Periodical Report
24 Months of project implementation

New Curricula in Precision Agriculture Using GIS Technologies and Sensing Data

CUPAGIS

IBN KHALDOUN TIARET UNIVERSITY UIK

Co-funded by the Erasmus+ Programme of the European Union

Joint Project: Capacity Building in the Field of Higher Education ERASMUS+ 2018

By UIK Group

1- PROJECT ACTIVITIES from 16.05.2020 till 15.11.2020

1- Discussion with local experts (two local experts have been appointed) the proposed program.

2- Review the recommendations proposed by Cupagis experts

3- Begin the administrative procedures of the Master of Precision Agriculture Master Plan with the scientific authorities: Department Council, Faculty Scientific Council, University Scientific Council for visa.

4- The file was submitted to the regional conference

Activities and their results specifically for each of the Work Packages (WP1-WP5)

WP1: Review of the current curricula for BA/MSc

Agricultural statistics and experimentation ; Plant ecophysiology , Geographics informations systems ;; Information's & communications technologies ; Bibliographic research, general agriculture , agro meteorology

WP2 : Update new curricula

Remote Sensing and Application of Earth and Environment related PA ; Yield sensors for Precision Agriculture ; Basics of the Precision Agriculture ; Intensive course to leverage acceptance of the new technologies ; Soil physical properties and its measurement ; Algorithmic and data structure ; Electrical and electronic measurements ; Global Navigation Satellite System (GNSS) ; signal processing ; Artificial Intelligence , Start-up initiatives for future farmers ; Using of SENTINEL1-2-3 imagery for agricultural field monitoring ;Optimizing computer vision algorithms and real-time implementations ; Web technology ; Application of precision agriculture for culture growth ; Geographic's data bases ; Management Marketing and Decision Making in Precision Agriculture, agricultural legislation

WP3 Quality Control:

- Asess visibility, clarity and attractiveness of training
- Assess adequacy of access conditions with the objectives of the training
- Collection and analysis of data
- Internal review of the curricula
- Meeting with the members of the University QA Unit
- Developpement of quality indicators for curricula
- Curricula Evaluation

Activities and their results specifically for each of the Work Packages (WP1-WP5)

WP4 Passenso:

- 05 programs on Tiaret radio were animated defining the objectives of Cupagis, to raise awareness among potential socio-economic partners and other actors in the agricultural sector.
- Participation in the national agricultural extension day (October 2020): the Cupagis group presented posters and brochures to rural populations.
- Creation and distribution of a Cupagis brochure on the moodle eLearning platform of IBN KHALDOUN DE TIARET University.

4-presentation of the Cupagis project to students from target populations.

WP5 management project:

- Organization of meetings zoom with European and Algerian partners (on average every two weeks). The main topic is Cupagis equipments.
- Organization of meetings with the members of Cupagis: the objective was: to upgrade old programs; the improvement of the new programs offered, credit calculation etc....
- Preparation of the national agricultural extension day (October 2020)
- Participation in local radio broadcasts
- Meeting of Cupagis zoom with socioeconomic partners.
- Preparation of the master's file for submission to the ministry.

Positive changes/benefits in the university as the result of each of the implemented activities of the project

WP1: Upgrade of old programs that can be taught currently at our university.

WP2- A new precision agriculture program curriculum has been introduced.

WP3- Installation of a quality and control unit was installed, not only for the Cupagis project, but for the university of Tiaret

WP4- Effective and valid dissemination for the University of Tiaret

Problems/difficulties encountered while implementing the activities and the measures taken to solve them

The implementation of a final list of project equipment was difficult: some equipment essential for the project was eliminated by the Algerian partners (the administrative procedures for acquiring this equipment are complicated)

2- New Courses development

f 4, Viu 3 o U	Title of the course And in which program it is taught (Bachelor, Master)	Number of ECTS	Number of students participating in the course	Name new elements in the course and estimate the percentage they represent in relation to pre-existing course	Link to the course on the university page	Accreditation and recognition : specify the date when the course was accredited in the curriculum and when the pilot teaching started
01	Remote Sensing and Application of Earth and Environment related PA	08	25	100 %	being uploaded	**Accreditation :** **02/04/2020 (Scientific council of department)** **05/04/2020(scientific council of faculty)** **06/04/2020 (scientific council of university)** **Pilot teaching Start date : October 2020** **Accreditation :** **02/04/2020 (Scientific council of department)**
02	Yield sensors for Precision Agriculture	03	25	100 %		
03	Basics of the Precision Agriculture	05	25	100 %		
04	Intensive course to leverage acceptance of the new technologies	03	25	100 %		
05	Soil physical properties and its measurement	04	25	100 %	being uploaded	
06	Algorithmic and data structure.	05	25	100 %		
07	Electrical and electronic measurements	05	25	100 %		
08	Global Navigation Satellite System (GNSS)	3.5	25	100 %		
09	signal processing	03	25	100 %		
10	Artificial Intelligence	03	25	100 %		

2- New Courses development

Course N°	Title of the course And in which program it is taught (Bachelor, Master)	Number of ECTS	Number of students participating in the course	Name new elements in the course and estimate the percentage they represent in relation to pre-existing course	Link to the course on the university page	Accreditation and recognition : specify the date when the course was accredited in the curriculum and when the pilot teaching started
11	Start-up initiatives for future farmers	2.5	25	100 %		05/04/2020(scientific council of faculty) 06/04/2020 (scientific council of university) Pilot teaching Start date :October 2020
12	Using of SENTINEL1-2-3 imagery for agricultural field monitoring	04	25	100 %		
13	Optimizing computer vision algorithms and real-time implementations.	04	25	100 %		
14	Web technology	03	25	100 %		
15	Application of precision agriculture for culture growth	04	25	100 %	being uploaded	Accreditation : 02/04/2020 (Scientific council of department) 05/04/2020(scientific council of faculty) 06/04/2020 (scientific council of university) Pilot teaching Start date :October 2020
16	Geographics data bases	04	25	100 %		
17	Agricultural legislation	02	25	100 %		
18	Management Marketing and Decision Making in Precision Agriculture	03	25	100 %		

∑(Total number of new courses) =_18_
∑(Total number of ECTS) = ___69__

- Updated and New Courses

activities and the measures taken to solve them

Table 2.1.1. UPDATED COURSES						
Course №	Title of the course and in which program it is taught (Bachelor, Master)	Its volume (in ECTS)	Number of students participating in the course	Name new elements in the course and estimate the percentage they represent in relation to the preexisting course	Link to the course on the university page	Accreditation and recognition: Specify the date when the course was accredited in the curriculum and when the pilot teaching started
Course 1	Agricultural statistics and experimentation	04	25		Being uploaded	Accreditation : 02/04/2020 (Scientific council of department) 05/04/2020(scientific council of faculty) 06/04/2020 (scientific council of university) Pilot teaching Start date : October 2020
Course 2	Plant ecophysiology	04	25			
Course 3	Geographics informations systems	04	25			
Couse 4	Information's & communications technologies	01	25			
Course 5	Bibliographic research	01	25			
Course 6	general agriculture	03	25			
Course 7	agro meteorology	04	25			

∑(Total number of updated courses) = __07___
∑(Total number of ECTS) = ___21_____

3- Quality assurance

- **Provide the work plan of the Quality group from November 15, 2020 till November 15, 2021**

Conduct surveys of visibility, clarity and attractiveness of training
Assess adequacy of access conditions with the objectives of the training
Internal review of new courses
Updating of the group's work schedule.

- **Report on the peer review procedure: which new modules have you chosen for the peer review?**

The New chosen modules are:

- Basics of the Precision Agriculture
- Application of precision agriculture for culture growth

Which quality indicators have you chosen for the peer review template? – Provide in the presentation

Peer reviewers
Contribution of socioeconomic partners /conventions
Number of interested students (Survey).

- **Who are/will be peer reviewers?**

The peer reviewers are lecturers at the Faculty of natural and life sciences and the Faculty of applied sciences.

- **When did you conduct peer reviews? If you haven't done it yet: When will you send the peer review questionnaire and get a feedback from peer reviewers?**

The peer review questionnaire concerning the curricula was sent to the peer reviewers but we don't have the feedback yet. The peer review questionnaire concerning the new courses will be sent to the peer reviewers soon.

4- Laboratories and equipment

Within the framework of the ERASMUMS + CUPAGIS project, the IUK University has two types of laboratories mobilized for this purpose, the educational laboratory belonging to the Faculty of Natural and Life Sciences, Department of Agricultural Sciences, will house the educational work and end of studies dissertations, in particular with aspects related to soil sciences and plant physiology.

The Agrobiotechnology and Nutrition in Semi-arid zones Laboratories, as well as that of Computer Engineering through their research teams, will ensure the part relating to the modeling of crops, the use of remote sensing technologies, GIS, the installation of sensors on the ground as well as the applications of artificial intelligence for the monitoring of crops at the level of the experimental plots made available by the socio-economic partners, as well as that of the educational farm of the university .

5- Dissemination and Sustainability

Table 5.1.1 DISSEMINATION		
	Question	**Answer**
1	**How many and which of dissemination materials were produced (leaflets, brochures, flyers, publications etc). Please, provide designs (scans) in the presentation.**	Two types of dissemination materials were used to promote the new curricula within the CUPAGIS project
2	**Provide a link to the Internet sources where publications about the project/dissemination materials were posted**	**http://cupagis.univ-tiaret.dz/**
3	**How many non-consortium organizations (for example, universities/teachers, students, administrative staff of universities) have been informed about the project?**	the CUPAGIS project has affected different levels at the level of the IBN KHALDOUN University of TIARET, particularly at the level of the faculty of natural and life sciences, where the students of the target populations, the teachers, the administrative staff are held in current of the new training offer proposed as part of the project, the planned equipment as well as everything related to the progress of the project.

5- Dissemination and Sustainability

Table 5.1.2. DISSEMINATION EVENTS

No	Date	Title	Target Audience	Number of participants	Is there a press-release of the event (YES/NO). If YES, provide it.
1	Every month Since January 2020	Radio broadcast and debates around the project on the local station (03 sessions)	PUBLIC	03 (PASENSO & MANAGERS)	https://www.eldjoumhouria.dz/art.php?Art=88664 https://www.vitaminedz.com/مشروع-لإنشاء-مدرسة-وطنية-للزراعات-الذكية-
2	1st October 2020	- Participation in the national agricultural extension day (October 2020)	farmers, companies, politicians, researchers	06(PASENSO , MANAGERS, TEACHERS)	https://alhayatalyaoum.com/مشاركة-قوية-وفعّالة-لجامعة-ابن-خلدون-ف-
3	09 February 2021	Presentation of Cupagis to the Minister of Higher Education	PUBLIC	06(PASENSO , MANAGERS, TEACHERS)	https://www.elitihadcom.dz https://www.djazairess.com/elwa i/114358

Sustainability of PASENSO Offices

Table 2.4. PASENSO Service Office

№	Question	Answer
1	Name of the person(s) responsible for PASENSO operation in your university	• MAAMAR BENCHOHRA • BOUACHA MOHAMED ISLEM
2	Provide scan of PASENSO regulations approved at institutional level	Appendix 02
3	Provide scan of PASENSO work plan approved at institutional level	Appendix 03
4	Indicate activities, that was already been implemented according to PASENSO work plan (title of activity, date, link to agenda, number of persons involved)	• Presentation of the project to socio economic partners • Presentation of the project to the state governor • Presentation of the project to large audience using the official local radio station. (Please refer to the work plan for the links
5	Provide link to the PASENSO web page at the university website / FB page or any other digital source of PASENSO	http://cupagis.univ-tiaret.dz/ https://www.facebook.com/Erasmus-CUPAGIS-University-Ibn-khaldoun-Tiaret-351876452140276 https://www.facebook.com/tiaret.univ/posts/4431287170279579
6	How many CUPAGIS+ agreements were signed so far?	03 agreements

Appendix's. Peer review reports.

University of Tiaret

Faculty of Natural and Life Sciences

Co-funded by the Erasmus+ Programme of the European Union

Training offer: Master in Precision Agriculture

Reviewed module: **Application of precision Agriculture for crops growing**

Peer-review questionnaire

1-Peer reviewer information:

Name of the reporter: Dr. Mohamed Djamel MIARA

Position: Lecturer-Researcher (Department and Faculty of Natural and life sciences, university Ibn Khaldoun, Tiaret)

2- Evaluation of New Modules:

N°	Evaluation criteria	Appreciation
01	The prerequisites are well defined.	B
	The chapters are well structured and coherent	A
02	The chapters are sufficiently detailed.	B
03	The attributed ECTS are in concordance with the importance of the subject.	A
04	The number of contact hours is sufficient.	A
05	Bibliographical references are rich and up to date	A
06	The teaching method is adapted to the content of the module (lectures-training- group work- individual work-, etc.)	B
07	The evaluation method (tests- exams) is adopted for the module content.	A

Evaluation scale: A: completely satisfied ; **B**: quite satisfied ; **C**: Satisfied ; **D**: insufficiently satisfied ; **E**: Very insufficiently satisfied

3. Comments and Conclusions:

The objective of the courses should be better detailed. The teaching method must be specified.....

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Reviewer name: **Dr. Mohamed Djamel MIARA**

Signature of the Reviewer

Appendix's

University of Tiaret

Faculty of Natural and Life Sciences

Co-funded by the Erasmus+ Programme of the European Union

Training offer: Master in Precision Agriculture

Peer-reviewer questionnaire

1-Peer reviewer information:

Name of the reporter: Belkacem BELABBAS

Position: Senior Lecturer at university Ibn Khaldoun, Tiaret, Algeria.

2-Evaluation of the curricula:

N°	Evaluation criteria	Appreciation
01	The CANVAS is conformed to the European standards.	**A**
02	The offer is valid by all control authorities	**A**
03	The objectives are well defined by the CANVAS	**A**
04	The offered formation is in agreement with the socio-economic needs of the region.	**A**
05	The offered formation is linked with the project's objectives of this institute/ university.	**A**
06	The program contents are clear and coherent to the target competencies.	**A**
07	The access conditions are defined. The concerned population is well specified.	**A**
08	The modules are compatible with the method of teaching (lectures-training- group work- individual work-..) to have a satisfied quality of formation.	**A**
09	The evaluation methods are well defined (attending or at distance).	**B**
10	The pedagogical locals feed the need of the adopted formation	**A**
11	The pedagogical materials ensure the target formation	**B**
12	The new curricula is well structured	**A**
13	The mode of evaluation (tests- exams) is adopted for each teaching module	**B**
14	The tutors' profiles correspond to the taught modules	**A**
15	The rate of supervision is in concordance with the international standards.	**A**
16	The training team contains associate teachers	**A**

Evaluation scale: A: completely satisfied; **B**: quite satisfied; **C**: Satisfied; **D**: insufficiently satisfied; **E**: Very insufficiently satisfied

3. Comments and Conclusions:

According to the CANEVAS of the academic master's training, we see that:

Availability of human resources (intervening teachers) and materials (laboratories, rooms, IT tools, etc.).

The proposed modules are suitable for this training.

The content of each module is well detailed.

This academic master's degree offers a great opportunity for Ibn Khaldoun University, Tiaret, Algeria.

Reviewer name: **Belkacem BELABBAS**

Signature of the Reviewer

Appendix's

University of Tiaret

Faculty of Natural and Life Sciences

Co-funded by the Erasmus+ Programme of the European Union

Training offer: Master in Precision Agriculture

Reviewed module: Electrical and electronic measurements

Peer-review questionnaire

1-Peer reviewer information:

Name of the reporter: Belkacem BELABBAS

Position: Senior Lecturer at university Ibn Khaldoun, Tiaret, Algeria.

2- Evaluation of New Modules:

N°	Evaluation criteria	Appreciation
01	The prerequisites are well defined.	A
	The chapters are well structured and coherent	A
02	The chapters are sufficiently detailed.	A
03	The attributed ECTS are in concordance with the importance of the subject.	A
04	The number of contact hours is sufficient.	D
05	Bibliographical references are rich and up to date	C
06	The teaching method is adapted to the content of the module (lectures-training- group work- individual work-, etc.)	A
07	The evaluation method (tests- exams) is adopted for the module content.	B

Evaluation scale: A: completely satisfied; **B**: quite satisfied; **C**: Satisfied; **D**: insufficiently satisfied; **E**: Very insufficiently satisfied

3. Comments and Conclusions:

After viewing the content of this module, we find that a lesson lasting 1 hour: 30 minutes is insufficient to complete the 6 chapters during one semester. So, it is necessary to add another class session lasting 1 hour: 30 minutes.

It is important to add detail in this CANVAS on the number of TP titles that should be completed during the semester.

The content of the module is very detailed and includes all the basics of signal processing.

Reviewer name: **Belkacem BELABBAS**

Signature of the Reviewer

Appendix's

University of Tiaret

Faculty of Natural and Life Sciences

Co-funded by the Erasmus+ Programme of the European Union

Training offer: Master in Precision Agriculture

Reviewed module: Signal processing

Peer-review questionnaire

1-Peer reviewer information:

Name of the reporter: Belkacem BELABBAS

Position: Senior Lecturer at university Ibn Khaldoun, Tiaret, Algeria.

2- Evaluation of New Modules:

N°	Evaluation criteria	Appreciation
01	The prerequisites are well defined.	A
	The chapters are well structured and coherent	A
02	The chapters are sufficiently detailed.	A
03	The attributed ECTS are in concordance with the importance of the subject.	A
04	The number of contact hours is sufficient.	C
05	Bibliographical references are rich and up to date	C
06	The teaching method is adapted to the content of the module (lectures-training- group work- individual work-, etc.)	A
07	The evaluation method (tests- exams) is adopted for the module content.	B

Evaluation scale: A: completely satisfied; **B**: quite satisfied; **C**: Satisfied; **D**: insufficiently satisfied; **E**: Very insufficiently satisfied

3. Comments and Conclusions:

Given the importance of this module for this training, it is necessary to add a tutorial session lasting 1 hour: 30 minutes and change the evaluation mode.

The module content is very detailed and includes all the basic notions of signal processing.

Reviewer name: **Belkacem BELABBAS**

Signature of the Reviewer

Appendix's

University of Tiaret

Faculty of Natural and Life Sciences

Co-funded by the Erasmus+ Programme of the European Union

Training offer: Master in Precision Agriculture

Reviewed module: Yield sensors for Precision Agriculture

Peer-review questionnaire

1-Peer reviewer information:

Name of the reporter: Belkacem BELABBAS

Position: Senior Lecturer at university Ibn Khaldoun, Tiaret, Algeria.

2- Evaluation of New Modules:

N°	Evaluation criteria	Appreciation
01	The prerequisites are well defined.	A
	The chapters are well structured and coherent	A
02	The chapters are sufficiently detailed.	A
03	The attributed ECTS are in concordance with the importance of the subject.	A
04	The number of contact hours is sufficient.	A
05	Bibliographical references are rich and up to date	A
06	The teaching method is adapted to the content of the module (lectures-training- group work- individual work-, etc.)	A
07	The evaluation method (tests- exams) is adopted for the module content.	B

Evaluation scale: A: completely satisfied; **B**: quite satisfied; **C**: Satisfied; **D**: insufficiently satisfied; **E**: Very insufficiently satisfied

3. Comments and Conclusions:

After viewing the content of this module, we note that the number of TP titles carried out during the semester 1is not detailed enough in this CANVAS.

To conclude, the module has a very important value in the training. His content is well presented and bibliographic references are recent.

Reviewer name: **Belkacem BELABBAS**

Signature of the Reviewer

Appendix's. PASENSO documents and Work plan

CUPAGIS

Co-funded by the
Erasmus+ Programme
of the European Union

IBN Khaldoun University, Tiaret

PASENSO OFFICE

Here, by the present statement, the undersigned Professor Mhamed MAATOUG, acting as coordinator of the project **Erasmus + Project: New curricula in Precision Agriculture using GIS technologies and sensing data (CUPAGIS)**, certify that Dr. Benchohra MAAMAR is a member of the project and practices within the next activity: Chief Officer of the PASENSO Office, responsible for communication and follow-up.

12. 01. 2019
UIK Coordinator,

Prof. MAATOUG .M.
Cupagis Project Coordinator
UIK Tiaret University,Algéria

CUPAGIS

Co-funded by the
Erasmus+ Programme
of the European Union

IBN Khaldoun University, Tiaret

PASENSO OFFICE

Here, by the present statement, the undersigned Professor Mhamed MAATOUG, acting as coordinator of the project **Erasmus + Project: New curricula in Precision Agriculture using GIS technologies and sensing data (CUPAGIS)**, certify that Dr. Mohamed islem BOUACHA is a member of the project and practices within the next activity: member of the PASENSO Office, responsible for communication and follow-up.

12. 01. 2019
UIK Coordinator,

Prof. MAATOUG .M.
Cupagis Project Coordinator
UIK Tiaret University,Algéria

Appendix's. PASENSO documents and Work plan

PASENSO UIK. Tiaret. Algeria
CUPAGIS work plan for dissemination,
period 15-11-2020 / 14-11-2021.

1- Project presentation:

In the continuity of the actions of presentation of the project, for the university community at the University Ibn Khaldoun (UIK) of TIARET, the PASENSO plans to prepare brochures and flyers explaining the objectives of the project, its benefits as well as its repercussions.

2- Animation and dissemination on social networks:

Two links were provided for the benefit of target populations, socio-economic partners but also local political authorities in order to reach a wider audience and a large public.

CUPAGIS UIK Facebook page: https://www.facebook.com/Erasmus-CUPAGIS-University-Ibn-khaldoun-Tiaret-351876452140276

CUPAGIS UIK web page : http://cupagis.univ-tiret.dz/

3- Facilitation of media sessions:

with representatives of local television stations and regional/national radio stations.

A presentation of the project was made the state (wilaya) governor:

https://www.facebook.com/tiaret.univ/posts/4431287170279579

A presentation of the new curricula was made Dr. Bouacha Mohamed for the local radio station

4- Conferences and webinars:

Preparation of online conference and webinar sessions jointly with the socio-economic partners, the training team and the universities members of the project in view of a possible partnership and an opening of the project to local companies and other actors of agriculture.

Organizing series of moodles by the participants in the master classes held by the Berlin university to assure a wide transfert of knowledge for local students.

Organizing open days event to present the new curricula once approved by local Ministry of higher education.

5-Coordination and internal dissemination:

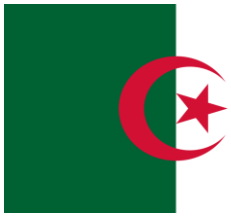
to prepare with the training team the courses to be put on line on the Cupagis platform on the site of the University IBN KHALDOUN DE TIARET. To facilitate the circulation of information in coordination with the persons in charge of the project for a better planning and implementation of the tasks.

5- Design and production of dissemination tools:

Preparation of brochures, flyers to be distributed during open days, study days around the project, and to be disseminated online on the project's web pages.

Local coordinator UIK

Prof. MAATOUG .M.
Cupagis Project Coordinator
UIK Tiaret University,Algeria



Thank you for you attention!

By UIK University Group

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