

Democratic and People's Republic of Algeria
Ministry of Higher Education and Scientific Research
Hassiba Benbouali University – Chlef



Academic offer of State Engineers Degree
In
agro-technology and innovation

Etablissement	Faculté / Institut	Département
Hassiba Benbouali University	Natural and Life Sciences	Agronomic Sciences

Field	Subject	Specialty
Natural and life sciences	Agronomic Sciences	agro-technology and innovation

In English Agricultural Engineers ‘Agro-technology and Innovation’ (3rd year)

1. Overview of the programme

The Ingénieurs en Agro-Technologie et Innovation programme at the University of Chlef (Algeria) aims to train engineers specialising in innovative technologies applied to agriculture. Here is an overview of the main elements of the programme:

Programme objectives

- Train engineers capable of modernising the agricultural sector using new technologies.
- Integrate technological innovations (precision agriculture, IoT, biotechnologies, etc.).
- Develop skills in the sustainable management of agricultural resources.

Career opportunities

- Agro-technology engineer
- Precision agriculture consultant
- Agricultural innovation project manager
- Agri-business entrepreneur

2. Strengths of the programme

The agricultural engineering course specialising in Agro-Technology and Innovation offers many advantages, both academically and professionally. Its main strengths are as follows:

1. Multidisciplinary approach

- Combining skills in agronomy, biotechnology, process engineering, data science and innovation management.
- Training at the interface between agriculture, technology and sustainability.

2. Innovation and R&D orientation

- Development of new agricultural technologies (precision farming, bioprocesses, IoT, robotics).
- Management of innovative projects to meet agri-food and environmental challenges.

3. Focus on current issues

- Sustainable agriculture: reducing inputs, optimising resources, agro-ecology.
- Food safety: improving production and processing chains.
- Digital transition: use of AI, drones and intelligent sensors.

4. High employability

- Growth sectors: agri-food, biotechnologies, innovation consultancy, agtech start-ups, agricultural cooperatives.
- A wide range of occupations: R&D engineer, innovation project manager, agro-technology consultant, quality manager..

5. Practical and professional experience

- Work placements in companies or laboratories
- Collaborative projects with manufacturers and research centres.
- Use of high-tech tools (connected farms, experimental platforms).

3. Admissions information

A bachelor's degree in experimental sciences

The course generally lasts 5 years following the classic system (Engineering Cycle).

4. Basic courses :

Core curriculum (1st and 2nd year)

- Applied Mathematics
- Physics and Chemistry
- Plant and animal biology and physiology
- Plant and animal biosystematics
- Applied agriculture and climatology
- Computer science applied to agriculture
- Cartography
- Microbiology, biochemistry, genetics
- Biophysics
- Bioinformatics

5. Advanced subjects :

Specialisation

- Agro-technologies:
 - Agri-food industry technology
 - Machinery and agricultural equipment
 - Animal and plant production and improvement
 - Digital technologies applied to agriculture
 - Applied biotechnologies
- Innovation and Management:
 - Management of innovative agricultural projects
 - Innovative production systems
- Modelling and prototyping
- Work placements on farms and in agro-industrial companies.
- Innovative projects: Design of technological solutions for agriculture (automated greenhouses, agricultural monitoring applications, etc.).

Tuition fees: No tuition fees

Language of instruction: English / Arabic / French

**Common Core curriculum for obtaining the State Engineering Diploma
in the field of "Natural and Life Sciences", Subject "Agronomic Sciences"**
Semester 1

Teaching Unit	Subject headings	HV Weekly			VHS (15 semaines)	Student Individual Work	Coeff	Crédit	Evaluation	
		Course	Directed Work	Practical Work					Exam	Continuous
Fundamental EU Code : UEF1.1 Crédits : 14 Coeff : 7	Animal Biology 1 (Cytology and Histology)	1h30		1h30	45h00	55h00	2	4	60%	40%
	Plant Biology 1	1h30		1h30	45h00	55h00	2	4	60%	40%
	Chemistry 1	1h30	1h30	1h30	67h30	82h30	3	6	60%	40%
Methodological EU Code : UEM1.1 Crédits : 13 Coeff : 7	Physics 1	1h30	1h00	1h30	60h00	65h00	3	5	60%	40%
	Mathematics 1	1h30	1h30		45h00	55h00	2	4	60%	40%
	Geology	1h30		1h30	45h00	55h00	2	4	60%	40%
Discovery EU Code : UED1.1 Crédits : 2 Coeff : 2	The teaching team must choose one subject from: - Rural sociology - Agricultural geography	1h30			22h30	2h30	1	1	100%	
	Computer Science 1			1h30	22h30	2h30	1	1		100%
Transversal EU Code : UET1.1 Crédits : 1 Coeff : 1	English language communication and expression techniques 1	1h30			22h30	2h30	1	1	100%	
Total Semester 01	Total	12h00	4h30	9h00	375h00	375h00	17	30		

Semester 2

Teaching Unit	Subject headings	HV Weekly			VHS (15 semaines)	Student Individual Work	Coeff	Crédit	Evaluation	
		Course	Directed Work	Practical Work					Exam	Continuous
Fundamental EU Code : UEF1.2 Crédits : 14 Coeff : 10	Animal Biology 2 (Embryology)	1h30		1h30	45h00	55h00	2	4	60%	40%
	Plant Biology 2	1h30		1h30	45h00	55h00	2	4	60%	40%
	Chemistry 2	1h30	1h30	1h30	67h30	82h30	3	6	60%	40%
Methodological EU Code : UEM1.2 Crédits : 13 Coeff : 7	Physics 2	1h30	1h00	1h30	60h00	65h00	3	5	60%	40%
	Mathematics 2	1h30	1h30		45h00	55h00	2	4	60%	40%
	Climatology	1h30			22h30	27h30	1	2	60%	40%
	Applied agriculture 1	1h30			22h30	27h30	1	2	60%	40%
Discovery EU Code : UED1.2 Crédits : 1 Coeff : 1	Rural economy	1h30			22h30	2h30	1	1	100%	
Transversal EU Code : UET1.2 Crédits : 2 Coeff : 2	English language communication and expression techniques 2	1h30			22h30	2h30	1	1	100%	
	Computer Science 2			1h30	22h30	2h30	1	1	100%	
Total Semester 02	Total	13h30	4h30	7h30	375h00	375h00	17	30		

Semester 3

Teaching Unit	Subject headings	HV Weekly			VHS (15 semaines)	Student Individual Work	Coeff	Crédit	Evaluation	
		Course	Directed Work	Practical Work					Exam	Continuous
Fundamental EU Code : UEF1.1.3 Crédits : 12 Coeff : 9	Plant Physiology	1h30	1h30	1h30	67h30	45h00	3	4	60%	40%
	Plant biosystematics 1	1h30		1h30	45h00	45h00	3	4	60%	40%
	Animal biosystematics 1	1h30		1h30	45h00	45h00	3	4	60%	40%
Fundamental EU Code : UEF1.2.3 Crédits : 9 Coeff : 6	Biochemistry 1	1h30	1h30	1h30	67h30	45h00	2	3	60%	40%
	Genetic	1h30	1h30		45h00	45h00	2	3	60%	40%
	Microbiologie 1	1h30		1h30	45h00	45h00	2	3	60%	40%
Methodological EU Code : UEM1.3 Crédits : 6 Coeff : 6	Biostatistiques	1h30	1h30		45h00	65h00	2	2	60%	40%
	Biophysique	1h30	1h30		45h00	55h00	2	2	60%	40%
	Ecology	1h30	1h30	1h30	67h30	45h00	2	2	60%	40%
Discovery EU Code : UED1.3 Crédits : 1 Coeff : 1	Precision agriculture	1h30	1h30		45h00	22h30	1	1	60%	40%
Transversal EU Code : UET1.3 Crédits : 2 Coeff : 2	Mapping		1h30		22h30	22h30	1	1		100%
	English language communication and expression techniques 3	1h30			22h30	22h30	1	1	100%	
Total Semester 03	Total	16h30	12h00	09h00	562h30	502h00	24	30		

Semester 4

Teaching Unit	Subject headings	HV Weekly			VHS (15 semaines)	Student Individual Work	Coeff	Crédit	Evaluation	
		Course	Directed Work	Practical Work					Exam	Continuous
Fundamental EU Code : UEF1.1.4 Crédits : 12 Coeff : 6	Animal Physiology	1h30		1h30	45h00	45h00	2	4	60%	40%
	Plant biosystematics 1	1h30		1h30	45h00	45h00	2	4	60%	40%
	Animal biosystematics 1	1h30		1h30	45h00	45h00	2	4	60%	40%
Fundamental EU Code : UEF1.2.4 Crédits : 14 Coeff : 8	Biochemistry 1	1h30	1h00	1h30	60h00	45h00	3	5	60%	40%
	Immunology	1h30	1h00		37h30	37h30	2	3	60%	40%
	Microbiologie 2	1h30		1h30	45h00	55h00	2	4	60%	40%
Methodological EU Code : UEM1.4 Crédits : 4 Coeff : 2	Bioinformatics			1h30	22h30	27h30	1	2	60%	40%
	Applied Agriculture 2 (Field / Practice)	1h30			22h30	27h30	1	2	60%	40%
Discovery EU Code : UED1.4 Crédits : 1 Coeff : 1	Food security	1h30			22h30	2h30	1	1	100%	
Transversal EU Code : UET1.4 Crédits : 1 Coeff : 1	English language communication and expression techniques 4	1h30			22h30	2h30	1	1	100%	
Total Semester 04	Total	13h30	02h00	9h00	367h30	382h30	17	30		

Semester 05 specialty “ Agro-technology and Innovation”

Teaching Unit	Semestrial HV	HV Weekly				coefficients	Credits	Evaluation	
	15 weeks	Course	Directed Work	Practical Work	Student Individual Work			Continuous	Exam
Basic Teaching Unit BTU1						10	19		
Teaching subjects 1: Pedology and soil biology	45h00	01h30		01h30	55h00	02	04	40%	60%
Teaching subjects 2: Agricultural hydraulics	37h30	01h30	01h00	-	37h30	02	03	40%	60%
Teaching subjects 3: Animal production and improvement	45h00	01h30	01h30	-	55h00	02	04	40%	60%
Teaching subjects 4: Plant production and improvement	45h00	01h30		01h30-	55h00	02	04	40%	60%
Teaching subjects 5 : Plant protection	45h00	01h30		01h30-	55h00	02	04		
Methodological Teaching Unit MTU1						04	08		
Teaching subjects 1: Applied biotechnologies	45h00	01h30		01h30	55h00	02	04	40%	60%
Teaching subjects 2: Cultivation practices	22h30	01h30	-	-	27h30	01	02	-	100%
Teaching subjects 3: Technologie des industries agroalimentaires	22h30	01h30	-	-	27h30	01	02	-	100%
Discovery Teaching Unit DTU1						02	02		
Teaching subjects 1: Forest, steppe and Saharan ecosystems	22h30	01h30	-	-	2h30	01	01	-	100%
Teaching subjects 2: Machinery and agricultural equipment	22h30	01h30	-	-	2h30	01	01	-	100%
Transversal Teaching Unit TTU1						01	01		
Teaching subjects 1: Agricultural business management	22h30	01h30	-	-	2h30	01	01	-	100%
Total Semester 05	375h	16h30	06h00	02h30	375h	17	30		

Semester 06

Teaching Unit	Semestrial HV	HV Weekly				coefficients	Credits	Evaluation	
	15 weeks	Course	Directed Work	Practical Work	Student Individual Work			Continuous	Exam
Basic Education Unit									
BTU1									
Teaching subjects 1: Digital technologies applied to agriculture	67h30	01h30	01h30	01h30	82h30	03	06	40%	60%
Teaching subjects 2: Agricultural decision support tools	67h30	01h30	01h30	01h30	82h30	03	06	40%	60%
Teaching subjects 3: Innovative agricultural production systems	67h30	01h30	01h30	01h30	82h30	03	06	40%	60%
Methodological Teaching Unit									
MTU1									
Teaching subjects 1: Modeling, design and prototyping	45h00	01h30	-	01h30	65h00	02	04	40%	60%
Teaching subjects 2: Energy management and optimization in agriculture	55h00	01h30	-	01h30	55h00	02	04	40%	60%
Discovery Teaching Unit									
DTU1									
Teaching subjects 1: Innovation Management	45h00	01h30	01h30	-	05h00	02	02	40%	60%
Teaching subjects 2: Introduction to programming	22h30			01h30	02h30	01	01	-	100%
Transversal Teaching Unit									
TTU1									
Teaching subjects 1: Professional immersion internship	22h30	-	-	01h30	02h30	01	01	-	100%
Total Semester 06	375h	9h00	6h00	10h30	375h	17	30		