Periodical Report
12 Months of project implementation

New Curricula in Precision Agriculture Using GIS Technologies and Sensing Data

CUPAGIS

DJILLALI LIABES UNIVERSITY OF SIDI BEL-ABBES

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Schedule of meetings

A meeting, gathering the workgroup and teachers participating in the training of Berlin, was organized in order to discuss how to share the knowledge received during the training.
The download link for course materials, notes, photos and videos related to the courses were made available to the teachers who are part of the master's training team.

Schedule of meetings

The following schedule for meetings was adopted to disseminate knowledge, acquired from training of Berlin, to the teachers:

01 octobre 2019
08 octobre 2019
13 octobre 2019
20 octobre 2019

List of participants to the meetings

Nº	Name, SURNAME	Position in the University
1	Nadir BENMANSOUR	Teacher, Natural and Life Sciences Faculty
2	Fatiha FARAOUN	Teacher, Natural and Life Sciences Faculty
3	Riad DJELLOULI	Teacher, Natural and Life Sciences Faculty
4	Salah eddine BACHIR BOUIADJRA	Teacher, Natural and Life Sciences Faculty
5	Abbassia AYACHE	Teacher, Natural and Life Sciences Faculty
6	Mostefa HADDAD	Teacher, Head of Agronomy department
7	Miloud CHIKR ELMEZOUAR	Teacher, Electrical engineering Faculty
8	Zidane DJELLOUL	Teacher, Responsible of the Entrepreneurship office
9	Abdelkader RAHMANI	Teacher, Natural and Life Sciences Faculty
10	Ahmed MELALIH	Teacher, Natural and Life Sciences Faculty
11	Mohammed Mokhtar REGUIEG	Teacher, Natural and Life Sciences Faculty
12	Mimoun HAMOU	Director of the National Agricultural Research Institute of Algeria (INRAA) of Sidi Bel Abbes
13	Djamil Abdelhak MEHADJI	Teacher, computer science department
14	Mohammed HELAL	Head of Mathematics department
15	Djamel Berrabeh	Teacher, computer science department

A review to the teaching materials “training in Berlin”

This training was scheduled over a period of ten days. Three teachers from the University of Sidi Bel Abbes participated in this training..
The choice of teachers was based on their profiles, given the training program.
The first day, registrations were made at 9:00 Am and classes started one hour later.
It should be noted that all courses were in English

A review to the teaching materials “training in Berlin”

- The first day Prof. Dr. Martin Kada started the course with the presentation of 'Institute of Geodesy and Geoinformation Science' and research topics from his team 'Methods of Geoinformation Science (GIS)'. He then continued with a course on 'GIS and Spatial Databases', concluding with 'Introduction to Deep Learning'.

A review to the teaching materials “training in Berlin”

- The courses of the second day were provided by the doctoral student Sergej Dogadov. The themes are:
  - Introduction to Machine and Bayesian Learning
  - Machine Learning for Remote Sensing
  - Clustering: K-Means and GaussianMixture Models
- The courses of the third and fourth day were taught by the teachers of the Czech partner 'Czech University of Life Sciences Prague', in this case Prof. František Kumhála, Dr. Jitka Kumhálová and Dr. Jan Chyba. The courses delivered during these days are: 'Yield Sensors for Precision Agriculture', 'Introduction to crop growth monitoring and modeling on the basis of spectral response of canopies' and 'Basics & methods of soil physical properties & its evaluation'

A review to the teaching materials “training in Berlin”

- The presentations of the fifth day took place at the 'GFZ German - German Research Center, Potsdam'. The researchers: Trosten Schmidt, Antonoglou N., Henryk Dobslaw and Claudia Vallentin have presented their research on the following topics:

 GNSS radio occulations: processing at GFZ and applications for weather and climate research.

 GNSS-based remote sensing: an innovative observation of key hydrological parameters in central Andes.

GR Observing mass variability in the Earth system with satellite gravity missions GRACE and GRACE-FO

 Remote sensing applications for precision agriculture

 Data fusion for precision farming based on belief theory

A review to the teaching materials “training in Berlin”

- The second week started with the classes of Prof. Dr-Ing Klauss Briess, Chair of Space Technology, TUB, dealing with remote sensing in general, and that applied to precision farming in particular.
- The presentations of the two following days were provided by teachers of the Bulgarian partner and concerned:
 Using GIS and SENTINEL1-2-3 imagery for agricultural field monitoring
 Global Navigation Satellite Systems (NAVSTAR, GLONASS, GALILEO)
 Precision agriculture - characteristics, technologies, economic efficiency, optimal use of resources
- At the end of the course a course on management and another on programming in Python were scheduled.

A review to the teaching materials “training in Berlin”

- It is to highlight that :

 The training went well overall and benefited our teachers.

 New contacts were made with European, Kazakh, Uzbek and Turkmen partners for future collaborations in research projects and university education.

UDL University plans regarding new curricula

Djillali Liabes University of Sidi Bel-Abbes plans to launch one new Master curriculum in Precision Agriculture.
As expected, most of the courses proposed in the project will be introduced in this curriculum; namely:
- Remote Sensing and Application of Earth and Environment related PA
- Using of SENTINEL1-2-3 imagery for agricultural field monitoring
- Global Navigation Satellite Systems (NAVSTAR, GLONASS, GALILEO, etc.)

UDL University plans regarding new curricula

- Web technologies (Agro SDI, Geo-portals, Geo-services, Geo-analytical systems)
- Basics of the Precision agriculture – characteristics, technologies, economic efficiency, optimal use of resources
- Soil physical properties and its measurement
- Application of Precision Agriculture for crops growing
- Start-up initiatives for future farmers
- Management Marketing and Decision Making in Precision Agriculture
- Management Marketing and Decision Making in Precision Agriculture

UDL University plans regarding new curricula

However, we propose to discard the course regarding Optimizing computer vision algorithms and real-time implementations, in favor of other courses as detailed hereafter.

On the other hand, the course of “Yield sensors for precision agriculture” will include, in addition to yield sensors, the most popular sensors used in PA. It will be renamed as “Sensors for Precision Agriculture”.

UDL University plans regarding new curricula

As reported above, the following courses will be introduced in the Master curriculum:

- ✓ Bioinformatique et analyses des données
- ✓ Gestion des bases de données et Big data
- ✓ Grandes cultures
- ✓ Cultures maraichères
- ✓ Cultures pérennes
- ✓ Protection des cultures
- ✓ Machinisme agricole
- ✓ Irrigation de précision

Schedule of re-training of teachers

The following schedule for meetings was adopted to disseminate knowledge, acquired from training of Berlin, to the teachers:

- 01 octobre 2019
- 08 octobre 2019
- 13 octobre 2019
- 20 octobre 2019

Accreditation deadline and future procedure

Accreditation of a new training program in an Algerian university goes through the following steps:

1- The training team prepares all the programs for the training subjects and fills in a template provided by the Ministry of Higher Education.

2- This template is subject to an expertise at the level of the appropriate scientific advice of the institution.

3- The approved programme, at university level, is sent for national expertise when the ministry opens the expertise session for new training programs. The date of this session, managed by the ministry, is often set towards the end of February.

Accreditation deadline and future procedure

4- The results of the expert reports will be available towards the end of June (after 4 months).
5- The new training will be operational at the start of the next academic year.
NB: no training program can be launched if it is not validated by the ministry.

Quality indicators

1) Balance of student's workload: theory, practical work, individual work, internship in a company, testing system
2) Application of ECTS by developing new courses or modernizing the old ones.
3) Usage of the up-to-date information about the latest results of international scientific research in teaching materials.
4) Usage of the university online educational platform during the educational process

Quality indicators

5) Ability of students to influence the educational content or process. For instance, ability of students to choose a topic of reporting or practical works, to attend elective modules/courses.
6) Partial teaching and implementation of reporting works in English
7) Portfolio of student's completed practical works in a group

Quality indicators

8) Correspondence to the national norms (standards) of education
9) Consideration of a new module by the university with the participation of experts from non-academic partners and organizations.
10) Publications of teaching staff, participation of students in conferences on the module’s topics

Peer reviewers of the future new curricula

A list of potential peer reviewers to conduct review of our courses is under construction. Contacts with representatives of research centers and universities are in progress. In addition, we plan to invite expert from non-academic partners for reviewing the new curricula.

Work plan of quality group until may 2020

The quality assurance plan aims at:

- Collecting data to ensure that required actions are correctly/efficiently implemented;
- Ensuring the quality of the data collected.

The following activities should be included:

Mention frequency of meetings including participants, agenda, future actions, reports...;

Provide and specify a list of all documents referenced in the partner's tasks;

Detail the project minor and major milestones including reviews;

Check that the deadlines and schedule are observed;

Work plan of quality group until may 2020

List the specific individuals implied in each of the identified activities/tasks;
Plan process review: targets, expected outcomes, impact...
Targets set previously will be reviewed;
Strategies and techniques implemented to ensure progress towards the targets should be clearly identified.
Assess periodically the state of progress of the following tasks, progress should be quantifiable:

- Develop new curricula and syllabi;
- Purchase and install the equipment;

Work plan of quality group until may 2020

Define participants training criteria;
Gather documentation for PAGIS and VCR;
Prepare a set of documentation for PASENSO.

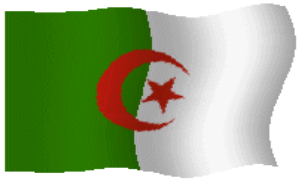
A specific attention will be drawn on communication and coordination efficiency.

Depending on the data generated, corrective actions will be performed to solve potential problems.

A quality assurance checklist has been designed including/taking into account various parameters of the project.

Future dissemination activities until May 2020

№	Event	Date
1.	Meeting of the CUPAGIS project work group.	monthly
2	Workshop for teachers of Natural and Life Sciences Faculty.	January 2020
3	Workshop for students of Natural and Life Sciences Faculty / and for each new BA class	February 2020
4	Meeting with Associated Partners and stakeholders	Depending on timetable of our partners.
5	UDL CUPAGIS Facebook page updating and web information diffusion	According to conducted events
6.	Publishing UDL CUPAGIS information on newspaper	To be defined
7	Publication as information leaflets, brochures, and on the Website of the university	Frequently
8	Participation in coordination meetings.	according to plan
9	Meeting for diffusion about the Pasenso office.	May 2020



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Thank you for you attention!

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