Erasmus+

Educational for Drone (eDrone)

(Project Number 574090-EPP-1-2016-1-IT-EPPKA2-CBHE-JP)

WP7, D7.7

Proposal for recognition of the courses degree

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Result	Proposal for recognition of the courses degree
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INTRODUCTION / FOREWORD

In cohesion with the need for strengthening the relation between higher education and wider economic and social environment, eDrone partners will put in place actions to persuade the relevant Ministries of the Republics of involved Partner Countries to approve the new courses degree and recognize formally the relative area of expertise.

The importance of this act of suasion is in plain sight since the Partner Country Government (in the economic Improvement Strategy) has emphasized the need to improve the quality of specialists and curricula, strengthening the material and technical bases of higher education institutions.

DESCRIPTION

In accordance with the need for strengthening the relation between higher education and the wider economic and social environment, eDrone partners will put in place actions to persuade the relevant Ministries of the Republics of involved Partner Countries to approve the new course degrees and recognize formally the relative area of expertise.

The importance of this act of suasion is in plain sight, since the Partner Country Government (in the Economic Improvement Strategy) has emphasized the need to improve the quality of specialists and curricula, strengthening the material and technical bases of higher education institutions.

As project coordinator, UNISANN managed the activities related to the approval of the course degrees by Partner Countries.

AIM OF THE ACTIVITY

Since the local particularities and the actual situation made it more difficult for the Partner Countries of the eDrone project to present in a unitary scheme the approval of the new course degrees, we chose a sequential structure of the report.

As a consequence, for this deliverable, each Partner Country will highlight the eDrone exploitation results in a distinct way, along that sequential structure.

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1. National legislative framework

(Rules to follow for obtaining the approval of the new courses degree and recognition of the relative area of expertise)

1.1 Armenia

The education sector in Armenia is represented by two types of educational establishments: general (**Preschool establishment and School**) and professional (Preliminary Professional Educational Institution – **Technical School**; Middle Professional Educational Institute – **College**; Higher Education Institution (HEI) – **University, Institute, Academy and Conservatory**). Post-graduate studies are available within HEIs as well as in scientific institutes.

In 2006 Armenia converted to a three level 12-year general education system having the following sequence: elementary school (4 years), middle school (5 years) and high school (3 years).

VET mainly covers Initial Vocational Education and Training (IVET), which is divided into two levels: preliminary (craftsmanship) and middle vocational education (or middle VET). Both routes offer a vocational qualification and opportunities for a secondary general diploma, so students have the option to pursue higher education. The VET Department in the Ministry of Education, Science, Culture and Sport (MoESCS) is responsible for defining vision and strategy and monitoring national VET policies. MoESCS is also in charge of the network of providers. With the Ministry of Finance (MoF), it plans the budget for vocational schools. The Ministry of Labour and Social Issues (MoLSI) is in charge of employment policy, implemented by its State Employment Agency.

Legislation

The general principles of legislation in the tertiary sector are determined in the framework of **Law on Education (LE)**adopted in April 1999 and in **Law on Higher and Postgraduate Professional Education** adopted in 2004. The university or college status as an organizational entity is regulated by the **Law on State Non-Profit Entities** adopted in October 2001.

The main principles of Armenian TVET policies and priorities are stated in the following documents:

- The Government Decree on approving National Qualifications Framework (2011).
- Concept on Development and Introduction of Competency-based State Educational Standards of the Vocational Education and Training Professions (2010).

- Sustainable Development Programme (SDP-II) (2008): by making reference to vocational education policy identifies the need to ensure a better-quality education system and to increase enrolment of poor and youth living away from urban centres as priorities.
- The Concept on Social Partnership in the field TVET system of Armenia (2008).
- Strategy of National Security (SNS) (2007): points out incomplete/unsatisfactory availability of vocational education for all individuals as a national security threat and declares development of educational system in Armenia a priority.
- Concept paper on non-formal education in Armenia (2006).
- The Law on Preliminary Vocational (Craftsmanship) and Middle Vocational Education (2005): identifies state policies in the field of TVET; introduces social partners into TVET system.
- Concept paper on Adult Education and its Strategy (2005).
- The Government Decree on the Procedure of formation and approval of state educational standards for professions of professional education (2003): introduced Model of State Educational (Qualification) Standard.
- The Law on Licensing (2001): introduced the licensing of elementary and secondary vocational education as a compulsory requirement.
- The Law on State Non Commercial Organisations: reorganised state vocational education institutions as state non-commercial organisation (2001).
- The Law on Education (1999): identifies main principles of the state education policy.
- The Constitution of the Republic of Armenia (1995): grants everyone the right to education and the right to free and competition based education in any vocational public education institution.

Quality Assurance

The external review of quality assurance of HEIs is done by the **National Center for Professional Education Quality Assurance Foundation (ANQA)** – an independent foundation aimed at promoting quality education at tertiary level, being established on December 28, 2008. ANQA is founded and subsidized by the Armenian Government and is projected to be financed through entrepreneurial initiatives. It is governed by the board of stakeholders and is independent of the

Ministry of Education, Science, Culture and Sport (MoESCS) and institutions at tertiary level. Among the objectives of the center are to accredit quality of the educational programmes and provide the decision to the MoESCS for state accreditation; make academic audit of HEI, evaluate and accredit HEI, provide the decision on accreditation to the MoESCS for state accreditation of HEIs, as well as evaluate quality assurance systems of HEIs and make recommendations, etc. The Universities themselves are involved in the development of internal mechanisms for quality assurance. They are becoming increasingly introspective and analytical about their strengths and weaknesses and need to develop a culture of constant improvement through periodic evaluation.

European Credit Transfer and Accumulation System (ECTS)

ECTS credits linked to learning outcomes are prescribed for HE levels only, however currently there are wide consultations on introducing ECTS credits into vocational education as well.

1.2 Belarus

The legislative framework of the Republic of Belarus in the higher education system is based on the main document "CODE OF THE REPUBLIC OF BELARUS ON EDUCATION" adopted by the House of Representatives of the National Assembly on January 13, 2011 N 243-3 as amended on 13.12.2011 N 325-3, 26.05.2012 N 376- 3, from 04.01.2014 N 126-3, 07/18/2016 N 404-3. Currently, for the second year, a new Education Code is being developed. However, we are working as before. According to this document, student training programs are formed of two sections: the state component and the university component. The structure and content of the state component is determined by the Ministry of Education for all universities and, for natural and technical specialties, includes mainly humanitarian courses, a foreign language, physical education, etc. The university component is divided into general courses and special courses, including courses of the student's choice. In recent years, the Ministry of Education has vigorously pursued a policy of consolidation of specialties and profiling in the framework of advanced training, which will be enshrined in the new Education Code. In addition, Belarusian State University is a classical university that prepares scientific and technical personnel at natural science faculties. Therefore, the formation of a completely new program of training specialists with accreditation in the Ministry of Education is currently impossible. However, at natural science faculties and, first of all, the faculty of radiophysics and computer technology and the faculty of physics, specialists in related specialties are being trained successfully. In particular, at the Faculty of Radiophysics and Computer Technology - in the field of aerospace technologies including unmanned aerial vehicles and robotics, and in the physical - in the field of big data processing and machine learning. Therefore, the maximum benefit from the project for the Belarusian State University will be in the development of

new and modernization of existing special courses with a focus on unmanned aerial vehicles. For the legalization of new and modernized courses, the approval of the Council of the faculty and the Educational and Methodological Association of the university is enough.

1.3 Georgia

The legislative framework of Georgia in the higher education is regulated by the law on higher education accepted by Georgian Parliament in 2004/21/12. According to which the universities are free to regulate the training courses conducted at the university and award with certificate of completion the courses.

Tbilisi State University offers students the elective courses and mandatory courses that are related to their study program and those courses need to be accredited. The unified National Body of Accreditation gives accreditation to the Universities programs. As regards the training courses offered by the University don't need to be accredited by the Ministry. But based on the special application form the life-long learning center refers to the Quality Assurance and Accreditation Unit of TSU after their approval the certificate could be awarded for the participants.

As concerning with Ilia State University, Ministry of Education has two procedures to ensure the quality of the institutions. Authorization and Accreditation. Accreditation is given for 7 years. Ilia State University received last accreditation in 2019, thus Ilia can incorporate Drone courses in their programmes without the need for approval from Ministry of Education.

1.4 Moldova

The European Credit Transfer and Accumulation System (ECTS) is a tool of the European Higher Education Area (EHEA) for making studies and courses more transparent and thus helping to enhance the quality of higher education.

The ECTS was instituted in 1989, within the Erasmus programme, as a way of transferring credits that students earned during their studies abroad into credits that counted towards their degree, upon their return to studying in their home institution. In the following years, it came to be used not only for transferring credits, on the basis of workload and achieved learning outcomes, but also for accumulating them in institutions' degree programmes. ECTS helps in the design, description and delivery of programmes, makes it possible to integrate different types of learning in a lifelong learning perspective, and facilitates the mobility of students by easing the process of recognising qualifications and periods of study. ECTS can be applied to all programmes, regardless of the mode of delivery (classroom-based, work-based, distance learning) or the status of students (full-time, part-time), and to all kinds of learning contexts (formal, non-formal and informal) [The

ECTS Users' Guide (https://ec.europa.eu/assets/eac/education/ects/users-guide/docs/ects-users-guide_en.pdf)].

The process of awarding credit to non-formal or informal learning has four main stages:

1. Initial advice and guidance (what does the process involve for the learner, the credit limits for non-formal/informal learning; what are the costs, roles and responsibilities of the learner and the tutor/advisor; and different learning pathways to obtaining a qualification).

2. Support (reflective process; understanding learning outcomes; identifying own learning outcomes; evidence gathering and selection).

3. Recognition/assessment (assessment of evidence of achievement of learning outcomes and assessment criteria).

4. Award of credit (credit awarded through this process is of same value as credit gained through formal learning).

In the Republic of Moldova the ECTS was applied from 2006 according to the Directive of teh Ministry of Education of the Republic of Moldova.

Moldova State University has its own Regulation for the application of the national system of study credits to Moldova State University.

In addition, the ECTS recognition of the Program for continuing professional education has been done according to the Methodology of elaboration of programs and curriculum within the framework of lifelong learning, approved by the Ministry of Education, Culture and Research of Republic of Moldova. The national legislative framework for ECTS recognition provides the following guidelines:

The way of elaborating, updating the educational plans.

The process of elaboration and approval of an Education Plan for a new study program / vocational training program involves the following stages:

a) the initiator of the new study program (any interested legal person) identifies / establishes the course units / modules / disciplines in the educational plan and the list of the scientific-didactic / didactic staff with competences in the field. The education plan, the staff list for the new study program are drawn up and correlated with the necessary educational resources;

b) the program of studies / the training program with annexes is transmitted for approval to the senate / the scientific-didactic council / the professional council;

c) after the final approval, the management of the institution designates the team for the elaboration of the self-evaluation report of the new study program / professional training program in order to authorize the Provisional functioning;

d) the study program / vocational training program, as the case may be, is submitted to the relevant Ministry for coordination, after which, together with the self-assessment report, it is submitted to the National Agency for Quality Assurance in Education and Research or another member or affiliate authority for carrying out the external evaluation in order to authorize the provisional operation.

The educational plans for continuous professional training and for studies of additional qualification and professional re-qualification are elaborated on professional training programs / specialties, according to the Nomenclature of the professional training fields and of the specialties, oriented to the acquisition of the learning results: training of the competences provided by the National framework of the qualifications on general fields of study / professional training areas, obtaining the learning results and training the competences for a professional training field will be completed by emphasizing the pragmatic character of the training content of the course units / modules / disciplines / internships, included in the educational plan.

When developing the education plans for additional qualification and retraining, it will pursue a beneficiary-centered education process, oriented towards acquiring the learning results and training general and specific professional competences.

The basic formative element of the educational plan is the unit of the course: the module / discipline / internship, which represents unitary activities attributed to a distinct formative content.

The course can be realized through auditory activity (direct contact): course / lectures, seminars, laboratory works, practical works and other forms approved by the educational institution; as well as didactic activity outside the auditorium (guided individual study): didactic-artistic or sports activities, projects, individual activity, social and community activities, internships and other activities provided by the institutional regulations.

Taking into account this provision, both CTT and CIA courses developed within the eDrone project were approved by the Ministry of Education, Culture and Research in January 2018, before the CTT courses started (see the *Annexes M01*, *M02*).

2. Envisaged results

(Practical consequences expected from of the new courses degree and recognition of the relative area of expertise)

2.1 Armenia

The Continuing Vocational Training Program "Education for Drone", developed at National Polytechnic University of Armenia in collaboration with Armenian State Economic University and the Armenian Associate Partners of eDrone Project (Instigate Armenia, Air Worker etc.), is aimed to solve some problems discovered in the educational and professional system existing in Armenia, such as the lack of an educational program covering the use of drones in several fields of civil fields of application, especially for professional activities in many areas.

Thus, the "Education for Drone" Continuing Vocational Training Program is aimed to:

- define a learning environment to deliver more opportunities to access new competences related to the use of drone technologies in professional activities.
- transfer knowledge and experience regarding the civil applications of drones from professionals to the attendees with the help of the created OED laboratory equipped with effective and efficient instruments.
- share educational contents and databases to professionals and attendees through the innovative ICT-based infrastructure employing enhanced technologies and methodologies. This infrastructure is currently supporting the OED in the technological and scientific transfer to professionals and attendees. deepening, extending the knowledge and capabilities accumulated in the field of drones and their application in various branches of the national economy;
- provide training skills for applying knowledge in practice, determining priorities, solving in different contexts and circumstances the problems specific to the field of education for drones;
- provide developing capabilities related to technology, maintenance, drone piloting, as well as studying the need for drone application in various fields; studying the legal framework for the use of drones;
- carry out the study of the technological, legal and applicative aspects of drones for different users; development of working skills in groups, in teams, training of self-study skills and

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self-evaluation of the results obtained, of using the experience in an interactive work environment, of the ability to make optimal (achievable) decisions and to responds to social, scientific and ethical issues in the process of scientific and practical activity.

The CIA course "Education for Drone" as Continuing Vocational Training Program is introduced in the list of available Continuing vocational training programs of National Polytechnic University of Armenia for the years 2019-2020.

According to the Armenian legislation and university's internal rules and regulations there is not necessity of the accreditation of the Continuing Vocational Training Program "Education for Drone".

2.2 Belarus

The implementation of the eDrone program will strengthen the main goal of the proposal for broad support at the European level for innovative training programs with technological competencies in using the Drone program for civilian applications in order to facilitate:

- reducing the shortage of specialists in this field, offering more opportunities for specialized training
- a lifelong education system based on an innovative distance learning environment based on theoretical and experimental content specifically related to the use of drones by: i) creating an innovative curriculum, ii) distance learning, iii) using a multilingual system, will make it accessible to all partner countries curricula, didactic methodology and content to begin standardization on the use of the drone in the civilian sphere with special technological competencies.

The main goal of the eDrone project is to promote knowledge and technology for professionals and other interested parties in the program countries, so that through a network of transnational cooperation to achieve those results that cannot be achieved alone. The desired results cannot be achieved only with regional, national or local funding.
The result will be:

- Improving the quality of higher education and increasing its relevance to the labor market and society.
- Improving competencies and skills in higher education institutions through the creation of new and innovative curricula.
- Promoting cooperation between the EU and partner countries that may be participating in the program (as well as between partner countries that may be participating in the program).
- Promoting the growing popularity of practical entrepreneurial experience in education, training and youth work

- Stimulating regional integration and cooperation between different regions of the world through joint initiatives, sharing best practices and cooperation.

2.3 Georgia

Over the past few years, drones have become central to the functions of many enterprises and governmental organizations. Adoption of drone technology across industries grew fairly quickly as more and more businesses started to realize its potential, scope, and scale of global reach. Usage of drones in civil applications is gaining steady momentum, as multiple industries are working with drones as part of their daily regular and often mission critical business functions. According to BI Intelligence, the market for civilian drones will grow at a compound annual growth rate (CAGR) of 19% between 2015 and 2020. The future of using drones in civil applications is bright.

Education systems are criticized heavily around the world for failing to prepare specialists with skills that are needed for the industry. That's why the courses that were developed as part of eDrone project are very important for Georgia. As the usage of drones grows so does the demand for technical specialists in the field of drones, and entrepreneurs who can experiment with business models and apply them across different industries in Georgia. We envisage that the courses that Ilia State University and Tbilisi State University will be offering will become highly needed and requested.

The Training Program "educational for drone" conducted by Tbilisi State University and Ilia State University will give possibilities to each interested person in the field to gain professional skills and knowledge for overcoming the challenges in the field and to develop new competences. The rapid development of Drones industry in the country showed that the educational system was not ready to prepare qualified staff for the field. With the help of eDrone project TSU will be able to give valuable knowledge and expertise in the field of Civil Applications for using drones. The Laboratory set up in the framework of eDrone project will play a crucial role in development this direction in our Country.

The pilot courses developed by Ilia State University will show how to develop and refine the material and methodology further. The first CIA course at TSU at the Laboratory of Drones has been prepared, the participant has been selected, but the course implementation was interrupted because of COVID 19 breakup. We worked for distance course implementation. In September 2020 the distance course has been offered with the expectation that in late October the practical works at the laboratory would have been completed. But, because the Pandemic situation has worsened in the country no physical gatherings are allowed so far.

2.4 Moldova

The Continuing Vocational Training Program "Education for Drone", developed at Moldova State University in collaboration with the Moldovan partners in the eDrone Project, is motivated to solve some problems discovered in the educational and professional system existing in the Republic of Moldova, such as the lack of an educational program covering the use of drones in several fields of application, especially for professional activities in many areas.

Thus, the "Education for Drone" Continuing Vocational Training Program is meant to provide:

- deepening, extending the knowledge and capabilities accumulated in the field of drones and their application in various branches of the national economy;
- training skills for applying knowledge in practice, determining priorities, solving in different contexts and circumstances the problems specific to the field of education for drones;
- developing capabilities related to technology, maintenance, drone piloting, as well as studying the need for drone application in various fields; studying the legal framework for the use of drones;
- carrying out the study of the technological, legal and applicative aspects of drones for different users; development of working skills in groups, in teams, training of self-study skills and self-evaluation of the results obtained, of using the experience in an interactive work environment, of the ability to make optimal (achievable) decisions and to responds to social, scientific and ethical issues in the process of scientific and practical activity.

The CIA course "Education for Drone" as Continuing Vocational Training Program is introduced in the list of available Continuing vocational training programs of Moldova State University for the years 2019-2020 (see the link http://usm.md/wp-content/uploads/Oferta-programe-formare-continua-pentru-anul-2020.pdf).

The accreditation procedure of the Continuing Vocational Training Program "Education for Drone" was finished in July 2020. The program was accredited for a period of 5 years according to the Accreditation Certificate.

Agenția Națională de Asigurare a Calității în Educație și Cercetare

AFFILIATE OF ENQA

CERTIFICAT

de evaluare externă a calității

seria FC nr.0041-20

eliberat Instituției Publice Universitatea de Stat din Moldova, cu sediul: MD-2009, mun. Chișinău, str. A. Mateevici, 60, înregistrată la Camera Înregistrării de Stat nr. 1006600064263 din 29.12.2006.

În baza rezultatelor evaluării externe, Consiliul de Conducere al Agenției Naționale de Asigurare a Calității în Educație și Cercetare a luat decizia:

- nr. 17 din 31.07.2020 de acreditare a programului de formare profesională continuă Robotică și mecatronică (Educație pentru Drone (eDrone)), forma de organizare cu frecvență, pentru o perioadă de 5 ani;
- nr. 18 din 31.07.2020 de autorizare de funcționare provizorie a programului de formare profesională continuă Biblioteconomie, asistență informațională și arhivistică, forma de organizare cu frecvență.

Președinte Andrei CHICIUC

Eliberat la 25 septembrie 2020

Chișinău

3. The actual achievements of the eDrone project

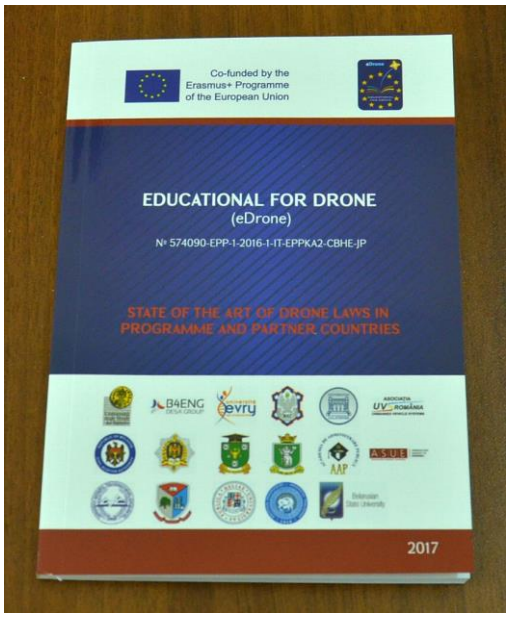
(Description of what was done)

3.1 Armenia

By the end of the eDrone project almost all objectives have been successfully achieved at National Polytechnic University of Armenia and Armenia State Economical University.

Thanks to the joint efforts of ASUE, NPUA and other associated partners and collaborators, during the eDrone project lifetime the following activities were accomplished:

- ASUE & NPUA had their contributions in the "Educational for Drone" (State of the art of drone laws in programme and partner countries) handbook regarding the drones' laws and regulations.



ASUE has printed the handbook and the partners disseminated it through several workshops, seminars, meetings, events, etc.

- ASUE hosted the workshop on law and user needs, where the Drone Laws in Partner (Armenia, Belarus, Georgia, Moldova) and Programme Countries have been presented.

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- ASUE & NPUA visited several enterprises, public and private companies with the collaboration proposal to exploit the project results as wide as possible. More details are available in D7.5 report.


- A **research** has been implemented by Assistant Professor Argam Artashyan from ASUE eDrone team on the following topic: "The international market of drones and the involvement of Armenia". This has been published as an **article** in one of the high-level scientific journals in Armenia - **alternative.am,** which is approved by the Higher Qualification Committee of Republic of Armenia. The article is available (in Armenian) via the following link: http://bit.ly/2V9VF1j.

- ASUE organized and implemented several dissemination meetings for the students both at ASUE and at OED laboratory (jointly with NPUA).

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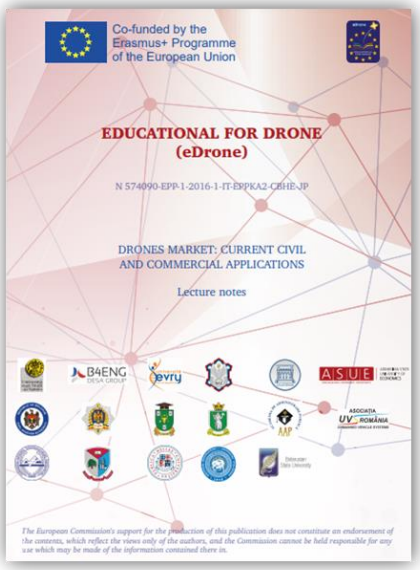
- ASUE has participated in the promotion and exploitation activities of the ICT platform.

- ASUE prepared and printed lecture notes ("Drones market. Current civil and commercial applications") for the CIA attendees.



- According to the Armenian legislation and university's internal rules and regulations in January 2020 the programs for CIA courses were adopted by the NPUA vice-rector in charge of educational processes and offered in the Center for VET and Lectures Training of NPUA. (Annex AI)

- The OED in Armenia was opened on the 6th of February 2020. The equipment required for the implementation of the CIA courses was purchased in due time.

ASUE and NPUA representatives have participated in the workshops and coordination meetings in the frames of eDrone project.

- The NPUA and ASUE lecturers developed and provided their part of education programme of the CIA courses.

- The lecturers from ASUE & NPUA attended the two-week internship at the University of Sannio (Italy, Benevento).

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- The modules of the CIA were distributed between teachers from 3 Armenian partner organizations.

- The recruitment of first edition attendees was done according to the instruction needs of the associated partners and the organizations involved in the survey about user needs in drone technology and regulation (D1.4. and D2.4.). (Annex AII)

- The first edition of the CIA course was launched in February 14th, and it was planned to finish it on April 4th, 2020, but was postponed because of COVID-19 disease.

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- The recruitment process for the second edition was done during the period February-beginning of March 2020. (Annex III)

- The first two classes (10 and 12 March) of the second edition of the CIA courses have been implemented before the university closure because of the state of emergency announced in Armenia connected with the COVID-19 disease.

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- The second batch of the equipment normally should be purchased during the period February-March according to the national rules for acquisition. (Before the university closure due to pandemic of coronavirus).

- The third group of CIA courses was formed but the lessons have been postponed due to the COVID-19 pandemic situation and closure of the universities in Armenia.

3.2 Belarus

The CIA training is implemented by the BSTU OED in the form of the training courses. The courses are provided with the study program and learning material. The course program that allows to issue the state certificate was approved 31.12.2019.

УТВЕРЖДАЮ
Первый проректор БГТУ
академик
_____ А.Р. Цыганов
«__» _____ 20 19 г.

УЧЕБНО-ТЕМАТИЧЕСКИЙ ПЛАН
обучающих курсов по программе
ПОДГОТОВКА ОПЕРАТОРОВ БЕСПИЛОТНЫХ ЛЕТАТЕЛЬНЫХ АППАРАТОВ (МБЛА) МУЛЬТИРОТОРНОГО ТИПА

Продолжительность обучения: Одна неделя, 40 ак. часов
Форма получения образования: очная (с отрывом от производства)

№	Наименование разделов программы курсов повышения квалификации	Количество часов			
		Всего	Распределение по видам занятий		Зачет
			лекции	практические	
1.	Правовые и организационные основы использования воздушного пространства Республики Беларусь.	2	2		
2.	Правовые и организационные основы и осуществления деятельности в области авиации Республики Беларусь.	2	2		
3.	Основы аэродинамики, воздушной навигации, авиационной метеорологии.	2	2		
4.	Теории и методики управления летательными аппаратами.	2	2		
5.	Руководящие документы по организации и выполнению полетов авиации	2	2		
6.	Основы теории и методики управления БЛА.	2	2		
7.	Воздушная навигация.	2	2		
8.	Авиационная метеорология.	2	2		
9.	Аэродинамика.	2	2		
10.	Основы конструкции и эксплуатации БЛА.	2	2		
11.	Наземная подготовка.	2		2	
12.	Тренажерная подготовка.	2		2	
13.	Тренировка в управлении БЛА.	8		8	
14.	Основы спутниковой системы навигации (GNSS) и кинематики в реальном времени (RTK), содержащихся в мБЛА мультироторного типа. Принцип работы и особенности эксплуатации.	2	1	1	
15.	Основные функции и возможности использования специализированного программного обеспечения для автоматизации аэрофотосъемки (аэровидеосъемки) мБЛА мультироторного типа.	2	1	1	
16.	Обзор основных программных продуктов, специализирующихся на обработке данных, полученных с помощью мБЛА мультироторного типа. Этапы обработки данных.	2	1	1	
17.	Применение обработанных данных, полученных с помощью мБЛА мультироторного типа в различных сферах жизнедеятельности человека.	2	1	1	
	Всего:	40	24	16	

Директор ИПКиП С.Н. Пищов
Зав. кафедрой ОПиЭН Е.В. Россоха

Учреждение образования

(полное официальное наименование учреждения образования, иной организации, индивидуального предпринимателя,
«Белорусский государственный технологический университет»
которым в соответствии с законодательством предоставлено право осуществлять образовательную деятельность)

СПРАВКА ОБ ОБУЧЕНИИ

А № 1509152

Выдана Вашинке Дмитрию Анатольевичу
(фамилия, собственное имя, отчество (если таковое имеется)

в том, что он (она) осваивал(а) образовательную программу обучающих курсов
(наименование образовательной программы)
«Подготовка операторов мБЛА мультироторного типа»

с 24 февраля 20 20 г. по 28 февраля 20 20 г.

Справка выдана в связи с отчислением приказ № 84 от 28 февраля 2020 г. об окончании
(основания отчисления, дата и номер решения)
слушателями обучения в институте повышения квалификации и переподготовки БГТУ

№ п/п	Названия разделов учебной программы	Количество часов (академических)
1	Правовые и организационные основы использования воздушного пространства Республики Беларусь и осуществления деятельности в области авиации. Основы аэродинамики, воздушной навигации, авиационной метеорологии, теории и методики управления летательными аппаратами.	8
2	Руководящие документы по организации и выполнению полетов авиации. Основы теории и методики управления БЛА.	8
3	Воздушная навигация. Авиационная метеорология. Аэродинамика. Основы конструкции и эксплуатации БЛА. Наземная подготовка. Тренажерная подготовка.	8
4	Тренировка в управлении БЛА.	8
5	Основы спутниковой системы навигации (GNSS) и кинематики в реальном времени (RTK), содержащихся в мБЛА мультироторного типа. Принцип работы и особенности эксплуатации. Основные функции и возможности использования специализированного программного обеспечения для автоматизации аэрофотосъемки (аэровидеосъемки) мБЛА мультироторного типа. Обзор основных программных продуктов, специализирующихся на обработке данных, полученных с помощью мБЛА мультироторного типа. Этапы обработки данных. Применение обработанных данных, полученных с помощью мБЛА мультироторного типа в различных сферах жизнедеятельности человека.	8
	ВСЕГО:	40

Руководитель учреждения образования,
иной организации,
индивидуальный предприниматель (подпись) А.А. Сакович (инициалы, фамилия)

Директор ИПКиП БГТУ С.Н. Пищов

Город Минск 28 февраля 20 20 г. Рег. № 384

Associate Partners

The applicants who have successfully competed the CIA, obtain the certificate and the Certificate of State Education. The course degree is confirmed by the Certificate of State Education of the Republic of Belarus.

БГТУ
ИПКиП

СЕРТИФИКАТ

выдан в подтверждение того, что

Вашинко Дмитрий Анатольевич

прошел(ла) обучающие курсы

«Подготовка операторов мБЛА мультироторного типа»

Организован учреждением образования «Белорусский государственный технологический университет»
при поддержке Белорусской федерации беспилотной авиации
г. Минск, 24-28 февраля 2020 г.

Белорусская федерация беспилотной авиации

Г.В. Бондарик
Заместитель председателя правления
ОО Белорусская Федерация Беспилотной Авиации

А.А. Сакович
Проректор БГТУ

33 students have obtained the State Certificates up to date.

Project activities in Belarus

- Kick Off Meeting Yerevan (Armenia) – February 13-16, 2017;
- Set of new curricula and modules was delivered
- Meeting regarding review current curricula Tbilisi (Georgia) - Yerevan (Armenia) – July 11-13, 2017

Associate Partners

- 1st Consortium Meeting, Chisinau (Moldova), December 6-9, 2017
- CTT courses, Chisinau (Moldova), June 4-10, 2018
- Internship, Galaţi & Brăila, September 29 - October 12, 2018
- Internship, Consortium Meeting, Minsk (Belarus), November, 4-7, 2018
- Workshop and Consortium Meeting, Chisinau (Moldova), June 12 - 15, 2019
- Internship, Consortium Meeting, Minsk (Belarus), September, 18 - 21, 2019
- Workshop and Consortium Meeting, Yerevan (Armenia), February 5 - 8, 2020
- **7 Lecturers from BSU have been trained in Chisinau, Galaţi and Brăila.**
- **New special courses have been developed and accredited:**
  1. Practical ballistics and navigation, BA
  2. Neural networks, MA
- **The existing special courses have been modernized and supplemented:**
  1. Small spacecraft, BA
  2. GIS technology, BA
  3. Information processing methods in a space physical experiment, BA
  4. Basics of satellite navigation, BA
  5. Special laboratory “Study of digital signal processing methods based on the ELVIS platform”, BA, MA

Dissemination and exploitation strategies of eDrone project established by our work group:

- Project presentation on Conferences:
  - VII Belarusian Space Congress, Minsk, 24 – 26 October 2017 (photos included),
  - Annual student conferences of Faculty of Radio Physics ad Computer Technologies and Physics Faculty (May 2018 and 2019).
  - 2020 IEEE INTERNATIONAL WORKSHOP ON Metrology for AeroSpace, Pisa, 22 – 24 June 2020
  - VIII Belarusian Space Congress, Minsk, 25 – 27 October 2020.
- Project information through news lines of Aerospace Educational Center WEB site.
- Career Forums: March 2018 and 2019.
- Seminar with eDrone Plus Partners (and signing eDrone Plus agreements), 10 October 2018.

Associate Partners

- Seminar 1: Legal Aspects of Startups "Technological entrepreneurship" The basics of business organization for physics students: just about important in the right» - 19.10.2018.
- Seminar 2: Intellectual Property Protection in IT "Technological entrepreneurship" The basics of business organization for physics students: just about important in the right» - 22.11.2018.

5 eDrone + agreements with academic and industrial partners have been signed.

Stand and Booklet have been developed and printed.

3.3 Georgia

During the eDrone project lifetime, following activities were carried out:

- Kick Off Meeting Yerevan (Armenia) – February 13-16, 2017 was attended by the colleagues
- The Workshop took place in Tbilisi on 11 July, 2017.
- The Workshop held in Yerevan, Armenia 13 July, 2017
- 1st Consortium Meeting, Chisinau (Moldova), December 6-9, 2017
- CTT courses, Chisinau (Moldova), June, 2018 The three lecturers were Trained from TSU – Shota Barbakadze, Andro Gelashvili and Mikheil Makhviladze.
- 3 trainers from Ilia State University (P15) - Avtandil Mgebrishvili, Goga Saatashvili and Nana Dikhaminjia attended trainings in Moldova. More information can be found here:

  http://iliauni.edu.ge/ge/iliauni/units/developmentoffice/siaxleebi/educational-for-drone.page
- Internship In Poland 29.09.2018 – 10.10.2018 at the Military University of Technology attended by the the three trainers from TSU and the three form ISU.
- Workshop and Consortium Meeting, Chisinau (Moldova), June 12 - 15, 2019
- Consortium Meeting, Minsk (Belarus), September, 18 - 21, 2019
- Workshop and Consortium Meeting, Yerevan (Armenia), February 5 - 8, 2020
- The material for CIA Course developed, organized and uploaded on Moodle.
- Partnership agreements signed with Copter and Georgia's Aviation Agency.

ISU launched the Pilot courses on February 4th and are planning to finish the courses at the end of March. 20-25 students will be trained and some will be further trained by undergoing internship at Copter.ge. You can find more information about the courses here https://iliauni.edu.ge/ge/siaxleebi-8/gonisdziebebi-346/ilias-saxelmwifo-universitetis-dronis-sapilote-kursi.page?fbclid=IwAR3_Q8qYSNElFnvaUHUvqapie3J_wj5_sMpOkQMKOZwDRE0BmT6Hil88F9I

ISU helped two startups in drone area to achieve significant results. Our professors mentored them. One startup – AgroDrone whose mission is to produce drones optimized for Agriculture as a result became finalist of NASA competition, and also won 100K Georgian Lari grant from Georgian Innovation and Technology Agency. Second startup (VTOLS) also won 100K Georgian Lari grant from the same program. They were among 20 winners from 180 applicants.

Edrone project's greatest achievement is setting up the OED Laboratory at TSU, which has defined the first learning environment for researching drones. To strengthen the academia and business linkages in the field of drones.

ICT platform has been developed.

3.4 Moldova

Starting from the project objectives necessary to be achieved:

- Setting up the OEDs in Moldova, Armenia, Belarus and Georgia,
- Organizing courses for training trainers (one edition),
- Organizing two editions of CIA courses during the project,
- Creating and maintaining the ICT platform;

Moldova State University can affirm that all the eDrone project objectives were successfully achieved.

During the eDrone project lifetime, following activities were accomplished:

- According to the user needs report developed within the WP1 and WP2, during the months M1-M10 the course program and course content of the CTT were prepared.

- The programs for CTT and CIA courses were approved by the Ministry of Education, Culture and Research of Republic of Moldova *(Annexes M01 and M02)* in January 2018.

- The OED at Moldova State University was opened on the 4th of June. Almost all the equipment needed for use during CTT courses was purchased in due time.

- The CTT course was developed at Moldova State University during the period June-July 2018. 36 teachers from Moldova, Armenia, Georgia, and Belarus attended the CTT courses.

- Teachers form Moldovan partner organizations attended the two-week internship at Evry University.

- The modules of the CIA were distributed between teachers from 5 Moldovan partner organizations. The course content for the CIA was prepared and translated and uploaded on the MOODLE platform used for teaching CIA.

- The recruitment of first edition attendees was done according to the instruction needs of the associated partners and the organizations involved in the survey about user needs in drone technology and regulation (D1.4. and D2.4.).

- The first edition of the CIA course took place during the period November 29th-March 4th, 2019.

- The recruitment process for the second edition was done during the period January-February 2019.

- The second edition of the CIA course took place during the period March 4th-May 31st, 2019.

- The second batch of the equipment was purchased during the period June-October according to the national rules for acquisition.

4. Extended summary on the official communications with the Ministry

(Incl. annexes, if any)

4.1 Armenia

On February 26 2020, a meeting took place between the Civil Aviation Committee, UNDP in Armenia, Ministry of Emergency Situations, Erasmus + National Program Office, "Locator" CJSC, Aviation Training Center, NPUA and ASUE within the frames of eDrone project in the Civil Aviation Committee. The Draft of Technical Assignment for the Working Group on the Regulation of UAVs within the framework of the National Disaster Risk Reduction Platform was discussed.

The next step should be the elaboration of the common educational program on the base of eDrone CIA curricula which will be used for different purposes by wide range of stakeholders.

The next meetings of the Working Group was postponed because of pandemic of coronavirus.

In 2017 was the meeting with representatives of the Ministry of Agriculture (now Ministry of Territorial Administration and Infrastructure) took place. The possibility of using the technical capabilities of the eDrone project for the needs of the ministry was discussed.

4.2 Belarus

The Ministry of Education of the Republic of Belarus supports the project carried out in the framework of the legislation of the Republic of Belarus on higher education. This was confirmed by the deputy head of the main department of professional education, Elena Lipa, during the monitoring of international projects on November 19-21, 2019 in Minsk with the participation of Mr. Ralph Rahders, representative of the European Commission's Executive Agency for Education, Culture and Audiovisual Media.

4.3 Georgia

It used to be during Soviet time in Georgia that Ministry of Education played important and integral part and all courses needed to be approved by it to be conducted and allowed in Universities. Situation changed drastically after the break-up of Soviet Union. Educational institutions have freedom designing own courses, only new programs need to be approved by Ministry of Education. As a result ISU did not have any communication with Ministry of Education, as drone courses were never planned as a new program, but they are parts of existing program.

As concerning TSU, since universities have freedom to design own training courses, they need only to be approved by the Quality Assurance and Accreditation unit of TSU.

As the training courses “Educational for Drone” are designed as the certified courses and not as a new program direction in the framework of any faculty at TSU we never had the communication with the Ministry of Education, Science, Culture, and Sport of Georgia.

The Administration of TSU and ISU has issued the document that says that certified courses don’t need to be accredited and life-long learning centers will offer the courses to the audiences.

4.4 Moldova

Taking into account the provisions of the national Methodology of elaboration of programs and curriculum within the framework of lifelong learning, approved by the Ministry of Education, Culture and Research of the Republic of Moldova, both CTT and CIA courses developed within the eDrone project were approved by the Ministry of Education, Culture and Research in January 2018, before the CTT courses started (see the *Annexes M01, M02*).

With regards to the accreditation of the Continuing Vocational Training Program “Education for Drone”, the MSU eDrone project team has done the following steps:

- MSU Senate decision about accreditation of CIA on 05.11.2019 *(Annex M03).*
- The self-assessment report of the Continuing Vocational Training Program "Education for Drone" according to the National Agency for Quality Assurance in Education and Research Requirements was submitted on 11.12.2019.
- According to the recommendation of the National Agency for Quality Assurance in Education and Research *(Annex M04),* the updated documentation for the Continuing Vocational Training Program "Education for Drone" was submitted to the Ministry of Education, Culture and Research of the Republic of Moldova on 26.12.2019. The Ministry approved the updated Continuing Vocational Training Program "Education for Drone" on February 11 2020 (*Annex M05*).
- The letter for the continuation of the accreditation procedure was submitted on 17.02.2020 *(Annex M06).*
- The accreditation procedure of the Continuing Vocational Training Program "Education for Drone" was finished in July 2020. The program was accredited for a period of 5 years according to the Accreditation Certificate.

Agenția Națională de Asigurare a Calității în Educație și Cercetare

AFFILIATE OF ENQA

CERTIFICAT

de evaluare externă a calității

seria FC nr.0041-20

eliberat Instituției Publice Universitatea de Stat din Moldova, cu sediul: MD-2009, mun. Chișinău, str. A. Mateevici, 60, înregistrată la Camera Înregistrării de Stat nr. 1006600064263 din 29.12.2006.
În baza rezultatelor evaluării externe, Consiliul de Conducere al Agenției Naționale de Asigurare a Calității în Educație și Cercetare a luat decizia:
• nr. 17 din 31.07.2020 de acreditare a programului de formare profesională continuă Robotică și mecatronică (Educație pentru Drone (eDrone)), forma de organizare cu frecvență, pentru o perioadă de 5 ani;
• nr. 18 din 31.07.2020 de autorizare de funcționare provizorie a programului de formare profesională continuă Biblioteconomie, asistență informațională și arhivistică, forma de organizare cu frecvență.

Președinte Andrei CHICIUC

Eliberat la 25 septembrie 2020

Chișinău

Associate Partners

5. EDRONE project exploitation results

(Description of the obtained results)

5.1 Armenia

The exploitation activities and their results implemented by ASUE and NPUA jointly with all Armenian eDrone partners are described below:

- In 2019 ASUE participated in the **Erasmus+ Information Days in Armenia** organized by the National Erasmus+ Office in Armenia. The overall aim of these Information Days was to inform academic and non-academic beneficiaries about the Erasmus+ Call for Proposals to be launched in October 2018 and on the actions relevant to the international dimension of Higher Education (ICM/Traineeships and Degree Mobility, Capacity Building in Higher Education, plus Jean Monnet Actions) and Youth. The eDrone project activities and outputs were also disseminated during these info days. The ASUE team informed every interested party about the project's main directions, already obtained and upcoming outputs. As a result, several discussions have been implemented with the relevant interested parties regarding the dissemination and exploitation tools and mechanisms of the project and the CIA courses to be launched in the future. The "Educational for Drone" handbooks and eDrone roll-up were used as dissemination & exploitation tools to spread about the project as much as possible.

- eDrone dissemination materials have been presented during the **job fair** organized by ASUE where 50 employers and 3500 job seekers were brought. The "Educational for Drone" handbooks and information regarding the project's OEDs, CIA courses were disseminated for further promotion of the OED laboratory in Armenia. As the majority of the participants were students, the ASUE eDrone team managed to present the CIA courses to the ones who were seeking a job in this field. As a result, several students' (not only from ASUE) contacts have been saved during the job fair, which were later used to inform that students about the launch of the courses.

- ASUE has also organized informative seminar and workshop for the students to attract their attention and interest on the topics covered by the CIA courses.

1. The **info seminar** was held by the Doctor Professor Vardan Sargsyan and Assistant professor Argam Artashyan aimed to explain the significance of the project, gained knowledge about the use of drones, their usage in different fields of economy (agriculture, construction, production, emergency situations, and environment), their peculiarities and usefulness.

2. The **workshop with the students** of the Marketing specialty was organised by the Associate professors Lilit Dadayan and Vadim Grigoryan. During the workshop Lilit Dadayan assigned a practical task within the frames of "Innovation Marketing" course at the 4th year students of the Marketing specialty, that's, to develop and submit a proposal or business plan through teamwork that can become a startup in Armenia. Before passing to the assignment, Vadim Grigoryan presented the project details, then mentioned which areas were being observed in terms of expanding the use of drones. The students were divided into teams and started an active discussion looking for ways to solve the task. In the end, they presented their ideas on what startups they can create with the help of drones' civil applications and how to promote the project outputs especially the OED laboratory and CIA courses in Armenia.

- Several meetings have been organized and implemented to identify the main promotion directions of OED laboratory in Armenia, in particular with NPUA eDrone team, "Instigate Robotics", "Civil Aviation Committee in Armenia", associated partner of eDrone project "Aviation training center". As a result of these meetings, several arrangements have been acquired with them mainly regarding the teaching staff in the frames of the CIA courses; several discussions have been implemented regarding the shape and structure of the courses of drones technologies, the main target groups and possible collaborations of OED laboratory in Armenia; etc.

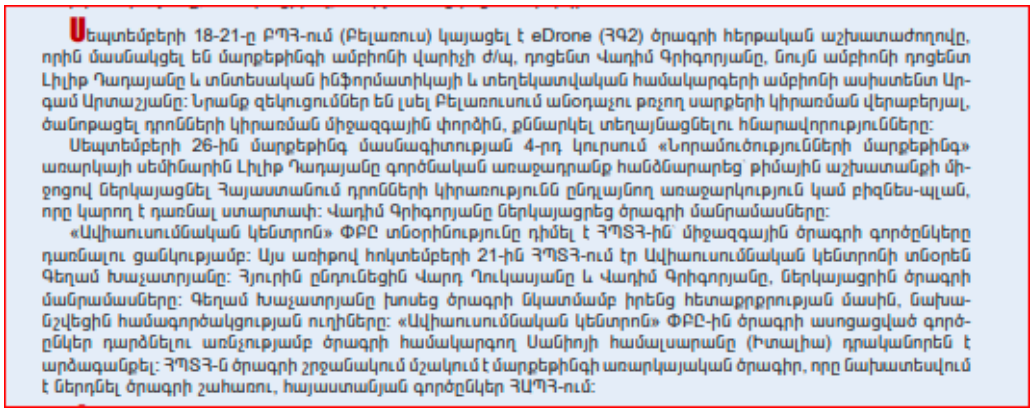
Associate Partners

- A dissemination event has been organized and implemented in the OED laboratory jointly by ASUE & NPUA on Feb 27 (https://asue.am/am/news/a-tour-and-presentation-of-the-unmanned-aerial-vehicle-training-course-as-part-of-the-edrone-project-photos). During the event, NPUA and ASUE representatives told the laboratory visitors about the topics, timetable and other details of the "UAV Training" course. Also, they implemented a tour in the laboratory, telling them about the different civil applications of drones, their technical responses and capabilities. As a result, at the end of the dissemination event some of the students registered for the 2nd "UAV Training" course launched on March 10.

- On February 26, a meeting took place between the “Civil Aviation Committee”, UNDP in Armenia, Ministry of Emergency Situations, Erasmus+ National Program Office, “Locator” CJSC, Aviation Training Center, NPUA and ASUE in the “Civil Aviation Committee”. The draft of technical assignment for the working group on the regulation of UAVs within the framework of the national disaster risk reduction platform was discussed.

Associate Partners

- An article has been published on the ASUE Magazine "Tntesaget" (https://asue.am/en/media/tntes) which presents the details of the Belarus workshop and the participation of our lecturers in it. Also, it tells about the collaboration with the "Aviatraining" company – the associated partner of eDrone project. This article is available in Armenian here: https://asue.am/upload/files/tntesaget-magazine/tntesaget-2019-4_.pdf on page 42.



Սեպտեմբերի 18-21-ը ԲՊՀ-ում (Բելառուս) կայացել է eDrone (ՀԳ2) ծրագրի հերթական աշխատաժողովը, որին մասնակցել են մարքեթինգի ամբիոնի վարիչի ժ/պ, դոցենտ Վադիմ Գրիգորյանը, նույն ամբիոնի դոցենտ Լիլիթ Դադայանը և տնտեսական ինֆորմատիկայի և տեղեկատվական համակարգերի ամբիոնի ասիստենտ Արգամ Արտաշյանը: Նրանք զեկուցումներ են լսել Բելառուսում աճօդաչու թռչող սարքերի կիրառման վերաբերյալ, ծանոթացել դրոնների կիրառման միջազգային փորձին, քննարկել տեղայնացնելու հնարավորությունները:

Սեպտեմբերի 26-ին մարքեթինգ մասնագիտության 4-րդ կուրսում «Նորամուծությունների մարքեթինգ» առարկայի սեմինարին Լիլիթ Դադայանը գործնական առաջադրանք հանձնարարեց՝ թիմային աշխատանքի միջոցով ներկայացնել Հայաստանում դրոնների կիրառությունն ընդլայնող առաջարկություն կամ բիզնես-պլան, որը կարող է դառնալ ստարտափ: Վադիմ Գրիգորյանը ներկայացրեց ծրագրի մանրամասները:

«Ավիառուսումնական կենտրոն» ՓԲԸ տնօրինությունը դիմել է ՀՊՏՀ-ին՝ միջազգային ծրագրի գործընկերը դառնալու ցանկությամբ: Այս առիթով հոկտեմբերի 21-ին ՀՊՏՀ-ում էր Ավիառուսումնական կենտրոնի տնօրեն Գեղամ Խաչատրյանը: Հյուրին ընդունեցին Վարդ Ղուկասյանը և Վադիմ Գրիգորյանը, ներկայացրին ծրագրի մանրամասները: Գեղամ Խաչատրյանը խոսեց ծրագրի նկատմամբ իրենց հետաքրքրության մասին, նախանշվեցին համագործակցության ուղիները: «Ավիառուսումնական կենտրոն» ՓԲԸ-ին ծրագրի ասոցացված գործընկեր դարձնելու առնչությամբ ծրագրի համակարգող Սանիոյի համալսարանը (Իտալիա) դրականորեն է արձագանքել: ՀՊՏՀ-ն ծրագրի շրջանակում մշակում է մարքեթինգի առարկայական ծրագիր, որը նախատեսվում է ներդնել ծրագրի շահառու, հայաստանյան գործընկեր ՀՊՊՀ-ում:

- An article has been published on the ASUE Magazine "Tntesaget" (https://asue.am/en/media/tntes) which presents the collaborative meeting with several companies in Civil Aviation Committee of Armenia. The second article tells about the dissemination tours for the CIA attendees organised by ASUE and NPUA at the OED laboratory, also about the CIA editions. These articles are available in Armenian here: https://asue.am/upload/files/tntesaget-magazine/TERT%202020.2.pdf on page 40.

eDrone

Փետրվարի 26-ին ՀՊՏՀ նախաձեռնությամբ Քաղաքացիական ավիացիայի կոմիտեում տեղի է ունեցել հանդիպում Քաղավիացիայի կոմիտեի, Հայաստանում ՄԱԿ-ի զարգացման ծրագրի ներկայացուցչության, «Էրազմուս+» ծրագրի ազգային գրասենյակի, «Լոկատոր» ՓԲԸ-ի, Ավիաուսումնական կենտրոնի, ՀԱՊՀ-ի և ՀՊՏՀ-ի միջև: Շահառու կազմակերպությունները ներկայացրել են իրենց նախագծերը, նպատակները, իրականացման ընթացքը և արդյունքները: Մասնակիցները քննարկել են համագործակցության ուղիները՝ կապված անօդաչու թռչող սարքերի ուսուցման հետ և համաձայնության են եկել ստեղծելու աշխատանքային խումբ, որը կզբաղվի այդ ուսուցման ծրագրերի համատեղ իրականացման հնարավորությունների քննարկմամբ և մշակմամբ:

Փետրվարի 27-ին ՀԱՊՀ-ում բացված OED լաբորատորիայում տեղի է ունեցել շրջայց և «Անօդաչու թռչող սարքերի ուսուցում» դասընթացի ներկայացում՝ հետաքրքրված անձանց համար: ՀԱՊՀ և ՀՊՏՀ ներկայացուցիչները լաբորատորիայի այցելուներին ծանոթացրել են դասընթացի թեմաներին, ժամանակացույցին և այլ մանրամասների, շրջայց կատարել լաբորատորիայում, պատմել անօդաչու թռչող սարքերի քաղաքացիական կիրառությունների, տեխնիկական հնարավորությունների մասին, պատասխանել հարցերի: Մարտի 10-ին ՀԱՊՀ-ում մեկնարկել են դասընթացի 2-րդ խմբի դասերը: ՀԱՊՀ ներկայացուցիչ Հրաչյա Կարապետյանը ուսանողների հետ զրուցել է դասընթացի թեմաների և այլ մանրամասների վերաբերյալ, այնուհետև մեկնարկել է առաջին դասը:

ՀՊՏՀ-ից միջոցառումներին մասնակցել են մարքեթինգի ամբիոնի վարիչ, դոցենտ Վադիմ Գրիգորյանը, ՀՊՏՀ ռեկտորի խորհրդական, մարքեթինգի ամբիոնի դոցենտ Լիլիթ Դադայանը, տնտեսական ինֆորմատիկայի և տեղեկատվական համակարգերի ամբիոնի ասիստենտ Արգամ Արտաշյանը, միջազգային կապերի բաժնի պետ Սոնա Մատինյանը և նույն բաժնի գլխավոր մասնագետ Արփինե Ջրաղացպանյանը, ուսանողներ:

Ծրագրերը ՀՊՏՀ-ում համակարգում է միջազգային կապերի բաժինը, մանրամասները՝ asue.am-ի «Միջազգային ծրագրեր» խորագրում:

- An article has been published on the ASUE Magazine "Tntesaget" (https://asue.am/en/media/tntes) which tells about the first dissemination tour at the OED laboratory and the 1st edition of CIA courses and its details. This article is available in Armenian here: https://asue.am/upload/files/tntesaget-magazine/TERT%202020.1_compressed.pdf on page 42.

Associate Partners

Փետրվարի 6-7-ին ՀԱՊՀ-ում կայացել է ԵՄ «Էրազմուս+»-ի (կարողությունների զարգացմանը միտված գործընկերային ծրագրեր (ՀԳԶ)) eDrone նախագծի հերթական աշխատաժողովը, որին ՀՊՏՀ-ից մասնակցել են մարքեթինգի ամբիոնի վարիչ, դոցենտ Վադիմ Գրիգորյանը, նույն ամբիոնի դոցենտ Լիլիթ Դադայանը, տնտեսական ինֆորմատիկայի և տեղեկատվական համակարգերի ամբիոնի ասիստենտ Արգամ Արտաշյանը, միջազգային կապերի բաժնի պետ Սոնա Մատինյանը և նույն բաժնի գլխավոր մասնագետ Արփինե Զրաղացպանյանը:

Նախագծի գործընկեր բուհերի ներկայացուցիչները զեկուցումներ են լսել անդամ երկրներում անօդաչու թռչող սարքերի կիրառման հնարավորությունների, ինչպես նաև օրենսդրական կարգավորումների վերաբերյալ, մասնակցել ՀԱՊՀ-ում OED (Office for Education for Drone) լաբորատորիայի բացմանը, որը ծրագրի վերջնարդյունքներից մեկն է: Աշխատաժողովի ընթացքում ՀՊՏՀ-ականները գործընկերներին ներկայացրել են ծրագրի շրջանակում իրենց կատարած գործողությունները, գրանցած արդյունքները:

ՀԱՊՀ-ում փետրվարի 17-ին մեկնարկել է «Անօդաչու թռչող սարքերի ուսուցում» դասընթացը՝ eDrone նախագծի շրջանակում ստեղծված OED (Office for Education for Drone) լաբորատորիայում:

ՀՊՏՀ և ՀԱՊՀ ներկայացուցիչները ուսանողներին պատմել են դասընթացի մանրամասները, շրջայց կատարել լաբորատորիայում և քննարկել հետագա քայլերը eDrone նախագծի արդյունքում ստեղծված բացառիկ հնարավորությունը առավել լայնորեն տարածելու համար: Լաբորատորիայում այժմ տեղակայված են անհրաժեշտ բոլոր սարքավորումները՝ ուսանողներին թե՛ տեսական, թե՛ գործնական գիտելիք տրամադրելու համար: Կարճաժամկետ դասընթացի ծրագիրը մշակվել է eDrone նախագծի ընթացքում կազմակերպված վերապատրաստումների արդյունքում: Դասընթացի շրջանակում դասավանդելու են նաև ՀՊՏՀ դասախոսները՝ անդրադառնալով անօդաչու թռչող սարքերի քաղաքացիական կիրառության ոլորտների (շինարարություն, գյուղատնտեսություն, արտակարգ իրավիճակներ և այլն) և հնարավորությունների առաջխաղացմանը:

As a result, the elaboration of the common educational program on the base of eDrone CIA curricula was planned to be the next step, which would be used for different purposes by wide range of stakeholders. But the next meetings of the working group were postponed because of COVID-19 disease.

- To disseminate the project results and activities and further promote the exploitation of the eDrone project, ASUE has linked the eDrone project website and the ICT platform to ASUE official website; particularly it can be found in the “International projects” section available both in Armenian (http://bit.ly/2ViQpsD) and in English (http://bit.ly/2SMEb9X). The screenshot is presented below:

Associate Partners

Aim of the Project

Official ICT Platform

ASUE Role in the Project

Deliverables

Project Partners

News

Announcements

The official website-www.edrone.unisannio.it/

Moreover, ASUE has allocated a special part on the first page of ASUE official website (www.asue.am) for eDrone project & ICT platform. It is available via this link: https://asue.am/en.

The main website sharing information on eDrone project is **ASUE official website** (www.asue.am). ASUE has shared the main goal, project partners, deliverables of the project in the "International

projects" section (http://bit.ly/2SMEb9X). We are also regularly sharing announcements (https://asue.am/en/announcement) and news (https://asue.am/en/news) on the respective sections of the website:

- ASUE as a Participant of eDrone Project, https://asue.am/en/media/news-143/asue-as-a-participant-of-edrone-project-2901

- Workshop of eDrone Project, https://asue.am/en/media/news-143/workshop-of-edrone-project-3117

- ASUE Hosted In-House Dissemination Event, https://asue.am/en/media/news-143/asue-hosted-in-house-dissemination-event-3339

- ASUE Employees Participated in Coordination Meeting of eDrone Project, https://asue.am/en/media/news-143/asue-employees-participated-in-coordination-meeting-of-edrone-project-3372

- Educational for Drone (eDrone). ASUE lecturers have been trained in Italy, https://asue.am/en/news/educational-drone-asue-lecturers-trained-italy

- Working visit to Minsk within the eDrone project, https://asue.am/en/news/working-visit-minsk-within-edrone-project

- eDrone Project Presentation for Students of Marketing Specialty, https://asue.am/en/news/students-of-marketing-faculty-get-informed-about-edrone-program-get-involved-in-the-process-of-developing-proposals

- ASUE Representatives Attended Workshop on eDrone Technology in Minsk, https://asue.am/en/news/asue-representatives-attended-edrone-workshop-in-minsk

- Aviation Training Center Becomes Associate Partner of eDrone Project: Cooperation Opportunities were Discussed at ASUE, https://asue.am/en/news/air-training-center-becomes-associate-partner-of-edrone-program-asue-ways-of-cooperation-were-outlined-1

- ASUE Representatives Participated in Another Workshop of eDrone Project, https://asue.am/en/news/asue-representatives-participated-in-the-regular-edrone-workshop

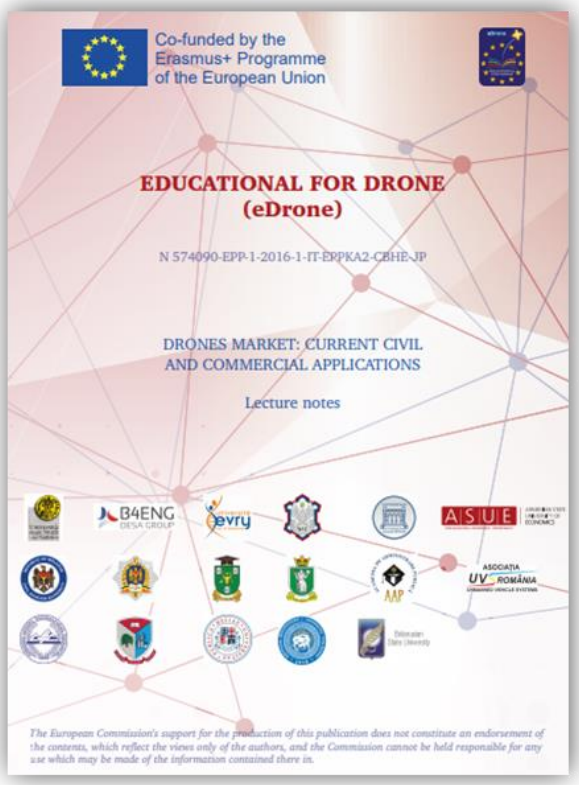
- ASUE Representatives Attended the Opening of the "Unmanned Aerial Vehicle Training" Course, https://asue.am/en/news/representatives-participated-in-the-opening-of-the-unmanned-aerial-vehicle-training-training

- The 2nd Stage of "UAV Training" Course Launched, https://asue.am/en/news/phase-2-of-the-drone-training-course-kicks-off

Also, to disseminate the project and its results as wide as possible ASUE always shares information, announcements and news regarding the eDrone project on **ASUE official FB page**

(http://bit.ly/2Pdl2vE) and **ASUE International Relations Division FB page** (http://bit.ly/3bVWgJW).

- Two special Course Outline (subject educational program) were developed: "Drones aerodynamics and architecture" and "Avionic systems for drones". From the 1st September 2020 these subjects will be included in the "Aircraft aviation equipment" bachelor educational program under the "Aviation and rocket technics" specialty as a minor courses.



- According to the agreement between NPUA and UAV LAB LTD and Locator LTD NPUA students of specialties of aviation mechanics and aviation management and economics as well as trainees of CIA courses will undergo internship and practical training at these enterprises.

- On the base of CIA curricula a draft of the new educational program "Operation and application of unmanned aerial vehicles" was developed by the NPUA project team, which will be discussed in the NPUA Scientific Council in September-October 2020.

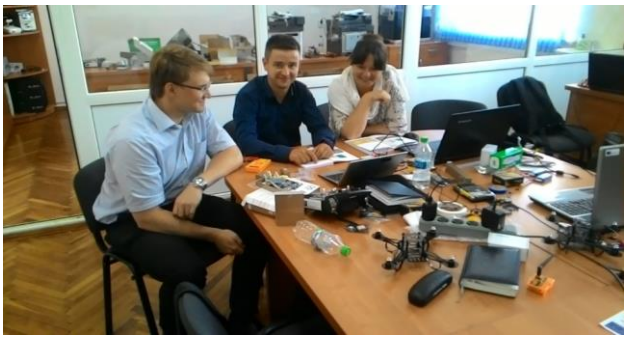
Associate Partners

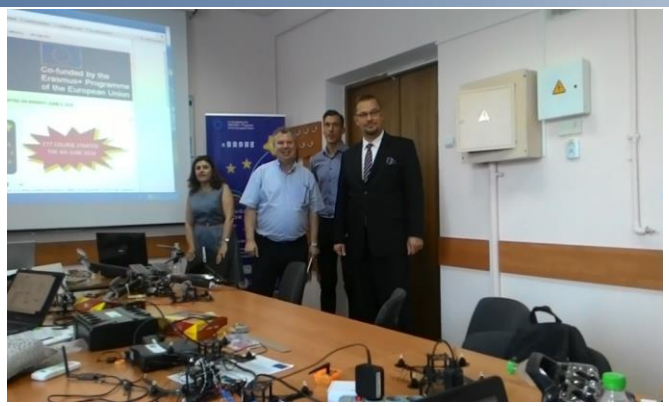
- According to the preliminary agreement with the United Nations Development Program officers and program coordinator trainers of two regional Aerial Robotics Educational Centers in Vayk and Stephanavan will be trained in the OED (ToT courses).

- Printed lecture notes for the CIA attendees (ASUE)

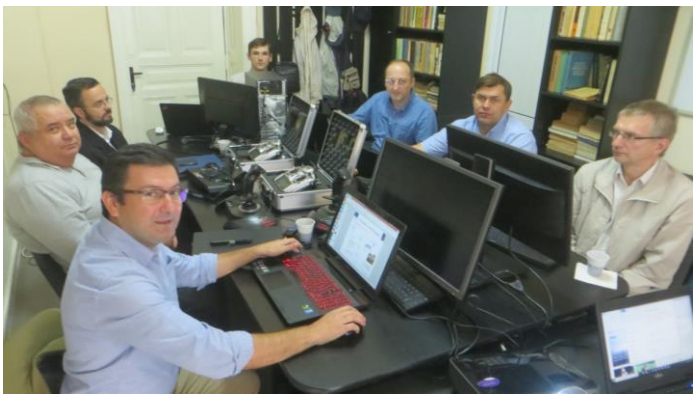
5.2 Belarus

As concerning the exploitation of the results, thanks to the CTT course attended in MSU, Chisinau (Moldova), June - July 2018. In the following some picture of the CTT course.





After the CTT course, the Belarusian participants attended to the Internship activities organized in September 29 - October 12 2018 by UNIGAL in Galați& Brăila. In the follow, some pictures about the internship activities.



In BSU more than 40 students and 15 undergraduates undergo training annually on the basis of developed and modernized courses and laboratories. Please see in the following some pictures of the BSU students attending the modernized courses. As a tangible result, in BSU more than 30 student works and dissertations, as well as 5 master's theses have been completed.

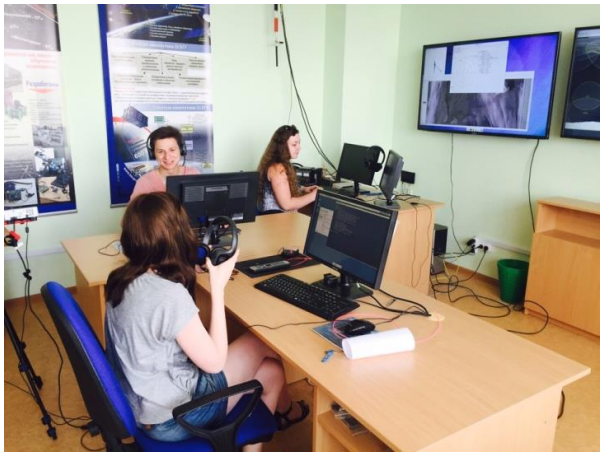
Table I list of Master Theses, Diplomas and Course works

No	Year	Title	Student
Master's theses			
1	2016	Development of a subsystem for managing the power supply of a small spacecraft.	M.A. Surovtsev
2	2017	Development of a software module for the on-board computer of the nanosatellite orientation subsystem.	S.V. Vassilenko
3	2018	Development of a web system for the collection of storage and analysis of telemetry of the university nanosatellite 2018	A.V. Zinovich
4	2018	Correction of the orbital parameters of a university nanosatellite based on data from an on-board navigation receiver	A.A. Dubovik
5	2019	Calculation of the state vector of a low-orbit spacecraft based on the SGP model, followed by refinement of the navigation data	V.A. Karpenko
Diplomas			
1	2016	Analysis of radiation resistance of equipment elements and testing radiation sensors for CubeSat nanosatellites	P.A. Krishnev
2	2016	Development of a software module for the on-board computer of the nanosatellite orientation subsystem	S.V. Vasilenko
3	2016	Development of a laboratory training bench for the study of positioning systems using MEMS sensors	I.A. Sakovich
4	2017	Development of a software and hardware module for radio communication of a nanosatellite	D.V. Buchinsky,
5	2017	Creating a simulator of GPS signals based on the NI PXI5673E vector generator	I.N. Gusev
6	2017	Development of the information and educational portal for the university nanosatellite	A.V. Zinovich
7	2017	Distributed telemetry reception system for nanosatellite BSU BeKass	Y.L. Snegur
8	2018	Development of a web system for collecting storage and analysis of telemetry of a university nanosatellite	A.V. Zinovich
9	2018	Comparative analysis of algorithms for the selection of “cloud” pixels in satellite images of the visible and near-IR spectral ranges	A.N. Nasekaylo
10	2019	Internet server for processing telemetry BSUSat-1	E.V. Strival
11	2019	Determination and correction of orbital parameters of a spacecraft from external trajectory Doppler measurements	E.Y. Neborskiy

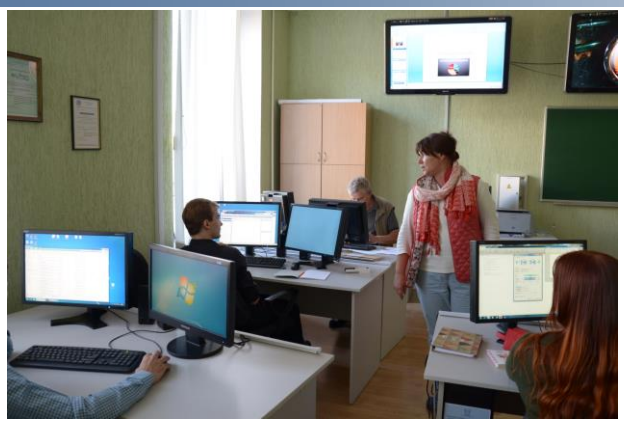
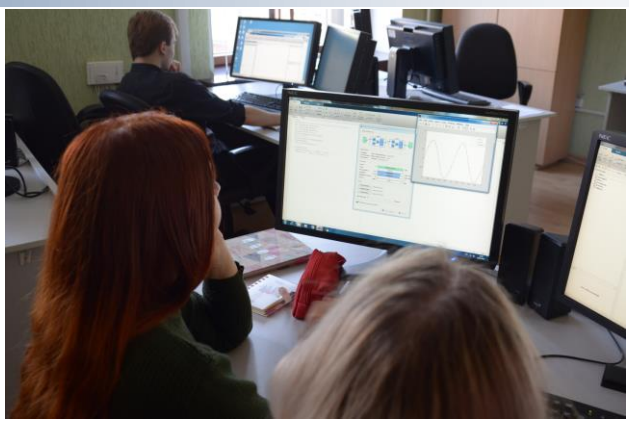
12	2019	Development of an autonomous mobile receiving station from small spacecraft	D.A. Cherny
13	2019	Calibration of the magnetometer data of a small spacecraft	A.S. Goncharik
14	2019	Development of the hardware-software platform of the Earth's magnetic field simulator 2018/2019	A.I. Korolev
15	2019	Development of a software module for pre-processing images on board a satellite, 2018/2019	V.V. Astrovsky
16	2019	Development of an application for the collection and analysis of data obtained from the nanosatellite	I.V. Misteyko
17	2019	The study of the characteristics of wire antennas and imitation surfaces	D.S. Moskalenko
18	2020	CubeSat-1 nanosatellite telemetry receiving system	G.R. Vygovsky
Course works			
1	2016	Development of a software module for processing signals from a solar orientation sensor as a part of a microsatellite	V.N. Labynko
2	2016	Development of an electronic calibration bench for orientation systems in space	A.V. Kovtun
3	2017	Analysis of radiation resistance of equipment elements and testing radiation sensors for CubeSat nanosatellites	P.A. Krishnev
4	2017	Comparative analysis of algorithms for the selection of “cloud” pixels in satellite images of the visible and near-IR spectral ranges	A.N. Nasekaylo
5	2017	Development of an informational and educational portal for a university nanosatellite	A.V. Zinovich
6	2018	Determination of the speed of movement and the slant range of a student nanosatellite based on Doppler measurements	V.A. Babitsky
7	2018	Study of technology for receiving telemetry of small spacecraft based on a software-defined radio receiver	A.P. Verstakovskaya
8	2018	Modeling the dynamics of the orbital motion of space objects	A.G. Kezik
9	2018	The initial distribution of the orbit of the spacecraft according to the measurements of the Dappler frequency shift of the received radio signal	V.Y. Zaitseva
10	2018	Determination of orientation on the basis of solar and magnetometric measurements	E.S. Kurzenkov
11	2018	The solar panel as a rough sensor of the orientation of the spacecraft	S.I. Kasyuk
12	2018	Algorithms for damping the angular velocity of MCA based on magnetic coils	N.Y. Zubrinovich

13	2018	Processing Doppler measurements of the frequency of the radio signal of a small spacecraft based on technology for receiving software-defined radio.	I.N. Klepitsky
14	2018	Numerical modeling of the orbital parameters of a small spacecraft for the task of determining the trajectory of its motion	A.S. Tarasov
15	2018	Determination and correction of orbital parameters of a small spacecraft from external trajectory measurements	E.Y. Neborskiy
16	2018	Development of an autonomous mobile receiving station from small spacecraft	D.A. Cherny
17	2018	Calibration of the magnetometer data of a small spacecraft	A.S. Goncharik
18	2018	Application of the Gauss method for the initial determination of the orbit of low-orbit satellites"	A.D. Slabko
19	2018	Development of an application for the collection and analysis of data obtained from the nanosatellite	I.V. Misteyko
20	2018	Development of the hardware-software platform of the Earth's magnetic field simulator	A.I. Korolev
22	2018	Development of a software module for pre-processing images on board a satellite	V.V. Astrovsky
23	2018	The study of the characteristics of wire antennas and imitation surfaces, 2018/2019	D.S. Moskalenko
24	2019	CubeSat-1 nanosatellite telemetry receiving system	G.R. Vygovsky
25	2019	Analysis of payload of CubeSat class nanosatellite for radiation monitoring	A.S. Kasyanik

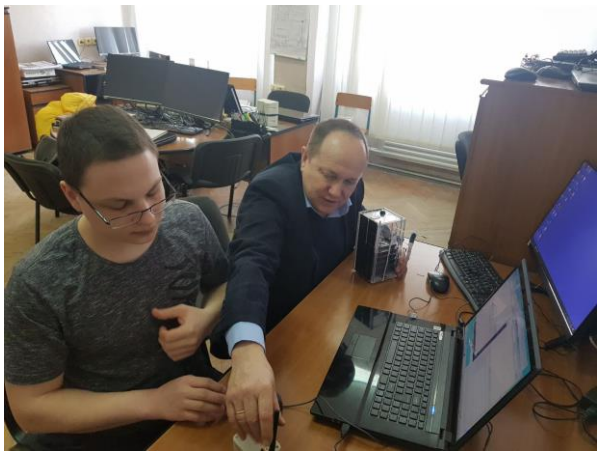
In the following some pictures of the teaching activities

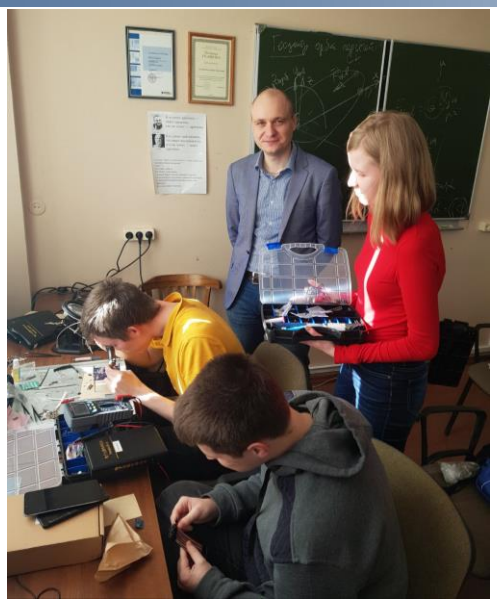


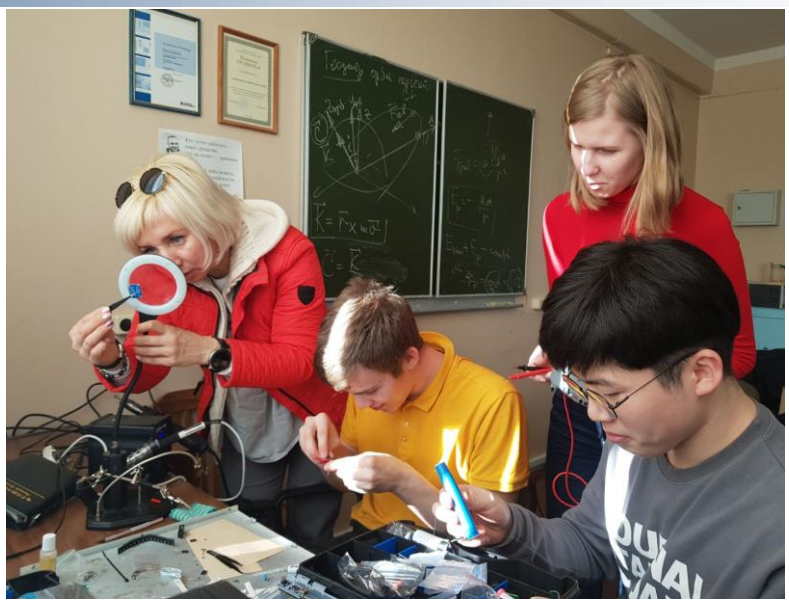
Associate Partners

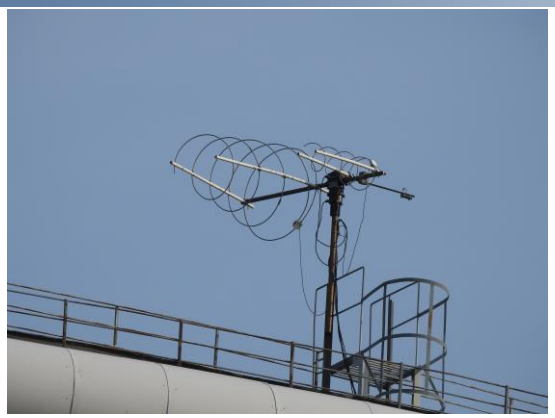


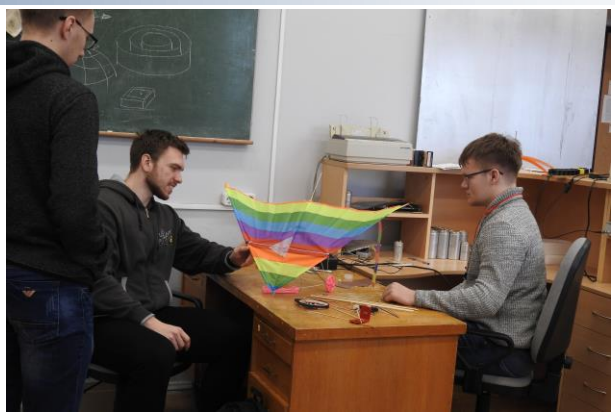


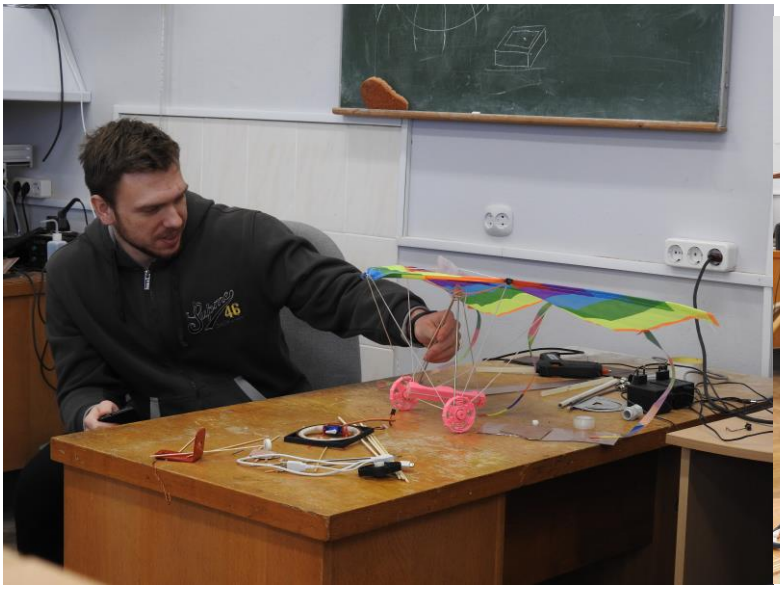


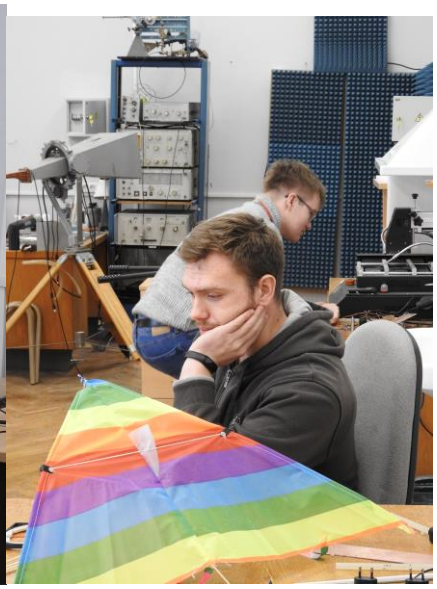


Associate Partners









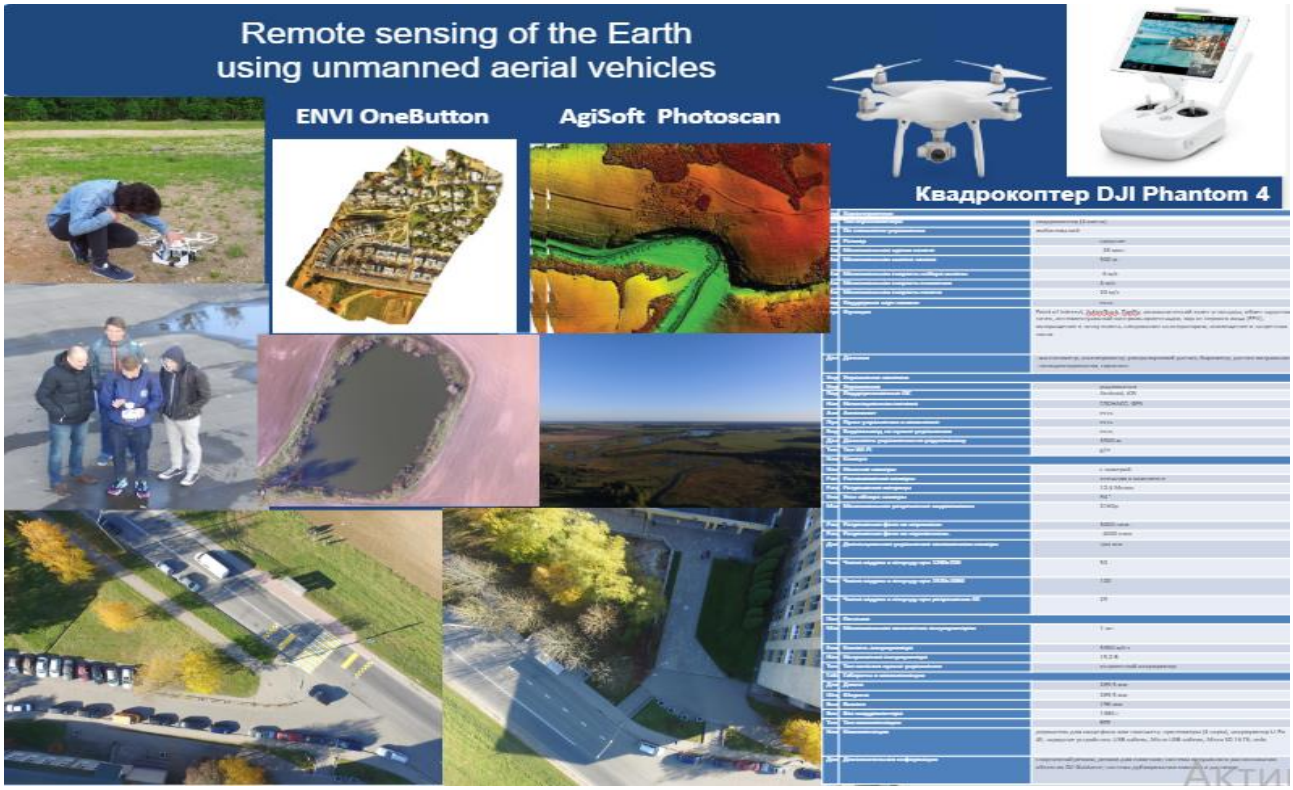



Currently, in the framework of the special courses "Small Spacecraft" and "Geoinformation Systems" lectures are given. The topics of the lectures are:

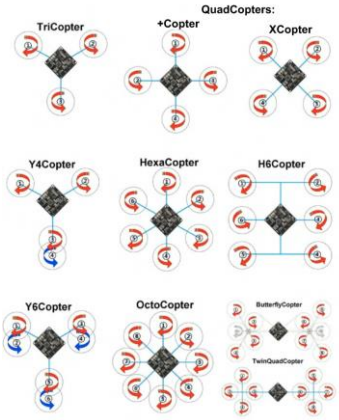
- Overview of unmanned aerial vehicles.
- Classification of unmanned aerial vehicles.
- Applications of unmanned aerial vehicles.
- Design fundamentals of unmanned aerial vehicles.

Associate Partners

- Construction of geographic information systems based on the technology of unmanned aerial vehicles/

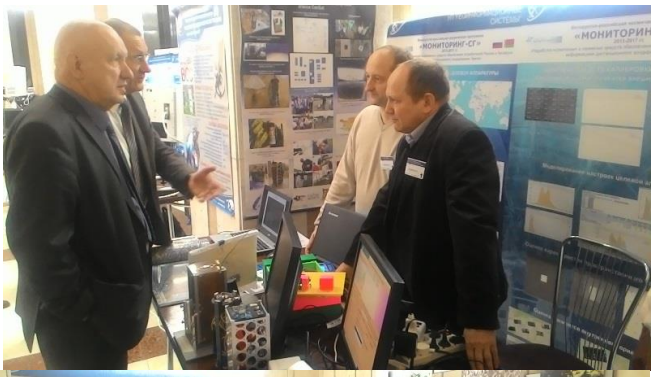



HK's Наземная станция управления - Lite - v1.3.37
Файл
Помощь
Инструменты
Serial Data
Командная строка
Live Camera
Waypoints
Control
Configuration
Вид карты
Live Camera
1238 X 645
Home
Широта: 53.961273
Долгота: 27.654610
Sats: 9 (Зафиксировано)
HDOP: 0.94 (Ideal)
Run: 3 secs
Режим:
Путевые точки:
Дистанция:
Дроссель (газ): 39%
US Dept of State Geographer
Image © 2013 DigitalBodbe
© 2013 Google
© 2013 Cnes/Spot Image
Google earth
Преследующая камера
Head Lock
Center On Plane
Очистить
Set Home
Click Home
Выход


QuadCopters:
TriCopter
+Copter
XCopter
Y4Copter
HexaCopter
H6Copter
Y6Copter
OctoCopter
ButterflyCopter
TwinQuadCopter

In several meetings BSU as presented eDrone project and the achieved results:

- On November 24 – 26 October 2017 eDrone project where presented at the **VII Belarusian Space Congress**, in the following some pictures of the event



- On 03/03/2018 eDrone and the possible work opportunities related to drone technologies where presented at the Career Forum. Career Forums 2018 and 2019 presented new forms of work with graduates to improve their personal and professional competences, allowing young technical specialists to have advantages in the labor market.

On November 5-6, 2018 a seminar and coordination meeting in the framework of Erasmus+ project "574090-EPP-1-2016-1-ITEPPKA2-CBHE-JP Educational for Drone" were held at Belarusian State University. http://erasmusplus.by/en/main.aspx?guid=2191&detail=13213. The BSU Student questionnaire are available at the following link: https://docs.google.com/forms/d/e/1FAIpQLSepJQCKSQuzoqUfKCpxVSP9jJLAWVs9N9M4JwUBbO7dFR-w_A/viewform

Finally, the eDrone projet was presented at the following two seminars:

- Seminar 1: Legal Aspects of Startups "Technological entrepreneurship" The basics of business organization for physics students: just about important in the right» - 19/10/2018.
- Seminar 2: Intellectual Property Protection in IT "Technological entrepreneurship" The basics of business organization for physics students: just about important in the right» - 22/11/2018.

Associate Partners


BSU was contacted by the following organizations and company, today eDrone + academic and industrial partners:

- Belarusian State Academy of Aviation
- Belarusian State Agrarian Technical University
- Republical Production Unitary Enterprice “Precise Electromechanic Factory “
- Institute of Experimental Botany of National Academy of Sciences
- Closed Joint Stock Company “Aviation Technologies and Systems”


Associate Partners

Moreover, BSU has organized and published the following Dissemination & Sustainability Activities Leaflets:

Associate Partners

БЕЛОРУССКИЙ ГОСУДАРСТВЕННЫЙ УНИВЕРСИТЕТ

2016 2017 2018 2019

Erasmus+

Образовательная среда для дронов
Educational for Drone

Цель проекта:

Расширить среду обучения, чтобы предоставить возможность доступа к новым компетенциям, связанным с использованием беспилотных технологий в профессиональной деятельности. Эти новые компетенции относятся, в частности, к использованию современных информационно-коммуникационных технологий (ИКТ) по применению дронов и данных, полученных с их помощью.

Партнер №	Роль	Название организации	Город Страна
P1	Координатор	Университет Саннио	Беневенто Италия
P2	Партнер	B4Eng sas S	Тулуза Франция
P3	Партнер	Университет Эври	Эври Франция
P4	Партнер	Военный Технологический Университет	Варшава Польша
P5	Партнер	Университет «Dunarea de Jos»	Галац Румыния
P6	Партнер	Ассоциация UVS	Бухарест Румыния
P7	Партнер	Управление гражданской авиации	Кишинев Молдова
P8	Партнер	Академия "Stefan cel Mare", Министерство Внутренних Дел (полицейская академия)	Кишинев Молдова
P9	Партнер	Молдавский государственный Университет	Кишинев Молдова
P10	Партнер	Государственный аграрный Университет Молдовы	Кишинев Молдова
P11	Партнер	Академия государственного управления	Кишинев Молдова
P12	Партнер	Армянский экономический Университет	Ереван Армения
P13	Партнер	Национальный Политехнический Университет Армении	Ереван Армения
P14	Партнер	Белорусский государственный технологический университет	Минск Беларусь
P15	Партнер	Государственный университет имени Ильи Чавчавадзе Тбилиси Грузия	Тбилиси Грузия
P16	Партнер	Тбилисский государственный университет имени Ивана имени Ильи Чавчавадзе	Тбилиси Грузия
P17	Партнер	Белорусский государственный университет	Минск Беларусь

2016 2017 2018 2019

Erasmus+

Задачи:

- **Проанализировать образовательные потребности в намеченной области посредством анализа проблем и работы и проанализировать текущие учебные программы;**
- **Обновить текущие программы согласно последним достижениям в намеченной области к концу второго года проекта;**
- **Разработать, внедрить и аккредитовать новые ориентированные на практику и на студента базовые и переносимые учебные программы и модули, включая ECTS и инновационную академическую среду, в соответствии с методологией смешанного обучения;**
- **Приблизить учреждения высшего образования стран-партнеров к рынку труда.**

Задачи - расширить среду обучения, чтобы предоставить возможность доступа к новым компетенциям, связанным с использованием беспилотных технологий в профессиональной деятельности. Эти новые компетенции относятся, в частности, к использованию современных информационно-коммуникационных технологий (ИКТ) по применению дронов и данных, полученных с их помощью. Совместные ИКТ-решения значительно улучшат оптимизацию профессиональных компетенций, которые были изложены в «Стратегия социально-экономического развития2020» во всех странах-партнерах, способствует созданию новых рабочих мест, особенно для молодежи. Это активно поддерживается стратегией «Европа 2020», как указано в сообщении Европейской комиссии «Молодежь в движении». Использование дронов профессионалами откроет новые перспективы для которых необходимы практические и теоретические знания, которые выходят за рамки простого управления и обслуживания дронов: (i) механические характеристики дронов, (ii) сенсорное оборудование, (iii) обработка и использование полученной информации, и (iv) национальные и местные законы, регулирующие их использование. Основной целью проекта eDrone является обеспечение высших учебных заведений в стране-партнере эффективными и действенными инструментами для создания офисов по обучению дронам (OED) для передачи всех вышеперечисленных знаний специалистам каждой страны-партнера. Кроме того, проект направлен на реализацию инновационных инфраструктур на основе ИКТ с использованием передовых технологий и методологий, позволяющих всем странам-партнерам создать сеть для профессионалов по обмену учебными материалами и базами данных. Такая инфраструктура будет использоваться для поддержки OED в передаче профессионалам технических и научных знаний. Страны-программы будут передавать свои ноу-хау и опыт для достижения целей программы eDrone путем подготовки будущих преподавателей в офисы по обучению дронам и их поддержке в первом выпуске учебного материала для этого вуза.

Контакты:
пр. Независимости, 4, 220030, г. Минск,
saetchnikov@bsu.by, www.aec.bsu.by

Associate Partners

БЕЛОРУССКИЙ ГОСУДАРСТВЕННЫЙ УНИВЕРСИТЕТ

2016 2017 2018 2019

Erasmus+

Образовательная среда для дронов
Educational for Drone

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P12	Партнер	Армянский экономический Университет	Ереван Армения
P13	Партнер	Национальный Политехнический Университет Армении	Ереван Армения
P14	Партнер	Белорусский государственный технологический университет	Минск Беларусь
P15	Партнер	Государственный университет имени Ильи Чавчавадзе Тбилиси Грузия	Тбилиси Грузия
P16	Партнер	Тбилисский государственный университет имени Ивана имени Ильи Чавчавадзе	Тбилиси Грузия
P17	Партнер	Белорусский государственный университет	Минск Беларусь

2016 2017 2018 2019

Erasmus+

Задачи:
- Проанализировать образовательные потребности в намеченной области посредством анализа проблем и работы и проанализировать текущие учебные программы;
- Обновить текущие программы согласно последним достижениям в намеченной области к концу второго года проекта;
- Разработать, внедрить и аккредитовать новые ориентированные на практику и на студента базовые и переносимые учебные программы и модули, включая ECTS и инновационную академическую среду, в соответствии с методологией смешанного обучения;
- Приблизить учреждения высшего образования стран-партнеров к рынку труда.

Задачи - расширить среду обучения, чтобы предоставить возможность доступа к новым компетенциям, связанным с использованием беспилотных технологий в профессиональной деятельности. Эти новые компетенции относятся, в частности, к использованию современных информационно-коммуникационных технологий (ИКТ) по применению дронов и данных, полученных с их помощью. Совместные ИКТ-решения значительно улучшат оптимизацию профессиональных компетенций, которые были изложены в «Стратегия социально-экономического развития2020» во всех странах-партнерах, способствует созданию новых рабочих мест, особенно для молодежи. Это активно поддерживается стратегией «Европа 2020», как указано в сообщении Европейской комиссии «Молодежь в движении». Использование дронов профессионалами откроет новые перспективы для которых необходимы практические и теоретические знания, которые выходят за рамки простого управления и обслуживания дронов: (i) механические характеристики дронов, (ii) сенсорное оборудование, (iii) обработка и использование полученной информации, и (iv) национальные и местные законы, регулирующие их использование. Основной целью проекта eDrone является обеспечение высших учебных заведений в стране-партнере эффективными и действенными инструментами для создания офисов по обучению дронам (OED) для передачи всех вышеперечисленных знаний специалистам каждой страны-партнера. Кроме того, проект направлен на реализацию инновационных инфраструктур на основе ИКТ с использованием передовых технологий и методологий, позволяющих всем странам-партнерам создать сеть для профессионалов по обмену учебными материалами и базами данных. Такая инфраструктура будет использоваться для поддержки OED в передаче профессионалам технических и научных знаний. Страны-программы будут передавать свои ноу-хау и опыт для достижения целей программы eDrone путем подготовки будущих преподавателей в офисы по обучению дронам и их поддержке в первом выпуске учебного материала для этого вуза.

Контакты:
пр. Независимости, 4, 220030, г. Минск,
saetchnikov@bsu.by; www.aec.bsu.by

Finally, the eDrone project activities are disseminated trough web, in the following some links:

- BSU webpage linking to eDrone project:
  - https://ums.bsu.by/ru/pr/mezhdunarodnye-proekty/erazmus/edrones
- Websites from Belarus linking to eDrone project:
  - https://aec.bsu.by/projects/eDrone
- Websites talking about eDrone Project:
  - http://erasmusplus.by/ru/main.aspx?guid=4081
    Cluster project monitoring November 20, 2019
  - http://erasmusplus.by/en/main.aspx?guid=2191&detail=13213
    November 5-6, 2018 a seminar and coordination meeting in the framework of Erasmus+ project “574090-EPP-1-2016-1-ITEPPKA2-CBHE-JP Educational for Drone” were held at Belarusian State University.

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5.3 Georgia

P15 Ilia State University uses the university site www.iliauni.edu.ge, also the Facebook page of ISU for dissemination and exploitation purpose. All the news, events, actions, etc. related to the eDrone project are uploaded there.

The general information about the project, its aim and the project web page you can see on the following link Where all Current Erasmus+ projects are presented: http://iliauni.edu.ge/en/iliauni/units/developmentoffice/mimdinare-proeqtebi/erasmus/erasmus.page

The Workshop and CM took place in Tbilisi on 11 July, 2017. Event was published on ISU web page: http://iliauni.edu.ge/ge/siaxleebi-8/gonisdziebebi-346/shexvedra-dronebis-teqnologiis-shesaxeb.page

Information about the Trainings In Moldova and Internship in Poland : http://iliauni.edu.ge/ge/iliauni/units/developmentoffice/siaxleebi/educational-for-drone.page

Workshop in Minsk 19-21 September, 2019: http://iliauni.edu.ge/ge/siaxleebi-8/axali-ambebi-36/proeqtis-educational-for-drone-samushao-shexvedra.page

04.02.2020 The Pilot courses launched the information about it was disseminated through the web page and Facebook page of ISU: https://iliauni.edu.ge/ge/siaxleebi-8/gonisdziebebi-346/ilias-saxelmwifo-universitetis-dronis-sapilote-kursi.page?fbclid=IwAR3_Q8qYSNElFnvaUHUvqapie3J_wj5_sMpOkQMKOZwDRE0BmT6Hil88F9I

https://www.facebook.com/Iliauni/

The OED Laboratory has been set up at TSU. Course material has been prepared and The CIA courses have been conducted online, without the practical training because of the Pandemic COVID 19.

Due to the dissemination activities the webpage of TSU and Facebook page has been used.

FB - EDrone Laboratory at Tsu/დრონების ლაბორატორია თსუში

Web-page - edrone.tsu.ge

New cooperations with industrial players has been developed.

5.4 Moldova

During the whole period of the eDrone project lifetime, the MSU team disseminated and advertised the CIA course within different events:

- **Participation of the MSU eDrone team in the** XXII International Exhibition of Inventions, Research and Technological Transfer "INVENTICA-2018", and the XXII International Conference of Inventions in June 27-29, 2018 in Iasi in the Lost Steps Hall of the "Gheorghe Asachi" Technical University of Iasi, Romania. 530 patents and technology transfer projects were presented, as well as scientific papers related to innovation and scientific research. The participant list included the representatives of universities, research centers, companies and NGOs from different countries, such as Romania, USA, Canada, Egypt, the Republic of Moldova, the Russian Federation, Poland, and Malaysia. Moldova State University (MSU) team members of the Erasmus+ eDrone project, Prof. Florentin Paladi and Ms. Tatiana Bulimaga, have participated in the Exposition and Conference. Among other 14 research and technology transfer projects presented by the MSU, as a recognition of the quality of the eDrone project and its impressive deployment results, such as OED & CTT courses, the "INVENTICA-2018" Organizing Committee has awarded **the Gold Medal and Diploma of Excellence for the Erasmus+ "Educational for Drone (eDrone)" project (**Universitatea de Stat din Moldova » Noi succese ale cercetătorilor USM la Expoziţia Internaţională de Invenţii „Inventica 2018”).

- **The eDrone project OED, CTT & CIA courses were awarded the Silver Medal and the Diploma of Excellence at EUROINVENT-2019 and its Book Fair.** The 11th Edition of EUROINVENT – European Exhibition of Creativity and Innovation – was held in Iasi, Romania, May 16-18, 2019 at the Palace of Culture. The event promotes creativity and innovation in an international context. There were presented about 600 patents and projects, as

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well as scientific books and journals related to innovation and scientific research. The participant list included the representatives of universities, research centers, companies and NGOs from about 45 countries, such as Romania, the USA, Canada, Egypt, Portugal, Iraq, the Republic of Moldova, the Russian Federation, Poland, and Malaysia. Moldova State University (MSU) team members of the Erasmus+ eDrone project, represented by Ms. Tatiana Bulimaga, have participated in the Exhibition and Book Fair. Among other 10 elaborations and projects presented by the MSU, as a recognition of the quality of the eDrone project and its impressive deployment results, such as OED, CTT & CIA courses, the "EUROINVENT-2019" Organizing Committee has awarded **the Silver Medal and Diploma of Excellence for the Erasmus+ "Educational for Drone (eDrone)" project.** At the same time, the **Handbook for the CIA courses (Authors:** Natalia NEDEOGLO, Corneliu ROTARU, Anton DANICI, Valeriu SEINIC, Veaceslav SPRINCEAN, Constantin VOZIAN, Valeriu CAZAN, Ion CORCIMARI, Eugenia CEBOTARU, **Coordinators: P**asquale DAPONTE, Fllorentin PALADI, Tatiana BULIMAGA) **has been awarded the Diploma of Excellence of the Book Fair.**

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EURO INVENT
11 EDITION
2019
romania2019.eu
IAȘI - ROMÂNIA
EUROINVENT
BOOK SALON
DIPLOMA
OF EXCELLENCE
Natalia NEDEOGLO, Corneliu ROTARU, Anton DANICI, Valeriu SEINIC, Veaceslav SPRINCEAN, Constantin VOZIAN, Valeriu CAZAN, Ion CORCIMARI, Eugenia CEBOTARU
EDUCAȚIE PENTRU DRONE (Suport de curs)
Coordonatori: Pasquale DAPONTE (UNISANNIO, Italia), Florentin PALADI (USM), Tatiana BULIMAGA (USM)
President of Jury
Prof. Constantin LUCA
President of Exhibition
Prof. Ion SANDU
May 16, 2019

Science Day 2018

The eDrone Project was presented in **the 8th edition of Science Day, which took place on the 10th of November, 2018 at the National History Museum of Moldova. The project results** attracted the attention of several people and young students.

Science Day 2019

The MSU eDrone team participated in the Science Day 2019 on 10th on November 2019. Information about the eDrone project and about the Continuing Vocational Training Program "Education for Drone" was disseminated during this event.

As a result, the 3rd and 4th editions of the CIA were organized during the period December 2019-February 2020.

Even the lockdown pandemic period due to the Covid-19 the project activities were interrupted, the interest for the CIA courses remained high and the requests for the next edition (5th edition) were received. In this way a new group of attendees was organized (http://www.edroneproject.org/index.php/news/225-20-10-2020-new-cia-course-announced-in-moldova-at-msu) on October 20. Due to the pandemic conditions a part of theoretical lectures were developed online and the practical seminars were developed in small groups according to the special schedule. A real contribution in the successful accomplishment of the 5th edition of the CIA courses had the ICT platform - eDrone Moodle in Moldova. Both trainers and attendees used the platform during the lectures. The 5th edition of CIA courses was accomplished on December 11 2020.

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During the practical seminars – 5th edition of CIA courses (20.10.2020-11.12.2020)