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ERASMUS +

HIGHER EDUCATION CAPACITY BUILDING

Erasmus+ Project

New curricula in Precision Agriculture using GIS technologies and sensing data

(CUPAGIS)

Information Management Package

Recommendations and informational materials regarding implementation of project activities according to the Bologna Process principles and guidelines of European Education, Audiovisual and Culture Executive Agency

Contents

Tab. 1. Project Activities incl. deadlines and distribution of responsibilities among consortium partners

№	Activities	Responsible:	Ref. №	Term of implementation(up to…)	Clarification notes
1	Each target university/organization has to develop its own internal plan of activities of the project.	P6-P10	1.1 - 5.2	15.12.2018	- Assign responsible persons as a work group for the execution of each work package (WP1 – WP5 (Ref. 1.1. – 5.2.): See Tab. 2 and 10 - Identify a project coordinator at the University, according to local conditions organize the project work group (under participation of university management, target departments /entities, representatives of teachers, students/graduate students, potential employers)
2	Make a list of valid subjects/courses for analysis and future updates	P6-P10	1.1	20.12.2018	Use valid University courses closest to the theme of the project.
3	a) Develop questionnaires for analysis of existing curricula/disciplines (questionnaire for teachers, students, graduates, young professionals, alumni; + a questionnaire for interested in project non-academic partners :potential employers, local associations, representatives of industrial enterprises, other parties that can somehow relate to the topic of the project b) Develop a schedule to conduct surveys c) Conduct surveys of various target groups d) Analyze the answered questionnaires	P6-P10, P11	1.1	30.12.2018	a) The survey questionnaire should reflect quality level of the analyzed curricula/discipline fully. Possible questions for the questionnaire: the name of discipline, what are the relevant faculties and departments, since which year is discipline taught the number of enrolled students, the balance of practical / theoretical hours and student workload. The existence, year of introduction and "freshness" of technical training tools, computers, software products, educational literature, the use of periodic national, foreign thematic/scientific/technical journals, the availability of trainee position… The practical performance of students in small groups, the number of such works. c) - Conduct a survey of teachers/lecturers at the university - Conduct a survey of young professionals / graduates - Conduct a survey of potential employers to clarify requirements to competences/ skills of graduates d) Conduct a meeting of teachers, students, alumni and employers to discuss and analyze results of surveys to take into account their views at updating of relevant subjects.

4	- Develop an analytical report on the results of the analysis of existing curricula/disciplines. - Make a list of curricula that you plan to upgrade. - Develop a schedule for updates of the selected curricula.	P6-P10, P11	1.1	30.04.2019	
5	Agreement on instructional strategy and guidelines for BA/MSc curricula design including the use of new Educational Technologies	All partners	1.2.	31.03.2019	Draft of agreement will be prepared by P2 up to 31.01.2019
6	a-b) The EU Universities are responsible for the content/teaching materials of curricula. P1-P4 should develop and transmit draft content to the target universities (P6-P10) + teaching materials c) Each target University (P1-P10) examines and adopts the received materials and develops on this basis their own courses, curricula, modules. d)Target universities should develop digital versions-drafts (.doc files) of their OWN manuals/text books/methodological recommendations for students and teachers for each of the curricula/course/module	a-b) P1-P4 c) P6-P10 d)P1, P6-P13	2.1	a) 30.04.2019 b) 31.08.2019 c) 31.03.2020 d) 31.10.2020	The lists of new subjects/courses see Tab. 4 The transfer of content/teaching materials will be carried out: a) P1-P4 should prepare a list of topics for theoretical and practical/laboratory classes, curricula description for each disciplines incl. ECTS (Tab. 3), the list of the recommended teaching materials (literature, text books etc), presentations in .ppt for each of the topics -> deliver all the materials to P6-P10 b) The last deadline: deliver the rest of the materials for each topic until 01.09.2019 c) Prepare draft of curricula descriptions of new core curricula and transferable modules inclusive innovative teaching/ learning facilities; develop syllabi –Tab. 3

7	a) Accreditation of developed subjects/courses/programmes in accordance with valid University rules. b) Accreditation at the national level.	P6-P10, P11	2.1	a) 31.05.2020 b) 31.08.2021	- Select and appoint a leader/specialist for the development of the curricula in the university and teachers responsible for the development and introduction of new disciplines, courses and curricula. It is advisable to involve these teachers in training in European universities in 2019-2020. -New disciplines should be in accordance with the Bologna recommendations course description in English and national languages including the ECTS points (Tab. 3) - It is recommended to introduce at least 50% of lessons /courses in English.
8	a) Prepare a set of documentation for PAGIS and VCR in each target universities b) Purchase the equipment incl. software; install the equipment	P5-P10	2.2	a) 30.09.2019 b)31.05.2020	a) Typical layout of the rooms and basic requirements to them will be given to the target universities by P5 The contact data of the responsible persons at the partner universities must be sent to P5. List of equipment and choice of the delivery c) P5-P10 are responsible for the contracting, purchase and delivery of equipment.
9	a) Develop criteria for the selection of teachers to participate in trainings planned at EU universities b) Plan and carry out actions to prepare the selected candidates to participate in trainings including language training c) EU universities will develop training programs/schedule of trainings and inform target universities. d) Retrain academic teachers in new curricula using	a-b) P1-P10 c)P1-P4 d) P1-P10	2.3	a) 31.03.2019 b) 31.08.2019 c) 01.03.2019 d)from 01.09.2019 up to 31.08.2020	Example of selection criteria: the age-not more than…, competences in English, experience in teaching - not less ..., Publications, own plan for future improvement. In EU universities 3 trainings of teachers are planned. 2 to 3 teachers from each target University can participate in the trainings, i.e. total of 6 to 9. A larger number of participants is possible on the basis of co-financing. Duration of trainings: from 10 till 14 days. After the end of training to organize a meeting for sharing of the knowledge gained in the target universities List of teachers that will participate in training acc. To the selection criteria C – schedule

	innovative teaching/ learning facilities and agreed instructional strategies				
10	- Update existing curricula, make a report on updating: - Develop a curricula description of each updated curriculum in English and national languages including the ECTS points (Tab. 3) in accordance with the Bologna recommendations - Accredit the updated disciplines in accordance with valid University rules/national law	P1-P10, P11	2.4	30.09.2020	
11	a) Starting performance of demonstration master classes (MC) for new subjects/modules b) pilot operation of PAGIS and VCR	a) P1-P4, P6-P10 b) P6-P10	2.5	a) start: 01.09.2020 b)start: 31.05.2020	MCs are carried out in the form of demonstration lessons with students in the target universities. The MC will be conducted by professors from European universities, responsible for the content of the curricula. Participants of MC should be the teachers who received trainings in European universities. New technical equipment purchased in the frame of the project will be used during the MCs.
12	Pilot teaching of updated/new curricula/modules/courses	P6-P10	2.6	Start: 01.09.2020	Pilot teaching should be in accordance with (Tab. 3)
13	a) Development of a quality assurance plan/strategy for the project b) Development of quality assurance plan in each university c) Development of recommendations for quality indicators for peer review of new curricula/courses d) Periodical survey of students (P6-P10 prepare a questionnaire) in order to assess quality of master	a)P5 b) P6-P10 c) P5, P6-P10 d) P5-P10	3.1	A) 15.12.2018 B) 15.01.2019 C) 31.03.2019 d) start: 01.09.2020 e) 31.03.2019	a) P5 is responsible B) On the basis of the project's QA plan to develop a QA plan in each of the universities. P6-P10 should create a quality group which will ensure high quality level of project implementation C) P5 provides recommendations; P6-P10 organize peer review of updated/new courses d) Template/recommendations for a questionnaire will be provided by P5 e) consortium will define an external expert; the expert will work on sub-contract basis

	classes; lectures during the pilot teaching e) External quality evaluation				
14	a) Develop a plan/strategy for dissemination and sustainability of the project b) Develop a plan for dissemination and sustainability of the project in each university, including activities on involving new participants in the project c) Development of the agreement "CUPAGIS Plus". d) Operation starting of the first version of the WEB platform.	a)P5 b) P6-P10, P11 c)P5 d) P6-P10, P11	4.1 4.2	a)15.12.2018 b) 15.01.2019 c) 15.12.2018 d)01.12.2018	Recommended components of the dissemination and sustainability plan of the project: - Each university should assign a "blogger", who will responsible for the posting information about the project in the Internet -Plan of publications (e.g.1 publication every 6 months). - Schedule of local sustainability activities and dissemination of the project results (e.g.– one event per quarter). - Plan of local and regional meetings. It is recommended to use scheduled periodic internal and external events (meetings, conferences, various meetings). - Post information about participation in the project on the universities' website (with a link to the project page) - Post on social networks (Facebook):each university should create a page on Facebook dedicated to the project and post there regularly Consortium members must provide informational materials for posting on the website of the project.
15	-Develop an agreement on the continued cooperation of the project participants for the development of its results after the ERASMUS+ financing	All partners	4	November 2021	Sign an Agreement in the Final conference
16	Organize dissemination of leaflets about the project amongst students and teachers.	P6-P10	4.1 4.2	Throughout the project until 14.11.2021	Recommendations for the design of information materials about the project are given in Tab. 6
17	a) Develop and approve a package of organizational documents for the creation of PASENSO in each target University. b) Each university should purchase and install	P6-P10	4.3	a)01.04.2019 b) 30.04.2020	a) Regulations of the structural division, job descriptions should be included in the organizational documents for PASENSO. Learn more about PASENSO: see Tab. 5

	equipment				
18	a) Conduct training for employees of PASENSO and start of functioning PASENSO . b) Start pilot operation of PASENSO c) Creation of the PASENSO network	a) P2, P5-P10 b) P6-P10 c) P5	4.4	a) 31.10.2020 b) Start: 01.04.2020 c) 30.04.2021	a) responsible for organizing and conducting the training – P2 & P4 c) develop a Memorandum of creation of a network of PASENSO (draft of the memorandum will be prepared by P5)
19	Refresh training courses for graduates in PASENSO	P6-P10 with support by P1-P5	4.5	Start: 01.09.2020	Select target groups of graduates and develop a program for the training courses, and conduct them.
20	Organization of International BA/ MSc Summer Schools	P2, P6-P10	4.6	Start: 01.06.2020 End: 31.07.2021	Organization: P2 Recommended dates for the First summer school: app. 06-07.2020; Second summer school: app. 06-07.2021 (will be discussed and clarified at the kick-off meeting)
21	Management of the project including project management online, daily project administration and coordination	P6-P10	5.1	Throughout the project	Preparing documentation of the management events and activities of the project incl. preparation of minutes by the local coordinator.
22	Coordination meetings	All partners	5.2	Throughout the project	Development of meeting plan will be created every year (incl. international, regional and local meetings).
23	Monitoring and controlling of project activities: development of questionnaires for partner universities regarding project implementation	P5, P6-P10	5.1	First template will be sent in March 2019 Schedule for the reporting: M6, M12, M18, M30, M36	P5 will develop a questionnaire for each 6-month-period that partner universities should fill in until the given deadlines, reporting on the implementation of the project in the university. The complete reports should be sent back to P5
24	Ensure using SKYPE to held meetings of the project consortium team.	All partners	5.1	Throughout the project	Local coordinators! Notify to ECM SKYPE nickname to arrange time and frequency of SKYPE conference. Skype meeting of local coordinators should be conducted every 3 months

Tab 2. Recommendations regarding work groups

The first step for the organization of the project implementation is to form a project work group in every university.
According to the existing experience and recommendations of the national Erasmus+ office, a work group can consist of approximately 7-11 persons. The groups should be formed and approved until November-December 2018.

List of the participants of the work group should include:

- Coordinator + contact person of the project
- Academic leader responsible for the development and implementation of updated/new teaching modules/curricula/courses content of the project. Should have experience in these activities
- Teachers, who possess knowledge of the project themes
- Student representatives
- Representatives of the administration
- Representatives of potential employers who are interested in the results of the project

Participants of the work group should possess competence, which respond to the requirements of the implementation of the project work plan. It is necessary to allocate responsibilities among the participants of the work group regarding the implementation of the activities of the project work packages, taking into consideration the deadlines of each of the activities.

Work Groups of Partner University/ Template

No	Name, Surname, email	Position in the university	Responsibility (Work Packages tasks according to the Work Plan)

Approved by: _____(signature, stamp)

Tab. 3. Template of the Curriculum/Module Description

Pay a special attention to the usage of verbs in "Learning outcomes of module". The recommended verbs are highlighted in blue

Short Name of the University/Countrycode **Date (Month/Year)**	
TITLE OF THE Curricula/Module	**Code**
Intelligent Mechatronic Systems	

Teacher(s)	**Department**

Coordinating: **Fedoreev Sergey** **Others:** Goman Viktor MuhutdinovRuslan	Information and Communications Technology

Study cycle	Level ofthemodule	Type ofthemodule
BA/MA/PhD	Bachelor	

Form ofdelivery	Duration	Langage(s)
offline	16weeks	russian

Prerequisites	
Prerequisites: To know: Electronics and Electrical Engineering Programming Fundamentals Mathematical Modelling of Engineering System Possess: basic programming skills	**Co-requisites (if necessary):**

ECTS (Credits of the module)	Total studentworkloadhours	Contacthours	Individual workhours
5	180	34	146

Aim of the module (course unit): competences foreseeen by the study programme

This course forms the skills for selecting and applying various elements of mechatronic systems, applying modern methods of machine learning for the intellectualization of mechatronic systems. The knowledge obtained as a result of mastering the discipline is necessary for solving practical problems in the field of professional activity, designing and developing intelligent mechatronic systems

Learning outcomes of module (course unit)	Teaching/learningmethods	Assessment methods
Toknow: To point: •the field of application of mechatronic and robotic systems; To explain: • structure of modern mechatronic and robotic systems; To numerate: • principles of the action of sensors used in mechatronic systems and industrial automation systems, the structure of measurement systems To recognize: • types of actuators in mechatronic systems and industrial automation systems; To give examplesof:	Lectures, independent study of the material	Quiz

• types of control and communication devices in mechatronic systems and industrial automation systems. To describe: • basic methods and algorithms for constructing artificial intelligence systems, control systems with fuzzy logic, expert systems and neural network control systems, genetic algorithms; To formulate: • basic principles, methods and tasks of machine learning.		
To be able to: • calculate and select the necessary types of mechatronic systems and their elements in the solution of a specific problem; • develop and analyze intelligent management systems using MATLAB software packages; • develop algorithms for control systems with fuzzy logic and neural networks in their structure; • use modern methods of machine learning for the practical solution of data analysis problems.	Implementation of the training project	Presentation of an educational project
Possess: • to buildof intelligent control systems; • to developof tools for machine learning and data mining; • to evaluate of various mechatronic systems and their elements for suitability for a specific task.	Implementation of the training project	Presentation of an educational project

Themes	**Contactworkhours**							**Time and tasks for individual work**	
	Lectures	Consultations	Seminars	Practiaclwork	Laboratory work	Placements	**Total contactwork**	**Individual work**	**Tasks**
Fundamentalsofmechatronics	3	0	0	3	0	0	**6**	**24**	Development of a mechatronic system for a technological facility; Development and research of the positioning system based on the electric drive with the position sensor; Development of a

									control system for interconnected electric drives.
Elementsofmechatronicsystems	5	0	0	5	0	0	**10**	**40**	Development of a mechatronic system based on proportional hydraulic drives/pneumatic actuators; Calculation and adjustment of the servomotor; Forming the trajectory of moving the manipulator on the basis of analyzing the images of products in the work area; Calculation and selection of actuators of mechatronic systems; Programming of logic controllers.
The Basics ofArtificialIntelligence	4	0	0	4	0	0	**8**	**36**	Application of machine learning technologies in robotics; Application of an artificial neural network to control the mechatronic system; Application of fuzzy logic to control the mechatronic system; Application of the genetic algorithm for optimizing the

									projected mechatronic system.
Introductiontomachinelearning	5	0	0	5	0	0	**10**	**46**	Studying methods and tools for data preprocessing; The application of the probabilistic model of learning; Solution of problems of the equipment cassation with the use of neural networks; Application of learning algorithms for static multilayer neural networks for controlling the mechatronic system; Application of dynamic learning algorithms for multi-layer neural networks for controlling the mechatronic system.
Total	**17**	**0**	**0**	**17**	**0**	**0**	**34**	**146**	

Assessment strategy	**Weight in %**	**Deadlines**	**Assessment criteria**
Running control 1	15	8 week	preliminary presentation of the project
Running control 2	70	14 week	Presentation of an educational project
Final exam	15	16 week	Final quiz

Compulsoryliterature/Aut	**Year ofissu**	**Title**	**No of periodical or**	**Place of printing. Printing**

hor	e		volume	house or internet link
T.I. Gorbenko	2012	Fundamentals of mechatronics and robotics		Tomsk, TSU, http://e.lanbook.com/book/44908
P. Plakh	2015	Machine learning		Moscow
L.N. Yasnitskiy	2012	Artificial Intelligence		Moscow, http://www.biblioclub.ru/book/115598/
V.P. Ivshin	2014	Modern automation in process control systems		Moscow
Additional literature				
N. Virt	2010	Algorithmsanddatastructures		Moscow, http://www.biblioclub.ru/book/86483/
V.V. Viugin	2013	Mathematical Fundamentals of Machine Learning and Forecasting		Moscow, http://e.lanbook.com/books/element.php?pl1_id=56397
M.T. Jons	2011	Программирование искусственного интеллекта в приложениях		Moscow, http://e.lanbook.com/books/element.php?pl1_cid=25&pl1_id=1244

ANOTATION /course summery

This course forms the skills for selecting and applying various elements of mechatronic systems, applying modern methods of machine learning for the intellectualization of mechatronic systems. The knowledge obtained as a result of mastering the discipline is necessary for solving practical problems in the field of professional activity, designing and developing intelligent mechatronic systems

List of **themes and short description**

Themes	Contact work hours
Fundamentals of mechatronics Basic terminology. Origin and development of the concept of "Mechatronics." General trends in the development of mechatronic systems. Integration, intellectualization, miniaturization of mechatronic systems. Levels of integration. The concept of constructing mechatronic systems. Structure and elements of mechatronic and robot-technical systems: mechatronic modules of motion, information-measuring systems, control systems.	**6**

Elements of mechatronic systems Classificationofsensors in mechatronicsystemsandautomationsystems. Typicalsignalsandmethodsforconnectingsensors. Structureoftheme assuring channel. Features of analog-to-digital conversion of signalsfrom analog sensors. The maintypesofactuators in mechatronicsystems (electro-, hydro-, pneumaticactuators). Comparison. Classificationofprogrammablelogiccontrollers. Devices of human-machineinteraction, personal andbuilt-in industrialcomputers. The reviewofindustrialnetworksofdatatransmissionoffieldandfirstlevelandappliedcommunicationdevices.	**10**
The Basics of Artificial Intelligence Thinking and intellect. The definition of artificial intelligence (AI). Terminology. Philosophical aspects, problems of artificial intelligence systems (possibility of existence, safety, usefulness). History and prospects of the development of AI systems, the field of their practical use. Architecture and the main components of AI systems. Expert systems. Basic ideas and practical application no fuzzy logic. Linguistic variables and their description. Operations over fuzzy sets. The basic structure and principle of the fuzzy logic system. Fuzzification, rules of logical inferences and defuzzification. Example of using a system with fuzzy logic. Genetical gorithms.	**8**
Introductiontomachinelearning Basic terminology. The notionof Big Data. Treesofsolutions. Logical modelsofmachine-learning. Probabilisticlearningmodels. Metricmodels. Artificialneuralnetworks. Neuron andhismodel. The simplestperceptron. Systems such asAdaline. Adalinewith a sigmoid at theexit. Classificationofartificialneuralnetworks. Static linear single-layerneuralnetworks. Static multi-layerneuralnetworks. Algorithmsforthetrainingofstaticmultilayerneuralnetworks. Dynamic learningalgorithmsfor multi-layerneuralnetworks. An algorithmfor back propagationof an error.	**10**

Tab.4. List of Curricula CUPAGIS

9 Core Curricula	**3 Transferrable curricula**
1. Remote Sensing and Application of Earth and Environment related PA - 8 ECTS; 64 contact hours; 74 hours praxis; 64 hours student workload. 2. Optimizing computer vision algorithms and real-time implementations-4 ECTS; 40 contact hours; 35 praxis; 45 student workload. 3. Using of SENTINEL1-2-3 imagery for agricultural field monitoring-4 ECTS; 30 contact hours; 50 praxis; 45-student workload. 4. Global Navigation Satellite Systems (NAVSTAR, GLONASS, GALILEO, etc.)- 3, 5 ECTS; 32 contact hours; 40 praxis; 38-student workload. 5. Web technologies (Agro SDI, Geo-portals, Geo-services, Geo-analytical	1. Start-up initiatives for future farmers- 2, 5 ECTS-30 contact hours; 20 praxis; 20-student workload. 2. Management Marketing and Decision Making in Precision Agriculture- 3 ECTS- 28 contact hours; 30 praxis; 23-student workload. 3 ECTS; 45 contact hours; 30 praxis; 22-student workload. 3. Intensive course to leverage acceptance of the new technologies “in-field”- 3 ECTS; 45 contact hours; 30 praxis; 22-student workload.

systems) -3 ECTS; 24 contact hours; 50 praxis; 20 student workload. 6. Basics of the Precision agriculture – characteristics, technologies, economic efficiency, optimal use of resources- 5 ECTS; 72 contact hours; 40 praxis; 42 student workload. 7. Yield sensors for Precision Agriculture-3 ECTS; 30 contact hours; 34 praxis; 32- student workload. 8. Soil physical properties and its measurement- 4 ECTS; 48 contact hours; 36 praxis; 40-student workload. 9. Application of Precision Agriculture for crops growing- 4 ECTS; 38 contact hours; 46 praxis; 42 student workload.	

Tab. 5. Concept / objectives of PASENSO

PASENSO Offices are to be established in each target University with the support of non-academic organizations (core enterprises ...) in University organizational form based on local conditions.
Possible scope of activities of PASENSO: marketing of the needs in the area of PA and the development of appropriate services for different target groups. Development and implementation of training courses and/or advanced training of different target groups, such as farmers and engineers, marketing of educational services, service for farmer associations, study of requirements of employers, study of compliance of competences/skills of the graduates regarding the requirements of employers, information support, periodical conducting of the University audit on existing training courses aiming to replace/ upgrade of outdated curricula and develop new ones, studying the needs of industrial enterprises in service training of professional personnel, searching for interested organizations and sponsors, upgrade of outdated agricultural equipment – to equip old machinery with sensors, navigation systems for the improvement of operations; creation of service for airborne monitoring of fields and farms; processing of satellites data. PASENSO office can be considered as an integral part of new or existing student startups for innovative technology development enterprises, business incubators, technology parks or subdivisions. One of the main tasks of PASENSO is carrying out of introduction seminars regarding Precision Agriculture. Universities can create PASENSO Office based on new laboratories in the frame of the project to expand their capabilities. PASENSO Office can provide services based on the development of the materials created within the project disciplines e.g. seminars on PA; engineering services on request of interested persons / companies in relevant fields.

PASENSO strategic objective is to create conditions for the development of the project results after its completion and to facilitate the flow of funds for maintenance and development created by the project laboratory facilities. Legal form of PASENSO may differ from structural unit of the University to separate legal entity.

Tab. 6. **Recommendations for the design of information materials on the project**

Each university should select a "blogger" who will post information about the project in the Internet.
It is recommended to specify the following information:

- The name of the project, Internet: _____(will be available in December 2018)

- Creation of a Facebook page about the project by each of the universities
- Name of the project: New Curricula in Precision Agriculture using GIS technologies and sensing data / CUPAGIS
- Logo of the project and address of the main website of the project in all electronic resources should be mentioned
- Logo of the ERASMUS+ programme - available to download from the website of EACEA
- https://eacea.ec.europa.eu/about-eacea/visual-identity-and-logos-eacea/erasmus-visual-identity-and-logos_en
- The following disclaimer shall be added to the inner pages of the publications and studies written by external independent bodies with support from the European Commission:
  "The European Commission support for the production of this publication does not constitute an endorsement of the contents which reflects the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein."
- Flags of the participating countries and/or logos of the organizations participating in the project
- Next, depending on the specific objectives and the availability of space for placement of information: the composition of the project consortium, project implementation, goals and objectives of the project achieved / planned results, upcoming events.
- Photos of the project team, faculty and staff involved in the project
- Photos of project events
- Details of contact person for further information.

Model Press Release on the events of the project in the target universities for placement on the website of the project:

a) Name of the event, date and venue

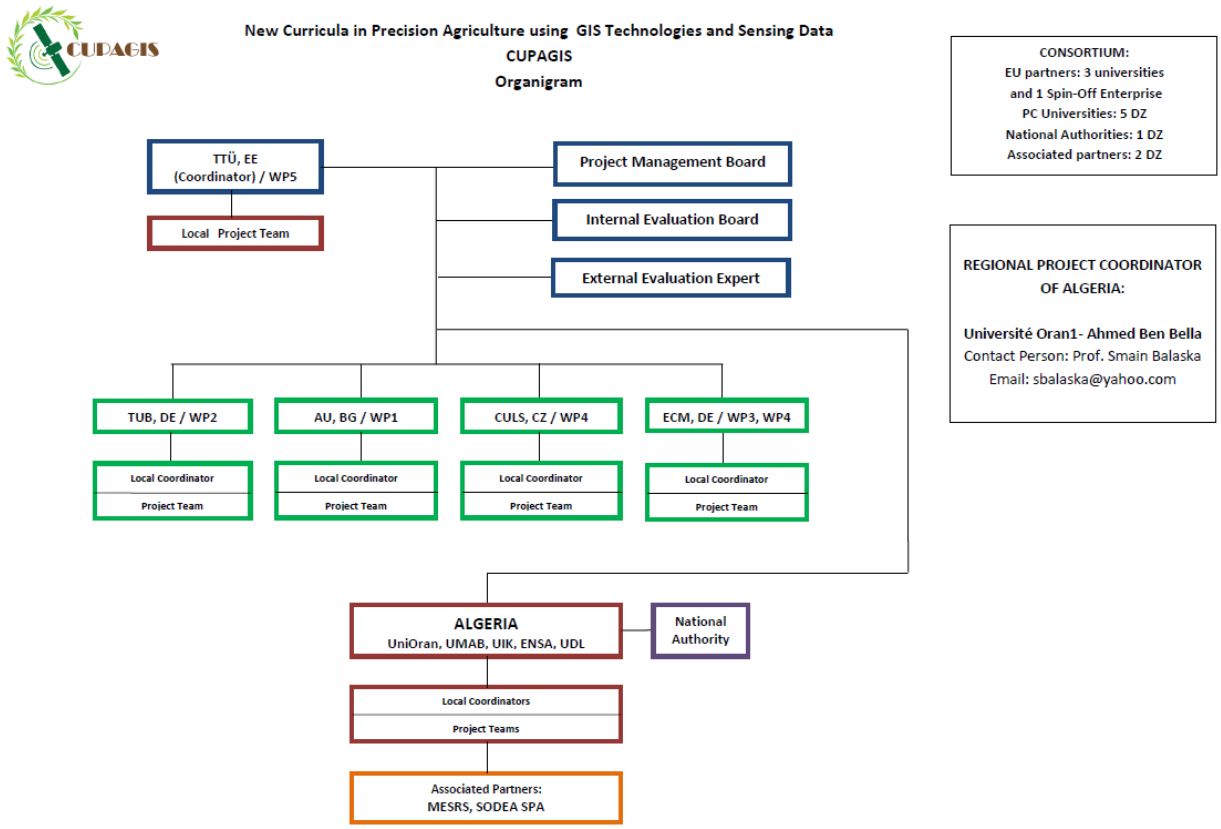
b) Programme (agenda) of the event

c) List of participants (name, organization, position)

d) Short description of the activity: goals/objectives, outcomes of the event

e) Photos of the event (2-5 pictures); videos

Tab. 7. Organigram of Consortium CUPAGIS



Tab. 8. Table of project partners:

Partner #	Organisation Name / Acronym		City / Country	
P1	Tallinn University of Technology	TTÜ (Coordinator)	Tallinn/Estonia	
P2	Technische Universität Berlin	TUB	Berlin / Germany	
P3	Agricultural University Plovdiv	AU	Plovdiv, Bulgaria	
P4	Ceska Zemedelska Univerztity v Praze	CULS	Prague, Czech Republic	
P5	ECM space technologies GmbH	ECM	Berlin / Germany	
P6	Djillali Liabes University	UDL	Sidi Bel Abbès, Algeria	
P7	Université d'Oran1 Ahmed Ben Bella	UniOran	Oran, Algeria	
P8	Ibn-Khaldoun University Tiaret	UIK	Tiaret, Algeria	

P9	UNIVERSITE DE MOSTAGANEM	UMAB	Mostaganem Algeria	
P10	Ecole Nationale Superieured´Agronomie	ENSA	Algiers, Algeria	
P11	Ministry of Higher Education and Scietific Research	MESRS	Ben Aknoun, Algeria	

Tab. 9. List of Associated Partners

Name of organisation	Type of institution	Website	City	Country
Ministry of Higher Education and Scientific Research	Government Institution	https://www.mesrs.dz/	Alger	Algeria
Agricultural Development Society (SODEA SPA)			Sidi-Bel-Abbes	Algeria

Tab.10. Work plan

Activities		Start	End
Ref.nr/ Sub-ref nr	**Title**		
1.1 Prep.	Review of the current curricula for BA/MSc in target area in PC HEIs. Guideline and plan for revising existing courses	15.11.2018	30.04.2019
1.2 Prep.	Agreement on instructional strategy and guidelines for BA/MSc curricula design including the use of new Educational Technologies	15.11.2018	31.03.2019
2.1 Dev.	a) Prepare a set of new core curricula and transferable modules inclusive innovative teaching/ learning facilities; develop syllabi; b) adopt on institutional level c) accredit on national level	a) 01.12.2018 b) 01.10.2019 c) 01.10.2020	a) 31.03.2020 b) 31.05.2020 c) 31.08.2021
2.2 Dev.	A) Prepare a set of documentation for PAGIS and VCR; B) purchase the equipment incl. software; install the equipment	a) 01.02.2019 b) 01.03.2019	a)30.09.2019 b)31.05.2020

2.3 Dev.	a) Casting criteria for participants and retraining program for academic teachers. b) Retrain academic teachers in new curricula using innovative teaching/ learning facilities and agreed instructional strategies	a)01.01.2019 b)01.09.2019	a)31.03.2019 b)31.08.2020
2.4 Dev.	To update the current BA/MSc curricula/create updated programs in the target area according to the Bologna requirements and the new developments	01.04.2019	30.09.2020
2.5 Dev.	a)Master Classes in new curricula b) Pilot operation of PAGIS and VCR	a) 01.09.2020 b) 31.05.2020	a)30.05.2021 b) 14.11.2021
2.6 Dev.	Pilot teaching of updated/new curricula/modules/courses	01.09.2020	14.11.2021
3.1 Quality	The Quality assurance strategy/Q Plan of each PC university including internal/external Quality evaluation/reports according to Q Plan	15.11.2018	14.11.2021
4.1 Diss.	Project DISS& EXP /communication plan using a Set of Promotional Materials; Dissemination Events, Joint WEB based platform, "CUPAGIS+" Agreement	15.11.2018	14.11.2021
4.2 Diss.	Full media coverage of the project activities inclusive developing and maintenance of Joint WEB based platform	15.11.2018	14.11.2021
4.3 Diss.	Develop a set documentation on PASENSO with stakeholders support /purchase /install equipment /establish	01.02.2019	30.04.2020
4.4 Diss.	a)Staff training PASENSO b) Pilot operation of PASENSO c) Establishing Regional /International PASENSO network	a) 01.04.2020 b) 01.04.2020 c) 01.04.2020	a) 31.10.2020 b) 14.11.2021 c) 30.04.2021
4.5 Diss..	Refresh training courses for graduates in PASENSO	01.09.2020	31.08.2021
4.6. Diss..	International BA/ MSc Summer Schools*	01.06.2020	31.07.2021
5.1. Manag	Management of the project including Project management online, daily project administration and coordination	15.11.2018	14.11.2021
5.2. Manag	Coordination meetings	15.11.2018	14.11.2021

Important milestone:

*First summer school: app. 06-07.2020;

Second summer school: app. 06-07.2021

(will be discussed at the kick-off meeting)

2.6. Pilot teaching updated/new curricula/modules/courses start: 01.09.2020