the final tests. During on the Summer School, the participants visited Black Sea, the Dracula Castle from Bran, the Peleș Castle from Sinaia, and the Parliament Palais from Bucharest, Romania.

Each partner institution from AMAZE project will identify potential calls for applying to future common projects in the frame of ERASMUS+, HORIZON programs, EEA grants, signing of ERASMUS bilateral agreements, realizing common BSc./ MSc. Diploma projects, etc.)

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