

**People's Democratic Republic of Algeria**  
**Ministry of Higher Education and Scientific Research**

## **Training offer: Academic Master**

<b>Institution</b>	<b>Faculty</b>	<b>Departement</b>
<b>University of Mohamed khider, Biskra</b>	<b>Faculty of Exact Sciences and Natural and Life Sciences</b>	<b>Agronomy</b>

**Field: Natural and life Sciences.**

**Option : In agronomy.**

**Major : Nutrition and production of Anima**

**Academic year: 2023-2024**

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***Institution : University of Mohamed Khider, Biskra***  
***Master's title : Nutrition and Production of animals***  
***Academic year : 2023/2024***

الجمهورية الجزائرية الديمقراطية الشعبية  
وزارة التعليم العالي والبحث العلمي

مواعمة  
عرض تكوين ماستر  
أكاديمي / مهني

القسم	الكلية/ المعهد	المؤسسة
العلوم الزراعية	كلية علوم الدقيقة و علوم الطبيعة و الحياة	جامعة محمد خيضر بسكرة

الميدان : علوم الطبيعة و الحياة

الشعبة : الزراعة

التخصص : الانتاج الحيواني

السنة الجامعية: 2024/2023

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## **I. TRAINING IDENTITY**

### **Location of the training**

**University:** Med khider, Biskra

**Faculty:** Exact sciences and Natural of life Sciences

**Department:** Agronomy Sciences

### **National Partners**

#### **Public institutions**

- ITDAS
- INPV
- CRSTRA
- HCDS
- ITGC
- CRBt
- INRA
- *PADESCA Laboratory , Constantine*

#### **Private socio-economic Parteners**

- Private Breeding Farms
- Artificial Insemination center, Ouled djellal-Biskra

### **International Partners\***

- CIRAD French
- RENNE French
- UNIVERSITY of PADOUE, ITALy

\* See conventions in annex.

## II. Training context and objectives

### II.1 Admission requirements

- Bac+3 \_ Professional or academic degree: Animal production
  - Bac+3 \_ Academic degree in arido-culture and the environment
  - Bac+3 \_ Professional or academic degree: Agronomy
  - Bac+3 \_ professionnel ou académique Biology option: Animal production
  - Bac+3 \_ Professional or academic degree: Zootechnics
  - Professional or academic degree: Veterinary science
- Any diploma recognized as equivalent

### II.2 Training objectives

Livestock farming is a long-standing activity in today's economic context. It has a social and economic function, maintaining activity, jobs and income in difficult regions and contributing to quality production (meat, wool, hides, etc.).

The aim of this Master's program is to train students to become specialists in livestock breeding, agropastoralism and the animal industry. The course covers the full range of livestock production techniques, as well as economics and biostatistics, enabling students to assess the positive and negative interactions between livestock production systems and natural resources, with a view to sustainable development of the environment as a whole; to identify problems relating to livestock production conditions; to suggest areas for improvement in the short and, more or less, the long term; and to master the principles of production relating to livestock and local products.

The candidate becomes a specialist in the relations between the three poles of the breeding system, i.e. the breeder, the environment and the animal; and in the socio-economic dynamics of the agro-pastoral environment.

The program develops cross-disciplinary skills, scientific communication and rapid links with the worlds of research, business and economics.

### **II.3 Targeted professional profiles and skills**

Educational training, fundamental and applied research in the fields of agriculture in general, and animal production and agropastoralism in particular.

This Master's degree prepares students for careers in research and provides access to doctoral studies, enabling them to join higher education and research organizations (universities, research centers, INA, INRAA, ITEBO, etc.), as well as public-sector companies (feed mills, animal breeding, preservation and improvement centers.....).

### **II.4 Regional and national employability potential for graduate**

- Potential assistants for practical work and tutorials (university sector vacations).
- Livestock management in national parks and nature reserves.

- Agricultural and livestock research, consultancy and expertise offices.
- Access to university structures, research centers, research units and laboratories (I.N.R.A.A ; C.R.S.T.R.A ; ITDAS .....);

### **II.5 Gateways to other specialties**

- Agronomic Sciences with a major in food and animal nutrition;
- Veterinary or biology with option:
  - Reproductive biotechnology
  - Parasitology
  - Hygiene and prophylaxis
  - Epidemiological control and animal health

### **II.6 Training follow-up indicators**

Progress indicators :

- Quantitative and qualitative analysis of students' academic results
- Level of student participation in local seminars and symposia
- Employability of graduates

#### **Measurement of these indicators**

- Results of students' personal work and degree of autonomy
- Semester results and evaluation



- Student initiative and effective participation

### **Student capacity**

Master 1: 30 students.

Master 2: 30 students

### III. Available human resources

#### School teachers involved in the specialty :Detailed

Name	Undergraduate certificate	Post graduate Certificate	Grade	TYPE	signature
DEGHNOUCH E Kahramen	veterinary Docteur	Doctor	Professor	lecture, TD, TP, Thesis supervision	
TARAI Nacer	Ingeneer In agronomy	Doctor	Professor	lecture, TD, TP, Thesis supervision	
BEN Aziza Abdel aziz	Ingeneer In agronomy	Doctor	Professor	lecture, TD, TP, Thesis supervision	
MASMOUDI ALI	Ingeneer In agronomy	Doctor	Professor	lecture, TD, TP, Thesis supervision	
BEN ZIOUECHE Salah	Ingeneer In agronomy	Doctor	Professor	lecture, TD, TP, Thesis supervision	
MESSAI Ahmed	veterinary Docteur	Doctor	Professor	lecture, TD, TP, Thesis supervision	
HICHER Azeddine	Ingeneer en zootechnic	Doctor	MCB	lecture, TD, TP, Thesis supervision	
ACHOURA Amar	Ingeneer In agronomy	Doctor	MCA	lecture, TD, TP, Thesis supervision	
MOUSSI Hamid	Ingeneer in Biology	Doctor	Professor	lecture, TD, TP, Thesis supervision	
SAADI Iness	Ingeneer In agronomy	Doctor	MCB	lecture, TD, TP, Thesis supervision	
BOUMARAF Belkacem	Ingeneer In agronomy	Doctor	MCA	lecture, TD, TP, Thesis supervision	
BOUKEHIL Khaled	Ingeneer In agronomy	Magister	MAA	lecture, TD, TP, Thesis supervision	
KESSAI Abla	Ingeneer In agronomy	Doctor	MCB	lecture, TD, TP, Thesis supervision	
BEDJAOUI Hanene	Ingeneer In agronomy	Doctor	MCA	lecture, TD, TP, Thesis supervision	
BENAISSA Keltoum	Ingeneer In agronomy	Doctor	MCA	lecture, TD, TP, Thesis supervision	
BOUKHALFA Hafida	Ingeneer In agronomy	Doctor	Professor	lecture, TD, TP, Thesis supervision	
SAIGHI Saida	Ingeneer In agronomy	Magister	MCB	lecture, TD, TP, Thesis supervision	
TITAOUINE Mohamed	veterinary Docteur	Doctor	Professor	Cours, TD, TP, Encadrement de mémoire	

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<b>REDOUANE-S ALAH Sara</b>	<b>Ingeneer in Biology</b>	<b>Doctor</b>	<b>Professor</b>	Cours, TD, TP, Encadrement de mémoire	
<b>DEMNATI Fatma</b>	<b>Ingeneer In agronomy</b>	<b>Doctor</b>	<b>Professor</b>	Cours, TD, TP, Encadrement de mémoire	
<b>GUIMER Kamal</b>	<b>Ingeneer In agronomy</b>	<b>Doctor</b>	<b>MCB</b>	Cours, TD, TP, Encadrement de mémoire	
<b>MABREK Naïma</b>	<b>Ingeneer In agronomy</b>	<b>Doctor</b>	<b>MCB</b>	Cours, TD, TP, Encadrement de mémoire	
<b>MEHAOUA M.Seghir</b>	<b>Ingeneer In agronomy</b>	<b>Doctor</b>	<b>Professor</b>	Cours, TD, TP, Encadrement de mémoire	
<b>RAZI Sabah</b>	<b>Ingeneer In agronomy</b>	<b>Doctor</b>	<b>MCB</b>	Cours, TD, TP, Encadrement de mémoire	
<b>MEZERDI Farid</b>	<b>Ingeneer In agronomy</b>	<b>Doctor</b>	<b>Professor</b>	Cours, TD, TP, Encadrement de mémoire	
<b>FARHI Kamelia</b>	<b>Ingeneer In agronomy</b>	<b>Doctor</b>	<b>Professor</b>	Cours, TD, TP, Encadrement de mémoire	
<b>DROUAI Hakim</b>	<b>Ingeneer In agronomy</b>	<b>Doctor</b>	<b>MCA</b>	Cours, TD, TP, Encadrement de mémoire	
<b>HIOUANI Fatima</b>	<b>Ingeneer In agronomy</b>	<b>Doctor</b>	<b>MCB</b>	Cours, TD, TP, Encadrement de mémoire	
<b>KHACHEI Salim</b>	<b>Ingeneer In agronomy</b>	<b>Doctor</b>	<b>MAA</b>	Cours, TD, TP, Encadrement de mémoire	
<b>HADJEB Ayoub</b>	<b>Ingeneer In agronomy</b>	<b>Doctor</b>	<b>MCA</b>	Cours, TD, TP, Encadrement de mémoire	

## **IV. Specific material resources available**

### **Pedagogical laboratories and equipments**

#### **\_ Vegetal Analysis Laboratory**

<b>N°</b>	<b>Intitulé de l'équipement</b>	<b>Nombre</b>	<b>Observations</b>
1	Creusets en porcelaine	20	
2	Balance à 0.1mg de précision	02	
3	Spatule	100	
4	Etuve à 105C°	02	
5	Plateau	10	
6	Dessiccateur	03	
7	Four à moufle pouvant travailler à 550 C°	01	
8	Matras de 250 ml	10	
9	Sabots de pesée	10	
10	Tiges comme support des sabots	01	
11	Rampe chauffante (ou digesteur) du type Gerhardt Kjeldatherm	01	
12	Distillateur	01	
13	Fioles jaugées de 100 ml	15	
14	Erlens-meyers et béchers de 150 ml	10	
15	Burettes de 25 ml	10	
16	Pipettes de 5 ml	10	
17	Minuteur	03	
18	Entonnoirs	15	
19	Eprouvette	04	
20	Agitateur magnétique, barreau d'agitation	01	
21	Cartouche d'extraction en cellulose	03	
22	Montage de Soxhlet (ballon en dessous de l'extracteur surmonté par un réfrigérant avec entrée et sortie d'eau de refroidissement).	01	
23	Bain marie	01	
24	Des verres de montre	10	
25	Plateau pour transport des creusets	02	
26	des baguettes en verre	10	
27	Pipettes de 5 ml	15	
28	Une plaque chauffante ou un bain de sable	01	
29	Papier filtre sans cendres- Fioles de 50 ml	100	
30	Béchers	10	

## Animal Biology Laboratory

N°	Intitulé de l'équipement	Nombre	Observations
1.	Réfrigérateur-congélateur	01	
2.	Balance de paillasse	01	
3.	Bain-marie Memmert 22L	01	
4.	Centrifugeuse de paillasse	01	
5.	Etuve Memmert	02	
6.	Spectrophotomètre	01	
7.	Plaque chauffante	02	
8.	Agitateurs magnétique chauffant	02	
9.	Microscope	16	
10.	Spectrophotomètre UV/visible	01	
11.	Dessiccateur	02	
12.	Distillateur	01	
13.	Evaporateur rotatif	01	
14.	Ballon évaporateur 50 ,100 ,250 ml poire	10	
15.	Conductimètre de paillasse	01	
16.	Balance de précision	01	
17.	Mortier en porcelaine	01	
18.	Bac récupérateur déchet	10	
19.	Pipettes graduées de différents calibres	50	
20.	Fioles jaugées de différents calibres	10	
21.	Erlenmeyer en verre	10	
22.	Bécher forme haute et basse de différentes capacités	10	
23.	Bec bunsen 13 mm gaz naturel	20	
24.	Hotte à flux vertical	01	
25.	pH mètre de paillasse	02	
26.	Thermomètre	05	
27.	Portoir en plastique	10	
28.	Trousse de dissection	10	
29.	Microtome	01	
30.	Lames préparées	100	
31.	Transparents (classeurs)	04	

## V. Internships and companies

Lieu du stage	Nombre d'étudiants	Durée du stage
Animalerie du département	30	
<i>ITDAS BISKRA</i>	10	07 jours
<i>INRA BISKRA / ALGER</i>	10	07 jours
<i>INPV BISKRA / ALGER</i>	10	07 jours
<i>Laboratoire DEDSPAZA</i>	04	07 jours
<i>Fermes pilotes étatiques</i>	10	07 jours
<i>Fermes privées</i>	10	07 jours

## VI. Research laboratory(ies) supporting the master

DEDSPAZA laboratory, University of Biskra.

<b>Laboratory manager : Guimeur Kamel</b>
<b>Laboratory agreement Number: N° 87 du 14/04/2013</b>
<b>Date :</b> <b>Avis du chef de laboratoire : Diversité des écosystèmes et dynamique des systèmes de production agricole en zones arides</b>

### **III. Semester's Organisation Sheet**

## Semester 1.

Teaching Units	VHS	Weekly Hour Volum			Coeff		Crédits	Evaluation Mode	
	14-16 sem	C	TD	TP				Pers.ev al	Exam
<b>Fundamental Teaching Units : FTU1</b>									
<b>Breeding systems and animal production field</b>									
M1 : Pastoral and agro-pastoral breeding systems sustainability	45h	1h 30		1h30		2	4	60%	40%
M3 : Development of Dairy, meat and poultry sectors	22 h 30	1h 30				1	2	60%	40%
<b>Fundamental Teaching Units : UEF2</b>									
<b>Nutrition and feeding of Farm animals</b>									
M1: nutrition physiology	45h	1h30	1h30			2	4	40%	60%
M2 : Feed for Farm animals	45h	1h30	1h30			2	4	60%	40%
M3 : Forage production in steppe areas	45h	1h30		1h30		2	4	60%	40%
<b>Methodology Teaching Unit : MTU</b>									
M1 : English for Science	22.30 h	1h30				1	2	60%	40%
M2: basiss on biostatistic /biometry	45 h	1h30		1h30		2	4	50%	50%
M3: Clinical Biochimistry	37 h30	1h30	1h			2	3	40%	60%
<b>Discovery Teaching Unit : DTU</b>									
M 1: Genetic improvement for Farm animals	45 h	1h30	1h30			2	2	40%	60%
<b>Cross disciplinary Teaching Units</b>									
M1 : Communication	22 h 30	1h30				1	1	40%	60%
<b>Total Semester 1</b>	<b>375h</b>	<b>15h</b>	<b>5.5h</b>	<b>4.5h</b>		<b>17</b>	<b>30</b>		



## Semester 2

Teaching Units	SHV	Weekly hourly volume			Coeff		Credit	Evaluation manner	
	14-16 sem	C	TD	TP				Per. Ev	Examen
<b>Fundamental Teaching Unit UEF1</b>	<b>Agro pastoral territory management</b>								
U1 : Landgrazing eco-systems functioning	45h	1h30	1h30			2	4	40%	60%
<b>Fundamental Teaching Unit UEF2 :</b>	<b>Epidemiology and health of animals</b>								
U1 : Animal farm hygiene and prophylaxie	45h	1h30		1h30		2	4	40%	60%
U2 : Parasitology	45h	1h30		1h30		2	4	40%	60%
<b>Fundamental Teaching Unit UEF3 :</b>	<b>Physiology and pathology of reproduction</b>								
U1 : Reproductive Physiology of farm animal	45h	2 X 1h30				2	4	30%	70%
U2 : Animal reproductive pathology	22h30	1h30				1	2	40%	60%
<b>Methodology Teaching Units</b>									
U1 : Bio économiques	45h	1h30	1h30			2	4	30%	70%
U 2 : English for Science	37h 30	1h30		1h		2	3	60%	40%
U 3 : Methodology for bibliography researches	22h30	1h30				1	2	60%	40%
<b>Discovery Teaching Units</b>									
U1 : Machines used in zootechnics	22h30	1h30				1	1	50%	50%
U 2 : Conversion of Animal products	22h30	1h30				1	1	50%	50%
<b>Cross disciplinary Teaching Units</b>									
U1 : Legislation	22h30	1h30				1	1	60%	40%
<b>Total Semester 2</b>	<b>375h</b>	<b>18h</b>	<b>3h</b>	<b>4 h</b>		<b>17</b>	<b>30</b>		

### Semester 3

Teaching Units	SHV	Weekly hourly volume			Coeff	Credit	Evaluation manner		
	14-16 Weeks	C	TD	TP			Per.Eva	Exam	
<b>Fundamental Teaching Unit : FTU 3.1. UEF1 : Breeding and Farm management</b>									
U1 : Special Zootechnic	45h	2 X 1h30		1h30	2	4	30	70%	
U2 : Animal rationing	45h	1h30	1h30		2	4	30 %	70%	
U 3 : Farming practices and breeding organisation .	45h	1h30			2	4	40%	60%	
<b>UEF3 : Farm animal Pathologies</b>									
U1 : Pathology of ruminants	45h	2 X 1h30			2	4	50%	50%	
U2 : Poultry Pathology	22h30	1h30			1	2	50%	60%	
<b>Methodology Teaching Units</b>									
U1 : Field diagnostics	22h30	1h30		1h	1	2	60%	40%	
U2 : Introduction to data analysis in zootechnics and epidemiology	45h	1h30	1h30		2	4	60%	40%	
U3 : agricultural extension	37h30	1h30			2	3	60%	40%	
<b>Discovery Teaching Units</b>									
U1 : Veterinary medicine and the environment	45h	1h30	1h30	2h30	2	2	40%	60%	
<b>Cross disciplinary Teaching Units</b>									
U 1: Entrepreneurship and project management	22h30	1h30			1	1	60%	40%	
<b>Total Semestre 3</b>	<b>375h</b>	<b>18h</b>	<b>4h30</b>		<b>17</b>	<b>30</b>			

### Semester 4

**Field:** Natural and life sciences

**Branch:** Agronomy

**Major:** Nutrition and animal Production

**In-companies internship culminating in a dissertation and oral presentation.**

	SHV	Coeff	Credit
Personnal work (thesis)	500*	10	20
internships	250**	5	10
Seminars			
Other activities )			
<b>Total Semester 4</b>	750	15	<b>30</b>

### VII. Overall training summary

H V \ TU	FTU	MTU	DTU	CTU	Total
Lecture	405	202,5	90	67,5	765
TD	90	60	45	0	195
TP	112,5	52,5	0	0	165
Individual work	742,5	360	15	7,5	1125
Other activities (Mémoire/Stage)	500	250			750
<b>Total</b>	1850	925	150	75	3000
<b>Credit</b>	74	37	6	3	120
credit % for each teaching unit	61,67	30,83	5,00	2,50	100%

FTU: fundamental Teaching Unit

MTU: Methodology Teaching Unit

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**DTU: Discovery Teaching Unit**  
**CTU: Cross disciplinary Teaching Unit**

## **VIII. Programm by Courses**

(1 detailed sheet per Course)

**Master's title: Nutrition and Animal Production**

**Semester : 01**

**Fundamental Teaching Unit \_ UTF1\_ Breeding systems and animal production field**

**Course- title: pastoral and agro-pastoral livestock systems Sustainability**

**Credit : 4**

**Coefficient: 2**

### Teaching objectives

- Analysis of the different typologies of farming systems and food and social sub-systems.
- Knowledge of the impact of these systems on the environment is an essential tool for any improvement in sustainability.

### Recommended prior knowledge

*Knowledge of local breeds in terms of numbers and phenotypology.*

### Course content

#### **I. Presentation of farming systems :**

##### **1. grass-fed livestock systems**

##### **1.1 the pastoral system**

1.1.1. Mobility

1.1.2. Productivity

1.1 .3. Constraints

##### **2. the mixed system**

2.1 Intensification of livestock farming

2.2. Productivity

2.3 Constraints

##### **3. Industrial system (above ground)**

3.1 Livestock effluents

3.2. Productivity

3.3 Constraints

#### **II. environmental impact of livestock farming**

1. animal-plant interaction

2. interaction between animals and their environment

**2.1.** Economic interactions

2.2. Biological and physical interactions

2.3 Impact of animals on soil productivity

III. Environmental protection and conservation of natural resources

1. Keep in Defence

2. restoration

**Practical works.**

1. Practical exercise 1: Setting up a rabbit hutch ;
2. Practical exercise 2: Completing the documents for a rabbit farm ;
3. Practical exercise 3: Completing documents for a sheep/goat farm ;
4. Practical exercise 4: Measurement of sheep ;
5. TP5: Rationing rabbits;
6. TP6: Cleaning a rabbit hutch.

**Personal work:** giving presentations. Field trips, carrying out zootechnical surveys

**Assessment method :**

**EMD note + Continuous assessment (TP + Presentation + scientific trip reports)**

**References**

- Pastoralisme, Troupeaux, Espaces et Sociétés, by Philippe Daget and Michel Godron (coord.), 1995.
- Manual of comparative North-South zootechnics Théwis A., Bourbouze A., et al., 2005
- Zootechnie des régions chaudes : Les systèmes d'élevages. Philippe Lhoste et al, 1993

**Master's title: Nutrition and Animal Production**

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**Semester : 01**

**Fundamental Teaching Unit \_ UTF1.\_ Breeding systems and animal production field**

**Title of the course: Development of Dairy, meat and poultry sectors**

**Credit : 3**

**Coefficient: 2**

**Teaching objectives).**

Break down the players in the various animal production chains (milk, white and red meat). Understanding the advantages and shortcomings of each product chain will enable improvements to be made.

**Recommended prior knowledge**

Knowledge of HACCP, ISO. The lactation curve and cutting up a carcass

**Content**

1. Ecolabel product
2. Animal products sectors.

2.1. Meat industry.

1. Meat and its physico-chemical characteristics ;
2. Carcass cut and category of product ;
3. Meat production chain,
4. The sector's strengths and weaknesses.

2.2. Dairy sector.

1. Milk and its physicochemical and bacteriological characteristics ;
2. The lactation curve and milk production factors ;
3. Milk production line,
4. The sector's strengths and weaknesses.

2.3 Poultry sector.

1. Fluctuation in poultry products ;
2. White meat production chain,
3. The sector's strengths and weaknesses.

**Personal work:** making presentations. Visit to a slaughterhouse, surveys of butchers

**Assessment method**

**EMD + Continuous assessment (Scientific trip report + presentation)**

**References**

- Memento of the agronomist. C,Gret.2004
- African agriculture and animal traction. CIRAD
- Mediterranean Agriculture ; G,Comet. 1999.

**Master's title: Nutrition and Animal Production**



**Semester : 01**

**Fundamental Teaching Unit \_ UTF1.2- Nutrition and feeding of Farm animals**

**Course title: Physiology of nutrition.**

**Credit : 3**

**Coefficient: 2**

**Teaching objectives**

The main aim of this course is to teach students about the nutritional requirements of animals in order to transform them into consumable products, and to help improve the efficiency of the operation.

**Recommended prior knowledge**

*The prerequisites are biochemical reactions and the measurement of enthalpy. Knowledge of the circulatory system is highly recommended.*

**Course content**

**I. PHYSIOLOGY OF RUMINANT AND MONOGASTRIC DIGESTION**

1. Definitions and sites of digestion and absorption
2. Digestion and absorption of carbohydrate compounds
3. Protein digestion and absorption
4. Lipid digestion and absorption

**II. ENERGY SUPPLY**

1. Concepts of bioenergetics
2. Energy expenditure by animals
3. Measuring energy expenditure
4. Expression of energy intake

**III. NITROGEN SUPPLY**

1. Nitrogen expenditure by the body
2. Variation factors in nitrogen use in animals
3. Study of the nitrogen value of foodstuffs
4. Methods of expressing nitrogen input
5. Supplementation of nitrogen sources

**IV. MINERAL NUTRITION**

1. Importance of water in the animal body
2. Importance of macro-element intake
3. Trace elements in animal feed

**V. VITAMIN NUTRITION**

1. Importance of vitamins in the animal body
2. Classification of vitamins

**B. TD:**

1. Assessing energy expenditure in ruminants
2. Assessment of metabolizable energy in poultry
3. Energy expression systems in ruminants

**Personal work:** giving presentations, solving homework,

**Assessment method:****EMD + continuous assessment (TD + Other activities )****References**

- Feeding cattle, sheep and goats. Animal requirements, feed values.
- Nutrition and feed for farm animals: Volume 1
- Nutrition and feeding of farm animals: Volume 2.

**Master's title:** Nutrition and Animal Production

**Semester :** 01

**Fundamental Teaching Unit \_ UTF1.2\_ Nutrition and feeding of Farm animals**

**Title of the Course:** feed for farm animals

**Credit :** 4

**Coefficient:** 2

### Teaching objectives

The aim is to teach students about foodstuffs (values and importance), how to classify them, the technologies that need to be applied to them to get the best out of them, and the possibilities and limits of their use by different animals.

### Recommended prior knowledge

*Pre-requisite knowledge includes food analysis methods, especially for forage, and digestibility factors.*

### Course content

#### I. PRESENTATION OF THE FOOD

1. Components and chemical composition
2. The different categories of animal feed

#### II. ASSESSING THE FEED VALUE OF LIVESTOCK FEED

1. In ruminants - nutritional value - ingestibility
2. In poultry - nutritional value
3. Forage analysis
- 4.5 Study of food digestibility and its factors of variation
4. Food manufacturing method :
  1. Silage,
  2. Hay ;
  3. CMV

#### III. IMPROVING THE FEED VALUE AND NUTRITIONAL VALUE OF LIVESTOCK FEED

1. Factors limiting feed value: roughage
2. Factors limiting nutritional value: simple concentrates
3. Technological processes
  - for improving the feed value of roughage
  - for improving the nutritional value of simple concentrated feeds
4. Manufacture of compound concentrated feeds

#### IV. Types of food :

1. For poultry,
2. For eggs ;
3. Small farms

#### V. EATING HABITS

1. In ruminants
2. In poultry

**TD:**

- a) Application of forage analysis equations,
- b) Evaluating the feed value of livestock feed: Using feed value tables ;
- c) Assessment of digestibility ;
- d) Quantifying silage ;
- e) Calculating the EN of a food ;
- f) Calculating the EM of a foodstuff ;
- g) Poultry feed

**Personal work:** Field trip (Visit to a livestock feed manufacturing plant. Observation of the feed manufacturing process), presentations, collection of feed samples, etc.

**Assessment method :**

**EMD + Continuous assessment (TD + Other activities )**

**References**

Mineral nutrition for ruminants. François Meschy. Quae éditions (2010)

Tables of composition and nutritional value of raw materials for livestock: pigs, poultry, cattle, sheep, goats, rabbits, horses, fish. Daniel Sauvant. Inra; Edition 2004

Livestock feed. [Paul Dechambre](#)

Quality Assurance for Animal Feed Analysis Laboratories. Jim Balthrop, Food and Agriculture Organization of the United Nations, Benedikt Brand, Richard A. Cowie. Stylus Pub Llc, 2011.

## **Master's title: Nutrition and Animal Production**

**Semester : 01**

**Fundamental Teaching Unit \_ UTF1.2- Nutrition and feeding of Farm animals**

**Course title:** Forage Production in steppe area

**Credit: 4**

**Coefficient: 2**

### Teaching **objectives**

Knowledge of the potential and limitations of the steppe environment, as well as the main species, varieties and populations grown. It also aims to understand the bio-climatological stratum in Algeria and the impact of climate on plant development.

### **Recommended prior knowledge**

*The role of weather stations and plant requirements and tolerance thresholds with regard to water and heat*

### *Course content*

1. Climatic factors and elements
2. Influence of climate on forage production
3. Assessment of crop water requirements
4. Productivity and environmental factors
5. Foreseeable impacts of climate change scenarios on forage production
6. Fodder crops
  - 6.1. The steppe environment: potential and limitations
  - 6.2. Main cultivated species, varieties and populations
  - 6.3. The main forage associations

### **Practical work: growing** forage crops. :

1. Water stress in a legume (alfalfa) ;
2. Water stress in a grass (sorghum, maize or barley).
3. Quadrat application

**Personal work:** giving presentations. Work on the farm

### **Assessment method:**

**EMD + Continuous assessment (practical work note+ presentation)**

**References**

- The steppes of esparto grass ( *Stipa tenacissima* L) and their utilisation by sheep. In Plant animal interactions in Mediterrean-type ecosystems. AIDOUD A. and NEDJRAOUI D.MEDECOS VI, Gréce 1992.
- Contribution to the study of grazed ecosystems of the Algerian-Oranian high plains. Functioning, evaluation and evolution of plant resources. AIDOUD A., 1989, PhD thesis USTHB, Algiers, 240p.

**Master's title: Nutrition and Animal Production****Semester : 01****Methodology Teaching Unit \_ MTU1****Course title: English for science.****Credit : 2****Coefficient: 1****Teaching objectives**

The teaching aims to develop the language of scientific English, in the field of agronomic sciences. It also seeks to develop a rich vocabulary and the procedures for writing an agronomic article.

**Recommended prior knowledge**

An acceptable level of English, rephrasing simple sentences and a few grammatical rules.

**Course content**

1. Linguistic foundations
  - 1.1 Homogenisation or language groups
    - 1.1.1. Syntax, reading and speaking practice
    - 1.1.2. Theme and version
  2. Technical and scientific English
    - 2.1. Study of documentary resources (related to agropastoralism and animal health)
      - 2.1.1. Study of extracts from works in English
      - 2.1.2. Study of specialist articles
    - 2.2 Case studies (relating to the different modules)
      - 2.2.1. Preparing presentations in English
      - 2.2.2. Oral expression, an extension of the written word.

**Personal work:** giving presentations.

**Assessment method :**

**EMD score + continuous assessment (presentation, Other activities )**

**References**


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***Institution : University of Mohamed Khider, Biskra***  
***Master's title : Nutrition and Production of animals***  
***Academic year : 2023/2024***

Scientific communication in English. Languages for all (2003)  
The scientific research article in English. Didier Carnet. Ellipses Marketing (2010)  
La communication orale scientifique en anglais : Guide pratique à l'usage des Sciences de la Vie et de la Santé. Ellipses Marketing (2002)  
Writing for publication: Practical advice for scientists. Springer Verlag  
France; Edition: 2nd edition (2012)

**Master's title: Nutrition and Animal Production**

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***Institution : University of Mohamed Khider, Biskra***  
***Master's title : Nutrition and Production of animals***  
***Academic year : 2023/2024***



**Semester : 01**

**Methodology Teaching Unit \_ MTU1.2**

**Course title: Basics of biostatistics .**

**Credit : 4**

**Coefficient: 2**

### **Teaching objectives**

The aim of this course is to highlight the statistical principles on which the design of experiments and the analysis of the resulting data are based. In particular, it will give them the means to design experiments that make efficient use of limited resources.

### **Recommended prior knowledge**

*Algebraic and probability mathematics.*

### **Course content**

- 1) Probability,
- 2) Laws of probability,
- 3) Random variables ;
- 4) Sampling and sampling distribution
- 5) Descriptive statistics ;
- 6) Inferential statistics
  - a) Estimate
  - b) Hypothesis testing
- 7) Anova 1
- 8) Regression and linear correlation

**Practical work:** Application of statistical software (Excel, SPSS, R, scientific calculator)

**Personal work :**

**Assessment method:**

**EMD + continuous assessment(presentation, Other activities )**

### **References**

- Notions de statistique : problemes et methodes. J . S herington and I .Grant
- Statistics, biometry, agronomy. pierre dagnelie. 1995
- Introduction to biometrics. Pierre Jolicoeur. Dunod (1991).

**Master's title: Nutrition and Animal Production****Semester : 01****Methodology Teaching Unit \_ MTU1.3****Course title: Clinical biochemistry.****Credit : 3****Coefficient: 2****Teaching objectives**

Knowledge and mastery of sampling, sample preservation and laboratory analysis techniques.

**Recommended prior knowledge**

*Basic notions of haematology (veins, arteries, circulatory system, etc.) in mammals and avifauna.*

**Course content**

CHAPTER 1: Samples for the laboratory.

- \* Nature of the samples
- \* Techniques
- \* Quantity
- \* Packaging
- \* Conservation

CHAPTER 2 : Main separation and assay methods in clinical biochemistry

1. Spectrophotometry
  - \* Molecular absorption
  - \* Atomic absorption.
  - \* Atomic emission
2. Chromatography
  - \* On a thin layer
  - \* Gas phase
  - \* H.P.L.C.
3. Electrophoresis
  - \* On gel
  - \* On paper
4. Radioimmunological methods

**Personal work:** presentations, laboratory work

**Assessment method:** EMD grade + continuous assessment (lecture grade + participation in lab operations)

**References** (*books and handouts, websites, etc.*).

- Medical biochemistry - Current markers and perspectives. [Geneviève Durand](#), [Jean-Louis Beaudoux](#). 2008.
- Medical Biochemistry. Physiology and Diagnosis. William J.MARSHALL, Stephen K.BANGERT ELSEVIER. 2006.

**Master's title: Nutrition and Animal Production****Semester : 01****Discovery Teaching Unit \_ DTU 1.1****Course title: Genetic improvement of domestic animals.****Credit : 2****Coefficient: 2****Teaching objectives**

- To provide information on the various methods of genetic improvement of domestic animals and their respective benefits, both from a theoretical point of view and in farm practice.

**Recommended prior knowledge**

*Mendelian and population genetics. A population in Hardy-Weinberg equilibrium.*

**Course content****GENETIC IMPROVEMENT OF QUANTITATIVE TRAITS**

- I. DNA
- II. GENETIC VARIABILITY and the calculation of genetic diversity,
- III. Khe-deux test for a biallelic genetic trait
- IV. EXPLOITING GENETIC VARIABILITY
  1. heritability Coefficient
  2. Genetic correlation Coefficient
  3. calculating a genetic value
- V. STUDY OF GENOTYPE X ENVIRONMENT INTERACTIONS
- VI. selection
- VII. Cross
- VIII. biotechnology
  
- IX. PRODUCTION AND DISSEMINATION OF GENETIC PROGRESS

TD :

1. equilibrium population of HW
2. assessment of genetic diversity,
3. application of  $\chi^2$  to a bi-allelic character
4. estimate of  $h^2$
5. calculation of genetic value (GV)
6. selection scheme and fitness estimation

**Personal work:** presentations, homework, helping to correct exercises

**Assessment method: (EMD score + continuous assessment( TD + presentation)**

### **References**

- Genetic improvement of farm animals: scientific bases, selection and crossbreeding. [Roland Jussiau \(Author\)](#), [Louis Montméas \(Author\)](#), [Alain Papet](#). Educagri (23 October 2006)
- Eléments de génétique quantitative. OLLIVIER L., Masson, Paris. 1981 Les principes de l'amélioration génétique. des animaux domestiques. Hubert de Rochambeau.2007
- Genetics. The main principles.Daniel L.HARTL Elisabeth W.Jones. DUNOB.3<sup>eme</sup> edition.2003.

**Master's title: Nutrition and Animal Production**

**Semester : 01**

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***Institution : University of Mohamed Khider, Biskra***  
***Master's title : Nutrition and Production of animals***  
***Academic year : 2023/2024***

**Cross-disciplinary Teaching Unit\_ CDTU 1.1****Course title: Communication.****Credit : 1****Coefficient: 1****Teaching objectives**

This module aims to master internal and external communication and to develop the ability to use professional documents and to listen and exchange.

**Recommended prior knowledge**

*The linguistic foundations.*

**Course content**

1. the message and multimedia
2. communication players
3. causes of communication failure
4. how to improve communication

**Personal work:** Oral and written expression during an active communication session, oral expression of a pre-prepared message.

**Assessment method :**

**EMD score + continuous assessment (communication activities)**

**References**

- *Signs of communication, Phillipe Verhaegen, 2010 ;*
- *L'information-communication, objets et communication, Bernard Miegen 2004 ;*
- *La communication, horizon de projet de recherche, Johanne saint charle, Pierre Mongean, 2012,*
- *Communication theory, C.David Mortensen, 2011*

**Master's title: Nutrition and Animal Production**

**Semester: 02**

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**Institution : University of Mohamed Khider, Biskra**  
**Master's title : Nutrition and Production of animals**  
**Academic year : 2023/2024**

**Fundamental Unit \_FU 2.1.1\_ Agro pastoral territory management****Course title: Land grazing ecosystems functioning****Credit : 4****Coefficient: 2****Teaching objectives**

The aim of this module is to assess pastoral resources, particularly in the steppic environment, and to identify the causes of rangeland degradation and the means of restoring and rehabilitating it.

**Recommended prior knowledge**

General ecology, carbon and nitrogen cycles.

**Course content****I Assessment of pastoral resources**

I-1 qualitative methods

-Linear reading

-Specific frequencies

-Specific contributions

-pastoral value

I-2 Quantitative methods

-Phytomass

-production coefficient

-weight productivity

-energy productivity

-pastoral productivity

II- Impact of overgrazing on the ecosystem

-impact on the ground

-Impact on vegetation

-Extension of cultivated areas

III- Degradation

-Desertification

**V. AGRO-PASTORAL MANAGEMENT TECHNIQUES**

1. Basis of development

2. Route management

2.1. Rotation

2.2. Delayed route

2.3 Defences

2.4. Notion of animal load

3. Pastoral improvements

4. The outlook for sustainable development

5. The basics of integrated planning.

**TD :**

- Creation of a plant matrix,

- Frequency calculation,
- Calculation of pastoral value,
- Calculation of pastoral productivity,
- Calculations based on LU,
- Calculating the load

**Personal work:** giving presentations, carrying out floral and vegetation analyses

**Assessment method :**

**EMD score + continuous assessment (TD score+ presentation+ fieldwork)**

**References**

**Degradation of steppe ecosystems and sustainable development strategy. Methodological development applied to the Wilaya of Nâama (Algeria)**

- Méthodes d'études quantitatives de la végétation, Gounot G., Paris, Masson, 314 p.
- Evolution des éléments biogènes et valeurs nutritives dans les principaux faciès de végétaux des hautes plaines steppiques de la Wilaya de Saida, Thesis, Université des Sciences et de la Technologie Houari Boumediene Nedjraoui D., 1981, Algiers, 180p.

**Master's title: Nutrition and Animal Production**

**Semester: 02**

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***Institution : University of Mohamed Khider, Biskra***  
***Master's title : Nutrition and Production of animals***  
***Academic year : 2023/2024***



## **Fundamental Unit \_FU 2.1.2\_ Epidemiological and Health of Farm animals**

**Course title: Hygiene and prophylaxis of farm animals.**

**Credit : 4**

**Coefficient: 2**

### **Teaching objectives**

The main aim of this course is to understand how the animal body reacts to various environmental stresses and to learn about the main diseases affecting animals and how to prevent them.

### **Recommended prior knowledge**

*The ecological climax, the immune system and the anatomy of the animal body.*

### **Course content**

#### **I. ORGANISM-ENVIRONMENT RELATIONSHIPS**

1. Adaptation, stress, illness.
2. The body's defences against unfavourable environmental conditions
3. The body's defences against infection

#### **II. GENERAL PROPHYLAXIS**

1. Notion of effective prophylactic action
2. Material and human environment
3. Pathological and therapeutic past and present
4. Drawing up a prophylaxis programme

#### **III. THE LEVEL OF INTERVENTION OF GENERAL PROPHYLAXIS**

1. Food hygiene
2. Disinfection of livestock buildings
3. Destruction of corpses
4. Dairy hygiene
5. Monitoring animal health
6. Action to be taken while waiting for the vet
7. Laboratory tests
8. Medicines

#### **IV. THE HUMAN FACTOR IN DISEASE TRANSMISSION**

1. The health of poultry farm workers
2. Hygiene, animal health and health safety
3. Product health quality

#### **V. CONCEPTS OF ECO-PATHOLOGICAL INVESTIGATIONS**

1. Definition
2. Resources to be deployed
3. Implementation of a national health control programme for livestock farming

### **PRACTICAL WORK**

- a. Hygiene of livestock buildings
- b. Work on animals: vaccination,

- C- Drogage,
- d- Marking,
- e- Destruction of corpses

**Personal work:** presentations and fieldwork

**Assessment method :**

**EMD score + continuous assessment (TP + presentation, Other activities )**

### **References**

- Epidemiological surveillance in animal health. Pascal Hendrikx , Edition 2011
- Epidemiology and modelling of animal diseases. Department of agriculture. Fisheries and forestry. 2005.
- Epidemiology: an introduction. Rothman KJ. Oxford: Oxford University Press, 2002. 223 p

**Master's title: Nutrition and Animal Production****Semester: 02****Fundamental Unit \_FU 2.2.1\_ Epidemiological and Health of Farm animals****Course title: Parasitology.****Credit : 4****Coefficient: 2****Teaching objectives**

Study of the main parasites of domestic animals and the diseases they cause, their transmission and means of control.

**Recommended prior knowledge**

*Animal systematics, the life cycle of a living being.*

**Course content**

Introduction. Parasitism, a unique interaction

Chapter 1. Basic definitions

Chapter 2. The importance of parasites

Chapter 3. Host-parasite relationships

Chapter 4. Adaptations to parasitic life

Chapter 5: Parasite development cycle

Chapter 6: Parasitic zoonoses

Chapter 7. Epidemiology of animal parasites

Chapter 8. Prophylaxis of animal parasites

**Practical work:** Coproscopy in different animal species

**Personal work:** Research and presentations.

**Assessment method :**

**EMD score + continuous assessment (TP + presentation, Other activities )**

**References**

-General parasitology. IFMT-Parasitology-Introduction Rattanaxay.2002

-The Annals of Parasitology of the Richelieu Experimental Station.

-Medical and veterinary parasitology. Lavoisier. 2008.

**Master's title: Nutrition and Animal Production****Semester: 02****Fundamental Unit \_FU 2.2.1\_ Physiology and pathology of reproduction****Course title: Physiology of Animal reproduction.****Credit : 4****Coefficient: 2****Teaching objectives**

The course focuses on the regulations and mechanisms governing the reproductive function. In this way, the teaching enables inter-specific comparisons to be made and the mode of action of products used to control the cyclicity of reproduction to be defined.

**Recommended prior knowledge**

*The physiological stages of the animal and the seasonality of production.*

**Course content****CHAPTER I: THE OESTROUS CYCLE****I- General characteristics of cycles**

1. terminology
2. Duration of the various phases
3. Life cycles

**II. CELLULAR EVENTS Cellular events**

1. Ovarian cellular events.
2. Cyclical evolution of the genital tract
3. Cyclical variations in the vaginal epithelium

**III-Endocrine and behavioural events**

1. Endocrine events in the oestrous cycle
2. Oestrus
3. Special cases

**CHAPTER II: REPRODUCTIVE ENDOCRINOLOGY: THE GONADOTROPIC AXIS****I. Steroid hormones**

1. Definition and classification
2. The pathways of sexual steroidogenesis
3. Compartmentalisation of sexual steroidogenesis
4. Physiological role of sex steroids

**II- Pituitary gonadotropins**

1. The pituitary gland: anatomy and secretions
2. Structure-activity relationship of gonadotropins
3. Physiological role and pulsatile secretion of pituitary gonadotropins

Pulsatile secretion of pituitary gonadotropic hormones

**III. THE GONADOLIBERINS Gonadoliberins**

1. The hypothalamus: anatomical data and hypothalamic hormones
2. Physiological role and pulsatile secretion of GnRH
3. Regulation of secretion of the GnRH-LH pair

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**Institution : University of Mohamed Khider, Biskra**

**Master's title : Nutrition and Production of animals**

**Academic year : 2023/2024**

## CHAPTER III: OVARIAN FUNCTION

### I. Female gametogenesis

### II. Cyclic luteal function

#### 1. Morphological characteristics of the corpus luteum

#### 2. Progesterone secretion and luteotropic factors

### III. THE MECHANISMS OF LUTEOLYSIS The mechanisms of luteolysis

#### 1. Demonstration of the role of the uterus in the luteolytic process

#### 2. Identification of Prostaglandin F<sub>2α</sub> as a luteolytic factor

#### 3. Mechanisms regulating luteolysis

### III. Luteal function during gestation

#### 1. Key role of progesterone in maintaining gestation

#### 2. Demonstration of the role of the conceptus in maintaining luteal function

#### 3. Maternal recognition of gestation

## CHAPTER IV. SPERM PRODUCTION AND TRANSPORT

### I- Spermatogenesis

#### 1. Anatomy of the testicle

#### 2. Cytology and kinetics of spermatogenesis

#### 3. Efficiency of spermatogenesis

### II. Regulation of testicular functions

#### 1. Endocrine control of testicular function

#### 2. Intra-gonadal regulation of testicular function

## CHAPTER V. SEXUAL BEHAVIOUR

### I. Ethology of sexual behaviour

### II. Neurobiological mechanisms of sexual behaviour

### III. Physiology of erection and ejaculation

#### 1. Physiology of the erection

#### 3. Ejaculation

#### 3. Mating procedures.

## CHAPTER VI. BRINGING GAMETES TOGETHER AND FERTILISATION

### II- Transport and survival of spermatozoa in the female genital tract

### III- FERTILISATION

#### 1. Penetration of the cumulus oophorus

#### 2. Interactions between the spermatozoon and the zona pellucida

#### Pronucleus formation, development and migration

### IV- Egg transport

## CHAPTER VII. DEVELOPMENT, IMPLANTATION OF THE BLASTOCYST AND PLACENTAL PHYSIOLOGY

### III. PLACENTAL PHYSIOLOGY Placental physiology

## CHAPTER VIII. THE ONSET OF PARTURITION

## CHAPTER IX: PHYSIOLOGY OF LACTATION

**Personal work:** giving presentations, drawing up fertility documents for rabbits on the farm.

### Assessment method :

**EMD score + Exposure score + Other activities**

**References**

- Reproduction in mammals and man. Editions Quae, 2001 - 928 pages
- Biology of reproduction in farmed mammals: Physiology of reproduction. 2011
- Farm animal reproduction. Soltner. 3<sup>eme</sup> edition. 2001

## **Master's title: Nutrition and Animal Production**

**Semester: 02**

**Fundamental Unit \_FU 2.2.2- Physiology and pathology of reproduction**

**Course title:** Reproductive pathology.

**Credit : 2**

**Coefficient: 1**

Teaching **objectives**

This course provides information on reproductive and udder diseases and their symptoms and lesions.

### **Recommended prior knowledge**

*-Knowledge of reproductive physiology*

### **Course content**

1. Abortions
2. Metritis
3. Mastitis
3. Embryonic mortality
4. Vaginal prolapse
5. Placental pathologies
6. Foetal deaths
7. Prolonged gestation
8. Superfecundation and superfetation
9. Rupture of the uterus
10. Ectopic gestation
11. Pseudo gestation
12. Abnormal vulval discharge
13. Ovarian cysts
14. Brucellosis
15. Toxoplasmosis
16. Listeriosis.

**Personal work:** giving presentations.

**Assessment method :**

**EMD score + Exposure score**

**References** (*books and handouts, websites, etc*).

- Cattle diseases. Institut de l'élevage. France Agricole Edition 2008
  - Mastitis. Dominique Remy. France Agricole Edition 2010
- Neonatology of the calf. Bérange Ravary ; Nicolas Sattler. Edition Point Vétérin

## **Master's title: Nutrition and Animal Production**

**Semester: 02**

**Methodology Teaching Unit\_ UTM 2.1**

**Course title: Bioeconomics.**

**Credit : 4**

**Coefficient: 2**

### **Teaching objectives**

The aim is to provide the method and tools for socio-economic analysis of the environment and natural resource management, and to integrate the economic dimensions into the analysis,

### **Recommended prior knowledge**

*Calculating the gross margin and profit of a farm. Knowledge of the economic criteria of the animal industry.*

### **Course content**

#### **Chapter I: Basics on economics**

1. General definition of some of the main concepts in economics
  - Natural and social sciences
  - Economics and management science
  - The nature, bases and elements of the economic problem
2. Main activities and economic sectors
3. The economic system and its structure
4. Main categories of economic evaluation

#### **Chapter II: The Bio-economics**

Definition of the Bioeconomics

- The emerging bioeconomics
  - The Bioeconomics and sustainable development
1. Summary of the Bioeconomics
    - Integrated economic-biological analysis
    - Assessment tools
    - The link between biological reproduction and economic reproduction
  2. The Bioeconomics today: the state of play
    - Applying bioeconomics to agriculture and primary production
  3. The Bioeconomics by 2030
  4. The institutional determinants of the Bioeconomics
  5. Economic models for the Bioeconomics

#### **Chapter III: Biodiversity, natural resources and sustainable development**

1. Sustainable development :
  - Definition of sustainable development



### The principles of sustainable development

2. Biodiversity issues
3. Biodiversity and sustainable development
4. Conserving biodiversity
  - The scale of the decline in biodiversity
  - The causes of biodiversity decline
  - Biodiversity and convention guidelines
  - Spaces and species to protect
  - From the theoretical framework of valuation to the multiple values of biodiversity
  - Legal and economic incentives for conservation
  - Preserve and protect through negotiated and contractual management

### Chapter IV: Environmental economics

1. The general framework for environmental analysis in national accounting.
2. Natural capital and sustainable development.
3. General framework for measuring sustainable development

### TD

- Agri-environmental policies
- The cost of climate change
- Bioeconomics and biotechnologies
- Structuring the economic system and spatial scales in economics
- Towards sustainable development based on biodiversity.

**Personal work:** giving presentations.

**Assessment method:** EMD score + continuous assessment (TD + presentation + Other activities )

### References

- Bioeconomics and solidarity: for an economics at the service of Life.  
Bioeconomics.pagesperso-orange.fr
- <http://www.actu-environnement.com>. New European strategy for a sustainable Bioeconomics 2012.
- <http://www.bio-economie.com/> .Bio-economics and BIO-ECONOMICS. 2011.
- <http://www.novethic.fr/>.La Is the Bioeconomics sustainable? 2010.

**Master's title: Nutrition and Animal Production**

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***Institution : University of Mohamed Khider, Biskra***  
***Master's title : Nutrition and Production of animals***  
***Academic year : 2023/2024***

**Semester: 02**

**Methodology Teaching Unit\_ UM 2.2**

**Course title: English for science.**

**Credit : 2**

**Coefficient: 1**

### **Teaching objectives**

*The primary goal for this education is to study the compared zootechny in English precisely for sheep and goat species.*

### **Recommended prior knowledge**

*Digestive system, biochemical reactions*

### **Course content**

- Sheep physiology
- Common diseases in sheep and goats
- Anatomy of sheep
- Digestive system of goats
- Ruminant production and management

**Personal work:** presentation.

**Assessment method:** EMD score + presentation score

### **References**

-Improvement of goats,  
[- www.sheep.fr](http://www.sheep.fr)

**Master's title: Nutrition and Animal Production**

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***Institution : University of Mohamed Khider, Biskra  
Master's title : Nutrition and Production of animals  
Academic year : 2023/2024***

**Semester: 02**

**Methodology Teaching Unit\_ MTU 2.3**

**Course title: Methodology for bibliography researches**

**Credit : 2**

**Coefficient: 1**

### **Teaching objectives**

The aim is to provide the method and tools for researching scientific information and the techniques for good writing with a view to making them publishable.

### **Recommended prior knowledge**

*Scientific writing techniques, notions of bibliographic software*

### **Course content**

1. Research tools
2. Objectives of the methodology
3. Aim of the research.
4. Search operators.
5. Writing the thesis.

### **TD**

**Discussing scientific articles**

**Personal work:** presentations+ Other activities

**Assessment method:** EMD score + TD score + Other activities

### **References**

**Master's title: Nutrition and Animal Production**

**Semester: 02**

**Discovery Teaching Unit- DTU 2.1.**

**Course title: Machines used in farm animals**

**Credit : 2**

**Coefficient: 2**

**Teaching objectives**

The main objective will be to introduce students to reasoning methods applicable to animal farms when choosing equipment.

**Recommended prior knowledge**

*Livestock equipment, different forage and concentrate production techniques.*

**Course content**

I. Handling of agricultural products

1. Bucket elevator
2. Belt conveyor
3. Screw conveyor

II Water supply installation

1. Constant level trough
2. Pressure trough
3. Prairie pumps

III. Feed preparation machinery

1. Grain processing machines
  - Shredders
  - Mixers
  - Pellet press
2. Machines for processing coarse fodder
  - Forage harvesters
  - Silage cutters

IV. Food distribution machines

1. Distribution trailer
2. Chain distribution assembly
3. Belt distribution assembly
4. Screw distribution assembly

V. Stable cleaning machines

1. Manure evacuation with push benches
2. Circular chain manure evacuation
3. Discharge via a hydraulic system

VI. Mechanical milking machines

1. Pipeline milking machines

## 2. Milking machines for loose housing

### Practical work

- Visit to a well-equipped farm in the Centre region.

**Personal work:** presentations.+ Other activities

### Assessment method :

**EMD score + TP score + Presentation**

### References (*books and handouts, websites, etc*).

Machinery, equipment and tools for agriculture and animal husbandry.

[http://www.paginegialle.it/cat/machines\\_materiel\\_et\\_outillages\\_pour\\_agriculture\\_zootechnie\\_et\\_peche---.html](http://www.paginegialle.it/cat/machines_materiel_et_outillages_pour_agriculture_zootechnie_et_peche---.html)

Installation and accessories for modern zootechnics.

[http://www.omve.it/contenuti/pdf/FRA\\_zootecnia\\_bovini.pdf](http://www.omve.it/contenuti/pdf/FRA_zootecnia_bovini.pdf)

**Master's title: Nutrition and Animal Production****Semester: 02****Discovery Teaching Unit- DTU 2.2.****Course title: Conversion of animal products.****Credit : 1****Coefficient: 1****Teaching objectives**

The module presents a general overview of food engineering based on animal products. Its aim is to publicise the various possibilities for adding value to animal by-products.

**Recommended prior knowledge**

*The constraints involved in marketing animal products and their storage and transport.*

**Course content**

1. Dairy
2. Butter and cheese factory
3. Farm dairy
4. Adding value to dairy by-products in animal feed
5. Meat processing
6. Production of animal meal
7. Animal product crafts

**Personal work:** presentations + trip to a dairy farm

**Assessment method :**

**EMD grade + continuous assessment (trip report)**

**References**

- *Laiterie, Charle Martin, 2010 ;*
- *Science et technique de lait, transformation du lait, collective work 2012 ;*
- *La route de fromage, collective work, 2012.*

**Master's title: Nutrition and Animal Production****Semester: 02****Cross Disciplinary Teaching Unit- CDTU 2.1****Course title: Legislation****Credit : 1****Coefficient: 1****Teaching objectives**

*Knowledge of the various products incorporated into livestock feed and the effects of these residues on humans. It also aims to quote food codes to guarantee healthy production for humans, animals and the environment.*

**Recommended prior knowledge**

*The effects of synthetic products on environmental sustainability and the huge expansion of organic farming.*

**Course content**

1. food additives
  1. definitions, types,
  2. advantages and disadvantages of food additives,
  3. latency time
  4. the relationship between synthesised products and human health,
2. Food codes
  1. For meat
  2. For milk
  3. For eggs

Personal work: giving presentations.

**Assessment method :****EMD score + Exposure score****References**

- Standards of identity and purity for food additives, FAO, 1985
- Food additives, Marie Laure André, 2015.
- The impact of food additives on human health, Thomas Gozan, 2012
- guide to food additives, Rochez Frely, 2014

## **Master's title: Nutrition and Animal Production**

**Semester: 03**

**Fundamental Teaching Unit- FTU 3.1- Breeding and Farm management**

**Course title:** Special zootechnics.

**Credit : 4**

**Coefficient: 2**

### **Teaching objectives**

This course aims to provide the skills and knowledge needed to set up and run a camel, poultry (other than hens), dairy, bee and fish farm.

### **Recommended prior knowledge**

*Knowledge of how to run and manage cattle, sheep and poultry farms.*

### **Course content**

1. Camel farming
  - 1.1 Situation and importance
  - 1.2. Specific features of adaptation to the steppe environment
    - 1.2.1. Morphological characteristics
    - 1.2.2. Anatomical and physiological particularities
    - 1.2.3. Behavioural characteristics
  - 1.3. Special zootechnical features
    - 1.3.1. Power supply
    - 1.3.2. Reproduction
    - 1.3.3. Genetics and selection
  - 1.4. The dromedary's multifunctionality
    - 1.4.1. Production (milk, meat, hair, etc.)
    - 1.4.2. Services (saddle, pack, draught, etc.)
  - 1.5. Pathology
    - 1.5.1. Pathological features
  - 1.6. Fate of the camel
2. Sheep and goat farming
  - 2.1. Situation and importance
  - 2.2 History and workforce
  - 2.3 High breeds
  - 2.4. Farm management
  - 2.5. Genetics and selection
  - 2.6. Production
  - 2.7. Problems
  - 2.8. Development prospects



3. Cattle breeding
  - 3.1 Introduction of cattle
  - 3.2. Situation and importance
  - 3.3 History and workforce
  - 3.4. High breeds
  - 3.5. Farm management
  - 3.6. Breeding limits
  - 3.7. Development prospects
4. Other farms
  - 4.1. Poultry farming
  - 4.2 Rabbit farming
  - 4.3. Beekeeping
  - 4.4. Fish farming

**Personal work:** Field trips, presentations and work in the field

**Assessment method :**

**EMD note + Report note.**

### **References**

- Working with livestock. Special issue on animal production. 2012 edition
  - Sheep production. C Dudouet. France Agricole.2012
  - Conduite du troupeau bovin laitier.2<sup>eme</sup> edition. France Agricole 2009.
- Goat farming. France Agricole 2012.

**Master's title: Nutrition and Animal Production**

**Semester: 03**

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***Institution : University of Mohamed Khider, Biskra***  
***Master's title : Nutrition and Production of animals***  
***Academic year : 2023/2024***

## **Fundamental Teaching Unit- FTU 3.2\_ Breeding and Farm management**

**Course title:** Rationing of livestock.

**Credit : 4**

**Coefficient: 2**

### **Teaching objectives**

The aim of the course is to determine the feed requirements for the various animal species on the farm, and to prepare the quantity of feed needed to feed the animals, using the resources available and complying with rationing standards.

### **Recommended prior knowledge**

*Metabolism is the set of biological and chemical reactions that take place in living matter (animals) and the process by which they are transformed.*

### **Course content**

- General information: concepts of food and food rations
- Food sources
- Animal feed requirements
- Food tables
- Rationing practice
  - Rationing of dairy females ;
  - Rationing of lactating females;
  - Rationing of fattening ;
  - Rationing horses ;
  - Rationing rabbits

### **Tutorial**

- 1) Using the food chart ;
- 2) Rationing a dairy cow or goat ;
- 3) Rationing a herd ;
- 4) Rationing a suckler ewe,
- 5) Rationing a flock of sheep,
- 6) Rationing on pasture ;
- 7) Rationing laying hens ;
- 8) Rationing a racehorse or a pregnant rabbit

**Personal work:** presentations, helping to formulate rations using local co-products, field work

### **Assessment method :**

**EMD grade + Continuous assessment (TD + various activities).**

### **References**

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***Institution : University of Mohamed Khider, Biskra***  
***Master's title : Nutrition and Production of animals***  
***Academic year : 2023/2024***

- Alimentation des bovins, ovins et caprins : Besoins des animaux-valeurs de l'aliment,INRA 2007 ;
- Dairy cow feeding, Roger Wolter, 1997;
- Alimentation des animaux monogastriques :porc, lapin, ouvrage collectif INRA 1989 ;
- Nutrition et alimentation des animaux d'élevage, Tome1, tome2, Marie Christian Leborgne,2013 ;

**Master's title: Nutrition and Animal Production**

**Semester: 03**

**Fundamental Teaching Unit- FTU 3.2\_Breeding and Farm Management**

**Course title:** Farming practices and breeding organisation.

**Credit : 4**

**Coefficient: 2**

**Teaching objectives**

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***Institution : University of Mohamed Khider,Biskra***

***Master's title : Nutrition and Production of animals***

***Academic year : 2023/2024***

At the end of the course, students will be able to understand the interactions between animals and plants and the dynamics of grazing livestock.

### **Recommended prior knowledge**

*Plant physiology, especially photosynthesis, and the optimum load in a course.*

### **Course content**

#### I. OVERVIEW OF THE ECOLOGY OF STEPPE PASTURES

1. Bioclimatic diversity in pastoral areas
2. Fodder production factors

#### II. USES OF PASTORAL LAND AND CURRENT DIFFICULTIES FOR GRAZING LIVESTOCK

#### III. SOME BASIC PRINCIPLES OF USE

#### VEGETATION BY ANIMALS

1. The effects of harvesting (or defoliation)
2. The effects of animal behaviour
3. The nutritional value of the food intake
4. Quantities consumed on the course

#### INTERVENTION ON THE USE OF FAIRWAYS

#### BY ANIMALS

1. Intervention on how animals use grazing land
  - 1.2. Load management
    - 1.2 How can the condition of a pastoral site be analysed?
  - 1.3. The importance of the grazing season
  - 1.4. Distribution of animals on the pasture
2. Pasture use techniques
  - 2.1. Continuous grazing
  - 2.2. Deferred grazing
  - 2.3. Rotational grazing

#### INTERVENE ON THE ANIMAL AND THE HERD

- 1 The qualities required of the animal on the course
2. How to better adapt sheep management to the pastoral system

#### INTERVENE IN THE VEGETATION OF THE ROUTES.

### **Practical work :**

- 1) Effect of defoliation on plant development ;
- 2) Distribution of grazing land ;
- 3) Analysis of a pastoral site ;
- 4) Pasture management.

**Personal work:** presentations. Field trips to protected areas, field work

### **Assessment method :**

**EMD score + Continuous assessment score (TD + exit report+ Other activities ).**

**References**

- Working with livestock. Special issue on animal production. 2012 edition
- Developing the Algerian steppe. Ahmed Medjoubi

**Master's title: Nutrition and Animal Production**

**Semester: 03**

**Fundamental Teaching Unit- FTU 3.2\_ Farm Animal Pathologies**

**Course title: Ruminants' pathologies.**

**Credit : 4**

**Coefficient: 2**

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***Institution : University of Mohamed Khider, Biskra***  
***Master's title : Nutrition and Production of animals***  
***Academic year : 2023/2024***

**Teaching objectives**

To provide the skills and knowledge needed to care for an animal. This includes choosing the veterinary products and equipment needed for treatment, defining a recommended treatment and applying a given treatment to an animal.

**Recommended prior knowledge**

*Hygiene and prophylaxis rules, how a disease spreads.*

**Course content**

1. Metabolic pathology
2. Digestive pathology
3. Respiratory pathology
4. Foot pathology

**Personal work:** presentations.

**Assessment method :**

**EMD score + Exposure score.**

**References**

- Memento of bovine medicine. Med'com 2005
- Cattle diseases.4<sup>eme</sup> edition. France Agricole 2008.
- Practical guide to cattle diseases. Edition France agricole 2012

**Master's title: Nutrition and Animal Production**

**Semester: 03**

**Fundamental Teaching Unit- FTU 3.2\_ Farm Animals' Pathologies**

**Course title: Avian pathology.**

**Credit : 2**

**Coefficient: 1**

**Teaching objectives**

Understanding the major syndromes encountered in poultry farming: these are often complex problems involving technical factors and/or infectious agents.

**Recommended prior knowledge**

*Avian anatomy and physiology, lifestyle of a gregarious species.*

**Course content**

1. General information on bacteria, viruses and parasites
  - 1.1. Bacteria
  - 1.2. Viruses
  - 1.3. Parasites
2. Relationship: Microorganisms/Pathology
3. Viral diseases
4. bacterial diseases
5. parasitic diseases
6. Nutritional diseases.

**Practical work**

**Personal work:** giving presentations.

**Assessment method:** EMD score + practical score + presentation+ Other activities .

**References** (*books and handouts, websites, etc*).

- Manuel de pathologie viaire. Ed. Chaire de Pathologie Médicale du Bétail et des Animaux de Basse-Cour, Ecole Nationale Veterinaire d'Alfort, 1992
- Poultry disease. Ed France Agricole 2012

**Master's title: Nutrition and Animla Production**

**Semester: 03**

**Methodology Teaching Unit- MTU 3.1**

**Course title: Field diagnostics.**

**Credit : 2**

**Coefficient: 1**

**Teaching objectives**

The aim of this module is to gather and analyse information and data on the study area.

**Recommended prior knowledge**

*The art of conducting a survey in agronomy, notions of geography and topology.*

**Course content**

- Stage 1: documentation, bibliography....etc
- Stage 2: Interviews with stakeholders in the field and drafting of the survey questionnaire
- Stage 3: data analysis.

**Personal work:** presentations.

**Assessment method:** EMD score + presentation score+ Other activities .

**Master's title: Nutrition and Animal Production**

**Semester: 03**

**Methodology Teaching Unit- MTU 3.2**

**Course title: Introduction to data analysis in zootechnics and epidemiology.**

**Credit : 4**

**Coefficient: 2**

**Teaching objectives**



organise data collection in the field, - carry out a statistical analysis of a series of data collected in the field, interpret the results of the statistical analysis and familiarise students with the main software programmes that can be used.

### **Recommended prior knowledge**

*Descriptive and inferential statistics (estimation and hypothesis testing).*

### **Course content**

Introduction to experimentation and data processing

- I. Definition and purpose of statistics (Definition of the term statistics, purpose of statistics)
- II. Experimental design and clinical trials ;
- III. Processing experimental data
  1. Data processing
  2. Notion of data file
  3. The different types of file
  4. Declaration of variables and factors
- IV. File transformation and storage
  - 5 IT tools for data processing
  - 6 The paintings
- V. Polling, random polling, stratified polling; 2-stage or multi-stage polling).
- VI. Proposal and organisation of statistical surveys.
- VII. Data processing software.
  
- VIII. Further regression analysis
- IX. Non-parametric statistical methods

### **TD:**

1. Descriptive statistics,
2. Estimate ;
3. Variables on SPSS,
4. ANOVA on SPSS,
5. PCR on SPSS

**Personal work:** making presentations, carrying out a small statistical study of your own

**Assessment method :****EMD note + Continuous assessment note (TD + Other activities )****References**

Epidemiology: principles and quantitative methods. Principles and quantitative methods. Jean Bouyer, Denis Hémon, Sylvaine Cordier et al.2009

**Statistical epidemiology.** T.ANCELLE. MALOINE.2008

Manual of comparative North-South zootechnics. [André Théwis](#) et al. Inra-Quae (14 September 2005)

**Master's title: Nutrition and Animal Production****Semester: 03****Methodology Teaching Unit- MTU 3.3****Course title: Agricultural extension.****Credit : 3****Coefficient: 2****Teaching objectives**

This course aims to acquire the knowledge and skills needed to choose an appropriate extension method for disseminating a given innovation, and to define the profile of an extension agent.

## Recommended prior knowledge

*Communication tools, agricultural experimentation*

## Course content

1. History of agricultural extension in Algeria
2. National agricultural extension system
3. Concepts and definitions
4. The different methods of agricultural extension
5. Advantages and disadvantages of different agricultural extension methods
6. Communication as a popularisation tool
7. Outreach projects

## Practical work:

- Leading a popularisation session (technique chosen by the student).

**Personal work:** making presentations leading popularisation sessions

**Assessment method:** EMD score + Continuous assessment score ( practical work+ Other activities )

## References

- *Practical manual of agricultural extension, volume 1, Jan Maris, 1992 ;*
- *Agricultural extension: time for change, Pye-Smith, 2012;*
- *Intensive extension campaign, Ronny Adhikarya, 1997*

## Master's title: Nutrition and Animal Production

Semester: 03

Discovery teaching unit- DTU 3.1

Course title: Veterinary medicine and the environment.

Credit : 2

Coefficient: 2

## Teaching objectives

"Veterinary Medicine and the Environment" aims to develop the general and interdisciplinary skills needed to understand the full complexity of health issues at the animal-human-environment interface, using a multidisciplinary approach.

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**Institution : University of Mohamed Khider, Biskra**  
**Master's title : Nutrition and Production of animals**  
**Academic year : 2023/2024**

## Recommended prior knowledge

### Course content

- Animal health and ecological impact
- Use of veterinary products
- Use of pesticides
- Presence of toxic residues in animal products.

**Personal work:** presentations.

### Assessment method :

**EMD score + Exposure score.**

### References

- Epidemiological surveillance in animal health. 3<sup>eme</sup> edition. Quae 2011
- \_\_Guide thérapeutique veterinary ; animaux de rente. Ed Point Veterinary 2008.

## Master's title: Nutrition and Animal Production

Semester : 03

cross-disciplinary teaching unit- CDTU 3.1

Course title: Entrepreneurship and project management.

Credit : 1

Coefficient: 1

### Teaching objectives

The aim of the Entrepreneurship programme is to give students a comprehensive overview of the different facets of entrepreneurship, its challenges, risks and characteristics.

## Recommended prior knowledge

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**Institution : University of Mohamed Khider, Biskra**  
**Master's title : Nutrition and Production of animals**  
**Academic year : 2023/2024**

Management, Economics and Statistics

## **Course Content**

### **Chapter 1: The concept of entrepreneur and entrepreneurship**

Definition of entrepreneurship  
 Characteristics of the contractor :  
 Entrepreneurship in the economics  
 Case studies on GEM

### **Chapter 2: The entrepreneurial approach**

What is an opportunity?  
 Innovation  
 Why innovate and the obstacles to innovation  
 Key factors in innovation  
 Market analysis

### **Chapter 3: Company development**

Growth  
 The internationalisation of the company

### **Chapter 4: Idea, creation, development and beyond?**

Transmission  
 The recovery  
 Failure and a second chance

### **Chapter 5: The business plan and partners**

The Business Plan  
 Our partners  
 Analysis of an entrepreneurial theme with student groups

### **Personal work:** Presentations

Analysis of a balance sheet - Preparation of technical data sheets - Analysis of a balance sheet -  
 Preparation of technical data sheets - Analysis of a balance sheet - Preparation of technical data sheets  
 Calculates costs, cost prices and margins.  
 Notion of performance, productivity and value

**Assessment method:** continuous assessment + examination

### **References**

Entrepreneurship, Michel Coster, Pearson Education, 2009  
 Soparnot R., 2012-Organisation and management of the company  
 Collection: Les Topos , Dunod - 2nd edition - 128 p.  
 Soparnot R., 2009- Management des entreprises, Stratégie. Structure. Organisation.

# Semester 4

# Thesis writing Skills