Plan

- Curricula: updated and new courses, curricula description, teaching materials, pilot teaching.
- Quality assurance
- Laboratories: equipment retrieve+dispatch task, exploited laboratories in the launched curricula.
- Dissemination and sustainability
- Spin-off effects

Curricula / Updated Courses

Accredited at university and regional levels: 20 March 2021.
Accredited by the national commission at the ministry of higher education: 12 July 2021
Integrated in the official ministry list of curricula for high school bachelors: 29 June 2021

- **Agriculture**: Plant physiology, Plant biodiversity, Ecology and environment, Physiology of vegetable nutrition, Plant ecophysiology.
- **Technologies**: Introduction to Computer Science, Mathematics, Applied physics, Statistics, Data analytics, Bioinformatics, GIS for Precision Agriculture.

Curricula / New Courses

Accredited at university and regional levels: 20 March 2021.
Accredited by the national commission at the ministry of higher education: 12 July 2021
Integrated in the official ministry list of curricula for high school bachelors: 29 June 2021

- **Agriculture**: Water and water nutrition of plants, Physiology and biochemistry of symbotic fixation of nitrogen, Pedology, Agricultural irrigation technology, Vegetable production, Agricultural mechanization technology, Phytodiagnosis and phytoprotection, Fertilisation, Salty soils.

Curricula / New Courses

Accredited at university and regional levels: 20 March 2021.
Accredited by the national commission at the ministry of higher education: 12 July 2021
Integrated in the official ministry list of curricula for high school bachelors: 29 June 2021

- **<u>Technologies</u>**: Technological tools for Precision Agriculture, Programming and Algorithms, Information systems and web/mobile programming, Image Processing and Computer Vision, Sensor Systems for Precision Agriculture, Remote sensing, Advanced GIS Techniques for Precision Agriculture, Global Navigation Satellite Systems, Artificial intelligence, machine learning and big-data.

Curricula / Curricula description details

We have provided the core-curricula details. See the link:

https://drive.google.com/file/d/11H4TOSm602pBvhbxIhwGr1UFGs39_7J2/view?usp=sharing

Semester 1

Units	Courses	Total presential	Total student	LE	TU	PW	Personal Work	H. coach / stud.	H. coach / group stud.	Coeff	Credits	C : continu R : writ. rep. D : defense
UE Fundamental												
FU1 Introduction to plan biology	Plant physiology	45	70	22.5		22.5	25			4	4	
	Plant biodiversity	45	70	22.5		22.5	25			3	4	
	Ecology and environment	37.5	52.5	15	22.5		15			3	3	
FU2 Technologies	Technological tools for Precision Agriculture	45	80		22.5	22.5	35			4	4	
	Introduction to Computer Science	45	70	22.5		22.5	25			3	4	
U Methodology												
MU1 Mathematics and physics	Mathematics	52.5	67.5	15	22.5	15	15			3	3	
	Applied physics	45	60	22.5	22.5		15			3	3	
U Discovery												
UED1 Work methods	Fundamentals of the scientific approach	22.5	30		15	7.5	7.5			2	2	
U Transversal												
UET1 Language and communication 1	Strengthening of English language skills	22.5	30		15	7.5	7.5			2	1.5	
	Strengthening of language skills for communication	22.5	30.5		15	7.5	8			2	1.5	
	TOTAL SEMESTER	382.5	560.5	120	135	127.5	178			29	30	
	TOTAL	943										
	TOTAL FU	217.5	342.5	82.5	45	90	125			17	19	
	TOAL MU	97.5	127.5	37.5	45	15	30			6	6	
	TOTAL DU+TU	67.5	90.5	0	45	22.5	23			6	5	

Semester 2

Units	Courses	Total presential	Total student	LE	TU	PW	Personal Work	H. coach / stud.	H. coach / group stud.	Coeff	Credits	C : continu R : writ. rep. D : defense
U Fundamental												
FU1 Physiology and Nutrition	Physiology and biochemistry of symbiotic fixation of nitrogen	36	51	15	0	21	15			3	3	
	Physiology of vegetable nutrition	36	51	15	0	21	15			4	3	
	Water and water nutrition of plants	37.5	52.5	15	22.5	0	15			4	3	
FU2 Statistics and programming	Statistics	52.5	61.5	15	22.5	15	9			4	3	
	Programming and Algorithms	51	60	15	15	21	9			4	3	
	Information systems and web/mobile programming	36	51	15	0	21	15			3	3	
U Methodology												
MU1 Professions	Knowledge of Professions	22.5	37.5		15	7.5	15			2	1	
	Supervised project	22.5	45			22.5	22.5			2	2	
	Discovery training	0	112				112	2		6	6	
U Transversal												
TU1 Languages and communication 2	Professional English 1	22.5	30.5		15	7.5	8			2	2	
	Introduction to communication	22.5	30		15	7.5	7.5			2	1	
	TOTAL SEMESTER	339	582	90	105	144	243			36	30	
	TOTAL	921										
	TOTAL FU	249	327	90	60	99	78			22	18	
	TOAL MU	45	194.5	0	15	30	149.5			10	9	
	TOTAL DU+TU	45	60.5	0	30	15	15.5			4	3	

Curricula / Curricula description details

We have provided the core-curricula details. See the link:

https://drive.google.com/file/d/11H4TOSm602pBvhbxIhwGr1UFGs39_7J2/view?usp=sharing

Semester 3

Units	Courses	Total presential	Total student	LE	TU	PW	Personal Work	H. coach / stud.	H. coach / group stud.	Coeff	Credits	C : continu R : writ. rep. D : defense
U Fundamental												
FU1 *Agricultural Ecosystems*	Pedology	54	74	22.5	9	22.5	20			4	4	
	Plant ecophysiology	54	74	22.5	9	22.5	20			4	4	
	Agricultural irrigation technology	45	65		22.5	22.5	20			4	3	
FU2 *Data analytics and vision*	Data analytics	54	74	9	22.5	22.5	20			4	4	
	Bioinformatics	31.5	41.5	9	22.5		10			2	2	
	Image Processing and Computer Vision	67.5	87.5	22.5	22.5	22.5	20			4	4	
U Methodology												
MU1 *Self-awareness and project*	Self-awareness	9	9			9			3	1	1	
	Supervised project 1	22.5	45			22.5	22.5			2	2	
U Transversal												
TU1 *Languages and communication 3*	Professional english 2	22.5	30		15	7.5	7.5			2	2	
	Oral communication	22.5	30		15	7.5	7.5			1	2	
	Introduction to business management and creation	22.5	30.5	16.5	6		8			2	2	
TOTAL SEMESTER		405	560.5	102	144	159	155.5			30	30	
TOTAL		965.5										
TOTAL FU		306	416	85.5	108	112.5	110			22	21	
TOAL MU		31.5	54	0	0	31.5	22.5			3	3	
TOTAL DU+TU		67.5	90.5	16.5	36	15	23			5	6	

Semester 4

Units	Courses	Total presential	Total student	LE	TU	PW	Personal Work	H. coach / stud.	H. coach / group stud.	Coeff	Credits	C : continu R : writ. rep. D : defense
U Fundamental												
FU1 *Production and agricultural health*	Vegetable production	22.5	52.5	22.5			30			4	3	
	Phytodiagnosis and phytoprotection	45	65		22.5	22.5	20			4	3	
FU2 *GIS, sensors and remote sensing*	GIS for Precision Agriculture	45	69	22.5		22.5	24			4	3	
	Sensor Systems for Precision Agriculture	45	60		22.5	22.5	15			4	3	
	Remote sensing	60	75	15	22.5	22.5	15			3	3	
U Methodology												
MU1 *Projet management*	Decision in project management	9	39			9	30	3		2	2	
	Internship	0	224				224	3		9	9	
U Transversal												
TU1 *Languages, communication and companies*	Professional english 3	22.5	30		15	7.5	7.5			2	1.5	
	Written communication	22.5	30		15	7.5	7.5			1	1.5	
	Deepening in the management and creation of companies	22.5	32.5	12	10.5		10			1	1	
TOTAL SEMESTER		294	677	72	108	114	383			34	30	
TOTAL		971										
TOTAL FU		217.5	321.5	60	67.5	90	104			19	15	
TOAL MU		9	263	0	0	9	254			11	11	
TOTAL DU+TU		67.5	92.5	12	40.5	15	25			4	4	

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Curricula / Curricula description details

We have provided the core-curricula details. See the link:

https://drive.google.com/file/d/11H4TOSm602pBvhbxIhwGr1UFGs39_7J2/view?usp=sharing

Semester 5

Units	Courses	Total presential	Total student	LE	TU	PW	Personal Work	H. coach / stud.	H. coach / group stud.	Coeff	Credits	C : continu R : writ. rep. D : defense
UE Fundamental												
FU1	Fertilisation	46.5	66.5	9	22.5	15	20			4	3	
Agricultural	Salty soils	46.5	66.5	22.5	9	15	20			3	3	
Technologies	Agricultural mechanization technology	45	70	22.5	22.5		25			4	4	
	Advanced GIS Techniques for Precision Agriculture	54	74	22.5	9	22.5	20			4	4	
FU2	Global Navigation Satellite Systems	54	74	9	22.5	22.5	20			3	4	
GIS, GNSS and machine learning	Artificial intelligence, machine learning and big-data	45	65	22.5		22.5	20			3	3	
U Methodology												
MU1	Supervised project 2	22.5	45			22.5	22.5			3	3	
Project and business	Application to business management and creation	22.5	32.5	3	19.5		10			2	2	
U Transversal												
TU1	Professional English 4	22.5	30		15	7.5	7.5			2	2	
Languages and communication 4	Professional communication	22.5	30		15	7.5	7.5			1	2	
	TOTAL SEMESTER	381	553.5	111	135	135	172.5			29	30	
	TOTAL	934.5										
	TOTAL FU	291	416	108	86	98	125			21	21	
	TOAL MU	45	77.5	3	20	23	32.5			5	5	
	TOTAL DU+TU	45	60	0	30	15	15			3	4	

Semester 6

Units	Courses	Total presential	Total student	L E	TU	P W	Personal Work	H. coach / stud.	H. coach / group stud.	Coeff	Credits	C : continu R : writ. rep. D : defense
U Fundamental												
FU1		0	0	0						0	0	
		0	0	0						0	0	
U Methodology												
MU1	Final projet	0	200				200		16	9	9	
Final project	Internship on precision agriculture	0	420				420	5		21	21	
U Transversal												
		0	0									
		0	0									
	TOTAL SEMESTER	0	620	0	0	0	620			30	30	
	TOTAL	620										
	TOTAL UEF	0	0							0	0	
	TOAL UEM	0	620							30	30	
	TOTAL UED+UET	0	0							0	0	

Université d'Oran
جامعة وهران
أحمد بن بلة

Curricula / Teaching materials

The teaching materials are under construction. For now, we uploaded the drafts of the following teaching materials:

1. **Plant physiology (M. BELKHODJA, A. ACHOUR)**
2. **Introduction to Computer Science (M. Dahane)**
3. **Programming and Algorithms – Python (N. Aribi, L. Loukil, S. Fourour)**
4. **Statistics (M .Dahane, Y. Lebbah)**
5. **Data analysis and learning (N. Aribi, L. Loukil, S. Fourour)**
6. **Technological tools for Precision Agriculture (Y. Lebbah)**
   (*Part 1*: Introduction to remote sensing and GIS)
7. **Fundamentals of the scientific approach (A. KADIRI)**

The final teaching materials of all of the courses will be available about 2022 September.

Curricula / Pilot teaching

In Algeria, pilot teaching is difficult to perform in the context of current regulations.

The usual way in Algeria to propose a new curriculum is in three steps:
1. Design the curriculum in a document detailing all of the content of the courses, semesters, ECTS, …
2. Submit and get the approval of the curriculum from the national commission at the ministry of higher education.
3. Launch the curriculum and revise its content continuously at the national commission.

We have already finalized the content of our new curriculum on precision agriculture in 2020/2021 reports. (See the final document in French)

Once the curriculum approved by the ministry of higher education, we can consider the first students group following the curriculum as a pilot teaching.

Curricula / Pilot teaching / Bachelor curriculum launched

- Local approve at the university (see link of the approving document).
- Curricula approved by the national commission (see link).

- Fourteen (14) students are fulfilling our bachelor curricula on precision agriculture.
- Gender balance of the enrolled students: 8 + 6.
- Amount of the courses with ECTS, involved in the pilot teaching: 30*6
- Number of teachers involved in the pilot teaching: 14 teachers on plant biology, 11 teachers on technologies.

- We will periodically peer-review the curricula. Surely, in three years, we will process an official revise of the whole curricula.

Quality assurance

- One peer review from the national commission to get agreement to launch our new curricula.
- Peer review asked about the arguments to get the "professional" label for our curricula.
- We argued by the numerous agreements we made with many professional stakeholders.
- Got the national agreement 2021 July 12.

Laboratories / Equipment retrieve+dispatch

Oran1 university fulfilled the sub-task of retrieving the equipment from Oran seaport, then partitioned the items into 5 equal parts. Each university got his equipment October/September.

Mostaganem
University
02-11-2021

Sidi-Belabbes
University
27-10-2021

Tiaret University
28-10-2021

ENSA Algiers
High engineering
school
03-11-2021

Laboratories / Received equipment

Computers, Workstations, Servers, Printers, Network switch, camera, Storage, Notebook, projector, Interactive screen.

Sensors: Handheld crop sensor, Guidance system, Climatic station, Diviner 2000, Kit Arduino, Raspberry Pi.

Laboratories / Received equipment / Details

N°	Items	Q.	Destination
1	Power supply APC Smart-UPS Uninterruptible power supply (UPS) – APC Smart-UPS SMT1500IC (origin: Packages 1(23) // 1–5(5))	1	CUPAGIS No 5
2	Network switch 24-port 24-Port Gigabit Smart Managed Switch – NETGEAR GS724T (origin: Packages 2(23) // 1(1))	1	CUPAGIS No 7
3	Network Switch 16-port 16-Port Gigabit Smart Managed Switch – NETGEAR GS716T (origin: Packages 3(23) // 1(1))	1	VCR No 6
4	Multifunction printer Multifunction b/w laser printer Canon i-SENSYS MF445dw + Canon 057 High black toner. Note: Package 4(23) // 11(11) contains 10xtoner (origin: Packages 4(23) // 1–11(11))	2	VCR No. 2 (5) and PASENSO No. 2 (5)
5	Digital camera, 64GB memory, bag – VGA adapter Digital camera with 64GB memory card and carrying bag –Canon EOS 4000D Kit + Samsung EVO Plus MB-MC64G - Flash memory card + Canon SB100 - Carrying bag for camera and lense – HP display port for VGA adapter (for Pos. 12) [All located in L*/01] (origin: Packages 5(23) // 1(1))	1+1+1	PASENSO No. 5
6	Data server - HPE ProLiant ML110 Gen10 Data server – HPE ProLiant ML110 Gen10 (origin: Packages 6(23) // 1–5(5))	1	CUPAGIS No. 4
7	Storage unit, HDD 4TB, adapter Data storage unit – Synology DS218 NAS + two 4TB Seagate Ironwolf NAS + travel adapter Goobay [two 4TB HD and travel adapter in L*/01] [NAS in separate box] (origin: Packages 7(23) // 1(1))	1+2+1	CUPAGIS No. 6 (storage, Seagate) + Sensors, AG100
8	Desktop computer - HP Z1/G5 Desktop computer – HP Z1 Tower G5 Entry Workstation (origin: Packages 8(23) // 1–15(15))	3	CUPAGIS No. 1, computer units

Laboratories / Received equipment / Details

N°	Items	Q.	Destination
9	Monitor 23'' - HP EliteDisplay E233 Computer monitor 23'' – HP EliteDisplay E233 (origin: Packages 9(23) // 1–15(15))	3	CUPAGIS No. 1, display units
10	All-in-one desktop computer - HP ProOne 440 G5 AIO All-in-one desktop computer – HP ProOne 440 G5 AIO (origin: Packages 10(23) // 1–90(90))	18	VCR No 1 (80) and PASENSO No. 1 (10)
11	Headset - Sandberg MiniJack Headset – Headset Sandberg MiniJack [Located in L*/01 (04 units), L*/05 (14 units)] (origin: Packages 11(23) // 1–3(3))	18	VCR No 1 (80) and PASENSO No. 1 (10)
12	Workstation - HP Z4 G4 Workstation – HP Z4 G4 (origin: Packages 12(23) // 1–5(5))	1	CUPAGIS No. 3, computer units
13	Monitor 27'' - HP EliteDisplay E273q Computer monitor 27'' – HP EliteDisplay E273q (origin: Packages 13(23) // 10(10))	2	CUPAGIS No. 3, display units (2)
14	Notebook - HP ProBook 450 G7 Notebook – HP ProBook 450 G7 (origin: Packages 14(23) // 1–2(2))	3	CUPAGIS 2 and VCR 5 and PASENSO 6
15	Handheld crop sensor - Trimble GreenSeeker Handheld crop sensor – Trimble GreenSeeker (origin: Packages 15(23) // 1(1))	1	Sensors, GreenSeeker
16	Data projector Data projector with wall mount – set of 2: HITACHI LPAW3001 + wall mount HAS-WM06 (origin: Packages 16(23) // 1–10(10))	1+ 1	VCR No. 3
17	Interactive screen Interactive screen – Promethean 88'' AB10T88D (flat item) (origin: Packages 17(23) // 1–5(5))	1	VCR No. 4
18	Data projector Data projector – EPSON EB-2247U (origin: Packages 18(23) // 1–2(2))	1	PASENSO No. 3
19	Tripod screen Tripod screen – Ligra Orion King, 244 cm (long item) (origin: Packages 19(23) // 1–5(5))	1	PASENSO No. 4

Laboratories / Received equipment / Details

N°	Items	Q.	Destination
20	Guidance system - SunNav AG100 Guidance system: set of 2 – SunNav AG100 Guidance System (Note: Package 1 contains 4 screens, package 2 one screen and most of cables for other screens) [All located in L*/02](origin: Packages 20(23) // 1–2(2))	1	Sensors, AG100
21	Climatic statition- IMETOS IMT 280-USW Wireless solar panel and battery powered data logger with unlimited license – IMETOS IMT 280-USW ultrasonic wind speed and wind direction sensor / Soil temperature sensor – Pessl Instruments single soil and water temperature sensor module with 5 m cable / Soil moisture sensor – Pessl Instruments PI 54-D. Sensor: Soil moisture (%), with 5 m cable, ECH interface for connecting PAL 7C (origin: Packages 21(23) // 1–5(5))	1	Sensors
22	Sensor - Diviner 2000 Diviner 2000 – Tube set for Diviner 2000 – Installation kit for Diviner 2000 Set contains: (4-A) Diviner 2000 / (long item) (4-B/1) and (4-B/2) Tube set for Diviner 2000 (long item)/ (4-C) Installation kit for Diviner 2000 (long item) [1 tube and 10 hat-tubes in L*/02](origin: Packages 22(23) // 1–14(14))	1	Sensors
23	Kit Arduino, JOYPI Raspberry Pi Arduino Kit – JOYPI Raspberry Pi, educational edition (5-A) Arduino Kit (30 pcs)(5-B) JOYPI Raspberry Pi educational edition (heavy item) [6 Arduino kit in L*/01][6 Raspberry Pi in L*/02](origin: Packages 23(23) // 1–10(10))	6+6	Sensors

Laboratories / CUPAGIS laboratory

Computers installed in the VCR space

Field where we will deploy received sensors

Laboratories / CUPAGIS laboratory - Courses

CUAPGIS laboratory

LABORATORY	SEMESTER	COURSE		TEACHERS
VCR space	S1	-	Technological tools for Precision Agriculture	Pr BELKHODJA Moulay + Pr. LEBBAH Yahia + Pr. BENAISSA Noureddine
		-	Introduction to Computer Science	Dr. DAHANE Miloud
	S2	- - -	Statistics Programming and Algorithms Information systems and web/mobile programming	Pr. LEBBAH Yahia As. FOUROUR Said Dr. ARIBI Noureddine
	S3	- - -	Data analytics Bioinformatics Image Processing and Computer Vision	Pr. LOUKIL Lakhdar Dr. AMOURI Adal Amar Dr. SAYAH Mohamed
	S4	-	GIS for Precision Agriculture	Pr. BENAISSA Noureddine + Ms. KHALFAOUI Houria + Dr. SAYAH Mohamed
		- -	Sensor Systems for Precision Agriculture Remote sensing	Dr. Dahane Amine Dr. ARIBI Noureddine
	S5	- - -	Advanced GIS Techniques for Precision Agriculture Global Navigation Satellite Systems Artificial intelligence, machine learning and big-data	Pr. BENAISSA Moussa Pr. KADDOUR Mejdi Pr. LOUKIL Lakhdar + Dr. ARIBI Noureddine + Pr. LEBBAH Yahia

CUAPGIS laboratory

| LABORATORY	SEMESTER	COURSE		TEACHERS
PAGIS space	S1	-	Technological tools for Precision Agriculture	Pr BELKHODJA Moulay + Pr. LEBBAH Yahia + Pr. BENAISSA
	S4	- -	Sensor Systems for Precision Agriculture Remote sensing	Dr. Dahane Amine Dr. ARIBI Noureddine
	S5	-	Advanced GIS Techniques for Precision Agriculture	Pr. BENAISSA Noureddine + Ms. KHALFAOUI + Dr. SAYAH Mohamed

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Laboratories / Existing laboratories

Existing laboratories			
LABORATORY	**SEMESTER**	**COURSE**	**TEACHERS**
Vegetable physiology Laboratory	S1	- Plant physiology - Technological tools for Precision Agriculture	Pr BELKHODJA Moulay + Dr ACHOUR Asma Pr BELKHODJA Moulay
	S2	- Water and water nutrition of plants - Physiology of vegetable nutrition	Pr BELKHODJA Moulay+ Dr ACHOUR Asma Dr BIDAI Yasmina
	S3	- Pedology - Plant ecophysiology - Agricultural irrigation technology	Dr BIDAI Yasmina Pr BELKHODJA Moulay Pr BELKHODJA Moulay
	S4	- Vegetable production	Dr BENLALDJ Amel
	S5	- Fertilisation - Salty soils - Agricultural mechanization technology	Dr BIDAI Yasmina+ Dr ACHOUR Asma Pr BELKHODJA Moulay
Plant biology Laboratory	S2	- Physiology of vegetable nutrition - Physiology and biochemistry of symbotic fixation of nitrogen	Pr IGHIL HARIZ Zohra Pr IGHIL HARIZ Zohra + Dr KADIRI Amina
Vegetable ecology Laboratory	S1	- Ecology and environment - Plant biodiversity	Dr HALFAOUI Yamina + Dr BENLALDJ Amel Dr BELASKRI Asma
Biotechnology Laboratory	S1	- Applied physics	Pr BENAISSA Noreddine
	S4	- Phytodiagnosis and phytoprotection	Pr HADDAD Fatima Zohra+ Pr BENAISSA Noreddine

Université d'Oran 1

1

Dissemination

- Presentation of CUPAGIS in an online event organized by CBHE SEED4NA project Wednesday June 2nd, 2021
- Brochure for high schools students to introduce our new bachelor curricula on precision agriculture.

  https://vrre.univ-oran1.dz/images/docs-telecharger/Brochure_AP.pdf
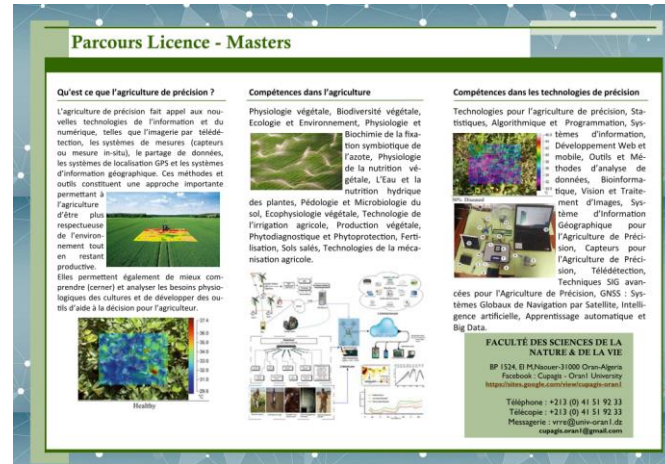
Dissemination / Webinars

- Webinar, CUPAGIS Project Women in Agricultural Science and technology March 08, 2021

  Dr. Asma ACHOR
  https://www.youtube.com/watch?v=yf88eYAyF0Q

  Dr. Fatma Zohra HADDAD
  https://www.youtube.com/watch?v=nPFwdNWgto8

- Presentation of CUPAGIS in an online event organized by CBHE SEED4NA project Wednesday June 2nd, 2021 (http://seed4na.eu/news15/)

  Dr. Yahia LEBBAH
  https://youtu.be/qRjJuFVeWK0?t=116

Dissemination / Erasmus days

- Erasmus days 2021-10-14 animated by Cupagis members
  https://www.univ-oran1.dz/index.php/730-videos-links-erasmus-day-october-14th-2021.html

Dissemination / Cupagis Oran1 on youtube

- We have created a youtube channel "Cupagis Oran":
  https://www.youtube.com/channel/UCawyxkqa8HNO3TMB3-m291w

- Continuously updated Facebook page to disseminate Cupagis activities
  https://www.facebook.com/Cupagis-Oran1-University-454383688459311

- (25/01/2021) The Week of Geospatial Information (GI)-Education for the Future (presentation of Cupagis implementation in Oran)
- (08/03/2021) Women in Agricultural Science and Technology
- (02/06/2021) Exploring the status of EO/GI in Algeria (presentation of Cupagis implementation in Oran1)
- (14/10/2021) Erasmus Days 2021

Regional Cooperation

During 2021 year, we have been fully busy with four main tasks unavoidable to enable regional cooperation:

- Getting the national agreement from the ministry of higher education. This takes time convincing the national commission to get the "professional" label, which is important to have internships and enable cooperation with future employers.
- Launching the curricula in September 2021. This is an important point motivating to continue working on regional cooperation for the benefits of the new students.
- Fulfilling the complex procedure to get all of the equipment from Estonia. Then, we have done the task of dispatching the received equipment to all of the national partners.
- Preparation of VCR, PAGIS and PASENSO spaces.

The next year 2022 will be particularly dedicated to develop cooperation and sign new agreements with non-academic stakeholders/enterprises.

Sustainability of PASENSO Offices

Agreements with many non-academic stakeholders, in particular:

- DSA Oran - Agricultural Services Management of the District of Oran (Direction des services agricoles de la wilaya d'Oran)
- Algerian Centre for Space Technologies (CTS/ASAL)

Developed complete practical trainings:

- Programming and Algorithms with Python
https://drive.google.com/file/d/1_ZMzrA8OYDNjY4Y7olX0iRr5RV1NIVZY/view?usp=sharing
- Statistics
https://drive.google.com/file/d/1ePXzKVqUl82ye2__E985XSo-Gmx02blX/view?usp=sharing
- Data analysis and machine learning
https://drive.google.com/file/d/1zKfvcWdJxwX9SyhSvz2y3zychrVpo1Kq/view?usp=sharing

Sustainability of PASENSO Offices

We are planning PASENSO activities in the priority order:

- Exploiting the received equipment to make agreements with other non-academic stakeholders in order to associate them to the equipment exploitation. Our first aim is to have interesting internships for our first year students.
- Organisation of newsletters, documentations, seminars, monitoring of research projects, advanced training for the benefit of the PASENSO regulation.

Spin-off effects

We can notice the following effects of the project:
- Active collaboration with Algerian Centre for Space Technologies (CTS/ASAL), who proposed a project to compare variability indicators between remote sensing and insitu sensing. We are working to be effective in this collaboration.

- A possible collaboration with the Algerian National Office of Meteorology, interested to assist us in the installation of the climatic station, and collaborate with us on projects related to climatic data.

- A possible collaboration with DSA (Agricultural Services Management of the District of Oran), for which the director is available to help preparing the field where we will deploy the sensors. DSA is also interested to disseminate our activities towards the farmers on precision technologies.

Thank you for you attention!

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