ANNEXES

ANNEX n.1 National and international exchange programmes

ANNEX n.2 Specific Objectives of the Faculty of Veterinary Sciences

ANNEX n.3 5th year of Veterinary Degree (1973)

ANNEX n.4 Additional information in relation to the curriculum

ANNEX n.5 Placements offered in 2003-2004 academic year

ANNEX n.6 Work done by the Audiovisual Service of the Faculty in 2004

ANNEX n.7 Shows offered by the Audiovisual Service

ANNEX n.8 List of research publications of the Departments

ANNEX n.9 University's budget

ANNEXES

ANNEX n. 1

NATIONAL AND INTERNATIONAL
EXCHANGE PROGRAMMES

SICUE PROGRAMME (Spain)

The Exchange System between the Spanish University Institutions (Sistema de Intercambio entre Centros Universitarios Españoles - SICUE) intends to enforce the opportunity to carry out part of the university studies in different Institutions from where the student is enrolled, getting a recognition of the credits studied, promoting in this way the student's mobility.
In order to access to this programme, the student has to fulfill the minimum requirements regarding credits and academic record.
The Faculty has signed bilateral agreements for periods of nine months.

RECEIVED				**SENT**			
Students	Sending Institution	Months	Total months x University	Students	Receiving Institution	Months	Total months x University
2	Barcelona	9	18	3	Autónoma de Barcelona	9	27
2	León	9	18	2	Córdoba	9	18

SOCRATES-ERASMUS PROGRAMME (European Union)

This programme of higher education of the European Commision encourages transnational cooperation between universities, boosting students mobility through periods of study in a european university with full academic recognition of studies and qualifications.
The Socrates-Erasmus programme offers the possibility of studying abroad in another european country for a period of between 3 and 12 months.
The Veterinary Faculty has signed bilateral agreements with 25 universities of 10 european countries.

RECEIVED					**SENT**				
Students	Country	Sending Institution	Months	Total months x University	Students	Country	Receiving Institution	Months	Total months x University
1	Italy	Bologna	10	10	2	Italy	Bologna	10	20
1	Italy	Bologna	6	6	1	Italy	Sassari	10	10
2	Italy	Sassari	9	18	1	Italy	Sassari	6	6
2	Italy	Torino	12	24	1	Italy	Torino	9	9
4	Italy	Parma	12	48	5	Italy	Parma	8	40
					1	Italy	Messina	3	3
Total students / country: 10. Total months: 106					Total students / country: 11. Total months: 88				

RECEIVED					SENT				
Students	Country	Sending Institution	Months	Total months x University	Students	Country	Receiving Institution	Months	Total months x University
1	France	Bordeaux	3	3	1	France	Bordeaux	6	6
1	France	Quimper	3	3	2	France	Nantes	10	20
					2	France	Toulouse	10	20
					1	France	Lyon	10	10
					2	France	Alfort	10	20
Total students / country: 2 Total months: 6					Total students / country: 8 Total months: 76				

RECEIVED					SENT				
Students	Country	Sending Institution	Months	Total months x University	Students	Country	Receiving Institution	Months	Total months x University
1	United Kingdom	Reading	3	3	1	United Kingdom	Reading	6	6
					1	United Kingdom	Aberdeen	10	10
Total students / country: 1 Total months: 3					Total students / country: 2 Total months: 16				

RECEIVED					SENT				
Students	Country	Sending Institution	Months	Total months x University	Students	Country	Receiving Institution	Months	Total months x University
1	Belgium	Ghent	3	3	2	Belgium	Ghent	3	6
2	Belgium	Liege	10	20	2	Belgium	Louvain	6	12
Total students / country: 3 Total months: 23					Total students / country: 4 Total months: 18				

RECEIVED					SENT				
Students	Country	Sending Institution	Months	Total months x University	Students	Country	Receiving Institution	Months	Total months x University
1	Germany	Hannover	4	4	1	Germany	Hannover	9	9
Total students / country:1 Total months: 4					Total students / country: 1 Total months: 9				

RECEIVED					SENT				
Students	Country	Sending Institution	Months	Total months x University	Students	Country	Receiving Institution	Months	Total months x University
1	Denmark	Lyngby	9	9	1	Denmark	Lyngby	6	6
Total students / country: 1 Total months: 9					Total students / country: 1 Total months: 6				

RECEIVED					SENT				
Students	Country	Sending Institution	Months	Total months x University	Students	Country	Receiving Institution	Months	Total months x University
2	Poland	Warsaw	10	20	1	Poland	Warsaw	4	4
					1	Poland	Warsaw	5	5
Total students / country: 2 Total months: 20					Total students / country: 2 Total months: 9				

RECEIVED					SENT				
Students	Country	Sending Institution	Months	Total months x University	Students	Country	Receiving Institution	Months	Total months x University
3	Portugal	Lisbon	3	9	1	Portugal	Lisbon	4	4
					2	Portugal	Vilareal	9	18
Total students / country: 3 Total months: 9					Total students / country: 3 Total months: 22				

RECEIVED					SENT				
Students	Country	Sending Institution	Months	Total months x University	Students	Country	Receiving Institution	Months	Total months x University
					1	Países Bajos	Utrecht	12	12
					1	Países Bajos	Utrecht	6	6
					Total students / country: 2 Total months: 18				

RECEIVED					SENT				
Students	Country	Sending Institution	Months	Total months x University	Students	Country	Receiving Institution	Months	Total months x University
					1	Austria	Wien	9	9
					Total students / country: 1 Total months: 9				

INTERNATIONAL COOPERATION PLACEMENTS PROGRAMME – UNIVERSITY OF ZARAGOZA (Latinamerica)

The students of our Faculty can carry out placements of veterinary health, livesotck production systems, food technology and rural development in Agronomy and Veterinary Faculties of Latinamerican Universities through signed agreements between the Institutions.
The University of Zaragoza supports this placements programme financing a maximun amount of the flying tickets and medical insurance price, whereas maintenance and accommodation expenses are covered by the receiveing Institutions.
These placements are for students enrolled in the last year of their degree. The period of stay is up to 8 weeks.

RECEIVED					**SENT**				
Students	Country	Sending Institution	Months	Total months x University	Students	Country	Receiving Institution	Months	Total months x University
1	Argentina	Río Cuarto	1	1	5	Argentina	Río Cuarto	2	10
					2	Argentina	Salvador de Buenos Aires	2	4
Total students / country: 1 Total months: 1					Total students / country: 7 Total months: 14				

RECEIVED					**SENT**				
Students	Country	Sending Institution	Months	Total months x University	Students	Country	Receiving Institution	Months	Total months x University
					2	Uruguay	De la República	2	2
					Total students / country: 2 Total months: 4				

RECEIVED					**SENT**				
Students	Country	Sending Institution	Months	Total months x University	Students	Country	Receiving Institution	Months	Total months x University
					4	Nicaragua	León	2	8
					Total students / country: 4 Total months: 8				

RECEIVED					**SENT**				
Students	Country	Sending Institution	Months	Total months x University	Students	Country	Receiving Institution	Months	Total months x University
					1	Bolivia	Mayor de San Andrés	2	2
					Total students / country: 1 Total months: 2				

RECEIVED					**SENT**				
Students	Country	Sending Institution	Months	Total months x University	Students	Country	Receiving Institution	Months	Total months x University
					1	Ecuador	Equinoccial de Quito	1	1
					1	Ecuador	Equinoccial de Quito	2	2
					Total students / country: 2 Total months: 3				

RECEIVED					SENT				
Students	Country	Sending Institution	Months	Total months x University	Students	Country	Receiving Institution	Months	Total months x University
1	Cuba	Matanzas	1	1	3	Cuba	Matanzas	2	6
					1	Cuba	Matanzas	1	1
					2	Cuba	Ciego de Ávila	2	4
Total students / country: 1 Total months: 1					Total students / country: 6 Total months: 11				

RECEIVED					SENT				
Students	Country	Sending Institution	Months	Total months x University	Students	Country	Receiving Institution	Months	Total months x University
					2	Colombia	Córdoba	2	4
					Total students / country: 2 Total months: 4				

RECEIVED					SENT				
Students	Country	Sending Institution	Months	Total months x University	Students	Country	Receiving Institution	Months	Total months x University
					3	Guatemala	Guatemala	2	6
					Total students / country: 3 Total months: 6				

RECEIVED					SENT				
Students	Country	Sending Institution	Months	Total months x University	Students	Country	Receiving Institution	Months	Total months x University
					1	Perú	Cayetano Heredia	2	2
					Total students / country: 1 Total months: 2				

ANNEX n. 2

SPECIFIC OBJECTIVES OF THE FACULTY OF VETERINARY SCIENCES

To provide the student with:

- Knowledge of the structure and functions of the animal organism systems.
- Knowledge of the mechanisms and methods of animal reproduction.
- Knowledge of the genetical basis and its applicative aspects, particularly those related to animal genetic improvement.
- Knowledge of the farming systems, accommodation conditions and animal handling.
- Knowledge of the animals nutritional needs, characteristics, nutritive value of their food and the precise techniques for their correct feeding.
- Knowledge of the behavioural models of animals and their relation with farming systems.
- Knowledge of the agrarian environment where stockbreeding production is developed.
- Knowledge of the natural ecosystems, specially the evaluation techniques, control and correction measures of the impact that agrofarming activities and food industry have in the environment.
- Knowledge of the agents that can cause medical problems to animals and how these problems developed. Functional and morphological alterations that cause, both at individual and collective levels.
- Knowledge and evaluation of diagnostic techniques, prognosis, therapeutic and surgical measures. How the applied pharmacological principles work, their indications and contraindications.
- Knowledge of the epidemiologic and ecopathologic aspects of animal diseases. Prevention, control and eradication methods, with special attention to zoonoses.
- Knowledge of the technology used in the production, transformation, preservation and distribution of food for human consumption.
- Knowledge of food hygiene and production industries. Food transformation, preservation and distribution.
- Knowledge of the inspection and control basis of food for human consumption.
- Knowledge of the economy in the productive and distributive processes in the livestock subsector.
- The acquisition, with adequate supervision, of practical experience in every aspect of the previous objectives.
- Enough information about deontology in the veterinary work and the legal, statutory and administrative dispositions related to themes mentioned before.

ANNEX n. 3

Although Chapter 4 is completed with the curriculum of the Degree in Veterinary Science, that was published in 2002 and replaces the previous one from 1973 (as we explain in section "INTRODUCTION"), we have to clarify that at the moment when the Evaluation Team visit takes place, 5th year of the syllabus from 1973 is still taught.
It is for that reason that this Annex has been introduced

5th year of Veterinary Degree (1973 curriculum)

Subject	Hours of training					
	Lectures	Practical work	Supervised work	Clinical work	Other	Total
Esp. Medicine and Health						
Medical and nutrition pathology	90			54	7.5	151.5
Infectious pathology and epidemiology	120	22	15	10.5	7.5	175
Surgical pathology II	60			43	7.5	110.5
Hygiene and food inspection	90	32	5		8	135
Reproduction and obstetrics	60	40		15	7.5	122.5
Total	**420**	**94**	**20**	**122.5**	**38**	**694.5**
Esp. Animal Production and Economics						
Hygiene and food inspection	90	32	5		8	135
Agrarian economics	90	9	16			115
Farming and Constructin Projects	60	6	7			73
Animal productions	150	86.5	18.5			255
Obstetrics and reproduction	60	40				100
Total	**450**	**173.5**	**46.5**		**8**	**678**
Esp. Bromatology						
Hygiene and food inspection	90	32	5		8	135
Livestock farming	60	12	2			74
Meat science and technology	90	52	8			150
Lactology	90	52	8			150
Fish technology	30	20				50
Total	**360**	**168**	**23**		**8**	**559**
Total	**1230**	**435.5**	**89.5**	**122.5**	**54**	**1931.5**

ANNEX n. 4

ADDITIONAL INFORMATION IN RELATION TO THE CURRICULUM

CORE SUBJECTS
1st YEAR

Anatomy and Embriology

Biochemistry

Physics

Mathematics

Chemistry

Animal and Plant Biology

Ethology and Animal Protection and Ethnology

Biomedical language (English – German)

Proforma for information on a specific subject

Subject title:	23000 – Anatomy and embriology	Semester of studies in which subject presented:	A
Department/unit responsible for teaching the subject.*	ANATOMY, EMBRIOLOGY AND ANIMAL GENETICS	Number of academic staff responsible for teaching this subject:	7

✶ State which Faculty if NOT the veterinary one

Number of individuals assisting with teaching or preparation			
	practical work	clinical work	other work (indicate type)
Support staff	1		
Postgraduate students			
Undergraduate students			
Practitioners			

State **objective**(s) of theoretical part of teaching in this subject, if this has been defined.

The objectives of Veterinary Anatomy is that the anatomical knowledge serves the student:

1) to acquire scientific and professional nomenclature related to structure and morphology of domestic species.
2) allow veterinarians to understand the organisation and ontogenic history of animal life throughout its life cycle, from conception to death.
3) as a base to study other clinical or pre-clinical material and to correlate morpholical and functional data.
4) as a basic part for the study and diagnosis of any clinical circumstance.
5) as a basic part to resolve functional or pathological problems.
6) to develop communication and observation skills and thereby, increase their intelligence and critical capacity.

Main themes and hours of lectures in this subject

Theme/field	hours	Theme/field	hours
General embriology	8	Lymphoid and Haematopoietic organs	1
Locomotive apparatus. General description.	3	Urogenital apparatus	8
Axial region	7	Endrocrinal system	2
Thoracic limb	6	Nervous system	14
Pelvic limb	7	The sense organs	6
Circulatory system	3	Tagumentary system	2
Splanchnology. General description	2	Anatomy of birds	3
Respiratory system	4		
Digestive system	14		

(extend table as necessary)

Is attendance at lectures compulsory (YES/NO) If YES, is it verified, and how?

NO

State **objective**(s) of practical part of teaching in this subject, if this has been defined.

The objectives of Veterinary Anatomy is that the anatomical knowledge serves the student:
1) to know the spatial position of the anatomical structures of domestic species in a real and topographical way;
2) to elaborate a precise spatial representation of the position of those anatomic structures;
3) to develop manual skills applicable to their latter medical-surgical practices.

Outline of main practical sessions in this subject

practical session topic & duration	(hours)	type of session	class size	no. of 'stations'	no. of staff	location (room)	time allocation
Osteology. Axial Skeleton	15	Bone study	72	12	7	Dissection room	4 hours/week
Osteology. Thoratic Limb	10	Bone study	72	12	7	Dissection room	4 hours/week
Osteology. Pelvic Limb	10	Bone study	72	12	7	Dissection room	4 hours/week
Trunk and limbs	15	Dissetion	72	12	7	Dissection room	4 hours/week
Head, cavities and organs	30	Dissection	72	12	7	Dissection room	4 hours/week
Nervous system and organs of the senses	10		72	12	7	Dissection room	4 hours/week

(extend table as necessary)

Is attendance at practical work compulsory (YES/NO)† If yes, is it verified, and how?

YES. Calling the roll.

Primary **course materials** students use for their work and leaning in this subject

Books published by members of the Department
Theoretical and practical material published by members of the Department

Examination format used (mark all that apply)	(none)	multiple-choice	oral	practical	written papers	
					short	long (essay)
During the semester		X		X	X	X
At the end of the subject		X		X	X	X

Can students choose when to present themselves for the examination (YES/NO)†
How many times is a student permitted to attempt the examinations ?
What are the prerequisites for taking this subject?
For what other subjects is this examination a prerequisite?

Proforma for information on a specific subject

Subject title:	23001 - Biochemistry	Semester of studies in which subject presented:	**A**
Department/unit responsible for teaching the subject.*	BIOCHEMISTRY AND MOLECULAR AND CELLULAR BIOLOGY	Number of academic staff responsible for teaching this subject:	**3**

✶ State which Faculty if NOT the veterinary one

Number of individuals assisting with teaching or preparation			
	practical work	clinical work	other work (indicate type)
Support staff	Technician		
Postgraduate students			
Undergraduate students			
Practitioners			

State **objective**(s) of theoretical part of teaching in this subject, if this has been defined.

To provide the student the appropriate basical knowledge that let him/her to acquire:
1.- The knowledge, in biochemical terms, of life in pluricellular beings, so the student can determine how inanimated molecules that constitute living beings mutually influence themselves to constitute, support and perpetuate life.
2.- To develop the capacity of work using cientific methods and handle basic instrumental available for the aplication of the said methods.
3.- To proporcionate the knowledge and capacity to handle the most important sources of information.
4.- To promote the attitude and collaboration in work groups.

Main themes and hours of lectures in this subject

Theme/field	hours	Theme/field	hours
Proteins	10		
Enzymes	10		
Nucleic acids	10		
Glucose metabolism	10		
Lipids metabolism	10		
Aminoacids metabolism	10		

(extend table as necessary)

Is attendance at lectures compulsory (YES/NO) If YES, is it verified, and how?

NO

State **objective**(s) of practical part of teaching in this subject, if this has been defined.

Those mentioned previosly.

Outline of main practical sessions in this subject

practical session topic & duration	(hours)	type of session	class size	no. of 'stations'	no. of staff	location (room)	time allocation
Introduction: weighing machine, solutions, Ph meter	4		14-18	14	1	Biochemistry facilities	
Spectrophotometry: calibration	4		14-18	14	1	Biochemistry facilities	
Quantitative determination of proteins	4		14-18	14	1	Biochemistry facilities	
Determination of enzyme activity	4		14-18	14	1	Biochemistry facilities	
Animal tissue DNA insulation	4		14-18	14	1	Biochemistry facilities	
PCR amplification of a DNA sequence	4		14-18	14	1	Biochemistry facilities	
Protein electrophoresis of a serum	4		14-18	14	1	Biochemistry facilities	
Quantitative determination of cholesterol	4		14-18	14	1	Biochemistry facilities	

(extend table as necessary)

Is attendance at practical work compulsory (YES/NO)† If yes, is it verified, and how?

Yes. It is verified calling the roll. They are qualified by means of three notes: First questions, attitude, final report

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Primary **course materials** students use for their work and leaning in this subject

Bibliography recommended in the student handbook. Slides shown at class are available in the reprography unit of the Faculty and intranet.

Examination format used (mark all that apply)	(none)	multiple-choice	oral	practical	written papers	
					short	long (essay)
During the semester		X		X		
At the end of the subject						

Can students choose when to present themselves for the examination (YES/NO)† YES

How many times is a student permitted to attempt the examinations ? As many as is permitted by the Faculty guidelines

What are the prerequisites for taking this subject? NONE

For what other subjects is this examination a prerequisite? NO

Proforma for information on a specific subject

Subject title:	23002 - Physics	Semester of studies in which subject presented:	**2C**
Department/unit responsible for teaching the subject.*	APPLIED PHYSICS	Number of academic staff responsible for teaching this subject:	**2**

✶ State which Faculty if NOT the veterinary one

Number of individuals assisting with teaching or preparation			
	practical work	clinical work	other work (indicate type)
Support staff			
Postgraduate students			
Undergraduate students			
Practitioners			

State **objective**(s) of theoretical part of teaching in this subject, if this has been defined.

Main themes and hours of lectures in this subject

Theme/field	hours	Theme/field	hours
Physics and life sciences. Scale laws	2		
Elastic properties of solids. Application to biological materials.	4		
Thermodynamics. Thermal regulation in living beings.	6		
Fluids. Hemodynamics.	4		
Electricity. Transmission of nerve impulses.	4		
Mechanical waves. Echography.	4		
Optics. Optical instruments. Colour.	4		
Ionising radiatons. Dosimetry.	2		

(extend table as necessary)

Is attendance at lectures compulsory (YES/NO) If YES, is it verified, and how?

NO

State **objective**(s) of practical part of teaching in this subject, if this has been defined.

Outline of main practical sessions in this subject

practical session topic & duration	(hours)	type of session	class size	no. of 'stations'	no. of staff	location (room)	time allocation
Elasticity. Elasticity coefficient of a spring Torsion coefficient of a beam	2	experimental	12 - 16	8		Physics Lab	Rotation. 12 groups
Thermodynamics. Calibration. Latent heat of ice fusion.	2	experimental	12	8		Physics Lab	Rotation. 12 groups
Fluids. Surface tension. Viscosity	2	experimental	12	8		Physics Lab	Rotation. 12 groups
Electricity I. Operating an oscilloscope. Calibratrion of a function generator.	2	experimental	12	8		Physics Lab	Rotation. 12 groups
Electricity II. Multimeter. Measure of resistances. Measure of capacities.	2	experimental	12	8		Physics Lab	Rotation. 12 groups
Transmission of nerve impulses. Waves	1	video sessions	80			Lecture Hall	2 groups

(extend table as necessary)

Is attendance at practical work compulsory (YES/NO)† If yes, is it verified, and how?

Yes. Students have to sign in two lists. 1) Attendance list. 2) Practical report sheet. Practical report sheets will be assesed.

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Primary **course materials** students use for their work and leaning in this subject

Free exercise books and practical diagrams. Lecture notes with graphics are available in the reprography unit of the Faculty.

Examination format used (mark all that apply)	(none)	multiple-choice	oral	practical	written papers	
					short	long (essay)
During the semester						
At the end of the subject					X	

Can students choose when to present themselves for the examination (YES/NO)† Yes
How many times is a student permitted to attempt the examinations ? 2
What are the prerequisites for taking this subject?
For what other subjects is this examination a prerequisite? No

Proforma for information on a specific subject

Subject title:	23003 – Mathematics	Semester of studies in which subject presented:	**1C**
Department/unit responsible for teaching the subject.*	APPLIED MATHEMATICS	Number of academic staff responsible for teaching this subject:	**1**

✶ State which Faculty if NOT the veterinary one

Number of individuals assisting with teaching or preparation			
	practical work	clinical work	other work (indicate type)
Support staff			
Postgraduate students			
Undergraduate students			
Practitioners			

State **objective**(s) of theoretical part of teaching in this subject, if this has been defined.

To acquire enough basic knowledge of mathematical tools in order to come to conclusions based on experimental data extracted from biological process.

Main themes and hours of lectures in this subject

Theme/field	hours	Theme/field	hours
Mathematical methods	1	Correlation and regression	3
Numerical resolution of systems and equations	3		
Interpolation and adjustment	3		
Basic biological models	4		
Data analysis	2		
Probability. Aleatory variable	3		
Distribution of probabilities	3		
Parameter estimation using confidence intervals	4		
Hypothesis contrast	4		

(extend table as necessary)

Is attendance at lectures compulsory (YES/NO) If YES, is it verified, and how?

It is not compulsory

State **objective**(s) of practical part of teaching in this subject, if this has been defined.

To learn how to use mathematical and statistical tools for theoretical problems resolution.

Outline of main practical sessions in this subject

practical session topic & duration	(hours)	type of session	class size	no. of 'stations'	no. of staff	location (room)	time allocation
Introduction to manipulator	2	Computer		15	1		
Numerical resolution of equations	2	Computer		15	1		
Interpolation and adjustment	2	Computer		15	1		
Difference equations	2	Computer		15	1		
Descriptive statistics	2	Computer		15	1		
Probability distributions	2	Computer		15	1		
Confidence intervals	2	Computer		15	1		
Hypothesis contrast	2	Computer		15	1		
ANOVA	2	Computer		15	1		
Correlation and regression	2	Computer		15	1		

(extend table as necessary)

Is attendance at practical work compulsory (YES/NO)† If yes, is it verified, and how?

Yes. It is verified calling the roll.

Primary **course materials** students use for their work and leaning in this subject

Lecture notes available in teacher's web page. Exercices. Solved exercices

Examination format used (mark all that apply)	(none)	multiple-choice	oral	practical	written papers	
					short	long (essay)
During the semester						
At the end of the subject				X		

Can students choose when to present themselves for the examination (YES/NO)† Yes

How many times is a student permitted to attempt the examinations ? 2

What are the prerequisites for taking this subject? None

For what other subjects is this examination a prerequisite? No

Proforma for information on a specific subject

Subject title:	23004 – Chemistry	Semester of studies in which subject presented:	**1C**
Department/unit responsible for teaching the subject.*	ANALYTICAL CHEMISTRY	Number of academic staff responsible for teaching this subject:	**1**

✶ State which Faculty if NOT the veterinary one

Number of individuals assisting with teaching or preparation			
	practical work	clinical work	other work (indicate type)
Support staff			
Postgraduate students			
Undergraduate students			
Practitioners			

State **objective**(s) of theoretical part of teaching in this subject, if this has been defined.

To understand the chemical basis of the biological processes and their medical and industrial applications.

Main themes and hours of lectures in this subject

Theme/field	hours	Theme/field	hours
I. Introduction to chemical processes.	10		
II. Physical-chemical methods for the study of biological processes and compunds.	4		
III. Organic compound chemistry	16		

(extend table as necessary)

Is attendance at lectures compulsory (YES/NO) If YES, is it verified, and how?

NO

State **objective**(s) of practical part of teaching in this subject, if this has been defined.

To acquire knowledge and handling of laboraty material. Basic laboratory work in basic operations applied to the biomedical field. Also to inforced the knowledge acquired in the theoretical part and numerical problems.

Outline of main practical sessions in this subject

practical session topic & duration	(hours)	type of session	class size	no. of 'stations'	no. of staff	location (room)	time allocation
1.- Knowledge and handling of laboratory material. Basic health and safety regulations.	2	Video	15	50	1	Video room	Vision and discussion about videos
2.- Managing the balance and pH meter. Demonstrations of basic laboratory operations. Using basic equipment and material.	2	Laboratory	15	15	1	Laboratory	Introduction, training and handling
3 & 4.- Preparation of solutions. Solid-liquid and liquid-liquid. Expressing concentrations and interconversion.	4	Laboratory	15	15	1	Laboratory	Introduction, develop and results revision
5 & 6.- Preparation of regulating mixtures. Calculating and measuring pH and shock absorber efficiency. Biological buffer.	4	Laboratory	15	15	1	Laboratory	Introduction, develop and results revision
7 & 8.- Acid-base titrations. Application of the acidity calculations to samples of biological interest.	4	Laboratory	15	15	1	Laboratory	Introduction, develop and results revision
9.- Cromatography	2	Laboratory	15	15	1	Laboratory	Demonstration
10.- Spectrophotometry	2	Laboratory	15	15	2	Laboratory	Introduction, develop and results revision

(extend table as necessary)

Is attendance at practical work compulsory (YES/NO)† If yes, is it verified, and how?

YES. Calling the roll and signing in an attendance list.

Primary **course materials** students use for their work and leaning in this subject

Theoretical and practical materialñ given out by the teacher and available in the reprography unit of the Faculty (paying).
Also available in ADD (Virtual Campus) http://add.unizar.es (free).
Recommended bibliography available in both unit and faculty libraries.

Examination format used (mark all that apply)	(none)	multiple-choice	oral	practical	written papers	
					short	long (essay)
During the semester				X	X	
At the end of the subject				X	X	

Can students choose when to present themselves for the examination (YES/NO)† NO
How many times is a student permitted to attempt the examinations ? 2
What are the prerequisites for taking this subject? To study veterinary
For what other subjects is this examination a prerequisite? NO

Proforma for information on a specific subject

Subject title:	23005 – Animal and plant biology	Semester of studies in which subject presented:	**2C**
Department/unit responsible for teaching the subject.*	BIOCHEMISTRY AND MOLECULAR AND CELLULAR BIOLOGY	Number of academic staff responsible for teaching this subject:	**2**

✶ State which Faculty if NOT the veterinary one

Number of individuals assisting with teaching or preparation			
	practical work	clinical work	other work (indicate type)
Support staff	1		
Postgraduate students			
Undergraduate students			
Practitioners			

State **objective**(s) of theoretical part of teaching in this subject, if this has been defined.

To study biological phenomenology from its different levels of complexity. The subject is focused in three wide aspects:
1.- Evolution
2.- Biology of populations
3.- Plant phisiology and biology

Main themes and hours of lectures in this subject

Theme/field	hours	Theme/field	hours
Evolution. Genetic of evolution	9-11	Plant organization	9-11
Variability. Natural selection	9-11	Structure and function of the plant cell	9-11
Descriptive ecology	9-11	Plant nutrition	9-11
Population	9-11	Plant reproduction	9-11
Community	9-11	Germination and development	9-11
The ecosystem	9-11	Hormones	9-11
The environment: the bioesphere-medium	9-11	Response to stimuli	9-11
Animal behaviour I	9-11	Development responses	9-11
Animal behaviour II	9-11		

(extend table as necessary)

Is attendance at lectures compulsory (YES/NO) If YES, is it verified, and how?

NO

State **objective**(s) of practical part of teaching in this subject, if this has been defined.

The student should learn the basic methodology of a laboratory.

Outline of main practical sessions in this subject

practical session topic & duration	(hours)	type of session	class size	no. of 'stations'	no. of staff	location (room)	time allocation
Introduction to the microscope use	3	Practical	14	14		Biology laboratory	3 h x 10 classes
Survey and cellular viability	3	Practical	14	14		Biology laboratory	3 h x 10 classes
Bacterium. Tintion	3	Practical	14	14		Biology laboratory	3 h x 10 classes
Study of subcellular organisms	3	Practical	14	14		Biology laboratory	3 h x 10 classes
Extraction, separation and quantifying of photosynthetic pigment	3	Practical	14	14		Biology laboratory	3 h x 10 classes
Study of osmotic phenomena	3	Practical	14	14		Biology laboratory	3 h x 10 classes
Chloroplasts insulation. Hill reaction	3	Practical	14	14		Biology laboratory	3 h x 10 classes
Erythrocyte and leucocyte study	3	Practical	14	14		Biology laboratory	3 h x 10 classes
Seminars	6	Theoretical - practical	60			Biology laboratory	

(extend table as necessary)

Is attendance at practical work compulsory (YES/NO)† If yes, is it verified, and how?

YES. Calling the roll

Primary **course materials** students use for their work and leaning in this subject

Microscopes, spectrophotometer, baths, weighing machines, electrophoresis and cromatography, centrifuges

Examination format used (mark all that apply)	(none)	multiple-choice	oral	practical	written papers	
					short	long (essay)
During the semester						
At the end of the subject	X	X				

Can students choose when to present themselves for the examination (YES/NO)† NO
How many times is a student permitted to attempt the examinations ? ONE
What are the prerequisites for taking this subject? NONE
For what other subjects is this examination a prerequisite? NO

Proforma for information on a specific subject

Subject title:	23006 –Ethology and animal protection and ethnology	Semester of studies in which subject presented:	**A**
Department/unit responsible for teaching the subject.*	ANIMAL PRODUCTION AND FOOD SCIENCES	Number of academic staff responsible for teaching this subject:	**5**

✶ State which Faculty if NOT the veterinary one

Number of individuals assisting with teaching or preparation			
	practical work	clinical work	other work (indicate type)
Support staff	2		
Postgraduate students			
Undergraduate students	1		
Practitioners	5		

State **objective**(s) of theoretical part of teaching in this subject, if this has been defined.

Objectives of **Ethnology** are to learn:
The basic technical terms
External morphology
Identification by natural characters
Breed identification through the study of the ethnology of animal farms (bovine, ovine, caprine, porcine, rabbits), and to be able of distinguish between breeds.
Physiozootechnical
Concept of breed. Breeds in danger

Main themes and hours of lectures in this subject

Theme/field	hours	Theme/field	hours
Basic technical terms	2		
External morphology (body parts)	6		
Identification by natural characters	4		
Breed identification through the study of the etnology of animal farms (bovine, ovine, caprine, porcine, rabbits), and to be able of distinguish between breeds.	9		
Physiozootechnical	2		
Concept of breed. Breeds in danger	2		

(extend table as necessary)

Is attendance at lectures compulsory (YES/NO) If YES, is it verified, and how?

NO

State **objective**(s) of practical part of teaching in this subject, if this has been defined.

Usefulness, location and terminology of the body parts of animals. To carry out and know the systems of animal identification. To understand the breed variability and be able to identify aptitudes and good use of animals. Animal handling and behaviour of the veterinarian when visiting farms.

Outline of main practical sessions in this subject

practical session topic & duration	(hours)	type of session	class size	no. of 'stations'	no. of staff	location (room)	time allocation
Morphological assesment and horse pedigrees	1,5	Field	12	2	2	Field	12 x 1,5 hours
Handling, external morphology and identification of ovines	2	Field	6	12	1	Field	12 x 2 hours
Study of wool	1	Laboratory	12	12	1	Laboratory	12 x 1 hour
Age determination through the dental arches	1,5	Classroom	40	40	1	Classroom	4 x 1,5 hours
Racial differentiation	4	Classroom	80	80	1	Classroom	8 x 1 hour
Visit to a livestock show	2	Field	160	160	4+instructors	Field	1 x 2 hours

(extend table as necessary)

Is attendance at practical work compulsory (YES/NO)† If yes, is it verified, and how?

Yes. Calling the roll

_____

Primary **course materials** students use for their work and leaning in this subject

Lecture notes – Guides and handbooks Cd Internet

Examination format used (mark all that apply)	(none)	multiple-choice	oral	practical	written papers	
					short	long (essay)
During the semester		X		X	X	
At the end of the subject		X		X	X	

Can students choose when to present themselves for the examination (YES/NO)† Yes

How many times is a student permitted to attempt the examinations ? 3

What are the prerequisites for taking this subject? Those according to the internal rules of the Faculty

For what other subjects is this examination a prerequisite? Those according to the internal rules of the Faculty

Proforma for information on a specific subject

Subject title:	23006 –Ethology and animal protection and Ethnology	Semester of studies in which subject presented:	**A**
Department/unit responsible for teaching the subject.*	ANIMAL PRODUCTION AND FOOD SCIENCES	Number of academic staff responsible for teaching this subject:	**5**

✶ State which Faculty if NOT the veterinary one

Number of individuals assisting with teaching or preparation			
	practical work	clinical work	other work (indicate type)
Support staff			
Postgraduate students			
Undergraduate students			
Practitioners			

State **objective**(s) of theoretical part of teaching in this subject, if this has been defined.

Objectives of **Ethology and animal welfare** are to learn:

- The role of Ethology in Veterinary
- Basic concepts of the behavioural model
- Methods of observation, recording and analysis of the animal behaviour
- Basic concepts of learning paradigms
- Neurological and hormonal base of the animal behaviour
- General aspects of the different types of basic behaviours
- The concept of animal welfare and how to evaluate it
- Animal welfare problems at the present time and providing solutions

Main themes and hours of lectures in this subject

Theme/field	hours	Theme/field	hours
The role of Ethology in Veterinary	1	The concept of animal welfare and how to evaluate it	2
Basic concepts of the behavioural model	3	Animal welfare problems at the present time and providing solutions	2
Methods of observation, recording and analysis of the animal behaviour	2		
Basic concepts of learning paradigms	2		
Neurological and hormonal base of the animal behaviour	2		
General aspects of the different types of basic behaviours	8		

(extend table as necessary)

Is attendance at lectures compulsory (YES/NO) If YES, is it verified, and how?

NO

State **objective**(s) of practical part of teaching in this subject, if this has been defined.

To practice the methods of observation, record and animal behaviour analysis.
To display, in a practical way and using a video, the steps of the conceptual model of behaviour.
To carry out a survey to consumers and retailers about social perception of animal welfare.
To make a behavioural study in a breed at the student's choice.

Outline of main practical sessions in this subject

practical session topic & duration	(hours)	type of session	class size	no. of 'stations'	no. of staff	location (room)	time allocation
1.- Behavioural observation methods	2	Video session	40	40	1	Lecture Hall	4 x 2 hours
2.- Conceptual model of behaviour	2	Video session	40	40	1	Lecture Hall	4 x 2 hours
3.- Animal welfare survey	2	Field	4	40	1	Field	40 x 2 hours
4.- Animal behaviour study	2	Field	4	40	1	Field	40 x 2 hours

(extend table as necessary)

Is attendance at practical work compulsory (YES/NO)† If yes, is it verified, and how?

Yes. Calling the roll (Video sessions 1 and 2)
Yes. A report of the practice must be written by the student and evaluated by the teacher. The student has to attend at least two times to tutorships (field 3 and 4)

Primary **course materials** students use for their work and leaning in this subject

Handbooks of practices
Videos

Examination format used (mark all that apply)	(none)	multiple-choice	oral	practical	written papers	
					short	long (essay)
During the semester		X		X		
At the end of the subject		X		X		

Can students choose when to present themselves for the examination (YES/NO)† Yes
How many times is a student permitted to attempt the examinations ? 3
What are the prerequisites for taking this subject? Those according to the internal rules of the Faculty
For what other subjects is this examination a prerequisite? Those according to the internal rules of the Faculty

Proforma for information on a specific subject

Subject title:	23007 – Biomedical language: german	Semester of studies in which subject presented:	**1C**
Department/unit responsible for teaching the subject.*	ENGLISH AND GERMAN PHILOLOGY	Number of academic staff responsible for teaching this subject:	**1**

✶ State which Faculty if NOT the veterinary one

Number of individuals assisting with teaching or preparation			
	practical work	clinical work	other work (indicate type)
Support staff			
Postgraduate students			
Undergraduate students			
Practitioners			

State **objective**(s) of theoretical part of teaching in this subject, if this has been defined.

To consolidate a good knowledge of the english language, at rethoric, morphosyntactic and lexicon level, specially in those aspects typical of scientific-technical language in the biomedical area.

Main themes and hours of lectures in this subject

Theme/field	hours	Theme/field	hours
1. Definition and physical description. Properties, shapes and size. Descriptive and qualifying statements.	3	10. Complex noun phrases. Expressions of degree. Expressions of causality and result	3
2. Structures description. Classification	3		
3. Word formation: prefixes, suffixes and roots. Morphology	3		
4. Naming statements. Relative clauses. Foreign and irregular plurals.	3		
5. Function description. Locative structures.	3		
6. Process description. Markers of time sequence. Time clauses.	3		
7. Instructions. Passive verbs with modals. Imperative structures. Reporting expressions.	3		
8. Process description. Clauses of condition. Clauses of concession.	3		
9. Modals of possibility, duty, obligation. Statements of frequency. Statements of probability and tendency.	3		

(extend table as necessary)

Is attendance at lectures compulsory (YES/NO) If YES, is it verified, and how?

It is not compulsory but positively valued and taken into account for continous assesment.

State **objective**(s) of practical part of teaching in this subject, if this has been defined.

To be able to understand and interpret specialised biomedical texts (veterinary and food sciences) written in german, at a speed that allow them to make natural and everyday use of the bibliography of their speciality published in german. To elaborate brief texts in german, on topics related to their academic activity. To acquire a level of oral comprehension so that they are able of undertand the general significance of a concefence, and take part in a debate or conversation on topics related to their veterinary studies.

Outline of main practical sessions in this subject

practical session topic & duration	(hours)	type of session	class size	no. of 'stations'	no. of staff	location (room)	time allocation
Practical problems about theme 1	3						
Practical problems about theme 2	3						
Practical problems about theme 3	3						
Practical problems about theme 4	3						
Practical problems about theme 5	3						
Practical problems about theme 6	3						
Practical problems about theme 7	3						
Practical problems about theme 8	3						
Practical problems about theme 9	3						
Practical problems about theme 10	3						

(extend table as necessary)

Is attendance at practical work compulsory (YES/NO)† If yes, is it verified, and how?

It is not compulsory but positively valued and taken into account for continous assesment.

Primary **course materials** students use for their work and leaning in this subject

Written texts taken from textbooks, specialised magazines, internet, running instructions of the instruments used in veterinary.
Audiovisual material: videos, DVDs

Examination format used (mark all that apply)	(none)	multiple-choice	oral	practical	written papers	
					short	long (essay)
During the semester					X	X
At the end of the subject					X	X

Can students choose when to present themselves for the examination (YES/NO)† YES
How many times is a student permitted to attempt the examinations 2
What are the prerequisites for taking this subject? None
For what other subjects is this examination a prerequisite?NO

Proforma for information on a specific subject

Subject title:	23008 – Biomedical language: english	Semester of studies in which subject presented:	**1C**
Department/unit responsible for teaching the subject.*	ENGLISH AND GERMAN PHILOLOGY	Number of academic staff responsible for teaching this subject:	**2**

✶ State which Faculty if NOT the veterinary one

Number of individuals assisting with teaching or preparation			
	practical work	clinical work	other work (indicate type)
Support staff			
Postgraduate students			
Undergraduate students			
Practitioners			

State **objective**(s) of theoretical part of teaching in this subject, if this has been defined.

To consolidate a good knowledge of the english language, at rethoric, morphosyntactic and lexicon level, specially in those aspects typical of scientific-technical language in the biomedical area.

Main themes and hours of lectures in this subject

Theme/field	hours	Theme/field	hours
1. Definition and physical description. Properties, shapes and size. Comparative structures. Descriptive statements.	3	10. Complex noun phrases. Expressions of degree. Expressions of causality and result	3
2. Structures description. Passive/Stative structures. Classification	3		
3. Word formation: prefixes, suffixes and roots.	3		
4. Naming statements. Relative clauses. Foreign and irregular plurals.	3		
5. Function description. Locative structures.	3		
6. Process description. Markers of time sequence. Time clauses.	3		
7. Instructions. Passive verbs with modals. Imperative structures. Reporting expressions.	3		
8. Process description II. Clauses of condition. Clauses of concession.	3		
9. Modals of possibility. Statements of frequency. Statements of probability and tendency.	3		

(extend table as necessary)

Is attendance at lectures compulsory (YES/NO) If YES, is it verified, and how?

It is not compulsory but positively valued and taken into account for continous assesment.

State **objective**(s) of practical part of teaching in this subject, if this has been defined.

To be able to understand and interpret specialised biomedical texts (veterinary and food sciences) written in english, at a speed that allow them to make natural and everyday use of the bibliography of their speciality published in english. To elaborate brief texts in English, on topics related to their academic activity. To acquire a level of oral comprehension so that they are able of undertand the general significance of a concefence, and take part in a debate or conversation on topics related to their veterinary studies.

Outline of main practical sessions in this subject

practical session topic & duration	(hours)	type of session	class size	no. of 'stations'	no. of staff	location (room)	time allocation
Practical problems about theme 1	3						
Practical problems about theme 2	3						
Practical problems about theme 3	3						
Practical problems about theme 4	3						
Practical problems about theme 5	3						
Practical problems about theme 6	3						
Practical problems about theme 7	3						
Practical problems about theme 8	3						
Practical problems about theme 9	3						
Practical problems about theme 10	3						

(extend table as necessary)

Is attendance at practical work compulsory (YES/NO)† If yes, is it verified, and how?

It is not compulsory but positively valued and taken into account for continous assesment.

Primary **course materials** students use for their work and leaning in this subject

Written texts taken from textbooks, specialised magazines, internet, running instructions of the instruments used in veterinary.
Audiovisual material: videos, DVDs

Examination format used (mark all that apply)	(none)	multiple-choice	oral	practical	written papers	
					short	long (essay)
During the semester					X	X
At the end of the subject					X	X

Can students choose when to present themselves for the examination (YES/NO)† YES
How many times is a student permitted to attempt the examinations ? To have a medium-high level of knowledge in english.
What are the prerequisites for taking this subject? To be able to follow the english classes
For what other subjects is this examination a prerequisite?NO

ANNEX n 4

ADDITIONAL INFORMATION IN RELATION TO THE CURRICULUM

CORE SUBJECTS
2nd YEAR

Agronomy and Agrarian Economy

Cytology and Histology

Epidemiology

Animal Physiology

Genetics

Immunology

Microbiology

Parasitology

Proforma for information on a specific subject

Subject title:	23009 – Agronomy and agricultural economics	Semester of studies in which subject presented:	2c
Department/unit responsible for teaching the subject.*	AGRICULTURE AND AGRARIAN ECONOMICS	Number of academic staff responsible for teaching this subject:	4

✶ State which Faculty if NOT the veterinary one

Number of individuals assisting with teaching or preparation			
	practical work	clinical work	other work (indicate type)
Support staff	1		
Postgraduate students	0		
Undergraduate students	0		
Practitioners	0		

State **objective**(s) of theoretical part of teaching in this subject, if this has been defined.

- To know the agrarian environment where livestock activities are developed in order to integrate them into the livestock ecosystem and establish the relations between climatology-soil-plants-livestock.
- To know the vegetation resources that take part in livesotck feeding, giving special relevance to its nutritive value and the factors that limitate its use. Moreover, to inform about its botanical characteristics, ecology, geographical distribution, varieties, production, and notions of crop systems and techniques.
- To integrate livetock production in the natural environment.
- To understand agrolivestock production as an economic activity and its social, political and cultural consequences.

Main themes and hours of lectures in this subject

Theme/field	hours	Theme/field	hours
Block I. INTRODUCTION. AGRONOMY. FUNDAMENTAL CONCEPTS	2	Block V. CHEMICAL-NUTRITIONAL CONSTITUENTS OF PLANTS	2
Block II. AGROLIVESTOCK ECOSYSTEM II.1. ECOLOGY II.2. CLIMATOLOGY II.3. SOIL SCIENCES	11	Block VI. MAIN CROPS OF INTEREST FOR CATTLE FEEDING. VI. 1. CEREALS VI. 2. GRASSLAND AGRICULTURE VI. 3. AGRICULTURAL SUBPRODUCTS.	18
Block III. BOTANY	6	Block VII. AGRICULTURAL SECTOR ECONOMY	4
Block IV. NOTIONS OF CROP SYSTEMS AND TECHNIQUES.	2		

(extend table as necessary)

Is attendance at lectures compulsory (YES/NO) If YES, is it verified, and how?

NO

State **objective**(s) of practical part of teaching in this subject, if this has been defined.

To develop activities linked to theorical teaching. Each activity has its specific objetive and students have practical guides, materials, equipment and personal guidance in order to carry out the practical part.

Outline of main practical sessions in this subject

practical session topic & duration	(hours)	type of session	class size	no. of 'stations'	no. of staff	location (room)	time allocation
Assesment of soil fertility	5	Sample analysis and results discussion	6	3	1	Lab	2,5 x 2 h/week
Chemical-nutritional assesment of agricultural resources for livestock	5	Sample analysis and results discussion	6	3	1	Lab	2,5 x 2 h/week
Use of botanical keys and plant identification	5	Visualisation and study of samples	6	3	1	Lab	2,5 x 2 h/week
Identification of seeds, feeds and sub-products	5	Visualisation and study of samples	6	3	1	Lab	2,5 x 2 h/week

(extend table as necessary)

Is attendance at practical work compulsory (YES/NO)† If yes, is it verified, and how?

NO

_____

Primary **course materials** students use for their work and leaning in this subject

Copies of the material projected at class: - Given out at class, as support material. Free - available in the reprography unit of the faculty. Paying

Examination format used (mark all that apply)	(none)	multiple-choice	oral	practical	written papers	
					short	long (essay)
During the semester	X					
At the end of the subject		X				

Can students choose when to present themselves for the examination (YES/NO)† NO

How many times is a student permitted to attempt the examinations ? Two each academic year

What are the prerequisites for taking this subject?

For what other subjects is this examination a prerequisite? NO

Proforma for information on a specific subject

Subject title:	23010 Cytology and histology	Semester of studies in which subject presented:	**A**
Department/unit responsible for teaching the subject.*	VETERINARY MEDICINE	Number of academic staff responsible for teaching this subject:	**3**

✶ State which Faculty if NOT the veterinary one

Number of individuals assisting with teaching or preparation			
	practical work	clinical work	other work (indicate type)
Support staff	1		Technical preparation of organs and tissue for their examination using a microscope.
Postgraduate students			
Undergraduate students			
Practitioners			

State **objective**(s) of theoretical part of teaching in this subject, if this has been defined.

To teach the student about the structure and ultrastructure of cells, tissues and organs and to relate them to their funcional characteristics

Main themes and hours of lectures in this subject

Theme/field	hours	Theme/field	hours
Citology	60 hours		
General histology			
Microscopic anatomy			

(extend table as necessary)

Is attendance at lectures compulsory (YES/NO) If YES, is it verified, and how?

NO

State **objective**(s) of practical part of teaching in this subject, if this has been defined.

To teach the student to identify through the microscope the organs and tissues

Outline of main practical sessions in this subject

practical session topic & duration	(hours)	type of session	class size	no. of 'stations'	no. of staff	location (room)	time allocation
Histolgical techniques Epithelial tissue (I, II, III) Connective tissue Cartilage Bone, Muscle, Nerve tissue Circulatory system Lymphoid organs (I, II) Digestive tract (I, II, III) Respiratory system Urinary system Female reproductive system Male reproductive system Endocrine system Sensory organs Skin	44	Laboratory with optical microscope	15-20	20	1	Histology and Pathological anathomy unit	

(extend table as necessary)

Is attendance at practical work compulsory (YES/NO)† If yes, is it verified, and how?

NO

_____

Primary **course materials** students use for their work and leaning in this subject

Books, Citology and Histology Atlas, slides, computer (it uses a software to visualize images of electronic microscopy). Optical microscope and histological preparations of organs and tissues from different animal species.

Examination format used (mark all that apply)	(none)	multiple-choice	oral	practical	written papers	
					short	long (essay)
During the semester					X	
At the end of the subject				X	X	

Can students choose when to present themselves for the examination (YES/NO)† Yes

How many times is a student permitted to attempt the examinations ? Those according to the guidelines of the Faculty

What are the prerequisites for taking this subject? Those according to the guidelines of the University

For what other subjects is this examination a prerequisite? for those according to the guidelines of the University.

Proforma for information on a specific subject

Subject title:	23011 - Epidemiology	Semester of studies in which subject presented:	**2C**
Department/unit responsible for teaching the subject.*	VETERINARY MEDICINE	Number of academic staff responsible for teaching this subject:	**1**

✶ State which Faculty if NOT the veterinary one

Number of individuals assisting with teaching or preparation			
	practical work	clinical work	other work (indicate type)
Support staff			
Postgraduate students			
Undergraduate students			
Practitioners			

State **objective**(s) of theoretical part of teaching in this subject, if this has been defined.

To acquire basic knowledge and skills to pose and solve epidemiological problems, especially evaluate diagnostic reliability, prepare a sample; to know the distribution of the disease and the associated risk factors

Main themes and hours of lectures in this subject

Theme/field	hours	Theme/field	hours
Introduction to epidemiology	3	Descriptive epidemiology	3
Casuality	2	Analytical Statistics	2
Elements of qualitative epidemiology	2	Analytical Epidemiology	3
Probability	1	Decision theory	1
Diagnosis	3		
Sampling	3		
Design of epidemiology studies	3		
Gathering information by means of surveys	2		
Descriptive statistics	2		

(extend table as necessary)

Is attendance at lectures compulsory (YES/NO) If YES, is it verified, and how?

NO

State **objective**(s) of practical part of teaching in this subject, if this has been defined.

To develop the skills described in the theoritical part.

Outline of main practical sessions in this subject

practical session topic & duration	(hours)	type of session	class size	no. of 'stations'	no. of staff	location (room)	time allocation
Introduction to Microsoft Excel and SPSS	3	Practice with computers	15	13	1	Computer room	
Sampling and calculation of sample size	3	Practice with computers	15	13	1	Computer room	
Evaluation of diagnostic tests	3	Practice with computers	15	13	1	Computer room	
Descriptive statistics and interference statistics	3	Practice with computers	15	13	1	Computer room	
Analysis and interpretation of epidemiological results: Disease measurement (prevalence), risk estimation	3	Practice with computers	15	13	1	Computer room	

(extend table as necessary)

Is attendance at practical work compulsory (YES/NO)† If yes, is it verified, and how?

Yes. Calling the roll at the beginning of each practical session

_____

Primary **course materials** students use for their work and leaning in this subject

Lecture notes published as a book and available in the reprography unit of the faculty. Material available in the web page of the subject

Examination format used (mark all that apply)	(none)	multiple-choice	oral	practical	written papers	
					short	long (essay)
During the semester						
At the end of the subject		X (30)		X (2)	X (5)	

Can students choose when to present themselves for the examination (YES/NO)† YES

How many times is a student permitted to attempt the examinations ? Those established by the Faculty

What are the prerequisites for taking this subject? None

For what other subjects is this examination a prerequisite? NO

Proforma for information on a specific subject

Subject title:	23012 – Animal physiology	Semester of studies in which subject presented:	**A**
Department/unit responsible for teaching the subject.*	PHARMACOLOGY AND PHYSIOLOGY	Number of academic staff responsible for teaching this subject:	**6**

✶ State which Faculty if NOT the veterinary one

Number of individuals assisting with teaching or preparation			
	practical work	clinical work	other work (indicate type)
Support staff	1		
Postgraduate students	2		
Undergraduate students			
Practitioners			

State **objective**(s) of theoretical part of teaching in this subject, if this has been defined.

1.- The study of the organs of the mammals and the avian
2.- The knowledge of mechanisms by wich the different organs develop its functions
3.- The study of the relationship between the different functions of the organs and its coordination and regulation

Main themes and hours of lectures in this subject

Theme/field	hours	Theme/field	hours
General physiology	6		
Neurophysiology	10		
Blood	2		
Cardiovascular physiology	12		
Respiratory function	7		
Renal physiology	6		
Digestion and gastrointestinal function	11		
Endocrinology	10		
Reproduction	8		

(extend table as necessary)

Is attendance at lectures compulsory (YES/NO) If YES, is it verified, and how?

Yes, but we do not control it.

State **objective**(s) of practical part of teaching in this subject, if this has been defined.

1.- Training in physiology techniques used to determine the function of the organs
2.- Analysis of the results obtained

Outline of main practical sessions in this subject

practical session topic & duration	(hours)	type of session	class size	no. of 'stations'	no. of staff	location (room)	time allocation
Action potential	4	Computer	14	14	1	Pc Laboratory	4 hours / 2,5 weeks
Electromyography	4	Laboratory	14	14	2	Laboratory	4 hours / 2,5 weeks
Blood	8	Laboratory	14	14	1	Laboratory	4 hours / 2,5 weeks
Electrocardiogram. Blood pressure	8	Laboratory+Computer	14	14	2	Laboratoty +Pc	4 hours / 2,5 weeks
Exercise Physiology	4	Computer	14	14	1	Pc Laboratory	4 hours / 2,5 weeks
Respiratory function	4	Laboratory+Computer	14	14	2	Laboratory +Pc	4 hours / 2,5 weeks
Urine Analysis	8	Laboratory	14	14	1	Laboratory	4 hours / 2,5 weeks
Intestinal absorption/motility	8	Laboratoty	14	14	2	Laboratory	4 hours / 2,5 weeks
Physiology of the reproduction	2	Laboratoty+Video	14/100	14/100	1	Laboratory /video	4 hours / 2,5 weeks

(extend table as necessary)

Is attendance at practical work compulsory (YES/NO)† If yes, is it verified, and how?

Yes. We control de attendance.

Primary **course materials** students use for their work and leaning in this subject

The students have a copy of the slides shown in theoretical classes
The students have information about bibliography and web addresses realted to the different subjects

Examination format used (mark all that apply)	(none)	multiple-choice	oral	practical	written papers	
					short	long (essay)
During the semester		X			X	
At the end of the subject		X		X	X	

Can students choose when to present themselves for the examination (YES/NO)† YES
How many times is a student permitted to attempt the examinations ? Two
What are the prerequisites for taking this subject?
For what other subjects is this examination a prerequisite? No

Proforma for information on a specific subject

Subject title:	23013 – Genetics	Semester of studies in which subject presented:	**1C**
Department/unit responsible for teaching the subject.*	ANATOMY, EMBRIOLOGY AND ANIMAL GENETICS	Number of academic staff responsible for teaching this subject:	**3**

✶ State which Faculty if NOT the veterinary one

Number of individuals assisting with teaching or preparation			
	practical work	clinical work	other work (indicate type)
Support staff	4		
Postgraduate students	1		
Undergraduate students	20		20 seminars
Practitioners	1		1 seminar

State **objective**(s) of theoretical part of teaching in this subject, if this has been defined.

To study the basic mechanisms of inheritance, basically how hereditary factors are transmitted and their convervation through the generations.
To study the material transmitted, how this transmission is accomplished, the effect of this material on both an organism and a population of organisms, and the variations that this material may undergo. What happens to hereditary material when studying populations.

Main themes and hours of lectures in this subject

Theme/field	hours	Theme/field	hours
Nature and organization of hereditary material	10		
Transmission and distribution	10		
Linkage and recombination	10		
Changes to hereditary material	10		
Cytoplasmic inheritance	1		
Control, expression and regulation	2		
Population genetics	3		

(extend table as necessary)

Is attendance at lectures compulsory (YES/NO) If YES, is it verified, and how?

NO

State **objective**(s) of practical part of teaching in this subject, if this has been defined.

To complement the theoretical part of the subject through lab practices. Students will develop appropriate methodology for each theme, obtaining by themselves evaluable results.

Outline of main practical sessions in this subject

practical session topic & duration	(hours)	type of session	class size	no. of 'stations'	no. of staff	location (room)	time allocation
Cytological basis of inheritance. Cell cycle.	2	Experimental	12	12	1	Laboratory	rotations
Study of genetic variability.	2	Experimental	12	12	1	Laboratory	rotations
Immunogenetic foundations for checking family relationships.	2	Experimental	12	12	1	Laboratory	rotations
Sex diagnosis using DNA testing	2	Experimental	12	12	1	Laboratory	rotations
Study of chromosomal abnormalities in mammals.	2	Experimental	12	12	1	Laboratory	rotations
Cell cultures	2	Experimental	12	12	1	Laboratory	rotations
Mutagenesis. Detection of DNA mutations	2	Experimental	12	12	1	Laboratory	rotations
Restrction maps. Cloning and subcloning of DNA sequences.	2	Experimental	12	12	1	Laboratory	rotations
Problems	15	Class	20	20	1	Class	1 hour /week

(extend table as necessary)

Is attendance at practical work compulsory (YES/NO)† If yes, is it verified, and how?

Yes. It is verified using personal identification lists.

Primary **course materials** students use for their work and leaning in this subject

Copies of lecture notes, texts, web pages. Students have to pay for copies and texts, but numerous texts are available in the library for free. Software used in practical work.

Examination format used (mark all that apply)	(none)	multiple-choice	oral	practical	written papers	
					short	long (essay)
During the semester		X		X	X	X (problems)
At the end of the subject		X		X	X	X (problems)

Can students choose when to present themselves for the examination (YES/NO)† YES
How many times is a student permitted to attempt the examinations ? 2
What are the prerequisites for taking this subject? NONE
For what other subjects is this examination a prerequisite? NO

Proforma for information on a specific subject

Subject title:	23014 – Immunology	Semester of studies in which subject presented:	**2C**
Department/unit responsible for teaching the subject.*	VETERINARY MEDICINE	Number of academic staff responsible for teaching this subject:	**6**

✶ State which Faculty if NOT the veterinary one

Number of individuals assisting with teaching or preparation			
	practical work	clinical work	other work (indicate type)
Support staff	1		
Postgraduate students			
Undergraduate students			Seminars
Practitioners			

State **objective**(s) of theoretical part of teaching in this subject, if this has been defined.

To learn the basic theoretical and practical concepts that enable the student to understand the mechanisms and fundamentals of the immune system of living beings as well as the alterations caused by disorders of this system.

Main themes and hours of lectures in this subject

Theme/field	hours	Theme/field	hours
General immunology	13		
Immunopathology	4		
Measurement of the immune response	2		
Immunological response to microbial antigens and parasites	2		
Non-microbial immunology. Local immunity and other immunological aspects	2		
Comparative immunology	2		
Applied immunity	5		

(extend table as necessary)

Is attendance at lectures compulsory (YES/NO) If YES, is it verified, and how?

Yes. It's verified using an aleatory system throughout the semester. (Signing lists)

State **objective**(s) of practical part of teaching in this subject, if this has been defined.

To acquire the manual skills neccessary when working in laboratories. To know the fundamentals and interpret the results of immunological techniques used in laboratories of veterinary diagnosis.

Outline of main practical sessions in this subject

practical session topic & duration	(hours)	type of session	class size	n. of 'stations'	no. of staff	location (room)	time allocation
Immunoprecipitation reaction	3	Laboratory / demonstration	16 (2 groups x 8 students	8 each lab	2 (1 prof/group)	2 Labs of Microbiology	1 group each 2 weeks
Test of the bactericidal action of a serum	3	Laboratory / demonstration	16 (2 groups x 8 students	8 each lab	2	2 Labs of Microbiology	1 group each 2 weeks
Fast and slow agglutination reactions	3	Laboratory / demonstration	16 (2 groups x 8 students	8 each lab	2	2 Labs of Microbiology	1 group each 2 weeks
Direct and indirect immunofluorescent reactions	3	Laboratory / demonstration	16 (2 groups x 8 students	8 each lab	2	2 Labs of Microbiology	1 group each 2 weeks
Direct and indirect ELISA reactions	3	Laboratory / experimental	16 (2 groups x 8 students	8 each lab	2	2 Labs of Microbiology	1 group each 2 weeks

(extend table as necessary)

Is attendance at practical work compulsory (YES/NO)† If yes, is it verified, and how?

Yes. Every practical class using an attendance list.

_____

Primary **course materials** students use for their work and leaning in this subject

Free web page. Theroretical and practical parts of the subject, bibliography, examinations dates, schedules, groups and marks.

Examination format used (mark all that apply)	(none)	multiple-choice	oral	practical	written papers	
					short	long (essay)
During the semester		X		X	X	
At the end of the subject						

Can students choose when to present themselves for the examination (YES/NO)† YES

How many times is a student permitted to attempt the examinations ? Two times during the academic year

What are the prerequisites for taking this subject? Those stablished by the university

For what other subjects is this examination a prerequisite? No

Proforma for information on a specific subject

Subject title:	23015 - Microbiology	Semester of studies in which subject presented:	**1C**
Department/unit responsible for teaching the subject.*	VETERINARY MEDICINE	Number of academic staff responsible for teaching this subject:	**6**

✶ State which Faculty if NOT the veterinary one

Number of individuals assisting with teaching or preparation			
	practical work	clinical work	other work (indicate type)
Support staff	1		
Postgraduate students			
Undergraduate students			
Practitioners			Seminars

State **objective**(s) of theoretical part of teaching in this subject, if this has been defined.

To learn about Microbiology in the specialities of Bacteriology, Virology and Mycology, both generally and specialized, with special emphasis on pathologies of domestic animals and its subsequent application to diagnostic techniques of both infectious illnesses and microbiology of food and environmental microbiology.

Main themes and hours of lectures in this subject

Theme/field	hours	Theme/field	hours
General microbiology and microbiological techniques	3		
General bacteriology	19		
Special and taxonomic bacteriology	12		
General and taxonomic micology	5		
General and taxonomic virology	17		
Applied microbiology	4		

(extend table as necessary)

Is attendance at lectures compulsory (YES/NO) If YES, is it verified, and how?

Yes. Attendance is verified aleatory througout the academic year using a signing list.

State **objective**(s) of practical part of teaching in this subject, if this has been defined.

To develop the manual skills and fundamentals of the microbiological techniques used in laboratories, both in diagnosis and food / enviroment control.

Outline of main practical sessions in this subject

practical session topic & duration	(hours)	type of session	class size	no. of 'stations'	no. of staff	location (room)	time allocation
General work norms in a Microbiology Lab. Material and apparatus. Cultivation and examination of microoganisms	3	Laboratory / experimental	16	8 each lab	2	2 labs in Microbiology Unit	1 group each 2 weeks
Microoganisms cultivation and tintions	5	Laboratory / experimental	16	8 each lab	2	2 labs in Microbiology Unit	1 group each 2 weeks
Identification of microorganisms	5	Laboratory / experimental	16	8 each lab	2	2 labs in Microbiology Unit	1 group each 2 weeks
Study of the sensitivity to antimicrobials	5	Laboratory / experimental	16	8 each lab	2	2 labs in Microbiology Unit	1 group each 2 weeks
Recount of microorganisms. Enviromental studies	5	Laboratory / experimental	16	8 each lab	2	2 labs in Microbiology Unit	1 group each 2 weeks
Study of the fungi.	5	Laboratory / experimental	16	8 each lab	2	2 labs in Microbiology Unit	1 group each 2 weeks
Identification of microonagisms using simulations	2	Computer	4	4	1	Computer Hall	

(extend table as necessary)

Is attendance at practical work compulsory (YES/NO)† If yes, is it verified, and how?

Yes. Calling the roll every day.

Primary **course materials** students use for their work and leaning in this subject

Next year will be a free web page with the theoretical and practical themes, exam dates, theoretical and practical timetible, groups and marks.

Examination format used (mark all that apply)	(none)	multiple-choice	oral	practical	written papers	
					short	long (essay)
During the semester		X		X	X	
At the end of the subject						

Can students choose when to present themselves for the examination (YES/NO)† Yes.
How many times is a student permitted to attempt the examinations ? Two times during the academic year
What are the prerequisites for taking this subject? Those stablished by the University
For what other subjects is this examination a prerequisite? No

Proforma for information on a specific subject

Subject title:	23016 – Parasitology	Semester of studies in which subject presented:	**1C**
Department/unit responsible for teaching the subject.*	VETERINARY MEDICINE	Number of academic staff responsible for teaching this subject:	**8**

✶ State which Faculty if NOT the veterinary one

Number of individuals assisting with teaching or preparation			
	practical work	clinical work	other work (indicate type)
Support staff			
Postgraduate students			
Undergraduate students			
Practitioners			

State **objective**(s) of theoretical part of teaching in this subject, if this has been defined.

A study of the morphology, bionomy, physiology and the systematics of parasites on domestic and farm animals. Parasite – host – environment interrelationships.

Main themes and hours of lectures in this subject

Theme/field	hours	Theme/field	hours
General concepts (Parasitology, P-H-E interrelationships)	5		
Protozoa	14		
Helminthiasis	20		
Arthropoda	6		

(extend table as necessary)

Is attendance at lectures compulsory (YES/NO) If YES, is it verified, and how?

No. It is not verified.

State **objective**(s) of practical part of teaching in this subject, if this has been defined.

Study of the most important species morphology of the different taxonomic groups with diagnostic aims.

Outline of main practical sessions in this subject

practical session topic & duration	(hours)	type of session	class size	no. of 'stations'	no. of staff	location (room)	time allocation
Protozoa	6		6-8	8	1	Parasitology laboratory	6
Trematodos	2		6-8	8	1	Parasitology laboratory	2
Cestoda	2		6-8	8	1	Parasitology laboratory	2
Nematoda	2		6-8	8	1	Parasitology laboratory	2
Arthropoda	4		6-8	8	1	Parasitology laboratory	4
Revises	4		12-16	8	1	Parasitology laboratory	4

(extend table as necessary)

Is attendance at practical work compulsory (YES/NO)† If yes, is it verified, and how?

Yes. The student have to sign in a list, before starting the practical work.

_____

Primary **course materials** students use for their work and leaning in this subject

Virtual campus (http://add.unizar.es)

Examination format used (mark all that apply)	(none)	multiple-choice	oral	practical	written papers	
					short	long (essay)
During the semester				X		X
At the end of the subject				X		X

Can students choose when to present themselves for the examination (YES/NO)†

How many times is a student permitted to attempt the examinations ?

What are the prerequisites for taking this subject?

For what other subjects is this examination a prerequisite?

ANNEX n 4

ADDITIONAL INFORMATION IN RELATION TO THE CURRICULUM

CORE SUBJECTS
3rd YEAR

Animal Breeding and Health

Pharmacology, Pharmacy and Therapeutics

Animal Nutrition

General Pathology

General Pathological Anatomy

Clinical Propedeutics

Radiology

Food Technology

Proforma for information on a specific subject

Subject title:	23017 – Animal Breeding and Health	Semester of studies in which subject presented:	**A**
Department/unit responsible for teaching the subject.*	ANATOMY, EMBRIOLOGY AND ANIMAL GENETICS	Number of academic staff responsible for teaching this subject:	**5**

✶ State which Faculty if NOT the veterinary one

Number of individuals assisting with teaching or preparation			
	practical work	clinical work	other work (indicate type)
Support staff			
Postgraduate students			
Undergraduate students			
Practitioners			

State **objective**(s) of theoretical part of teaching in this subject, if this has been defined.

To introduce the student into the knowledge of evaluation methodologies and genetic selection of animal reproductives used in genetic improvement. Students also have to pay attention to the elimination process of undesirable genes.

Main themes and hours of lectures in this subject

Theme/field	hours	Theme/field	hours
Improving population genetics	7	Gene studies	3
Quantitative genetics	9	Transgenic animals	3
Selection in animal improvement	6	Gene therapy	2
Selection types	7	Organization of genetic improvement	2
Hereditary defects and genetic resistance to diseases	6		
Hetetrosis and complementarity	3		
Hereditary pathology	6		
Genetic maps in animal pathology	3		
Genome scan	3		

(extend table as necessary)

Is attendance at lectures compulsory (YES/NO) If YES, is it verified, and how?

Yes. It is not verified.

State **objective**(s) of practical part of teaching in this subject, if this has been defined.

To consolidate the skills acquired in the practical part. Analysis of situations. Gene identifications at Lab.

Outline of main practical sessions in this subject

practical session topic & duration	(hours)	type of session	class size	no. of 'stations'	no. of staff	location (room)	time allocation
Problems and cases	25		50		1	Lecture Halls	25 x 1 hour
Cases discussion	5		10		1	Lecture Halls	5 x 1 hour
Genetic of population	5		10	10	1	Computer Hall	5 x 1 hour
Quantitative genetics	5		10	10	1	Computer Hall	5 x 1 hour
PRNP Scrapie gene identification	5		5	5	1	Laboratory	2 x 2,5 hour

(extend table as necessary)

Is attendance at practical work compulsory (YES/NO)† If yes, is it verified, and how?

Yes. It is verified using the ID card of each student.

_____

Primary **course materials** students use for their work and leaning in this subject

Books and lecture notes.

Examination format used (mark all that apply)	(none)	multiple-choice	oral	practical	written papers	
					short	long (essay)
During the semester				X problems		X
At the end of the subject				X problems		X

Can students choose when to present themselves for the examination (YES/NO)† Yes. They have two options in the final exam

How many times is a student permitted to attempt the examinations ? Two times per academic year

What are the prerequisites for taking this subject? The prerequisites of second cycle.

For what other subjects is this examination a prerequisite? No

Proforma for information on a specific subject

Subject title:	23018 – Pharmacology, Pharmacy and Therapeutics	Semester of studies in which subject presented:	**A**
Department/unit responsible for teaching the subject.*	PHARMACOLOGY AND PHYSIOLOGY	Number of academic staff responsible for teaching this subject:	**4**

✶ State which Faculty if NOT the veterinary one

Number of individuals assisting with teaching or preparation			
	practical work	clinical work	other work (indicate type)
Support staff	1		
Postgraduate students			
Undergraduate students			
Practitioners			

State **objective**(s) of theoretical part of teaching in this subject, if this has been defined.

To allow the student to acquire the knowledge of the farmacological bases of therapeutics for veterinarian practice.
To study the main groups of drugs with regard of action, pharmacokinetics, action mechanisms, collateral effects, interactions and bases of clinical use. Security aspects for humans and the enviroment will be taken into account when talking about administrate drugs to production animals.

Main themes and hours of lectures in this subject

Theme/field	hours	Theme/field	hours
General Pharmacology	19		
Pharmacology of infectious and parasitic processes	19		
Nervous system pharmacology	16		
Cardiovascular pharmacology	5		
Pharmacology of the respiratory system	2		
Pharmacology of the digestive system	2		
Hormone pharmacology	6		
Skin pharmacology	1		

(extend table as necessary)

Is attendance at lectures compulsory (YES/NO) If YES, is it verified, and how?

NO

State **objective**(s) of practical part of teaching in this subject, if this has been defined.

- **Lab Practicals**: they will complement the contents in general pharmacology, specially administration routes, pharmacokinetics y pharmacodinamics (interaction drug / receptor).
- **Seminars**: they allow the student to know the general principles of the different types of pharmaceutical forms, and calculate doses. The SN seminar will complement the contents in theory of anaesthetics.

Outline of main practical sessions in this subject

practical session topic & duration	(hours)	type of session	class size	no. of 'stations'	no. of staff	location (room)	time allocation
Drug administration routes	4	Laboratory	12	4	2	Pharmacology Lab	
IV/IM pharmacokinetics in rabbits I	4	Laboratory	12	4	2	Pharmacology Lab	
IV/IM pharmacokinetics in rabbits II. Pharmacokinetic simulation.	4	Analysis of results / Simulation	12	20	1	PC Room	
In vitro methods. I Isolated rat duodenum.	4	Laboratory	12	4	2	Practical Lab	
In vitro methods. II Agonists and antagonists	4	Laboratory	12	4	2	Practical Lab	
Pharmaceutical forms	3	Seminar	30	-	1	Lecture Hall	
Handling the handbook and calculating doses	3	Seminar	30	-	1	Lecture Hall	
Central Nervous system	3	Seminar	15	1	4	Surgery Room	
Resolution of clinical cases	3	Tutorial sessions	4	30	4	Personal work	

(extend table as necessary)

Is attendance at practical work compulsory (YES/NO)† If yes, is it verified, and how?

Yes. Students have to sign in a list

_____

Primary **course materials** students use for their work and leaning in this subject

Free access through web page to course material (ADD – Virtual Campus) http://add.unizar.es.
Part of this material is available in the reprography unit of the Faculty.

Examination format used (mark all that apply)	(none)	multiple-choice	oral	practical	written papers	
					short	long (essay)
During the semester						
At the end of the subject		X		attendance		
Resolution of clinical cases				report		

Can students choose when to present themselves for the examination (YES/NO)† YES
How many times is a student permitted to attempt the examinations ?
What are the prerequisites for taking this subject?
For what other subjects is this examination a prerequisite?

Proforma for information on a specific subject

Subject title:	23019 – Animal nutrition	Semester of studies in which subject presented:	**A**
Department/unit responsible for teaching the subject.*	ANIMAL PRODUCTION AND FOOD SCIENCES	Number of academic staff responsible for teaching this subject:	**5**

✶ State which Faculty if NOT the veterinary one

Number of individuals assisting with teaching or preparation			
	practical work	clinical work	other work (indicate type)
Support staff	1		
Postgraduate students	2		
Undergraduate students			
Practitioners			

State **objective**(s) of theoretical part of teaching in this subject, if this has been defined.

Knowledge of the nutrients provided by food and the needs of animals in the different physiological phases, including the analysis of feeding strategies and feeding systems.

Main themes and hours of lectures in this subject

Theme/field	hours	Theme/field	hours
Composition and food analysis	3	Meat chicken and pig feeding in growth stage	3
Comparative digestion of carbohydrates, lipids and proteins.	5	Needs in reproduction and food strategies. Reproducing hens	4
Digestibility. Methods to determine digestibility. Factors that affect digestibility.	3	Fetal growth and nutrition. Feeding of cattle, sheep and pigs during gestation.	4
Energy assesing of food.	5	Lactation. Origin of the constituents of milk and lactating animals feeding	5
Protein assesing of food	5	Equines and pets feeding	3
Voluntary ingestion. Regulation and prediction.	3	Bromatology	5
The nutritional needs and supply. Maintenance energy needs and thermoregulation	3	Sources of minerals and mitamins. Supplement strategies	2
Growth and development	3		
The needs of sheep and cattle in growth stage	4		

(extend table as necessary)

Is attendance at lectures compulsory (YES/NO) If YES, is it verified, and how?

NO

State **objective**(s) of practical part of teaching in this subject, if this has been defined.

To perfectionate the basis of the theoretical part using calculating exercises of nutrients and rationings. To familiarised the student with assesing alive methods, laboratorials and computer tools of formulation.

Outline of main practical sessions in this subject

practical session topic & duration	(hours)	type of session	class size	no. of 'stations'	no. of staff	location (room)	time allocation
Nutrient balance, rations.	32	Problems	70	70	1	Classrooms 2/4	1 h / week
Feeds under the microscope	6	Laboratory	10	10	1	Laboratory	Rotations
Degradability of nitrogenous compounds in the rumen	6	Experimental	10	10	1	Farm and lab	Rotations
Determining the biological value	6	Experimental	10	10	1	Farm and lab	Rotations
Formulation software	4	Demonstration	10	10	1	Computer room	Rotations
Feed manufacturing	2	Demonstration	10	10	1	Farm	Rotations
Practical case of rationing	4	Cases	4	4	1	Tutorials	Rotations

(extend table as necessary)

Is attendance at practical work compulsory (YES/NO)† If yes, is it verified, and how?

Yes. It is verified taking note of the names of the students who attends practicals.

_____

Primary **course materials** students use for their work and leaning in this subject

- Lecture notes of the theoretical part. Problems given at class.
- Educational version of the software used to make formulas and for autonomous work.
- Text books in the Faculty library
- Animals and laboratory materials used in practicals

Examination format used (mark all that apply)	(none)	multiple-choice	oral	practical	written papers	
					short	long (essay)
During the semester		X			X	
At the end of the subject		X		X	X	

Can students choose when to present themselves for the examination (YES/NO)† YES

How many times is a student permitted to attempt the examinations ? 3

What are the prerequisites for taking this subject? None

For what other subjects is this examination a prerequisite? No

Proforma for information on a specific subject

Subject title:	23020 – General Pathology	Semester of studies in which subject presented:	**1C**
Department/unit responsible for teaching the subject.*	VETERINARY MEDICINE	Number of academic staff responsible for teaching this subject:	**7**

✶ State which Faculty if NOT the veterinary one

Number of individuals assisting with teaching or preparation			
	practical work	clinical work	other work (indicate type)
Support staff	1		
Postgraduate students			
Undergraduate students			
Practitioners			

State **objective**(s) of theoretical part of teaching in this subject, if this has been defined.

To teach the student what disease is, its main manifestations, how living being become ill and the dysfunction that these diseases cause. To understand the physiopathological mechanisms that lead to the failure of a system or organ, the clinical manifestations that result from this, the adaptation mechanisms of the organism faced with illness and the reaction mechanisms of the different animal species.

Main themes and hours of lectures in this subject

Theme/field	hours	Theme/field	hours
Physiopathology and biopathology of adaptation and pain mechanisms	1	Physiopathology and biopathology of the urinary system	7
Physipathology and biopathology of thermoregulation	2	Physiopathology and biopathology of the locomotion system	1
Hidrosaline physiopathology and biopathology	3	Physiopatology and biopathology of the nervous system	3
Physiopathology and biopathology of nutrition and metabolism	3	Physiopathology and biopathology of the skin	2
Physiopathology and biopathology of the digestive system	10		
Physiopathology and biopathology of the respiratory system	6		
Physiopathology and biopathology of the endocrine system	7		
Physiopathology and biopathology of the circulatory system	8		
Physiopathology and biopathology of blood and hematopoietic organs	7		

(extend table as necessary)

Is attendance at lectures compulsory (YES/NO) If YES, is it verified, and how?

Yes, but it is not verified.

State **objective**(s) of practical part of teaching in this subject, if this has been defined.

The student should be able to collect organic samples (blood, urine, ruminal fluid), analyse them and interpret the results. Carrying out an electrocardiography and its interpretation. Interpretation of clinical conclusions about biopathological tests and biochemical samples.

Outline of main practical sessions in this subject

practical session topic & duration	(hours)	type of session	class size	no. of 'stations'	no. of staff	location (room)	time allocation
Methods of collecting blood and hemograme	3	Demonstration/ experiment	8	8	1	Laboratory	rotations
Methods of collecting urine and urinalysis	3	Demonstration/ experiment	8	8	1	Laboratory	rotations
Electrocardiography	3	Demonstration/ experiment	8	8	1	Laboratory	rotations
Taking samples of ruminal fluid and analyzing it	2	Demonstration/ experiment	8	8	1	Laboratory	rotations
Taking samples of skin. Dermatological diagnosis	3	Demonstration/ experiment	8	8	1	Laboratory	rotations
Interpretation of an hemograme	2	Seminar	40	40	1	Lecture Hall	rotations
Biopathology of the liver, pancreas and renal system	8	Seminar	40	40	1	Lecture Hall	rotations
Diagnostic test of endocrine alterations	6	Seminar	16	16	1	Lecture Hall	rotations

(extend table as necessary)

Is attendance at practical work compulsory (YES/NO)† If yes, is it verified, and how?

Yes. Calling the roll.

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Primary **course materials** students use for their work and leaning in this subject

Copied lecture notes, theoretical and practical presentations in power-point and archives containing images of hematology available in internet (web page of the Virtual Campus – http://add.unizar.es).
Copied lecture notes also available in the reprography unit of the Faculty.

Examination format used (mark all that apply)	(none)	multiple-choice	oral	practical	written papers	
					short	long (essay)
During the semester					X	
At the end of the subject					X	

Can students choose when to present themselves for the examination (YES/NO)† Yes
How many times is a student permitted to attempt the examinations ?
What are the prerequisites for taking this subject?
For what other subjects is this examination a prerequisite?

Proforma for information on a specific subject

Subject title:	23021 – General Pathological Anatomy	Semester of studies in which subject presented:	**2C**
Department/unit responsible for teaching the subject.*	VETERINARY MEDICINE	Number of academic staff responsible for teaching this subject:	**5**

✶ State which Faculty if NOT the veterinary one

Number of individuals assisting with teaching or preparation			
	practical work	clinical work	other work (indicate type)
Support staff	1		
Postgraduate students			
Undergraduate students			
Practitioners			

State **objective**(s) of theoretical part of teaching in this subject, if this has been defined.

1.- To learn the different types of existing lesions in cells, tissue and organs, macroscopic as well as microscopic.
2.- To recognise and be able to describe the different types of lesions, using the appropriate terminology.
3.- To understand the mechanisms which are activated in the animal organism as a consequence of the different pathogenic agents, as well as the evolution and the relationship to the induce clinical consequences.

Main themes and hours of lectures in this subject

Theme/field	hours	Theme/field	hours
I. Introduction and basic concepts	2		
II. Cellular pathology	1		
III. Death and necrosis	3		
IV. Metabolisim alterations, pathological deposts and degenerations	9		
V. Circulatory disorders	6		
VI. Inflammation and remedy	11		
VII. Growth alterations	12		

(extend table as necessary)

Is attendance at lectures compulsory (YES/NO) If YES, is it verified, and how?

NO. The students registered in this subject can access to the Virtual Campus http://add.unizar.es, where the main part of the theoretical contents of the subject are available.

State **objective**(s) of practical part of teaching in this subject, if this has been defined.

1.- The aim of the necropsy practicals is to be capable of making a systematic, ordered and complete opening of an animal corpse, mammals as well as birds.
2.- The aim of the demonstration of macroscopic lesions practicals is to identify and describe the different types of lesions.
3.- The aim of the seminars is to familiarise themselves with lesions using slides, as well as rare injuries observation.

Outline of main practical sessions in this subject

practical session topic & duration (hours)		type of session	class size	no. of 'stations'	no. of staff	location (room)	time allocation
Demonstration of necropsy practicals in birds and mammals and samples collection	8	Demonstration / disection	8-10	10	1	Necropsy room	4x2h
Macroscopic demonstration of lesions	3	Demonstration / disection	8-10	10	1	Necropsy room	3x1h
Microscopic demonstration of lesions	4	Demonstration	16-20	20	1	Microscopy room	4x1h
Seminars	15	Seminars	Theory group	90	1	Classroom	15x1h

(extend table as necessary)

Is attendance at practical work compulsory (YES/NO)† If yes, is it verified, and how?

YES. Calling the roll

Primary **course materials** students use for their work and leaning in this subject

1.- Students can access to the Virtual Campus http.//add.unizar.es/SCRIPT/105_11811/scripts/serve_home, where they find: course rules, theoretical and practical programmes, theme summaries, practical sessions, bibliography, necropsy techniques, data bases of lesions, etc.
2.- Summaries available in the reprography unit of the Faculty.
3.- Videos of techniques in mammals necropsies in the Library of the Faculty.
4.- Recommended bibliography:

- Introduction to general pathology anatomy. N.F. Cheville. Acribia, D.L. 1994 [1ª ed.] Zaragoza
- Mechanisms of disease: a textbook of comparative general pathology. D.O. Slauson, B.J. Cooper. Williams & Wilkins, cop. 1990 [2ª ed.] Baltimore
- Human Patology Robbins. V. Kumar, R.S. Cotran, S.L. Robbins. Elsevier, D.L. 2003 [7ª ed.]. Madrid
- Veterinary pathology. T.C. Jones, R.D. Hunt, N.W. King. Williams & Wilkins, cop. 1997 [6ª ed.] Baltimore

Examination format used (mark all that apply)	(none)	multiple-choice	oral	practical	written papers	
					short	long (essay)
During the semester						
At the end of the subject		X		X	X	

Can students choose when to present themselves for the examination (YES/NO)† NO
How many times is a student permitted to attempt the examinations ? 1 per official session
What are the prerequisites for taking this subject? None
For what other subjects is this examination a prerequisite? No

Proforma for information on a specific subject

Subject title:	23022 – Clinical Propedeutics	Semester of studies in which subject presented:	**2C**
Department/unit responsible for teaching the subject.*	VETERINARY MEDICINE	Number of academic staff responsible for teaching this subject:	**2**

✶ State which Faculty if NOT the veterinary one

Number of individuals assisting with teaching or preparation			
	practical work	clinical work	other work (indicate type)
Support staff	3		
Postgraduate students			
Undergraduate students			
Practitioners			

State **objective**(s) of theoretical part of teaching in this subject, if this has been defined.

To teach the technical procedures used to examine animals and obtain the symptoms of their illness, as well as interpret them.

Main themes and hours of lectures in this subject

Theme/field	hours	Theme/field	hours
Introduction. Handling and clinical history.	4	Nervous system exploration	3
Thermometry, lymphatic system and mocous membrane	2	Exotic animals exploration	3
Surface and skin exploration	2	Image diagnosis	3
Head exploration: Mouth, nostrils, ears and eyes	5		
Neck exploration: pharynx, larynx, esophagus, trachea	2		
Respiratory and cardiac thorax	7		
Abdomen exploration, monogastric and ruminant	5		
Genital and urinal system exploration	4		
Muscle-bone system exploration	2		

(extend table as necessary)

Is attendance at lectures compulsory (YES/NO) If YES, is it verified, and how?

NO

State **objective**(s) of practical part of teaching in this subject, if this has been defined.

The same as the theoretical, but using living animals

Outline of main practical sessions in this subject

practical session topic & duration	(hours)	type of session	class size	no. of 'stations'	no. of staff	location (room)	time allocation
Handling and vital sign taking and exploration of the lymph nodes in equine	3	Practical	60	10	1	Premises for animals	
Handling and vital sign taking and exploration of the lymph nodes in bovines	3	Practical	60	10	1	Premises for animals	
Handling and vital sign taking and exploration of the lymph nodes in small animals	3	Practical	30	10	1	Hospital	
Drug application, blood extraction and thorax exploration in equines and bovines	3	Practical	60	10	1	Premises for animals	
Exploration of dogs (thorax and abdomen)	3	Practical	30	10	1	Hospital	
Handling and exploration of small ruminants	3	Practical	60	10	1	Premises for animals	
Exploration of the digestive system in bovines and equines	3	Practical	60	10	1	Premises for animals	
Bone-muscle and nervous system in dogs	3	Practical	80	10	1	Hospital	
Genital and rectal system in bovines	3	Practical	60	10	1	Premises for animals	
Exploration of exotic animals	3	Practical	30	10	1	Hospital	

(extend table as necessary)

Is attendance at practical work compulsory (YES/NO)† If yes, is it verified, and how?

Yes. Calling the roll.

Primary **course materials** students use for their work and leaning in this subject

Books

Examination format used (mark all that apply)	(none)	multiple-choice	oral	practical	written papers	
					short	long (essay)
During the semester					X	
At the end of the subject					X	

Can students choose when to present themselves for the examination (YES/NO)† YES

How many times is a student permitted to attempt the examinations ? 2

What are the prerequisites for taking this subject?

For what other subjects is this examination a prerequisite?

Proforma for information on a specific subject

Subject title:	23023 – Radiology	Semester of studies in which subject presented:	**1C**
Department/unit responsible for teaching the subject.*	VETERINARY MEDICINE	Number of academic staff responsible for teaching this subject:	**5**

✶ State which Faculty if NOT the veterinary one

Number of individuals assisting with teaching or preparation			
	practical work	clinical work	other work (indicate type)
Support staff			
Postgraduate students			
Undergraduate students			
Practitioners			

State **objective**(s) of theoretical part of teaching in this subject, if this has been defined.

To introduce the students to the theoretical knowledge of veterinary radiology and echography so they can know the physical, chemical, geometrical fundamentals, means and equipment used and the application of those means to patients and the interpretation of the images obtained in order to stablish the appropriate radiological and/or ecographical diagnosis.

Main themes and hours of lectures in this subject

Theme/field	hours	Theme/field	hours
Radiology generalities	5	Ocular echography	1
Radiology for small animals	10	Tendon and joint echography	1
Radiology of equines	2		
Radiology of bovines	1		
Radiology of exotic animals	1		
Special radiological explorations	1		
Ecography generalities	1		
Abdominal ecography	5		
Echocardiography	2		

(extend table as necessary)

Is attendance at lectures compulsory (YES/NO) If YES, is it verified, and how?

YES. Students have to sign in a list.

State **objective**(s) of practical part of teaching in this subject, if this has been defined.

The same as the theoretical part, but introducing the student to the practical knowledge of veterinary radiography and echography, specially in use of equipments, radiprotection measures, carrying out echographies and radiographies and their interpretation.

Outline of main practical sessions in this subject

practical session topic & duration	(hours)	type of session	class size	no. of 'stations'	no. of staff	location (room)	time allocation
Radiology generalities (Use x-ray equipment, radiological instalations, radiation protection equipment, rules)	2	Seminar	16		1	Seminar Hall	2 hours
Practicals with animals carried out of the Seminar –Radiology. (Use of radio protection equipment, x-ray viewing and interpretation)	2	Demonstration	3-4	1	1	RX Room Veterinary Hospital	2 hours
Echography generalities (use ecography equipment, ecography installations, etc)	2	Seminar	16		1	Seminar Hall	2 hours
Practicals with animals carried out of the Seminar – Echography. (Carrying out echographies, explorations with Doppler echography, echograph interpretation)	2	Demonstration	3-4	1	1	RX Room Veterinary Hospital	2 hours

(extend table as necessary)

Is attendance at practical work compulsory (YES/NO)† If yes, is it verified, and how?

YES. Students have to sign in a list.

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Primary **course materials** students use for their work and leaning in this subject

Printed summaries of lecture notes available at the reprography unit of the Faculty. Recommended bibliography (13 books) available at the Faculty Library.

Examination format used (mark all that apply)	(none)	multiple-choice	oral	practical	written papers	
					short	long (essay)
During the semester						
At the end of the subject				X	X	

Can students choose when to present themselves for the examination (YES/NO)† It depends on the rules stablished by the Faculty

How many times is a student permitted to attempt the examinations ? 2

What are the prerequisites for taking this subject?

For what other subjects is this examination a prerequisite?

Proforma for information on a specific subject

Subject title:	23024 – Food technology	Semester of studies in which subject presented:	**A**
Department/unit responsible for teaching the subject.*	ANIMAL PRODUCTION AND FOOD SCIENCES	Number of academic staff responsible for teaching this subject:	**2**

✶ State which Faculty if NOT the veterinary one

Number of individuals assisting with teaching or preparation			
	practical work	clinical work	other work (indicate type)
Support staff	2		
Postgraduate students	2		
Undergraduate students			
Practitioners	10		

State **objective**(s) of theoretical part of teaching in this subject, if this has been defined.

To learn:
- Main sensory, nutritional and functional properties of different foods.
- Chemical, enzymatic and microbiological fundamentals that determine the alteration of food, and the strategies used in food technology.
- Fundamentals of the methods used for food preservation.
- Different technological operations and the packaging systems and which are the most approapriate for the different kind of foods.
- Relevant aspects regarding water supply and waste water treatment by the food industry
- Physical and chemical structure and propertires of milk, meat, fish, eggs and the preservation and transformation processes of this raw material.

Main themes and hours of lectures in this subject

Theme/field	hours	Theme/field	hours
Introduction	1	Egg and egg product technology	2
Food quality parameters	6	Milk technology	10
Food altering agents	6	Meat technology	9
Food preservation	17	Fish technology	4
Food preparation, transformation and packaging operations	4		
Water supply and residue treatment	1		

(extend table as necessary)

Is attendance at lectures compulsory (YES/NO) If YES, is it verified, and how?

NO

State **objective**(s) of practical part of teaching in this subject, if this has been defined.

They are the same as the theoretical part.

Outline of main practical sessions in this subject

practical session topic & duration	(hours)	type of session	class size	no. of 'stations'	no. of staff	location (room)	time allocation
Food quality parameters	4	Experiments Demonstration	6-10	1-6	2	Pilot Plant	1/4/week
Food altering agents	4	Experiments Demonstration	6-10	1-6	2	Pilot Plant	1/4/week
Food preservation	10	Experiments Demonstration	6-10	1-6	2	Pilot Plant	3/4/week
Packaging	2	Experiments Demonstration	6-10	1-6	2	Pilot Plant	1/2/week
Milk technology	12	Experiments Demonstration	6-10	1-6	2	Pilot Plant	3/4/week
Meat technology	8	Experiments Demonstration	6-10	1-6	2	Pilot Plant	2/4/week
Seminars	10	Seminars	2 groups		2	Classroom	4/2,5/year

(extend table as necessary)

Is attendance at practical work compulsory (YES/NO)† If yes, is it verified, and how?

YES. Calling the roll

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Primary **course materials** students use for their work and leaning in this subject

Copied lecture notes. All the information used in class is available in the web page (http://www.unizar.es/cta) and in the reprography unit of the Faculty.

Examination format used (mark all that apply)	(none)	multiple-choice	oral	practical	written papers	
					short	long (essay)
During the semester					X	
At the end of the subject					X	

Can students choose when to present themselves for the examination (YES/NO)† Yes
How many times is a student permitted to attempt the examinations ? 2
What are the prerequisites for taking this subject? None
For what other subjects is this examination a prerequisite? No

ANNEX n 4

ADDITIONAL INFORMATION IN RELATION TO THE CURRICULUM

CORE SUBJECTS
4th YEAR

Medicine and Clinical Surgery

Obstetrics and Reproduction

Special Pathological Anatomy

Medical and Nutrition Pathological

Animal Production and Veterinary Hygiene

Economics Applied to the Agrifood Sector

Proforma for information on a specific subject

Subject title:	23026 – Medicine and clinical surgery	Semester of studies in which subject presented:	**A**
Department/unit responsible for teaching the subject.*	VETERINARY MEDICINE	Number of academic staff responsible for teaching this subject:	**7**

✶ State which Faculty if NOT the veterinary one

Number of individuals assisting with teaching or preparation			
	practical work	clinical work	other work (indicate type)
Support staff			
Postgraduate students		6	
Undergraduate students			
Practitioners	2	3	

State **objective**(s) of theoretical part of teaching in this subject, if this has been defined.

To know the concept of biological surgery and destruction-repair equilibrium
Managing and curing the different types of live tissue together with incision, dissection, haemostasis and suture techniques. To learn the mechanisms by which diseases develop, its diagnosis and the methods of surgical resolution. Methods and surgical techniques. Pre-anaesthetics, induction, maintenance and how to revive a patient. To evaluate and control perioperative pain.

Main themes and hours of lectures in this subject

Theme/field	hours	Theme/field	hours
Traumatism and injuries	3	Monogastric digestive system	5
Healing process and surgery generalities	7	Ruminant digestive system	5
Anesthesia	9	Urogenital system	6
Skin injuries, and skin surgery	5		
Tendons, bones and joints	6		
Otolaryngology	4		
Ophtalmology	4		
Palate and odontology	4		
Thorax and respiratory system	2		

(extend table as necessary)

Is attendance at lectures compulsory (YES/NO) If YES, is it verified, and how?

NO

State **objective**(s) of practical part of teaching in this subject, if this has been defined.

To learn how to make incitions, dissections and sutures in live tissues To familiarize themselves with the sick animal, take notes, explorations. To familiarize themselves with obtaining diagnosis and the appropriate surgical technique. To learn how to handle with anesthesia and monitoring

Outline of main practical sessions in this subject

practical session topic & duration	(hours)	type of session	class size	no. of 'stations'	no. of staff	location (room)	time allocation
Sutures in biomodels	4	Personal	16	16	2	Laboratory	4h
General surgery	3	Video	16	session	1	Classroom	3h
Hospital resources	2	Visit	8	session	1	Hospital	2h
Surgical consultation of horses	3	Hospital	4-5	3	1	Hospital	3h
Anesthesia and ruminants surgery	8	Operating theatre	4-5	3	1	Operating theatre	2 x 4h
Anesthesia and monitoring	15	Hospital	4-5	4	2	Hospital	5 x 3
General surgery consultation	9	Hospital	4-5	3	2	Hospital	3 x 3
Orthopedic surgery consultation	6	Hospital	4-5	3	2	Hospital	2 x 3

(extend table as necessary)

Is attendance at practical work compulsory (YES/NO)† If yes, is it verified, and how?

Yes. It is verified signing in a list

_____

Primary **course materials** students use for their work and leaning in this subject

Books, lecture notes, record of case histories, videos and web pages

Examination format used (mark all that apply)	(none)	multiple-choice	oral	practical	written papers	
					short	long (essay)
During the semester	2			2	X	
At the end of the subject	1			1	X	

Can students choose when to present themselves for the examination (YES/NO)† Yes

How many times is a student permitted to attempt the examinations ? 2

What are the prerequisites for taking this subject?

For what other subjects is this examination a prerequisite? Orthopedic surgery and orthopaedics

Proforma for information on a specific subject

Subject title:	23027 – Obstetrics and reproduction	Semester of studies in which subject presented:	**A**
Department/unit responsible for teaching the subject.*	VETERINARY MEDICINE	Number of academic staff responsible for teaching this subject:	**6**

✶ State which Faculty if NOT the veterinary one

Number of individuals assisting with teaching or preparation			
	practical work	clinical work	other work (indicate type)
Support staff			
Postgraduate students			
Undergraduate students			
Practitioners			

State **objective**(s) of theoretical part of teaching in this subject, if this has been defined.

To acquire the knowledge of all the aspects, both physiological, pathotological and technological, that affect the reproductive organic function of domestic animals useful to man.
The programme includes: pre and post birth, clinical and surgical resolution of problems caused by birth, clinical physiopathology and technology of reproduction.

Main themes and hours of lectures in this subject

Theme/field	hours	Theme/field	hours
Functional anatomy of the genital apparatus	6	Birth	6
Endocrinology of the reproduction	4	Puerperium	4
Physiological base of animal reproduction	10	Sterility, infertility	6
Technology of reproduction: Artificial Insemination	10	Pathology of the gestation	3
Control of reproduction from the zootechnic point of view	6	Pathology of birth	2
Biotechnology with embryons	4	Pathology of the puerperium	2
Progestation	3	Obstetrics and surgical operation	2
Gestation	7		

(extend table as necessary)

Is attendance at lectures compulsory (YES/NO) If YES, is it verified, and how?

Yes. It is not verified.

State **objective**(s) of practical part of teaching in this subject, if this has been defined.

Dominion and control of the aspects related to the theoretical objectives of the subject: biotechnology applied to reproduction, reproductive control, obstetric manipulations, physiopathology of the reproduction, reproduction and obstetrics.

Outline of main practical sessions in this subject

practical session topic & duration	(hours)	type of session	class size	no. of 'stations'	no. of staff	location (room)	time allocation
Ruminants reproductive control	3	Demonstration	<10 to 20	10 to 20	1	Laboratory	3 x 12
Seminal technology	3	Practical	<10	10	1	Laboratory	3 x 12
Biotechnology of embryons and ovums	5	Practical	<10	10	1	Laboratory	(2+3) x 12
Applied anatomy in animal reproduction	3	Practical	<10	10	1	Laboratory	3 x 12
Obstetric examination and manipulation	4	Demonstration	<10 to 20	10 to 20	1	Laboratory	(2+2) x 12
Reproductive interventions	6	Practical	<10	10	1	Surgery room	(2+4) x 12
Reproductive clinic of equines	6	Clinics	5	5	2	Hospital	(3+3) x 24
Clinical consultations in small animals	15	Clinics	5	5	1-2	Hospital	(3+5) x 24
Extramural consultations	10	Farms	20 to 50	20 to 50	3-4	Several locations	(4+3+3) x 12

(extend table as necessary)

Is attendance at practical work compulsory (YES/NO)† If yes, is it verified, and how?

Yes. Calling the roll

Primary **course materials** students use for their work and leaning in this subject

Schemes and notes are distribuited at class. Texts of the themes imparted at class are available in the reprography unit of the Faculty.

Examination format used (mark all that apply)	(none)	multiple-choice	oral	practical	written papers	
					short	long (essay)
During the semester		X			X	
At the end of the subject		X		X	X	

Can students choose when to present themselves for the examination (YES/NO)† According to the Faculty guidelines
How many times is a student permitted to attempt the examinations ? According to the Faculty guidelines
What are the prerequisites for taking this subject? Those according to the guidelines
For what other subjects is this examination a prerequisite? There are no prerequisites

Proforma for information on a specific subject

Subject title:	23028 – Special Pathological Anatomy	Semester of studies in which subject presented:	**A**
Department/unit responsible for teaching the subject.*	VETERINARY MEDICINE	Number of academic staff responsible for teaching this subject:	**5**

✶ State which Faculty if NOT the veterinary one

Number of individuals assisting with teaching or preparation			
	practical work	clinical work	other work (indicate type)
Support staff	2		
Postgraduate students	2		
Undergraduate students			
Practitioners			

State **objective**(s) of theoretical part of teaching in this subject, if this has been defined.

Through the teaching of theory and practicals, the students should be able to:
1.- Recognise, describe, identify, and name the different lesions in the different organs, apparatus and systems.
2.- Relate the lesions with specific pathological charts, referring to is pathogeny and etiology

Main themes and hours of lectures in this subject

Theme/field	hours	Theme/field	hours
Presentation and programming	1	Skin lesions	2
Digestive system lesions	12		
Circulatory system lesions	6		
Respiratory system lesions	8		
Haematopoietic and lymphatic system lesions	3		
Urinary system lesions	4		
Nervous system lesions	5		
Locomotive system lesions	2		
Reproductive system lesions	2		

(extend table as necessary)

Is attendance at lectures compulsory (YES/NO) If YES, is it verified, and how?

NO, it is not compulsory

State **objective**(s) of practical part of teaching in this subject, if this has been defined.

1.- Recognise, describe, identify, and name the different lesions in the different organs, apparatus and systems
2.- Relate the lesions with specific pathological charts, referring to its pathogeny and aetiology
3.- Have a good working knowledge of autopsy techniques and know the sample taking criteria and methods for the different laboratory studies
4.- Have a good working knowledge of anatomo-pathological fundamentals for veterinary inspection at abbatoirs

Outline of main practical sessions in this subject

practical session topic & duration	(hours)	type of session	class size	no. of 'stations'	no. of staff	location (room)	time allocation
Necropsies	15 h / student / year	Disections	5	7 necropsy tables	1-2 teachers	Necropsy room	3 h / student / group. In one week: 3 h / student / week
Anatomo-pathological diagnosis of necropsies cases	At least 35 h / year	Diagnosis and necropsy cases discussion	30	7 necropsy tables	1-2 teachers	Necropsy room	1h student/day/group. At least 35 h / year
Identification of pathological pieces in slaughterhouses	4 h / student / year	Demonstration	30	7 necropsy tables	1-2 teachers	Necropsy room	1h/student/group
Case discussion in seminars	8 sessions in 2 hours / student / year	Seminars	60	Classroom	1	C & D classroom	16h/student/group. 1 seminar / month
Necropsies report	10-20h	Hystopathology and sample taking	5	Hystopathology diagnosis and library	1	Microscopy room and library	10-20 student/group/year

(extend table as necessary)

Is attendance at practical work compulsory (YES/NO)† If yes, is it verified, and how?

Yes, it is compulsory.

Primary **course materials** students use for their work and leaning in this subject

Slides shown at class are available in the virtual campus (http://add.unizar.es)
Lecture notes also available in the virtual teaching ring and in the reprography unit of the Faculty
Corpses of animals from the Veterinary Teaching Hospital, Clinics, individuals and several farms around Zaragoza (200 km).
Pathological pieces from the slaughterhouse of Zaragoza.

Examination format used (mark all that apply)	(none)	multiple-choice	oral	practical	written papers	
					short	long (essay)
During the semester						
At the end of the subject		X		X		

Can students choose when to present themselves for the examination (YES/NO)† NO
How many times is a student permitted to attempt the examinations ? Twice a year
What are the prerequisites for taking this subject? None
For what other subjects is this examination a prerequisite? No

Proforma for information on a specific subject

Subject title:	23029 – Medical and nutritional pathology	Semester of studies in which subject presented:	**A**
Department/unit responsible for teaching the subject.*	VETERINARY MEDICINE	Number of academic staff responsible for teaching this subject:	**1**

✶ State which Faculty if NOT the veterinary one

Number of individuals assisting with teaching or preparation			
	practical work	clinical work	other work (indicate type)
Support staff		9	2 seminars of discussion about clinical cases
Postgraduate students		2	
Undergraduate students		total number of students enrolled	
Practitioners			2 seminars of specialists

State **objective**(s) of theoretical part of teaching in this subject, if this has been defined.

The student has:
- To learn the clinical characteristics of the main diseases of pets.
- To be able to make a diagnostic protocol and to establish a logical relation of differential diagnosis
- To be able to select the correct diagnostic test that let the student to arise or dismiss suspicious syndromes of the process.
- To learn to select and administer a suitable theraphy in those process.

Main themes and hours of lectures in this subject

Theme/field	hours	Theme/field	hours
PROGRAMME OF PETS		PROGRAMME OF FARM ANIMALS	
Cardiovascular pathology: miocardiopathies and cardiac rhythm alterations	4	Equine respiratory pathology	2
Digestive pathology: dogs and cats diarrhoea	7	Digestive pathology in equines, colics	6
Urinary pathology: PP syndrome, renal insufficiencies	7	Digestive pathology in ruminants	10
Cutaneous pathology: Pruritus and alopecia	4	Ketosis, hypocalcemia	4
Endocrine pathology: hipothyroid, hyperadrenocorticism, diabetes	4	Sporadic diseases in birds and pigs	3
Anaemia, leukaemia, cancer	4	Other pathologies	12
Neuromuscular sindromes and epilepsy	4		
Respiratory distress, bronchitis, pneumonia	4		

(extend table as necessary)

Is attendance at lectures compulsory (YES/NO) If YES, is it verified, and how?

Yes. Daily control of attendance

State **objective**(s) of practical part of teaching in this subject, if this has been defined.

To put in practice the acquired knowledge in order to make a correct clinical history, systematic explorations and systematic of the patient. To infer the relation of the possible diagnosis.

Outline of main practical sessions in this subject

practical session topic & duration	(hours)	type of session	class size	no. of 'stations'	no. of staff	location (room)	time allocation
Internal medicine cosulting rooms for pets	15	Clinic	4-5	1	1 teacher // 1 resident	HCV	
Internal medicine consulting rooms for ruminants	15	Clinic	4-5	1	1 associated teacher	HCV	
Attending equine clinic for a week	15	Clinic	4-5	1	1 associated teacher	HCV	
Dermatology	4	Clinic	4-5	1	1 teacher 1 intern	HCV	
Oncology	3	Clinic	4-5	1	1 teacher 1 resident	HCV	
Pathogen behaviour and neurology	3	Clinic	4-5	1	1 teacher 1 intern	HCV	
Radiology	3	Clinic	4-5	1	1 teacher	HCV	
Exotic animals clinic	2	Clinic	4-5	1	1 teacher	HCV	

(extend table as necessary)

Is attendance at practical work compulsory (YES/NO)† If yes, is it verified, and how?

Yes. Every practice is controlled

Primary **course materials** students use for their work and leaning in this subject

Clinical cases of hospitalized sick animals
Copied lecture notes available in Digital Teaching Circle (ADD) http://add.unizar.es
Recommended bibliography available in the library of the Faculty.

Examination format used (mark all that apply)	(none)	multiple-choice	oral	practical	written papers	
					short	long (essay)
During the semester			X	X	X	
At the end of the subject					X	

Can students choose when to present themselves for the examination (YES/NO)† Yes. Two options every year
How many times is a student permitted to attempt the examinations ? 2
What are the prerequisites for taking this subject? Those established by the syllabus
For what other subjects is this examination a prerequisite? NO

Proforma for information on a specific subject

Subject title:	23035 – Animal production and veterinary hygiene	Semester of studies in which subject presented:	**A**
Department/unit responsible for teaching the subject.*	ANIMAL PRODUCTION AND FOOD SCIENCES	Number of academic staff responsible for teaching this subject:	

✶ State which Faculty if NOT the veterinary one

Number of individuals assisting with teaching or preparation			
	practical work	clinical work	other work (indicate type)
Support staff	1		
Postgraduate students			
Undergraduate students			
Practitioners	4 Veterinarians		

State **objective**(s) of theoretical part of teaching in this subject, if this has been defined.

- The study of the various production systems of current or potential interest, as well as the most common management techniques and the factor which have an influence on the quality and quantity of the product produced
- The knowledge of the hygiene needed in livestock farming to safeguard health, wellbeing and the productivity of the animals, as well as to prevent the contamination of the environment from their residues and excretions.

Main themes and hours of lectures in this subject

Theme/field	hours	Theme/field	hours
Dairy cow production	12-13		
Beef production	19-20		
Ovine, caprine production	13-14		
Poultry production	23-24		
Rabbit production	7-8		
Porcine production	12-13		

(extend table as necessary)

Is attendance at lectures compulsory (YES/NO) If YES, is it verified, and how?

NO

State **objective**(s) of practical part of teaching in this subject, if this has been defined.

To complement the theoretical part.

Outline of main practical sessions in this subject

practical session topic & duration	(hours)	type of session	class size	no. of 'stations'	no. of staff	location (room)	time allocation
Visit to livestock farms	4-5		30-40		1-2	Field	
Practicals on farms	2-4		5-6		1	Farm	
Visit to running farms	10		1		6		
Egg quality and incubation practicals	2 / n		5-6		1	Laboratory	
Meat quality and carcass practicals	3 / n		5-8		1-2	Laboratory – Slaughterhouse	
Porcine practicals	10		2-4		1	Laboratory – Farm	
Videos (practical cases)	8-10		40		1-2	Classroom	
Informatics	2-4		20		1	Classroom	

(extend table as necessary)

Is attendance at practical work compulsory (YES/NO)† If yes, is it verified, and how?

YES. Calling the roll

_____

Primary **course materials** students use for their work and leaning in this subject

Slides / Blackboard Part of the material used at class is provided to the students.

Examination format used (mark all that apply)	(none)	multiple-choice	oral	practical	written papers	
					short	long (essay)
During the semester						
At the end of the subject						

Can students choose when to present themselves for the examination (YES/NO)† YES

How many times is a student permitted to attempt the examinations ? 2 each academic year + 1 at the end of the first semester

What are the prerequisites for taking this subject?

For what other subjects is this examination a prerequisite? NO

Proforma for information on a specific subject

Subject title:	23030 – Economics applied to the Agrifood sector	Semester of studies in which subject presented:	**1C**
Department/unit responsible for teaching the subject.*	AGRICULTURE AND AGRARIAN ECONOMICS	Number of academic staff responsible for teaching this subject:	**5**

✶ State which Faculty if NOT the veterinary one

Number of individuals assisting with teaching or preparation			
	practical work	clinical work	other work (indicate type)
Support staff			
Postgraduate students			
Undergraduate students			
Practitioners			

State **objective**(s) of theoretical part of teaching in this subject, if this has been defined.

- To provide the student with an understanding of the basic notions of the fundamental laws of Economics
- To acquire a knowledge of the economic aspects specific to the agricultural sector (economy of agricultural companies, animal health, productive processes, and the main livestock sectors)
- To enable the student to analyze and manage livestock companies

Main themes and hours of lectures in this subject

Theme/field	hours	Theme/field	hours
Basic notions of Microeconomics	8		
The agricultural company. Analysis and management	12		
Economics of farms	10		

(extend table as necessary)

Is attendance at lectures compulsory (YES/NO) If YES, is it verified, and how?

NO

State **objective**(s) of practical part of teaching in this subject, if this has been defined.

To prepare the student to:
- Look for information (bibliographical, documental and statistical)
- Cases and problems resolution related to agricultural farms business.
- Report preparation and presentation

Outline of main practical sessions in this subject

practical session topic & duration	(hours)	type of session	class size	no. of 'stations'	no. of staff	location (room)	time allocation
To look for information (bibliographical, documental and statistical)	4			12		Computer room	
Cases and problems resolution related to agricultural farms business.	6			12		Classroom	
Report preparation and presentation	5			12		Classroom and library	

(extend table as necessary)

Is attendance at practical work compulsory (YES/NO)† If yes, is it verified, and how?

Yes.
If they do the practical work, the students do not need to take the practical exams.

_____

Primary **course materials** students use for their work and leaning in this subject

Lecture notes that students can buy

Examination format used (mark all that apply)	(none)	multiple-choice	oral	practical	written papers	
					short	long (essay)
During the semester					X	
At the end of the subject						

Can students choose when to present themselves for the examination (YES/NO)† Yes

How many times is a student permitted to attempt the examinations ? 2

What are the prerequisites for taking this subject? To have passed the 90% of the core subjects of 1st cycle.

For what other subjects is this examination a prerequisite? NO

ANNEX n 4

ADDITIONAL INFORMATION IN RELATION TO THE CURRICULUM

CORE SUBJECTS
5th YEAR (see Annex 3)

- **Esp. Medicine and Health:**

  Medical and Nutrition Pathology

  Infectious Pathology and Epidemiology

  Surgical Pathology II

  Hygiene and Food Inspection

  Reproduction and Obstetrics

- **Esp. Animal Production and Economics:**

  Hygiene and Food Inspection

  Agrarian Economics

  Farming and Construction Project

  Animal Productions

  Obstetrics and Reproduction

- **Esp. Bromatology:**

  Hygiene and Food Inspection

  Livestock Farming

  Meat Science and Technology

  Lactology

  Fish Technology

Proforma for information on a specific subject

Subject title:	11835 – Medical and nutrition pathology	Semester of studies in which subject presented:	**A**
Department/unit responsible for teaching the subject.*	VETERINARY MEDICINE	Number of academic staff responsible for teaching this subject:	**10**

✶ State which Faculty if NOT the veterinary one

Number of individuals assisting with teaching or preparation			
	practical work	clinical work	other work (indicate type)
Support staff			
Postgraduate students			
Undergraduate students			
Practitioners			

State **objective**(s) of theoretical part of teaching in this subject, if this has been defined.

To know the internal diseases of animals and the suitable drugs that attack the agent that causes the disease.

Main themes and hours of lectures in this subject

Theme/field	hours	Theme/field	hours
Respiratory pathology of equines	3	Small animals cardiology	4
Digestive system of equines	8	Digestive system of small animals	10
Liver and kidneys of equines	2	Ethology and nervous system of small animals	6
Equine dermatology	1	Oncology and hematology of small animals	5
Equine hematology	1	Respiratory system of small animals	8
Nutrition pathology	14	Small animals endrocrinology	8
Digestive pathology of ruminants	14		
Respiratory pahotology of ruminants	4		
Mammarian glad pathology	3		
Small animals dermatology	4		

(extend table as necessary)

Is attendance at lectures compulsory (YES/NO) If YES, is it verified, and how?

NO

State **objective**(s) of practical part of teaching in this subject, if this has been defined.

To teach the students to make clinical diagnosis, carrying out anamnesis, explorations, developing the diagnosis as well as the treatment required to solve the problem.

Outline of main practical sessions in this subject

practical session topic & duration	(hours)	type of session	class size	no. of 'stations'	no. of staff	location (room)	time allocation
Small animals consultations	15	Clinic	4	4	1	Hospital	
Pathology of small ruminants	15	Clinic	4	4	1	Farms	
Pathology of equines	10	Clinic	4	4	1	Hospital	
Consultations	12	Clinic	4	4	1	Hospital	
Attendance to clinical seminars	8	Seminar	4	4	1	Seminar	

(extend table as necessary)

Is attendance at practical work compulsory (YES/NO)† If yes, is it verified, and how?

Yes. Calling the roll. The student has to give an attendance sheet to the teacher.

_____

Primary **course materials** students use for their work and leaning in this subject

Copied lecture notes available in the reprography unit of the Faculty and in internet (Virtual Campus, http://add.unizar.es).

Examination format used (mark all that apply)	(none)	multiple-choice	oral	practical	written papers	
					short	long (essay)
During the semester					X	X
At the end of the subject					X	X

Can students choose when to present themselves for the examination (YES/NO)†

How many times is a student permitted to attempt the examinations ?

What are the prerequisites for taking this subject?

For what other subjects is this examination a prerequisite?

Proforma for information on a specific subject

Subject title:	11823 – Infectious pathology and epidemiology	Semester of studies in which subject presented:	**A**
Department/unit responsible for teaching the subject.*	VETERINARY MEDICINE	Number of academic staff responsible for teaching this subject:	**1**

✶ State which Faculty if NOT the veterinary one

Number of individuals assisting with teaching or preparation			
	practical work	clinical work	other work (indicate type)
Support staff			
Postgraduate students			
Undergraduate students			
Practitioners		Veterinarians	

State **objective**(s) of theoretical part of teaching in this subject, if this has been defined.

To know the infectious diseases that could affect the diverse animal species. The students should know the scientific terminology employed in their denomination and description, the pathogenic, clinical and epidemiological characters of the diverse processes, as well as the diagnostic methods and the actions, directed towards prevention, control and eradication of diseases, with special reference to zoonosis.

Main themes and hours of lectures in this subject

Theme/field	hours	Theme/field	hours
General concepts	4		
Health policy	4		
Epidemiology and general preventive medicine	12		
Ovine and bovine pathology	38		
Canine and feline pathology	18		
Porcine pathology	19		
Infectious diseases of rabbits and equines	14		
Infectious diseases of birds	9		
Infectious diseases of fish	2		

(extend table as necessary)

Is attendance at lectures compulsory (YES/NO) If YES, is it verified, and how?

NO

Proforma for information on a specific subject

Subject title:	11836 – Surgical Pahology II	Semester of studies in which subject presented:	**A**
Department/unit responsible for teaching the subject.*	VETERINARY MEDICINE	Number of academic staff responsible for teaching this subject:	**7**

✶ State which Faculty if NOT the veterinary one

Number of individuals assisting with teaching or preparation			
	practical work	clinical work	other work (indicate type)
Support staff	1	1	
Postgraduate students		8	
Undergraduate students			
Practitioners	13	5	

State **objective**(s) of theoretical part of teaching in this subject, if this has been defined.

To learn the pathology processes that required a surgical resolution.

Main themes and hours of lectures in this subject

Theme/field	hours	Theme/field	hours
Ophtalmology	8		
Otorhinolaryngology	9		
Odontology. Stomatology	5		
Urogenital	8		
Digestive system in small animals	8		
Digestive system in large animals	9		
Podology	10		
Hernias	3		

(extend table as necessary)

Is attendance at lectures compulsory (YES/NO) If YES, is it verified, and how?

Yes but it’s not verified.

State **objective**(s) of practical part of teaching in this subject, if this has been defined.

First approach to the sick patient. Initial diagnosis. Participation in complementary tests. First approach to surgery rooms (patient preparation, surgical team, instrument set, asepsis, antisepsis...)

Outline of main practical sessions in this subject

practical session topic & duration	(hours)	type of session	class size	no. of 'stations'	no. of staff	location (room)	time allocation
Surgery consultations	9	Hospital	5	5	1	Hospital	3h x 3 days
Traumatology consultations	6	Hospital	5	5	1	Hospital	3h x 2 days
Biomodels in traumatology	3	Biomodels	5	2	1	Laboratory Surgery	3h x 1 day
Surgery room	20	Hospital	5	3	2	Hospital	4h x 5 days
Surgical Consultation of Horses	3	Hospital	5	3	2	Hospital	3h x 1 day

(extend table as necessary)

Is attendance at practical work compulsory (YES/NO)† If yes, is it verified, and how?

Yes. The attendance is daily verified.

Primary **course materials** students use for their work and leaning in this subject

Copied lecture notes (the student pays the photocopies). Free web: www.cirugiaveterinaria.com. Also lecture notes in free web ADD – Virtual Campus. http://add.unizar.es

Examination format used (mark all that apply)	(none)	multiple-choice	oral	practical	written papers	
					short	long (essay)
During the semester		X			X	X
At the end of the subject		X			X	X

Can students choose when to present themselves for the examination (YES/NO)† YES

How many times is a student permitted to attempt the examinations ? Two

What are the prerequisites for taking this subject? None

For what other subjects is this examination a prerequisite? No

State **objective**(s) of practical part of teaching in this subject, if this has been defined.

Resolution of clinical cases.
Diagnostic techniques and interpretation of results.
Epidemiology (elaboration of questionnaires). Discussion and elaboration of conclusions.
Epidemiology and preventive medicine surveillance programs.
Vaccination

Outline of main practical sessions in this subject

practical session topic & duration	(hours)	type of session	class size	no. of 'stations'	no. of staff	location (room)	time allocation
Laboratorial diagnostic	12	Laboratory		10	2	Labs	4 days
Study of clinical cases	11	Practice		10	2	Computer hall	3 days
Epidemiological surveys	10	Visit to farms		4	6	Teacher office – Farms	8 sessions
Preventive medicine	7	Practice		10	1	Computer hall	2 days
Vaccination	8	Practice		10	1	Seminar	2 days

(extend table as necessary)

Is attendance at practical work compulsory (YES/NO)† If yes, is it verified, and how?

Yes. Calling the roll.

_____

Primary **course materials** students use for their work and leaning in this subject

Material prepared by the teacher and available in the web.
Bibliography recomended by the teachers of the Epidemiology and Infectious Pathology Unit.

Examination format used (mark all that apply)	(none)	multiple-choice	oral	practical	written papers	
					short	long (essay)
During the semester						Essay
At the end of the subject						Clinical cases and essay

Can students choose when to present themselves for the examination (YES/NO)† NO
How many times is a student permitted to attempt the examinations ? Two
What are the prerequisites for taking this subject? The students must be in 2nd cycle
For what other subjects is this examination a prerequisite? NO

Proforma for information on a specific subject

Subject title:	11837 – Hygiene and food inspection	Semester of studies in which subject presented:	**A**
Department/unit responsible for teaching the subject.*	ANIMAL PRODUCTION AND FOOD SCIENCES	Number of academic staff responsible for teaching this subject:	**11**

✶ State which Faculty if NOT the veterinary one

Number of individuals assisting with teaching or preparation			
	practical work	clinical work	other work (indicate type)
Support staff	1 Laboratory technician		
Postgraduate students	2		
Undergraduate students			
Practitioners			

State **objective**(s) of theoretical part of teaching in this subject, if this has been defined.

To learn the general principles in which quality, aptitude for consumption and food certification are based.
To learn to identify the problems in food safety and the strategies for its control in the food chain.
To know how to establish, in each case, the systematics of food inspection and control, as well as the most indicated laboratorial methods to carry out for the purpose of establishing the food report.
To know how to use and interpet the legislation in force in each case.

Main themes and hours of lectures in this subject

Theme/field	hours	Theme/field	hours
Hygiene, inspection and applied food control	1	Hygiene, inspection and control of meat and meat products	21
Aptitude for the consumption of food, alterations and preservation of food	2	Hygiene, inspection and control of milk and milk products	12
Food quality and certification	2	Hygiene, inspection and control of fish products	12
Biotical and abiotic causes that sustain the the health aptitude for consumption	6	Hygiene, inspection and control of eggs	4
Standards and measures of higyenic in the food chain	4	Hygiene, inspection and control of honey and conserve products	4
Food legislation	2	Hygiene, inspection and control of plant foods and mushrooms	3
Strategies ford food security control	2	Hygiene, inspection and control of food preparations for immediate consumption	2
Inspection and food control	5		
Tools of selfcontrol in food stablishments	8		

(extend table as necessary)

Is attendance at lectures compulsory (YES/NO) If YES, is it verified, and how?

NO

State **objective**(s) of practical part of teaching in this subject, if this has been defined.

Practical knowledge of:
- Methods of hygienic control of surfaces, environment, water and food handlers
- Application of the HACCP system in different stablishments and food process
- Interpretation of legal rules
- Hygienic problems in slaughterhouses, ante and post mortem inspections, specific methods of analysis for hygiene control in marketing.
- Microbiological and physic-chemical analysis methods in inspection and quality control of milk and dairy products.
- Methods of quality evaluation of eggs and hygienic control in egg-product industries
- Methods of quality control of conserve products
- Identification of edible and toxic mushrooms

Outline of main practical sessions in this subject

practical session topic & duration (hours)		type of session	class size	no. of 'stations'	no. of staff	location (room)	time allocation
Slaughterhouse (bovine, ovine, caprine, porcine and equine): ante and postmortem, specific postmortem examinations, meat and entrains, hygienic control in slaughterhouse.	12	Cases	10	1	1	Slaughterhouse	3 x 4 hours during the academic year
Slaughterhouse: Inspection, hygienic control in slaughterhouse, ARICPC, certification and documentation that the inspector should know	9	Seminars	12 48	1	1	Bromatology seminar	3 x 3 hours
Meat and meat products: Examinations and analysis of prohibited substances. Microbiological and parasitical analysis	4	Laboratory	12	4	1	Lab. nº 26	1 x 4 hours
Inspection of good practices in hygiene of the food industry.	4	Cases Laboratory	12	4	1	Pilot Plant	1 x 4 hours
Hygiene inspection of the processes of the milk industry	4	Cases Laboratory	12P	4	1	Pilot Plant	1 x 4 hours
Inspection of fish products, identification of species.	4	Laboratory	12	4	1	Lab. nº 38	1 x 4 hours
Inspection of milk, dairy products and quality of eggs for consumption	4	Laboratory	12	4	1	Lab. nº 38	1 x 4 hours
Inspection of canning. Identify the species of edible mushrooms.	4	Laboratory	12	4	1	Lab. nº 26	1 x 4 hours

(extend table as necessary)

Is attendance at practical work compulsory (YES/NO)† If yes, is it verified, and how?

YES, the attendance to every practical session is verified evaluating a report of the work done.

Primary **course materials** students use for their work and leaning in this subject

Lecture notes and material provided by the teacher and available in the reprography unit of the Faculty. (At cost)
Specific documentation distribuited by the teacher to every student (free).
Bibliography recommended by the teacher and available in the library of the Faculty and in the Department.

Examination format used (mark all that apply)	(none)	multiple-choice	oral	practical	written papers	
					short	long (essay)
During the semester					X	X
At the end of the subject			X		X	X

Can students choose when to present themselves for the examination (YES/NO)† Yes
How many times is a student permitted to attempt the examinations ? Two attempts
What are the prerequisites for taking this subject? None
For what other subjects is this examination a prerequisite? No

Proforma for information on a specific subject

Subject title:	11838 – Reproduction and obstetrics	Semester of studies in which subject presented:	**A**
Department/unit responsible for teaching the subject.*	VETERINARY MEDICINE	Number of academic staff responsible for teaching this subject:	**6**

✶ State which Faculty if NOT the veterinary one

Number of individuals assisting with teaching or preparation			
	practical work	clinical work	other work (indicate type)
Support staff			
Postgraduate students			
Undergraduate students			
Practitioners			

State **objective**(s) of theoretical part of teaching in this subject, if this has been defined.

To acquire the knowledge of all the aspects, both physiological, pathotological and technological, that affect the reproductive organic function of domestic animals useful to man.
The programme includes: pre and post birth, clinical and surgical resolution of problems caused by birth, clinical physiopathology and technology of reproduction.

Main themes and hours of lectures in this subject

Theme/field	hours	Theme/field	hours
Functional anatomy of the genital apparatus	6	Birth	6
Endocrinology of the reproduction	4	Puerperium	4
Physiological base of animal reproduction	10	Sterility, infertility	6
Technology of reproduction: Artificial Insemination	10	Pathology of the gestation	3
Control of reproduction from the zootechnic point of view	6	Pathology of birth	2
Biotechnology with embryons	4	Pathology of the puerperium	2
Reproduction by species	15	Obstetrics and surgical operation	2
Progestation	3		
Gestation	7		

(extend table as necessary)

Is attendance at lectures compulsory (YES/NO) If YES, is it verified, and how?

Yes, but it is not verified.

State **objective**(s) of practical part of teaching in this subject, if this has been defined.

Dominion and control of the aspects related to the theoretical objectives of the subject: biotechnology applied to reproduction, reproductive control, obstetric manipulations, physiopathology of the reproduction, reproduction and obstetrics.

Outline of main practical sessions in this subject

practical session topic & duration	(hours)	type of session	class size	no. of 'stations'	no. of staff	location (room)	time allocation
Ruminants reproductive control	3	Demonstration	<10 to 20	10 to 20	1	Laboratory	3 x 12
Seminal technology	3	Practical	<10	10	1	Laboratory	3 x 12
Biotechnology of embryons and ovums	5	Practical	<10	10	1	Laboratory	(2+3) x 12
Applied anatomy in animal reproduction	3	Practical	<10	10	1	Laboratory	3 x 12
Obstetric examination and manipulation	4	Demonstration	<10 to 20	10 to 20	1	Laboratory	(2+2) x 12
Reproductive interventions	6	Practical	<10	10	1	Surgery room	(2+4) x 12
Reproductive clinic of equines	6	Clinics	5	5	2	Hospital	(3+3) x 24
Clinical consultations in small animals	15	Clinics	5	5	1-2	Hospital	(3+5) x 24
Extramural consultations	10	Farms	20 to 50	20 to 50	3-4	Several locations	(4+3+3) x 12

(extend table as necessary)

Is attendance at practical work compulsory (YES/NO)† If yes, is it verified, and how?

Yes. Calling the roll

Primary **course materials** students use for their work and leaning in this subject

Schemes and notes are distribuited at class. Texts of the themes imparted at class are available in the reprography unit of the Faculty.

Examination format used (mark all that apply)	(none)	multiple-choice	oral	practical	written papers	
					short	long (essay)
During the semester		X			X	
At the end of the subject		X		X	X	

Can students choose when to present themselves for the examination (YES/NO)† According to the Faculty guidelines
How many times is a student permitted to attempt the examinations ? According to the Faculty guidelines
What are the prerequisites for taking this subject? Those according to the guidelines
For what other subjects is this examination a prerequisite? There are no prerequisites

Proforma for information on a specific subject

Subject title:	11840 – Agrarian Economics	Semester of studies in which subject presented:	A
Department/unit responsible for teaching the subject.*	AGRICULTURE AND AGRARIAN ECONOMICS	Number of academic staff responsible for teaching this subject:	4

✶ State which Faculty if NOT the veterinary one

Number of individuals assisting with teaching or preparation			
	practical work	clinical work	other work (indicate type)
Support staff			
Postgraduate students			
Undergraduate students			
Practitioners			

State **objective**(s) of theoretical part of teaching in this subject, if this has been defined.

To acquire basic knowledge on economic theory.
To study the special aspects of its application in the agrarian sector .
To prepare the student in the economic analysis of factors and agricultural productive process, with special attention to costs.

Main themes and hours of lectures in this subject

Theme/field	hours	Theme/field	hours
Theory of Economy	28		
Macroeconomics	19		
Economy and entreprise management	17		
Factor and product economy	26		

(extend table as necessary)

Is attendance at lectures compulsory (YES/NO) If YES, is it verified, and how?

NO. Nevertheless, attendance is easy to verify due to the reduced number of students enroled in this course (20-30 students) and the number of students attending lectures (>60%).

State **objective**(s) of practical part of teaching in this subject, if this has been defined.

Practical objectives are the same as the theorical part. Students will carry out individual exercises that will be part of the final marks.

Outline of main practical sessions in this subject

practical session topic & duration	(hours)	type of session	class size	no. of 'stations'	no. of staff	location (room)	time allocation
Following costs	2			10-15			
Productions economy	10			10-15			
Lineal Programming	4			2			
Enterprise economy	8			10-15			

(extend table as necessary)

Is attendance at practical work compulsory (YES/NO)† If yes, is it verified, and how?

NO. Although practical work it is not compulsory, the 100% of the students registered in the course attend it.

_____

Primary **course materials** students use for their work and leaning in this subject

Summaries of lectures available for students in the Reprography Unit of our Faculty.

Examination format used (mark all that apply)	(none)	multiple-choice	oral	practical	written papers	
					short	long (essay)
During the semester						
At the end of the subject				X		X

Can students choose when to present themselves for the examination (YES/NO)† SI

How many times is a student permitted to attempt the examinations ? One

What are the prerequisites for taking this subject? None

For what other subjects is this examination a prerequisite? No

Proforma for information on a specific subject

Subject title:	11842 – Farming and Construction projects	Semester of studies in which subject presented:	**A**
Department/unit responsible for teaching the subject.*	ANIMAL PRODUCTION AND FOOD SCIENCE	Number of academic staff responsible for teaching this subject:	**5**

✶ State which Faculty if NOT the veterinary one

Number of individuals assisting with teaching or preparation			
	practical work	clinical work	other work (indicate type)
Support staff			
Postgraduate students			
Undergraduate students			
Practitioners	1		Extramural practices (farms)

State **objective**(s) of theoretical part of teaching in this subject, if this has been defined.

To provide a serie of knowledge in relation to enviromental control, constructions and installations in the different domestic species.

Main themes and hours of lectures in this subject

Theme/field	hours	Theme/field	hours
Confection of stock farming projects	10		
Construction materials	5		
Enviromental control	8		
Installations for bovine	10		
Installations for ovine and caprine	4		
Installations for porcine stock	13		
Installations for equines	2		
Installations for rabbits	2		
Installations for poultry	6		

(extend table as necessary)

Is attendance at lectures compulsory (YES/NO) If YES, is it verified, and how?

NO. It is easy to control due to the reduce number of students (25).

State **objective**(s) of practical part of teaching in this subject, if this has been defined.

To apply the knowledge acquired in the theoretical part of this and other disciplines to the elaboration of an original farming project

Outline of main practical sessions in this subject

practical session topic & duration	(hours)	type of session	class size	no. of 'stations'	no. of staff	location (room)	time allocation
Recognition of construction materials	3	Visits	10		1	SAEA Veterinary Faculty	3 groups x 3 hours
Visits to stock farms	12	Visits to farm	25		2	Stock farms	3 visits x 4 hours
Analysis of installations for porcine stock	4	Visits to porcine farms	4		1	Porcine stocks	6 groups x 4 students

(extend table as necessary)

Is attendance at practical work compulsory (YES/NO)† If yes, is it verified, and how?

NO

Primary **course materials** students use for their work and leaning in this subject

Books, technical magazines and lecture notes. The students receive free graphical material of the subject. The teacher responsible of the subject has published a book: FORCADA, F. "Alojamiento para ganado porcino", Mira Editores, Zaragoza, 303 páginas. November 1997

Examination format used (mark all that apply)	(none)	multiple-choice	oral	practical	written papers	
					short	long (essay)
During the semester						
At the end of the subject		Theoretical	Project defense		Theoretical	

Can students choose when to present themselves for the examination (YES/NO)† Yes
How many times is a student permitted to attempt the examinations ? 2 / year
What are the prerequisites for taking this subject? None
For what other subjects is this examination a prerequisite? No

Proforma for information on a specific subject

Subject title:	11843 – Animal Productions	Semester of studies in which subject presented:	**A**
Department/unit responsible for teaching the subject.*	ANIMAL PRODUCTION AND FOOD SCIENCES	Number of academic staff responsible for teaching this subject:	

✶ State which Faculty if NOT the veterinary one

Number of individuals assisting with teaching or preparation			
	practical work	clinical work	other work (indicate type)
Support staff	1		
Postgraduate students			
Undergraduate students			
Practitioners	5-6		

State **objective**(s) of theoretical part of teaching in this subject, if this has been defined.

Physiological bases of Animal Production and application of the knowledge of the zootechnic sciences. Study of animal products.

Main themes and hours of lectures in this subject

Theme/field	hours	Theme/field	hours
Bovine production (milk)	22		
Bovine production (meat)	32		
Ovine and caprine production	26		
Poultry production	38		
Rabbit production	12		
Porcine production	20		

(extend table as necessary)

Is attendance at lectures compulsory (YES/NO) If YES, is it verified, and how?

NO

State **objective**(s) of practical part of teaching in this subject, if this has been defined.

To complement the theoretical objectives of the subjects.

Outline of main practical sessions in this subject

practical session topic & duration	(hours)	type of session	class size	no. of 'stations'	no. of staff	location (room)	time allocation
Stock farm visitis	5/n		30-40		1-2	Field	
Practices in farms (pultry, rabbits, ovine)	6/n		5-6		1	Stock farms	
Egg quality	2		5-6		1	Laboratory	
Incubation	2		5-6		1	Laboratory	
Meat quality	3		4-6		1	Laboratory	
Dressed carcass quality	2.5		8		2	Slaughterhouse	
Porcine practices	20		2-4		1	Laboratory - Farms	

(extend table as necessary)

Is attendance at practical work compulsory (YES/NO)† If yes, is it verified, and how?

Yes. It is verified calling the roll.

_____

Primary **course materials** students use for their work and leaning in this subject

Slides / transparencies / blackboard. The students receive part of the material for free.

Examination format used (mark all that apply)	(none)	multiple-choice	oral	practical	written papers	
					short	long (essay)
During the semester	1				X	X
At the end of the subject	1				X	X

Can students choose when to present themselves for the examination (YES/NO)† Yes

How many times is a student permitted to attempt the examinations ? each academic year: june-july and september

What are the prerequisites for taking this subject?

For what other subjects is this examination a prerequisite? No

Proforma for information on a specific subject

Subject title:	11844 – Livestock farming	Semester of studies in which subject presented:	**A**
Department/unit responsible for teaching the subject.*	ANIMAL PRODUCTION AND FOOD SCIENCES	Number of academic staff responsible for teaching this subject:	**5**

✶ State which Faculty if NOT the veterinary one

Number of individuals assisting with teaching or preparation			
	practical work	clinical work	other work (indicate type)
Support staff			
Postgraduate students			
Undergraduate students			
Practitioners			

State **objective**(s) of theoretical part of teaching in this subject, if this has been defined.

The subject, aimed at students of the Bromatology Dpt., and optional for students of Medicine and Health Dpt. The specific objectives are:

- The practical application and coordination of the Physiological, Genetic, Nutritional and Reproductive knowledge in the exploitation of the main livestock species.
- A study of the various production systems of current or potential interest, as well as the most common management techniques and the factors which have an influence on the quality and quantity of the product produced.
- The integration of this knowledge in a real life business in order to obtain a maximum economic profitability with respect to environment and animal welfare.

Main themes and hours of lectures in this subject

Theme/field	hours	Theme/field	hours
Dairy bovine production	12		
Bovine production (meat)	12		
Ovine and caprine production	12		
Porcine production	12		
Poultry production	12		

(extend table as necessary)

Is attendance at lectures compulsory (YES/NO) If YES, is it verified, and how?

Yes, but it is not verified.

State **objective**(s) of practical part of teaching in this subject, if this has been defined.

- To know the factors that influence the carcass and meat quality
- To know the factors that influence the egg quality
- To be familiarized with the farming sector through visits to farms and survey of livestock farming

Outline of main practical sessions in this subject

practical session topic & duration	(hours)	type of session	class size	no. of 'stations'	no. of staff	location (room)	time allocation
Meat and carcass quality	2,30	Slaughterhouse and laboratory		4	1	Slaughterhouse and practice laboratory	
Egg quality	2	Laboratory		5	1	Practice laboratry	
Visits to farms	3	Farm		40	1	Livestock farming	

(extend table as necessary)

Is attendance at practical work compulsory (YES/NO)† If yes, is it verified, and how?

Yes. Calling the roll

_____

Primary **course materials** students use for their work and leaning in this subject

Laboratorial material. Books and lecture notes (free and paying)

Examination format used (mark all that apply)	(none)	multiple-choice	oral	practical	written papers	
					short	long (essay)
During the semester	1					X (3 questions / species)
At the end of the subject	1					X (3 questions / species)

Can students choose when to present themselves for the examination (YES/NO)†

How many times is a student permitted to attempt the examinations ?

What are the prerequisites for taking this subject?

For what other subjects is this examination a prerequisite?

Proforma for information on a specific subject

Subject title:	11851 – Reproduction and obstetrics	Semester of studies in which subject presented:	**A**
Department/unit responsible for teaching the subject.*	VETERINARY MEDICINE	Number of academic staff responsible for teaching this subject:	**6**

✶ State which Faculty if NOT the veterinary one

Number of individuals assisting with teaching or preparation			
	practical work	clinical work	other work (indicate type)
Support staff			
Postgraduate students			
Undergraduate students			
Practitioners			

State **objective**(s) of theoretical part of teaching in this subject, if this has been defined.

To acquire the knowledge of all the aspects, both physiological, pathotological and technological, that affect the reproductive organic function of domestic animals useful to man.
The programme includes: pre and post birth, clinical and surgical resolution of problems caused by birth, clinical physiopathology and technology of reproduction.

Main themes and hours of lectures in this subject

Theme/field	hours	Theme/field	hours
Functional anatomy of the genital apparatus	6	Birth	6
Endocrinology of the reproduction	4	Puerperium	4
Physiological base of animal reproduction	10		
Technology of reproduction: Artificial Insemination	10		
Control of reproduction from the zootechnic point of view	6		
Biotechnology with embryons	4		
Progestation	3		
Gestation	7		

(extend table as necessary)

Is attendance at lectures compulsory (YES/NO) If YES, is it verified, and how?

Yes. It is not verified.

State **objective**(s) of practical part of teaching in this subject, if this has been defined.

Dominion and control of the aspects related to the theoretical objectives of the subject: biotechnology applied to reproduction, reproductive control, obstetric manipulations, physiopathology of the reproduction, reproduction and obstetrics.

Outline of main practical sessions in this subject

practical session topic & duration	(hours)	type of session	class size	no. of 'stations'	no. of staff	location (room)	time allocation
Ruminants reproductive control	3	Demonstration	<10 to 20	10 to 20	1	Laboratory	3 x 12
Seminal technology	3	Practical	<10	10	1	Laboratory	3 x 12
Biotechnology of embryons and ovums	5	Practical	<10	10	1	Laboratory	(2+3) x 12
Applied anatomy in animal reproduction	3	Practical	<10	10	1	Laboratory	3 x 12
Obstetric examination and manipulation	4	Demonstration	<10 to 20	10 to 20	1	Laboratory	(2+2) x 12
Reproductive interventions	6	Practical	<10	10	1	Surgery room	(2+4) x 12
Reproductive clinic of equines	6	Clinics	5	5	2	Hospital	(3+3) x 24
Extramural consultations	10	Farms	20 to 50	20 to 50	3-4	Several locations	(4+3+3) x 12

(extend table as necessary)

Is attendance at practical work compulsory (YES/NO)† If yes, is it verified, and how?

Yes. Calling the roll

_____

Primary **course materials** students use for their work and leaning in this subject

Schemes and notes are distribuited at class. Texts of the themes imparted at class are available in the reprography unit of the Faculty.

Examination format used (mark all that apply)	(none)	multiple-choice	oral	practical	written papers	
					short	long (essay)
During the semester		X			X	
At the end of the subject		X		X	X	

Can students choose when to present themselves for the examination (YES/NO)† According to the Faculty guidelines

How many times is a student permitted to attempt the examinations ? According to the Faculty guidelines

What are the prerequisites for taking this subject? Those according to the guidelines

For what other subjects is this examination a prerequisite? There are no prerequisites

Proforma for information on a specific subject

Subject title:	11844 – Livestock farming	Semester of studies in which subject presented:	**A**
Department/unit responsible for teaching the subject.*	ANIMAL PRODUCTION AND FOOD SCIENCES	Number of academic staff responsible for teaching this subject:	**5**

✶ State which Faculty if NOT the veterinary one

Number of individuals assisting with teaching or preparation			
	practical work	clinical work	other work (indicate type)
Support staff			
Postgraduate students			
Undergraduate students			
Practitioners			

State **objective**(s) of theoretical part of teaching in this subject, if this has been defined.

The subject, aimed at students of the Bromatology Dpt., and optional for students of Medicine and Health Dpt. The specific objectives are:

- The practical application and coordination of the Physiological, Genetic, Nutritional and Reproductive knowledge in the exploitation of the main livestock species.
- A study of the various production systems of current or potential interest, as well as the most common management techniques and the factors which have an influence on the quality and quantity of the product produced.
- The integration of this knowledge in a real life business in order to obtain a maximum economic profitability with respect to environment and animal welfare.

Main themes and hours of lectures in this subject

Theme/field	hours	Theme/field	hours
Dairy bovine production	12		
Bovine production (meat)	12		
Ovine and caprine production	12		
Porcine production	12		
Poultry production	12		

(extend table as necessary)

Is attendance at lectures compulsory (YES/NO) If YES, is it verified, and how?

Yes, but it is not verified.

State **objective**(s) of practical part of teaching in this subject, if this has been defined.

- To know the factors that influence the carcass and meat quality
- To know the factors that influence the egg quality
- To be familiarized with the farming sector through visits to farms and survey of livestock farming

Outline of main practical sessions in this subject

practical session topic & duration	(hours)	type of session	class size	no. of 'stations'	no. of staff	location (room)	time allocation
Meat and carcass quality	2,30	Slaughterhouse and laboratory		4	1	Slaughterhouse and practice laboratory	
Egg quality	2	Laboratory		5	1	Practice laboratry	
Visits to farms	3	Farm		40	1	Livestock farming	

(extend table as necessary)

Is attendance at practical work compulsory (YES/NO)† If yes, is it verified, and how?

Yes. Calling the roll

_____

Primary **course materials** students use for their work and leaning in this subject

Laboratorial material. Books and lecture notes (free and paying)

Examination format used (mark all that apply)	(none)	multiple-choice	oral	practical	written papers	
					short	long (essay)
During the semester	1					X (3 questions / species)
At the end of the subject	1					X (3 questions / species)

Can students choose when to present themselves for the examination (YES/NO)†

How many times is a student permitted to attempt the examinations ?

What are the prerequisites for taking this subject?

For what other subjects is this examination a prerequisite?

Proforma for information on a specific subject

Subject title:	11845 – Meat science and technology	Semester of studies in which subject presented:	**A**
Department/unit responsible for teaching the subject.*	ANIMAL PRODUCTION AND FOOD SCIENCE	Number of academic staff responsible for teaching this subject:	**2**

✶ State which Faculty if NOT the veterinary one

Number of individuals assisting with teaching or preparation			
	practical work	clinical work	other work (indicate type)
Support staff			
Postgraduate students			
Undergraduate students			
Practitioners			
	2		

State **objective**(s) of theoretical part of teaching in this subject, if this has been defined.

To provide a global, complete and deep vision of the composition, characteristics, properties, obtaining, processing and conservation of meat, as well as the elaboration, properties and defects of all meat products. All of this, from the chemical, microbiological, functional, nutritional, sensorial and technological points of view.

Main themes and hours of lectures in this subject

Theme/field	hours	Theme/field	hours
Composition, structure and functions of the muscle	15		
Fresh meat: quality parameters and technology of meat for consumption	35		
Technology of meat products.	40		

(extend table as necessary)

Is attendance at lectures compulsory (YES/NO) If YES, is it verified, and how?

No

State **objective**(s) of practical part of teaching in this subject, if this has been defined.

They have not been defined, but they can be summarized in: practical application of the theoretical objetives.

Outline of main practical sessions in this subject

practical session topic & duration	(hours)	type of session	class size	no. of 'stations'	no. of staff	location (room)	time allocation
Fresh meat properties: water retention capacity, evolution of the pH, determination and properties of the colagene.	3	Laboratory	6	6	1	Dep.	
Fresh meat technology: packaging systems. determination of colour and textures.	3	Laboratory	6	6	1	Dep.	
Cured meat products: elaboration of cured meat products using different elaboration processes and formulas.	10	Processing Plant	12	12	1	Pilot Plant	
Cooked meat products: frankfurt type sauseges using different elaboration processes and formulas.	10	Processing Plant	12	12	1	Pilot Plant	
Analytical determinations of interest in meat technology: nitrates and fosfates	6	Laboratory	6	6	1	Pilot Plant	
Sensorial analysis of meat products	6	Tasting room	12	12	1	Pilot Plant	
Seminars and monograficals	12	Office and lecture hall	1 / 50		1	Lecture hall	
Visits to meat industries	10	Industries	50		2	Industries	

(extend table as necessary)

Is attendance at practical work compulsory (YES/NO)† If yes, is it verified, and how?

Yes. Calling the roll

Primary **course materials** students use for their work and leaning in this subject

Bibliography recommended, copies of the slides shown in class and lecture notes.
The copies of the slides are available in the reprograhy unit of the Faculty (paying).

Examination format used (mark all that apply)	(none)	multiple-choice	oral	practical	written papers	
					short	long (essay)
During the semester						X
At the end of the subject						X

Can students choose when to present themselves for the examination (YES/NO)† Yes
How many times is a student permitted to attempt the examinations ? Two
What are the prerequisites for taking this subject? None
For what other subjects is this examination a prerequisite? No

Proforma for information on a specific subject

Subject title:	11846 – Lactology	Semester of studies in which subject presented:	**A**
Department/unit responsible for teaching the subject.*	ANIMAL PRODUCTION AND FOOD SCIENCES	Number of academic staff responsible for teaching this subject:	**2**

✶ State which Faculty if NOT the veterinary one

Number of individuals assisting with teaching or preparation			
	practical work	clinical work	other work (indicate type)
Support staff	1 Technician		
Postgraduate students	1		
Undergraduate students			
Practitioners			

State **objective**(s) of theoretical part of teaching in this subject, if this has been defined.

The study of the subject should provide fundamental knowledge on the biochemistry, microbiology and technology of milk and dairy products.
For this, the principal components of milk and its properties, especially those affected by and related to technological treatments are treated. Also associations and antagonisms between the microorganisms of milk, as well as those that are interesting from a technological point of view are studied. The processing methods of the different types of milk and diary products are revised with special attention to each stage objectives and the equipment. Moreover, the students study the main alterations of these products and how to prevent them.

Main themes and hours of lectures in this subject

Theme/field	hours	Theme/field	hours
Introduction. Sources of information. General bibliography	1	Detection of frauds	2
General composition of milk. Variation factors	2	Collection and refrigeration of milk. Operations prior to the thermal treatment of milk.	5
Milk fats	4	Pasteurisation and sterilisation of milk	6
Lactose	5	Concetrated and powdered milk	6
Proteins. Caseins. Coagulation. Lactoserum proteins	6	Filtration processes using membranes and its application to milk technology	2
Protein products of milk	2	Fermented milks	6
Vitamins and minerals	1	Cream	3
Enzymes	2	Butter	5
Physical properties of milk. Organoleptic properties	7	Ice creams and dairy desserts	3
Microbiology of milk. Associations and antagonisms between the microorganisms of milk. Cultures.	6	Cheese	16

(extend table as necessary)

Is attendance at lectures compulsory (YES/NO) If YES, is it verified, and how?

NO

State **objective**(s) of practical part of teaching in this subject, if this has been defined.

To acquire practice in analytical techniques used to determine the components of milk, its products and also to carry out the processing stages of the main dairy products manufactured in the Planta Piloto building.

Outline of main practical sessions in this subject

practical session topic & duration	(hours)	type of session	class size	no. of 'stations'	no. of staff	location (room)	time allocation
Determination of lactose in milk using different techniques	4	Practical in laboratory	10	12	1	Laboratory	4 hours / week
Lipolysis. Identification of sterilised milks.	4	Practical in laboratory	10	12	1	Laboratory	4 hours / week
Acid and enzymatic coagulation	4	Practical in laboratory	10	12	1	Laboratory	4 hours / week
Detection of fraudes by substitution of species	4	Practical in laboratory	10	12	1	Laboratory	4 hours / week
Determination of physical-chemical parameters	4	Practical in laboratory	10	12	1	Laboratory	4 hours / week
Skimming. Cream and butter elaboration.	5	Planta Piloto	10	15	2	Pilot Plant	5 hours / week
Manufacturing of firm and creamy yoghurt	5	Planta Piloto	10	15	2	Pilot Plant	5 hours / week
Manufacturing of fresh cheese	5	Planta Piloto	10	15	2	Pilot Plant	5 hours / week
Sensorial evaluation of manufactured products	5	Planta Piloto	10	15	2	Pilot Plant	5 hours / week
Visitis to milk industries	8	Visits	30		2	Industries	3 visits / academic year
Seminars	8	Seminars	30	60	1	Lecture Hall	3 hours / trimester

(extend table as necessary)

Is attendance at practical work compulsory (YES/NO)† If yes, is it verified, and how?

YES. It is verified calling the roll

_____

Primary **course materials** students use for their work and leaning in this subject

Schemes and graphical material used at class are available in the reprograhy unit of the Faculty. Also, part of the material is in the web page url: www.unizar.es/cta. Protocols of practical classes are available in both formats.

Examination format used (mark all that apply)	(none)	multiple-choice	oral	practical	written papers	
					short	long (essay)
During the semester						X
At the end of the subject						X

Can students choose when to present themselves for the examination (YES/NO)† Yes

How many times is a student permitted to attempt the examinations ?Two times (june/july – september)

What are the prerequisites for taking this subject? None

For what other subjects is this examination a prerequisite? No

Proforma for information on a specific subject

Subject title:	11847 – Fish Technology	Semester of studies in which subject presented:	**A**
Department/unit responsible for teaching the subject.*	ANIMAL PRODUCTION AND FOOD SCIENCES	Number of academic staff responsible for teaching this subject:	**2**

✶ State which Faculty if NOT the veterinary one

Number of individuals assisting with teaching or preparation			
	practical work	clinical work	other work (indicate type)
Support staff			
Postgraduate students	1		
Undergraduate students			
Practitioners			

State **objective**(s) of theoretical part of teaching in this subject, if this has been defined.

To let the student to know in some detail the elaboration methods of the products derived from the more current fish and to acquire the knowledge that will let him valorate the fish quality.

Main themes and hours of lectures in this subject

Theme/field	hours	Theme/field	hours
Biochemistry of fish: composition of fish. Variability in the composition and their causes. Classification of fish.	7	Salted cod and smoked salmon	1
Postmortem transformation in fish	1	Processing of tuna	1
Fishing in Spain and in the world	1	Processing of sardine	1
Systems of fishing and fish quality	2	Processing of anchovy	1
Levels of freshness	1	Marinades	1
Refrigeration of fish. Modificated athmospheres	2	Elaboration of surimi and other products	2
Fish freezing	2	Fish subproducts	1
Processing of hake	1	Effluent treatments	1
Conservation of fish by salting, smoking and dehydration	3	Marketing of products derived from fishing	1

(extend table as necessary)

Is attendance at lectures compulsory (YES/NO) If YES, is it verified, and how?

NO

State **objective**(s) of practical part of teaching in this subject, if this has been defined.

Make the students learn the elaboration process at a small scale of fish based products, manufacturing them by themselves. To complement the practical objectives through visits to fish industries and to let the student know the real situation of fish production.
The student will learn how to control the most important quality parameters of fish and derivations.

Outline of main practical sessions in this subject

practical session topic & duration	(hours)	type of session	class size	no. of 'stations'	no. of staff	location (room)	time allocation
Measurement of trimethylamine in fish	2	Laboratory	5		1		
Determination of the R-value in fish	2	Laboratory	5		1		
Levels of freezing/unfreezing	1	Laboratory	5		1		
Elaboration of marinade fish	3	Pilot Plant	10		3		
Elaborationi of smoked fish	3	Pilot Plant	10		3		
Elaboration of conserves	4	Visit to industries	30		1		
Elaboration of semiconserves	3	Visit to industries	30		1		
Elaboration of surimi and derivations	4	Visit to industries	30		1		

(extend table as necessary)

Is attendance at practical work compulsory (YES/NO)† If yes, is it verified, and how?

NO

_____

Primary **course materials** students use for their work and leaning in this subject

Protocols of the elaboration of products as well as the material used at class is available in the reprography unit of the Faculty.

Examination format used (mark all that apply)	(none)	multiple-choice	oral	practical	written papers	
					short	long (essay)
During the semester					X	
At the end of the subject					X	

Can students choose when to present themselves for the examination (YES/NO)† YES

How many times is a student permitted to attempt the examinations ? Two according to the guidelines of the Faculty

What are the prerequisites for taking this subject?

For what other subjects is this examination a prerequisite? No

ANNEX n 4

ADDITIONAL INFORMATION IN RELATION TO THE CURRICULUM

ELECTIVE SUBJECTS
1st – 2nd CYCLE

Ethnology of Pets and Competition Animals

Animal Experiments

Computer Tools for Scientific Experiments

Chemical Analysis

Wild Fauna, Genetic Studies and Conservation of the Biodiversity

Biotechnology Methods

Food Microbiology

Neurophysiology

Pasture and Fodder Production

Economics and Management of Agrifood Companies

Proforma for information on a specific subject

Subject title:	23048 – Ethnology of pets and competition animals	Semester of studies in which subject presented:	**2C**
Department/unit responsible for teaching the subject.*	ANIMAL PRODUCTION AND FOOD SCIENCES	Number of academic staff responsible for teaching this subject:	**5**

✶ State which Faculty if NOT the veterinary one

Number of individuals assisting with teaching or preparation			
	practical work	clinical work	other work (indicate type)
Support staff			
Postgraduate students			
Undergraduate students			
Practitioners			

State **objective**(s) of theoretical part of teaching in this subject, if this has been defined.

Main themes and hours of lectures in this subject

Theme/field	hours	Theme/field	hours
Canine breed	5		
Cats	2		
Lagomorphs and rodents	3		
Birds	7		
Amphibious and reptiles	3		
Aquarium fishes	5		
Cites agreement	1		
Equines	4		

(extend table as necessary)

Is attendance at lectures compulsory (YES/NO) If YES, is it verified, and how?

NO

State **objective**(s) of practical part of teaching in this subject, if this has been defined.

Identification and differentiation Main breeds and species Pets and competiton animals

Outline of main practical sessions in this subject

practical session topic & duration	(hours)	type of session	class size	no. of 'stations'	no. of staff	location (room)	time allocation
Canine breeds differentiation	10	Slides	50-100		1	Classroom	1h/week
Cat breeds differentiation	1	Slides	50-100		1	Classroom	1h/week
Rodents differentiation	1	Slides	50-100		1	Classroom	1h/week
Birds differentiation	1	Slides	50-100		1	Classroom	1h/week
Terrarium and aquarium animals	1	Slides	50-100		1	Classroom	1h/week

(extend table as necessary)

Is attendance at practical work compulsory (YES/NO)† If yes, is it verified, and how?

NO

_____

Primary **course materials** students use for their work and leaning in this subject

Lecture notes available in the reprography unit of the Faculty

Examination format used (mark all that apply)	(none)	multiple-choice	oral	practical	written papers	
					short	long (essay)
During the semester						
At the end of the subject		X		X	X	

Can students choose when to present themselves for the examination (YES/NO)† YES

How many times is a student permitted to attempt the examinations ? 6

What are the prerequisites for taking this subject? NONE

For what other subjects is this examination a prerequisite? NO

Proforma for information on a specific subject

Subject title:	23050 - Animal Experimentation	Semester of studies in which subject presented:	**1C**
Department/unit responsible for teaching the subject.*	PATHOLOGICAL ANATOMY, LEGAL MEDICINE, TOXICOLOGY AND HEALTH LEGISLATION	Number of academic staff responsible for teaching this subject:	**1**

✶ State which Faculty if NOT the veterinary one

Number of individuals assisting with teaching or preparation			
	practical work	clinical work	other work (indicate type)
Support staff	2		
Postgraduate students			
Undergraduate students			
Practitioners			

State **objective**(s) of theoretical part of teaching in this subject, if this has been defined.

To learn the animal types and animal species commonly used, zootechnic characteristics, genetics and health, as well as techniques and methods in research procedures.

Main themes and hours of lectures in this subject

Theme/field	hours	Theme/field	hours
Legislation , ethics and alternatives	5		
Biology and maintaining of the most used species	9		
Handling and manipulation. Wellbeing and related factors	10		
Health and safety. Experiment design	6		

(extend table as necessary)

Is attendance at lectures compulsory (YES/NO) If YES, is it verified, and how?

NO

State **objective**(s) of practical part of teaching in this subject, if this has been defined.

With what do I work? How do I work? How do I change my work? What are the results of my work?

Outline of main practical sessions in this subject

practical session topic & duration (hours)		type of session	class size	no. of 'stations'	no. of staff	location (room)	time allocation
Video shows about handling and manipulation of experimentation animals	2	Practical session		15	2	Assigned by the Faculty	
Handling and sexing most common animals. Wellbeing	2	Practical session		8	2	Laboratory	
Animal marking, distribution and growth curves.	2	Practical session		8	2	Laboratory	
Introduction to identification techniques of experimentation animals	2	Practical session		10	2	Laboratory	
Types of facilities for the correct accommodation of animals, depending on their sanitary category.	2	Practical session		20	2	Assigned by the Faculty	
General approach to reasearch with animals	2	Seminar		30	2	Assigned by the Faculty	
Cleaning and disinfection critical points in animal facilities.	1	Seminar		30	2	Assigned by the Faculty	
Search of information related to animal experimentation in webpages	2	Practical session		12	1	Assigned by the Faculty	

(extend table as necessary)

Is attendance at practical work compulsory (YES/NO)† If yes, is it verified, and how?

Yes. The students should give to the teacher a practical work.

_____

Primary **course materials** students use for their work and leaning in this subject

Videos, CD, DVD, computer and other usual elements.

Examination format used (mark all that apply)	(none)	multiple-choice	oral	practical	written papers	
					short	long (essay)
During the semester						
At the end of the subject		X			X	

Can students choose when to present themselves for the examination (YES/NO)† Yes
How many times is a student permitted to attempt the examinations ? 2
What are the prerequisites for taking this subject? Those establised by the Faculty
For what other subjects is this examination a prerequisite? NO

Proforma for information on a specific subject

Subject title:	23052 – Computer tool in experimental tools	Semester of studies in which subject presented:	**1C**
Department/unit responsible for teaching the subject.*	APPLIED MATHEMATICS	Number of academic staff responsible for teaching this subject:	**1**

✶ State which Faculty if NOT the veterinary one

Number of individuals assisting with teaching or preparation			
	practical work	clinical work	other work (indicate type)
Support staff			
Postgraduate students			
Undergraduate students			
Practitioners			

State **objective**(s) of theoretical part of teaching in this subject, if this has been defined.

Basic knowledge about linear programming and statistical quality control in order to implement them using a computer.

Main themes and hours of lectures in this subject

Theme/field	hours	Theme/field	hours
Linear programming and livestock rationing	5		
Stastistical quality control	5		

(extend table as necessary)

Is attendance at lectures compulsory (YES/NO) If YES, is it verified, and how?

NO

State **objective**(s) of practical part of teaching in this subject, if this has been defined.

To provide the student with basic knowledges about common computer tools and with other specific of veterinary.

Outline of main practical sessions in this subject

practical session topic & duration	(hours)	type of session	class size	no. of 'stations'	no. of staff	location (room)	time allocation
Windows	2	Computer practicals	20	10 computers	1	Computer room	2
Internet used as a tool	4	Computer practicals	20	10 computers	1	Computer room	
Microsoft word	6	Computer practicals	20	10 computers	1	Computer room	
Microsoft excel	2	Computer practicals	20	10 computers	1	Computer room	
Microsoft powerpoint	6	Computer practicals	20	10 computers	1	Computer room	
FileMaker Pro	6	Computer practicals	20	10 computers	1	Computer room	
Basic utilities: antivirus, dictionaries, translators, digital cameras, etc	3	Computer practicals	20	10 computers	1	Computer room	
Specific programmes for veterinary use: - QSB - Stat Graphics Plus	6	Computer practicals	20	10 computers	1	Computer room	

(extend table as necessary)

Is attendance at practical work compulsory (YES/NO)† If yes, is it verified, and how?

NO

Primary **course materials** students use for their work and leaning in this subject

Lecture notes, links, exercices, bibliography. The material is available in the Teaching Web of the teacher. The students registered in this subject have free access.

Examination format used (mark all that apply)	(none)	multiple-choice	oral	practical	written papers	
					short	long (essay)
During the semester						
At the end of the subject				X		

Can students choose when to present themselves for the examination (YES/NO)† YES

How many times is a student permitted to attempt the examinations ? 3

What are the prerequisites for taking this subject?

For what other subjects is this examination a prerequisite?

Proforma for information on a specific subject

Subject title:	23063 – Chemical analysis	Semester of studies in which subject presented:	**2C**
Department/unit responsible for teaching the subject.*	Analytical Chemistry	Number of academic staff responsible for teaching this subject:	**1**

✶ State which Faculty if NOT the veterinary one

Number of individuals assisting with teaching or preparation			
	practical work	clinical work	other work (indicate type)
Support staff			
Postgraduate students			
Undergraduate students			
Practitioners			

State **objective**(s) of theoretical part of teaching in this subject, if this has been defined.

To teach the veterinary students the analytical basics that are goint to be of use to them in their professional career. On th basis of analytical processses, the students are taught the various operations that have to be carried out from the moment the sample is taken to the acquisition of results. They are explained how to take samples and the different options to put it in solution and to analyze it. They are explained the different analytical techniques, both classical and instrumental, at their disposal to carry out an analysis, stressing the advantages and drawbacks of each, so that the student is able to choose the moset appropriate form to solve the problem in each case. They are also briefly introduced to data processing and interpretation.

Main themes and hours of lectures in this subject

Theme/field	hours	Theme/field	hours
Introduction to chemical analysis	2		
Analytical signal treatment	4		
Analytical process	5		
Analytical problem	4		
Evaluation of analytical results	5		
Gravimetric analysis	3		
Volumetric analysis	6		
Volumetric applications	3		
Introduction to analytical instrumental techniches	8		

(extend table as necessary)

Is attendance at lectures compulsory (YES/NO) If YES, is it verified, and how?

NO

State **objective**(s) of practical part of teaching in this subject, if this has been defined.

To verify and inforced the themes of the theoretical classes.
To homogeneize the students level
Skill learning (handling anaylitical instruments, etc...)
Work as a team

Outline of main practical sessions in this subject

practical session topic & duration (hours)		type of session	class size	no. of 'stations'	no. of staff	location (room)	time allocation
Looking for information about chemical analysis. Basic calculation on cuantitative determinations							
Qualitative and cuantitative analysis. Acid determination of powdered milk. Identification of phenolphthalein adulteration							
Statistical treatment of results and making decisions.							
Analytical process stages. Determination of Fe content in a vitamin complex by means of a UV-vis molecular absorption							
Interferences and calibration. Determination of Fe contents in wine samples.							

(extend table as necessary)

Is attendance at practical work compulsory (YES/NO)† If yes, is it verified, and how?

Yes. Calling the roll. Moreover, the guides of the practicals are collected, for their later assesment.

Primary **course materials** students use for their work and leaning in this subject

Lecture notes and problems collections elaborated by the teacher. The material is available both in the reprography unit of the Faculty (paying) and also in ADD (Virtual Campus) http://add.unizar.es

Examination format used (mark all that apply)	(none)	multiple-choice	oral	practical	written papers	
					short	long (essay)
During the semester				X		
At the end of the subject					X	

Can students choose when to present themselves for the examination (YES/NO)† YES
How many times is a student permitted to attempt the examinations ? 2
What are the prerequisites for taking this subject? None
For what other subjects is this examination a prerequisite? No

Proforma for information on a specific subject

Subject title:	23051 – Wild fauna. Genetic studies and preservation of biodiversity	Semester of studies in which subject presented:	**2C**
Department/unit responsible for teaching the subject.*	ANATOMY, EMBRYOLOGY AND ANIMAL GENETICS	Number of academic staff responsible for teaching this subject:	**5**

✶ State which Faculty if NOT the veterinary one

Number of individuals assisting with teaching or preparation			
	practical work	clinical work	other work (indicate type)
Support staff	4		
Postgraduate students			
Undergraduate students	20		20 Seminars
Practitioners	2		2 visits to recovery centers

State **objective**(s) of theoretical part of teaching in this subject, if this has been defined.

The student will receive a basic understanding of the wild fauna species to be able to manage, make use of, and carry out sustainable protection. The student will also analyse the work of the zoo-technical veterinarian as a specialist in wild fauna and the importance of interdisciplinary work, including the fields of ecology, zoology, fauna management, conservation biology, epidemiology and medicine of populations.

Main themes and hours of lectures in this subject

Theme/field	hours	Theme/field	hours
Genetic and zoological bases	2	Genetic control of repopulation	2
Genetic character identification methodologies	2	New reproductive technologies in bird species and wild mammals	2
Biodiversity and its importance. Study and conservation of genetic resources	2	Study of the main pathologies which wild species suffer from	2
Genetic mechanisms which deteriorate genetic structure of races and populations.	2	Contusions and injuries	2
Study techniques of wild species	2	Legislation on the conservation of animal genetic resources	2
Animal species in danger of extinction	2	Organization of the conservation of races	2
Conservation measures	2		
Conservation methods of animal genetic resources	2		
Genetic control of populations	2		

(extend table as necessary)

Is attendance at lectures compulsory (YES/NO) If YES, is it verified, and how?

NO

State **objective**(s) of practical part of teaching in this subject, if this has been defined.

To complement the theoretical part through laboratory and external practicals. To develop the knowledge about the geographical areas and main wild fauna habitats. Handling, surgery and medical techniques for the treatment of the main pathologies studied in the subject.

Outline of main practical sessions in this subject

practical session topic & duration	(hours)	type of session	class size	no. of 'stations'	no. of staff	location (room)	time allocation
Identification of genetic markets. Nuclear and mitochondrial DNA	2	Laboratory practicals				Laboratoty	
Sexing by means of DNA molecular methods. Birds and mammals	2	Laboratory practicals				Laboratoty	
Genetics and populations. Genotypes and genetic frequencies. Hardy-Weinberg genetic equilibrium	2	Laboratory practicals				Laboratory	
Factors which alter the Hardy-Weinberg equilibrium	2	Laboratory practicals				Laboratory	
Mutation, migration and selection	2	Laboratory practicals				Laboratory	
Small populations	2	Laboratory practicals				Laboratoty	
Access to data banks and computer networks	2	Computer				Computer room	
Bioinformatics. Sequence analysis. Genetic distances and evolutionary trees	2	Outings				Visits to natural parks, areas, farms etc	

(extend table as necessary)

Is attendance at practical work compulsory (YES/NO)† If yes, is it verified, and how?

Yes. Calling the roll

Primary **course materials** students use for their work and leaning in this subject

Lecture notes, texts, web pages related to the subject. Books available in the library center. Selfdirected software used in practicals.

Examination format used (mark all that apply)	(none)	multiple-choice	oral	practical	written papers	
					short	long (essay)
During the semester		X		X	X	problems
At the end of the subject		X		X	X	problems

Can students choose when to present themselves for the examination (YES/NO)† YES

How many times is a student permitted to attempt the examinations ? 2

What are the prerequisites for taking this subject? The student must pass the subject Genetics before enrolling in Wild Fauna

For what other subjects is this examination a prerequisite? NO

Proforma for information on a specific subject

Subject title:	23053 – Methods in Biotechnology	Semester of studies in which subject presented:	**2C**
Department/unit responsible for teaching the subject.*	BIOCHEMISTRY AND MOLECULAR AND CELLULAR BIOLOGY	Number of academic staff responsible for teaching this subject:	**8**

✶ State which Faculty if NOT the veterinary one

Number of individuals assisting with teaching or preparation			
	practical work	clinical work	other work (indicate type)
Support staff	2		
Postgraduate students			
Undergraduate students			
Practitioners			

State **objective**(s) of theoretical part of teaching in this subject, if this has been defined.

To know and deepen in the fundamental methods of biotechnological processes, specially those applied to clinical and industrial fields.

Main themes and hours of lectures in this subject

Theme/field	hours	Theme/field	hours
Animal monitoring	9		
Cell culture	9		
Cell separation	9		
Cell viability	9		
Cloning and transformation	9		
PCR. Types. Sequencing	9		
Separating proteins	9		
Western, Southern, Northern blot	9		
Immunohistochemistry, enzimo IW	9		

(extend table as necessary)

Is attendance at lectures compulsory (YES/NO) If YES, is it verified, and how?

Yes.

State **objective**(s) of practical part of teaching in this subject, if this has been defined.

The student is taught the most common cellular and molecular biology techniques applied to live and in vitro samples

Outline of main practical sessions in this subject

practical session topic & duration	(hours)	type of session	class size	no. of 'stations'	no. of staff	location (room)	time allocation
Animal monitoring: Sedation, perfusion and taking samples in laboratory animals	10-13		6	6			
Cultivating epithelial cell lines	10-13		6	6			
Cell viability: fluorescence	10-13		6	6			
Cloning of DNA fragments	10-13		6	6			
PCR. Sequencing	10-13		6	6			
Separating proteins	10-13		6	6			
Western, Southern blot	10-13		6	6			
Detection of the proteins of membranes	10-13		6	6			

(extend table as necessary)

Is attendance at practical work compulsory (YES/NO)† If yes, is it verified, and how?

Yes. It is verified calling the roll.

_____

Primary **course materials** students use for their work and leaning in this subject

Web pages of each methodologies. What is needed for experimental development

Examination format used (mark all that apply)	(none)	multiple-choice	oral	practical	written papers	
					short	long (essay)
During the semester						
At the end of the subject				X	X	

Can students choose when to present themselves for the examination (YES/NO)† No

How many times is a student permitted to attempt the examinations ? One

What are the prerequisites for taking this subject? To be enrolled in second cycle

For what other subjects is this examination a prerequisite? None

Proforma for information on a specific subject

Subject title:	23054 – Food Microbiology	Semester of studies in which subject presented:	**2C**
Department/unit responsible for teaching the subject.*	Animal Production and Food Science	Number of academic staff responsible for teaching this subject:	**1**

✶ State which Faculty if NOT the veterinary one

Number of individuals assisting with teaching or preparation			
	practical work	clinical work	other work (indicate type)
Support staff	1		Cleaning and mantaining of the material and machines
Postgraduate students			
Undergraduate students			
Practitioners	1 veteterinary		

State **objective**(s) of theoretical part of teaching in this subject, if this has been defined.

To provide the student the knowledge and skills to use the information sources.
To recommend the most appropriate method to count specific groups of micro-organisms transmitted by food.
To know, isolate and identify pathogenic micro organisms or toxins produced by them in food
To master the analysis technique and know the criteria which the sampling programmes are based on, to be able to judge the microbiological quality of foods.

Main themes and hours of lectures in this subject

Theme/field	hours	Theme/field	hours
Most common micro organisms found in food	2	Two or three category sampling plans. The bases of the selection. Interpretation of the results	2
Classical and modern methods of counting micro organisms	2	Food handlers and food establishments as reservoirs for pathogenic microorganisms	2
Enterobacteriaceae family	2		
E coli Pathotypes STEC (E coli, shiga toxine produder)	2		
Salmonella genus	3		
Campylobacter: C. jejuni genus	3		
Listeria: L. monocytogenes genus	3		
Food as carriers of viruses	2		
Know how to investigate and epidemic outbreak of infection or food poisoning	2		

(extend table as necessary)

Is attendance at lectures compulsory (YES/NO) If YES, is it verified, and how?

NO

State **objective**(s) of practical part of teaching in this subject, if this has been defined.

To know how to take samples depending on the food presentation and how to make dilutions.
To prepare correctly the systems of culture used in food microbiology.
To know how to distinguish between the presumed colonies in cultures.
To know the basis of the presumed tests for the identification of micro organisms
To give results of the counting and researchs and their correct expresion.

Outline of main practical sessions in this subject

practical session topic & duration (hours)		type of session	class size	no. of 'stations'	no. of staff	location (room)	time allocation
Practical tasks on taking samples, dilutions and foods. Counting aerobic mesophiles in foods	2	practicals	8	8	1	Laboratory	In 4 groups
Counting using the NMP techniques (coliphorms and enterococcus)	2	practicals	8	8	1	Laboratory	In 4 groups
Counting of enterobacteria in food. Confirmation tests	1	practicals	8	8	1	Laboratory	In 4 groups
Researching *Salmonella* in food	2	practicals	8	8	1	Laboratory	In 4 groups
Researching *Listeria monocytogenes* in food	2	practicals	8	8	1	Laboratory	In 4 groups
Moulds and leavens counting	1	practicals	8	8	1	Laboratory	In 4 groups
Counting Clotridios S-R and *C. Perfringens* in foods	1	practicals	8	8	1	Laboratory	In 4 groups
Research and counting of *Staphylococcus aureus* in food. Coagulase tests and the Dnase test	1	practicals	8	8	1	Laboratory	In 4 groups
Practical tasks on pathogenic transfer by food manipulators, surface counts and estimation of environmental flora	1,30	practicals	8	8	1	Laboratory	In 4 groups
Seminars	1,30	theoreticals	8	15	1	Seminar halls	In 1 groups

(extend table as necessary)

Is attendance at practical work compulsory (YES/NO)† If yes, is it verified, and how?

YES. Because of the reduced number of students attending practicals and the practicals distribution is easy to control it.

Primary **course materials** students use for their work and leaning in this subject

Lecture notes
Recommended bibliography in the unit library and in the library of the Faculty
Practicals notebook
Every material used by the teacher is given to the subject Delegate who takes it to the reprography unit so the students can photocopied them.

Examination format used (mark all that apply)	(none)	multiple-choice	oral	practical	written papers	
					short	long (essay)
During the semester	X					
At the end of the subject			not compulsory	X	X	X

Can students choose when to present themselves for the examination (YES/NO)† YES
How many times is a student permitted to attempt the examinations ? 2
What are the prerequisites for taking this subject? None
For what other subjects is this examination a prerequisite? no

Proforma for information on a specific subject

Subject title:	23055 – Neurophysiology	Semester of studies in which subject presented:	**2C**
Department/unit responsible for teaching the subject.*	PHARMACOLOGY AND PHYSIOLOGY	Number of academic staff responsible for teaching this subject:	

✶ State which Faculty if NOT the veterinary one

Number of individuals assisting with teaching or preparation			
	practical work	clinical work	other work (indicate type)
Support staff	1		
Postgraduate students	2		
Undergraduate students			
Practitioners			

State **objective**(s) of theoretical part of teaching in this subject, if this has been defined.

1.- To study the nervous system functions of mammalian animals.
2.- To know the mechanisms implicated in the organic functions.

Main themes and hours of lectures in this subject

Theme/field	hours	Theme/field	hours
Basic functions of nervous system			
Synaptic transmission			
Somesthetic sensory mechanisms			
Spinal cord and brainstem function			
Brain regulation of motor activity			
Neurophysiology of consciusness			
Learning and memory			
The eye and vision			
Special senses			

(extend table as necessary)

Is attendance at lectures compulsory (YES/NO) If YES, is it verified, and how?

Yes, but we do not control it

State **objective**(s) of practical part of teaching in this subject, if this has been defined.

Training in neurophysiological techniques and obtaining the abilities to analyze neurophysiological alterations.

Outline of main practical sessions in this subject

practical session topic & duration (hours)		type of session	class size	no. of 'stations'	no. of staff	location (room)	time allocation
Clinical correlations: lower motor neuron disease							
Clinical correlations: cerebellar hypoplasia							
Clinical examinations of cranial nerves and spinal segmental reflexes							

(extend table as necessary)

Is attendance at practical work compulsory (YES/NO)† If yes, is it verified, and how?

Yes. We control the attendance

_____

Primary **course materials** students use for their work and leaning in this subject

The students have a copy of the slides shown in theoretical classes. The students have information about bibliography of the subject.

Examination format used (mark all that apply)	(none)	multiple-choice	oral	practical	written papers	
					short	long (essay)
During the semester						
At the end of the subject		X			X	

Can students choose when to present themselves for the examination (YES/NO)† Yes

How many times is a student permitted to attempt the examinations ? Two

What are the prerequisites for taking this subject?

For what other subjects is this examination a prerequisite? No

Proforma for information on a specific subject

Subject title:	23059 – Pasture and fodder production	Semester of studies in which subject presented:	**2C**
Department/unit responsible for teaching the subject.*	AGRICULTURE AND AGRARIAN ECONOMICS	Number of academic staff responsible for teaching this subject:	**3**

✶ State which Faculty if NOT the veterinary one

Number of individuals assisting with teaching or preparation			
	practical work	clinical work	other work (indicate type)
Support staff	1		
Postgraduate students			
Undergraduate students			
Practitioners			

State **objective**(s) of theoretical part of teaching in this subject, if this has been defined.

To provide knowledge on the production, management, maintenance, farming (pasture or grazing) and the conservation of forage and grazing resources for animal production of farming linked to the soil (large scale ruminants, horses, pigs, etc). All of this, with a multifunctional view of livestock farming based on pastures: utilisation of own resources, respect and conservation of the agro-forestry-pasture ecosystem and the biodiversity, health and wellbeing of animals and safety, health and quality of the food produced.

Main themes and hours of lectures in this subject

Theme/field	hours	Theme/field	hours
Concept of pasture. Pasturing. Fodder. Intensiveand extensive pastures.	1	Ecological concepts of interest in grassland agriculture.	1
The use of pastures. Ecological and socio-cultural, ethical and political aspects.	2	Phytosociological concepts of interest in grassland agriculture. Phytosociological classification and cartography of pastures.	2
Basic nomenclature of pastures. Herbaceus and woody pastures. Cartography of pastures and farm census.	2	Synthetic methods of pastoral evaluation. Relationship with chemical and zootechnical methods.	1
Types of pastures linked to the landscape and to production. Grass husbandry, grass land agriculture	1	Optimum moment to use the grass in function of plant physiology.	1
Seasonality and complementarity of pastures. Grazing and forage calendar	1	Pasturage. Advantages and disadvantages. Free or extensive grazing, controlled or intensive grazing, deferred , mixed, etc	4
Main botanical species of interest in grassland agriculture. The special case of melliferous flora as bee pasture	2	Pastures conservation: Haymaking, forced aeration, dehydration, silage.	3
The nutritional value of grazing resources. Influence of ecology, flora, management, type of livesotck, storage, etc in the mentioned value.	2	Maintenance and improvement of natural pastures. Forestry-Grass cultivation.	1
Annual and year to year variations in the floral composition of pastures and its effects in the nutritional value	1	Maintenance and improvement of pastures on agricultural land. Fertilising, manure and irrigation	2
Weeds and poisonous plants in pastures	1	The use in pastures in ecological agriculture and livestock farming.	2

(extend table as necessary)

Is attendance at lectures compulsory (YES/NO) If YES, is it verified, and how?

NO

State **objective**(s) of practical part of teaching in this subject, if this has been defined.

The objectives are:
- To develop some theoretical themes. Recognising the main botanical species of nterest in grassland agriculture, using herbarium models, develops "Main families and pasture species" theme.
- "Classification and cartography of pastures" is develop with the study of very significant and specific cases and also with projections showing their aspect and landscape.
- "Synthetic methods of Pastoral Evaluation" theme is developed by means of evaluation exercises, previously studied in both theoretical and practical parts of "Agronomy and Agrarian Economy" subject

Outline of main practical sessions in this subject

practical session topic & duration (hours)		type of session	class size	no. of 'stations'	no. of staff	location (room)	time allocation
Recognising the main botanical species of interest in grassland agriculture I. Pulses II. Leguminous III. Other species IV. Toxic plants	 3 3 2 2	Display and study of herbarium models	6	6	1	Laboratory	hours/week: 1,5x2 1,5x2 2x1 2x1
Classification and cartography of pastures in Spain: Atlantic, Mediterranean and mountain	3	Specific cases study. Projections of pasture types.	6	6	1	Laboratory	1,5x2 h/week
Pastoral Evaluation exercises on different types of pastures, relating it to energy parameters, proteins, fibres, digestibility, etc.	2	Cases study. Results calculation and interpretation	6	6	1	Laboratory	2x1 h/week

(extend table as necessary)

Is attendance at practical work compulsory (YES/NO)† If yes, is it verified, and how?

Yes. It is verified calling the roll

Primary **course materials** students use for their work and leaning in this subject

Photocopies of the material displayed in class and practical guides, given out free amongst the students.

Examination format used (mark all that apply)	(none)	multiple-choice	oral	practical	written papers	
					short	long (essay)
During the semester	X					
At the end of the subject		X				

Can students choose when to present themselves for the examination (YES/NO)† NO
How many times is a student permitted to attempt the examinations ? 2
What are the prerequisites for taking this subject? None
For what other subjects is this examination a prerequisite? NO

Proforma for information on a specific subject

Subject title:	23066 – Economics and management of agrifood companies	Semester of studies in which subject presented:	**2C**
Department/unit responsible for teaching the subject.*	AGRICULTURE AND AGRARIAN ECONOMICS	Number of academic staff responsible for teaching this subject:	**3**

✶ State which Faculty if NOT the veterinary one

Number of individuals assisting with teaching or preparation			
	practical work	clinical work	other work (indicate type)
Support staff			
Postgraduate students			
Undergraduate students			
Practitioners			

State **objective**(s) of theoretical part of teaching in this subject, if this has been defined.

To transmit the basic conceptual elements of economics to food technology and provide a fundamental knowledge on production economics, company economics and the financial management of agrifood industries; as well as enable the student to solve some element questions related to the field of management.

Main themes and hours of lectures in this subject

Theme/field	hours	Theme/field	hours
Fundamental concepts of Economics. Basic concepts of economics theory.	12		
Economics and management techniques.	17		
Marketing management.	16		

(extend table as necessary)

Is attendance at lectures compulsory (YES/NO) If YES, is it verified, and how?

NO

State **objective**(s) of practical part of teaching in this subject, if this has been defined.

To know how to solve some questions asked in class.

Outline of main practical sessions in this subject

practical session topic & duration	(hours)	type of session	class size	no. of 'stations'	no. of staff	location (room)	time allocation
Economic-financing analysis in food companies	2	Cases	24	13 computers	2	Computer room	
Analysis of the profitability of investments	2	Cases	24	13 computers	2	Computer room	
Stock control. Wilson model	2	Cases	24	13 computers	2	Computer room	
Applied methods in market information and market research	2	Cases	24	13 computers	2	Computer room	
Planning, organizing and control of market strategy	2	Cases	24	13 computers	2	Computer room	

(extend table as necessary)

Is attendance at practical work compulsory (YES/NO)† If yes, is it verified, and how?

No, although only those who have attendended classes have their practicals assesed.

_____

Primary **course materials** students use for their work and leaning in this subject

Lecture notes available in the reprography unit of the Faculty (paying). Other material is given out free in class.

Examination format used (mark all that apply)	(none)	multiple-choice	oral	practical	written papers	
					short	long (essay)
During the semester					X	X
At the end of the subject						

Can students choose when to present themselves for the examination (YES/NO)†

How many times is a student permitted to attempt the examinations ?

What are the prerequisites for taking this subject?

For what other subjects is this examination a prerequisite?

ANNEX n 4

ADDITIONAL INFORMATION IN RELATION TO THE CURRICULUM

OPTIONAL SUBJECTS

Simposioum on Cooperativism and Rural Development

Complete Sustainable Rural Development

Agrarian and Food Model for Neoliberal Globalization

Technical Conference on Agriculture and Livestock and Ecological Agrotourism

Synopsis on Nature and the Environment

Films and Literature about Veterinary Medicine

Introduction to Veterinary Homeopathy

Coordinating with the Zaragoza Dog Show (Ring Commission)

Cat and Dog Feeding

Food Science and Technology

Food Industries

Proforma for information on a specific subject

Subject title:	80246 – Symposium on cooperativism and rural development	Semester of studies in which subject presented:	**2C**
Department/unit responsible for teaching the subject.*	AGRICULTURE AND AGRARIAN ECONOMICS	Number of academic staff responsible for teaching this subject:	**1**

✶ State which Faculty if NOT the veterinary one

Number of individuals assisting with teaching or preparation			
	practical work	clinical work	other work (indicate type)
Support staff			
Postgraduate students			
Undergraduate students			
Practitioners			
Other professionals			To give lectures

State **objective**(s) of theoretical part of teaching in this subject, if this has been defined.

- To make the students aware of the importance of associationism in rural envinronments.
- To study experiences about sustainable development and associationism.
- To streghten multidisciplinary workgroups.

Main themes and hours of lectures in this subject

Theme/field	hours	Theme/field	hours

(extend table as necessary)

Is attendance at lectures compulsory (YES/NO) If YES, is it verified, and how?

YES

State **objective**(s) of practical part of teaching in this subject, if this has been defined.

Outline of main practical sessions in this subject

practical session topic & duration	(hours)	type of session	class size	no. of 'stations'	no. of staff	location (room)	time allocation

(extend table as necessary)

Is attendance at practical work compulsory (YES/NO)† If yes, is it verified, and how?

Compulsory attendance. Students must prepare a critical work about the lectures or some themes treated in the lectures.

_____

Primary **course materials** students use for their work and leaning in this subject

Lecture summaries, subsequently published as a book and in the web page: www.cederul.org

Examination format used (mark all that apply)	(none)	multiple-choice	oral	practical	written papers	
					short	long (essay)
During the semester						
At the end of the subject						

Can students choose when to present themselves for the examination (YES/NO)† NO

How many times is a student permitted to attempt the examinations ? They can make the work in june/july/august

What are the prerequisites for taking this subject? None

For what other subjects is this examination a prerequisite? NO

Proforma for information on a specific subject

Subject title:	80291 – Integrated and sustainable rural development	Semester of studies in which subject presented:	**2C**
Department/unit responsible for teaching the subject.*	AGRICULTURE AND AGRARIAN ECONOMICS	Number of academic staff responsible for teaching this subject:	**1**

✶ State which Faculty if NOT the veterinary one

Number of individuals assisting with teaching or preparation			
	practical work	clinical work	other work (indicate type)
Support staff			
Postgraduate students			
Undergraduate students			
Practitioners			

State **objective**(s) of theoretical part of teaching in this subject, if this has been defined.

- To make the students aware of sustainability.
- To acquire knowledge about new rurality.
- Contribution to sustainability from rural environments.
- To acquire knowledge about communitarian programmes and iniciatives for development.
- The problem of poverty around world.

Main themes and hours of lectures in this subject

Theme/field	hours	Theme/field	hours
Growth and development	10		
New rurality in Europe	10		
The agrarian politics in the UE and development politics	10		
Communitarian iniciatives for rural development	10		
Integrated and sustainable rural development programmes	5		
Projects assessments	5		

(extend table as necessary)

Is attendance at lectures compulsory (YES/NO) If YES, is it verified, and how?

Virtual subject given through ADD, (virtual campus) http://www.add.unizar.es, to 9 Universities (G9)

State **objective**(s) of practical part of teaching in this subject, if this has been defined.

- Participation in debates (The role of Church in development, Kioto protocol, women role...)
- Final work about themes related to sustainability

Outline of main practical sessions in this subject

practical session topic & duration	(hours)	type of session	class size	no. of 'stations'	no. of staff	location (room)	time allocation
Final work	10						

(extend table as necessary)

Is attendance at practical work compulsory (YES/NO)† If yes, is it verified, and how?

- Final work is 40% of the final marks. Compulsory attendance
- Voluntary participation in debates

Primary **course materials** students use for their work and leaning in this subject

- Material from the 6 modules that constitute the programme.
- For each debate and in order to start the discussions, a base document is placed.

Examination format used (mark all that apply)	(none)	multiple-choice	oral	practical	written papers	
					short	long (essay)
During the semester						
At the end of the subject						

- Students must send a critical analysis of each module and its assessment constitutes the 60% of the final mark.
- The assessment of the final work is 40% of the final mark.
- There is no final exam
-

Can students choose when to present themselves for the examination (YES/NO)† Yes (june/september)
How many times is a student permitted to attempt the examinations ? June/September
What are the prerequisites for taking this subject? None
For what other subjects is this examination a prerequisite? No

Proforma for information on a specific subject

Subject title:	80292 – Agricultural and food model of neoliberal globalization	Semester of studies in which subject presented:	**1C**
Department/unit responsible for teaching the subject.*	AGRICULTURE AND AGRARIAN ECONOMICS	Number of academic staff responsible for teaching this subject:	**5**

✶ State which Faculty if NOT the veterinary one

Number of individuals assisting with teaching or preparation			
	practical work	clinical work	other work (indicate type)
Support staff			
Postgraduate students			
Undergraduate students			
Practitioners			

State **objective**(s) of theoretical part of teaching in this subject, if this has been defined.

To acquire the knowledge of the people that take part in the syposium, their roles, the relations and relation mechanisms and the principles that characterize the world food system, from production to consume, as well as the raised problems.

Main themes and hours of lectures in this subject

Theme/field	hours	Theme/field	hours
The symposium will be organized jointly with the Fundación Rey del Corral de Investigaciones Marxistas (Zaragoza) at the Veterinary Faculty. There will be 6 speakers and a round table that will cover farm production (peasant/family), The WTO, businesses, security and consumption (problems, effects, conflicts)	18		

(extend table as necessary)

Is attendance at lectures compulsory (YES/NO) If YES, is it verified, and how?

Yes. Signing in session lists.

State **objective**(s) of practical part of teaching in this subject, if this has been defined.

Outline of main practical sessions in this subject

practical session topic & duration	(hours)	type of session	class size	no. of 'stations'	no. of staff	location (room)	time allocation

(extend table as necessary)

Is attendance at practical work compulsory (YES/NO)† If yes, is it verified, and how?

_____

Primary **course materials** students use for their work and leaning in this subject

A copy of the conferences is given out to the participants.

Examination format used (mark all that apply)	(none)	multiple-choice	oral	practical	written papers	
					short	long (essay)
During the semester						A work about a theme
At the end of the subject						

Can students choose when to present themselves for the examination (YES/NO)†

How many times is a student permitted to attempt the examinations ?

What are the prerequisites for taking this subject?

For what other subjects is this examination a prerequisite?

Proforma for information on a specific subject

Subject title:	80293 – Technical conferences on ecological agriculture, stockbreeding and agro-tourism	Semester of studies in which subject presented:	**2C**
Department/unit responsible for teaching the subject.*	AGRICULTURE AND AGRARIAN ACONOMICS	Number of academic staff responsible for teaching this subject:	**3**

✶ State which Faculty if NOT the veterinary one

Number of individuals assisting with teaching or preparation			
	practical work	clinical work	other work (indicate type)
Support staff			
Postgraduate students			
Undergraduate students			
Practitioners			
Other professionals			Giving lectures

State **objective**(s) of theoretical part of teaching in this subject, if this has been defined.

- To acquire basic knowledges about ecological agriculture and stockbreeding.
- Alternatives to conventional tourism. Sustainable tourism instead of conventional tourism.
- To make the students aware about sustainability

Main themes and hours of lectures in this subject

Theme/field	hours	Theme/field	hours
Important specialists in ecological agriculture, stockbreeding and rural development are invited.			
An ecological agriculture and stockbreeding fair is organised at the same time.			

(extend table as necessary)

Is attendance at lectures compulsory (YES/NO) If YES, is it verified, and how?

Compulsory attendance

State **objective**(s) of practical part of teaching in this subject, if this has been defined.

Outline of main practical sessions in this subject

practical session topic & duration	(hours)	type of session	class size	no. of 'stations'	no. of staff	location (room)	time allocation

(extend table as necessary)

Is attendance at practical work compulsory (YES/NO)† If yes, is it verified, and how?

_____

Primary **course materials** students use for their work and leaning in this subject

A cd containing the lectures is given out to the students Other material is published in: http://www.eraecologica.com

Examination format used (mark all that apply)	(none)	multiple-choice	oral	practical	written papers	
					short	long (essay)
During the semester						
At the end of the subject						X

Can students choose when to present themselves for the examination (YES/NO)† NO

How many times is a student permitted to attempt the examinations ? Works can be prepared in june, july or september

What are the prerequisites for taking this subject? Veterinary, Food Science and Technology, Agricultural Technical Engineering, Agrarian Engineering Students.

For what other subjects is this examination a prerequisite? NO

Proforma for information on a specific subject

Subject title:	80297 – Synopsis of nature and the environment	Semester of studies in which subject presented:	**A**
Department/unit responsible for teaching the subject.*	BIOCHEMISTRY AND MOLECULAR AND CELLULAR BIOLOGY	Number of academic staff responsible for teaching this subject:	**2**

✶ State which Faculty if NOT the veterinary one

Number of individuals assisting with teaching or preparation			
	practical work	clinical work	other work (indicate type)
Support staff			
Postgraduate students			
Undergraduate students			
Practitioners			

State **objective**(s) of theoretical part of teaching in this subject, if this has been defined.

The student should go through a self-learning process, based on audiovisual learning, of specific aspects of nature life, animal reproduction and the environment.

Main themes and hours of lectures in this subject

Theme/field	hours	Theme/field	hours
Audiovisual learning (Video and DVD collections available in the Faculty library).	8-20		

(extend table as necessary)

Is attendance at lectures compulsory (YES/NO) If YES, is it verified, and how?

Yes. It is verified using visualization cards of every theme.

State **objective**(s) of practical part of teaching in this subject, if this has been defined.

This subject has no practical part.

Outline of main practical sessions in this subject

practical session topic & duration	(hours)	type of session	class size	no. of 'stations'	no. of staff	location (room)	time allocation

(extend table as necessary)

Is attendance at practical work compulsory (YES/NO)† If yes, is it verified, and how?

_____

Primary **course materials** students use for their work and leaning in this subject

Examination format used (mark all that apply)	(none)	multiple-choice	oral	practical	written papers	
					short	long (essay)
During the semester						
At the end of the subject						

Can students choose when to present themselves for the examination (YES/NO)†

How many times is a student permitted to attempt the examinations ?

What are the prerequisites for taking this subject?

For what other subjects is this examination a prerequisite?

Proforma for information on a specific subject

Subject title:	80334 – Cinema and literature in veterinary medicine	Semester of studies in which subject presented:	**1C**
Department/unit responsible for teaching the subject.*	VETERINARY MEDICINE	Number of academic staff responsible for teaching this subject:	**6**

✶ State which Faculty if NOT the veterinary one

Number of individuals assisting with teaching or preparation			
	practical work	clinical work	other work (indicate type)
Support staff			
Postgraduate students			
Undergraduate students			
Practitioners			

State **objective**(s) of theoretical part of teaching in this subject, if this has been defined.

General objectives:
- to integrate knowledge already acquired in first year courses of veterinary medicine
- to apply the knowledge acquired from real-life situations

Specific objectives:
- to develop a critical spirit
- to develop the ability to work as a team
- To acquire the ability to carry out bibliographical research
- To develop the ability to prepare and present scientific work

Main themes and hours of lectures in this subject

Theme/field	hours	Theme/field	hours
Introduction: searching information methodology, preparation and presentation of scientific works.	10		

(extend table as necessary)

Is attendance at lectures compulsory (YES/NO) If YES, is it verified, and how?

NO

State **objective**(s) of practical part of teaching in this subject, if this has been defined.

To consolidate and develop the skills described as objectives of the theoretical part.

Outline of main practical sessions in this subject

practical session topic & duration	(hours)	type of session	class size	no. of 'stations'	no. of staff	location (room)	time allocation
Cinema in veterinary medicine 1	5	Work presentation	40	40			
Cinema in veterinary mecicine 2	15	Showing				Auditorium	
Cinema in veterinary medicine 3	5	debate					
Literature in veterinary medicine	10	Work presentation					

(extend table as necessary)

Is attendance at practical work compulsory (YES/NO)† If yes, is it verified, and how?

Yes Calling the roll

_____

Primary **course materials** students use for their work and leaning in this subject

Videos and books

Examination format used (mark all that apply)	(none)	multiple-choice	oral	practical	written papers	
					short	long (essay)
During the semester				X		
At the end of the subject						

Can students choose when to present themselves for the examination (YES/NO)† YES

How many times is a student permitted to attempt the examinations ? Those established by the Faculty

What are the prerequisites for taking this subject? To be enrolled in second cycle.

For what other subjects is this examination a prerequisite? No

Proforma for information on a specific subject

Subject title:	80335 – Introduction to veterinary homeopathy	Semester of studies in which subject presented:	**1C**
Department/unit responsible for teaching the subject.*	VETERINARY MEDICINE	Number of academic staff responsible for teaching this subject:	**1**

✶ State which Faculty if NOT the veterinary one

Number of individuals assisting with teaching or preparation			
	practical work	clinical work	other work (indicate type)
Support staff			
Postgraduate students			
Undergraduate students			
Practitioners		specialist in homeopathy	

State **objective**(s) of theoretical part of teaching in this subject, if this has been defined.

To learn the theoretical bases of homeopathy
To learn the homeopathic clinical semiology
To know how to apply the similarity principal in the practice of homeopathy
To know the homeopathic medical material and its therapeutic remedies

Main themes and hours of lectures in this subject

Theme/field	hours	Theme/field	hours

(extend table as necessary)

Is attendance at lectures compulsory (YES/NO) If YES, is it verified, and how?

15 hours lectures (not compulsory)
15 hours non-lectures in the net. Verified using questionnaires, cases and problems

State **objective**(s) of practical part of teaching in this subject, if this has been defined.

Resolution of clinical cases and election of the correct homeopathic medicine

Outline of main practical sessions in this subject

practical session topic & duration	(hours)	type of session	class size	no. of 'stations'	no. of staff	location (room)	time allocation
Clinical cases	15	Seminars / Hospital consultations					

(extend table as necessary)

Is attendance at practical work compulsory (YES/NO)† If yes, is it verified, and how?

15 hours of practical sessions: Compulsory. Calling the roll

_____

Primary **course materials** students use for their work and leaning in this subject

Material prepared by the teacher and available in the net. Bibliography available in the Library of the Faculty

Examination format used (mark all that apply)	(none)	multiple-choice	oral	practical	written papers	
					short	long (essay)
During the semester		X		X		Clinical cases
At the end of the subject		X		X		Clinical cases

Can students choose when to present themselves for the examination (YES/NO)† NO

How many times is a student permitted to attempt the examinations ? 2

What are the prerequisites for taking this subject? To be enrolled in second cycle

For what other subjects is this examination a prerequisite? No

Proforma for information on a specific subject

Subject title:	80336 – Activity: Collaboration in the Zaragoza Dog Show (Ring Stewards)	Semester of studies in which subject presented:	**2C**
Department/unit responsible for teaching the subject.*	ANIMAL PRODUCTION AND FOOD SCIENCES	Number of academic staff responsible for teaching this subject:	**1**

✶ State which Faculty if NOT the veterinary one

Number of individuals assisting with teaching or preparation			
	practical work	clinical work	other work (indicate type)
Support staff			
Postgraduate students			
Undergraduate students			
Practitioners	JURY		

State **objective**(s) of theoretical part of teaching in this subject, if this has been defined.

- To acquire the knowledge of the main canine breeds
- To know how a dog show works
- Team project

Main themes and hours of lectures in this subject

Theme/field	hours	Theme/field	hours
Dog Show rules	2		
Work systematics	4		

(extend table as necessary)

Is attendance at lectures compulsory (YES/NO) If YES, is it verified, and how?

Yes. Calling the roll

State **objective**(s) of practical part of teaching in this subject, if this has been defined.

The same of the theoretical part

Outline of main practical sessions in this subject

practical session topic & duration	(hours)	type of session	class size	no. of 'stations'	no. of staff	location (room)	time allocation
To collaborate with the jury in ring shows	8		60	12	1		Dates of the expo
Evaluation of the races that compete in the show and results.	6		60	12			Until june

(extend table as necessary)

Is attendance at practical work compulsory (YES/NO)† If yes, is it verified, and how?

Yes. Signing in a list

_____

Primary **course materials** students use for their work and leaning in this subject

Free copied lecture notes

Examination format used (mark all that apply)	(none)	multiple-choice	oral	practical	written papers	
					short	long (essay)
During the semester						
At the end of the subject				X		

Can students choose when to present themselves for the examination (YES/NO)† no, it is a free choice activity

How many times is a student permitted to attempt the examinations ? 1

What are the prerequisites for taking this subject? Students who have studied ethnology have preference

For what other subjects is this examination a prerequisite? No

Proforma for information on a specific subject

Subject title:	80082 – Dog and cat nutrition	Semester of studies in which subject presented:	**2C**
Department/unit responsible for teaching the subject.*	ANIMAL PRODUCTION AND FOOD SCIENCES	Number of academic staff responsible for teaching this subject:	**1**

✶ State which Faculty if NOT the veterinary one

Number of individuals assisting with teaching or preparation			
	practical work	clinical work	other work (indicate type)
Support staff			
Postgraduate students			
Undergraduate students			
Practitioners			

State **objective**(s) of theoretical part of teaching in this subject, if this has been defined.

To broaden students knowledge about digestive and metabolic particularities of pets, food selection methods and feeding techniques along the biological cycle.
To deepen in the feeding techniques for the prevention of different common pathologies and during their clinical manifestations.

Main themes and hours of lectures in this subject

Theme/field	hours	Theme/field	hours
Digestion, metabolism, food elaboration and feeding in the different phases of the biological cycle.	10		
Clinical nutrition	10		

(extend table as necessary)

Is attendance at lectures compulsory (YES/NO) If YES, is it verified, and how?

Yes. Calling the roll at the begining of classes.

State **objective**(s) of practical part of teaching in this subject, if this has been defined.

There is no practical teaching

Outline of main practical sessions in this subject

practical session topic & duration	(hours)	type of session	class size	no. of 'stations'	no. of staff	location (room)	time allocation

(extend table as necessary)

Is attendance at practical work compulsory (YES/NO)† If yes, is it verified, and how?

_____

Primary **course materials** students use for their work and leaning in this subject

Before starting each lesson, the documents, including the power-point slides, are given out to the students.

Examination format used (mark all that apply)	(none)	multiple-choice	oral	practical	written papers	
					short	long (essay)
During the semester						
At the end of the subject	X (1)					

(1) Students have to give in at the end of the year a work about one of the lectures, being evaluated depending on the quality of the mentioned report.

Can students choose when to present themselves for the examination (YES/NO)† YES

How many times is a student permitted to attempt the examinations ?

What are the prerequisites for taking this subject? Students from Biomedical speciality in second cycle

For what other subjects is this examination a prerequisite? NO

Proforma for information on a specific subject

Subject title:	80337 – Food science and technology	Semester of studies in which subject presented:	**A**
Department/unit responsible for teaching the subject.*	ANIMAL PRODUCTION AND FOOD SCIENCE	Number of academic staff responsible for teaching this subject:	**1**

✶ State which Faculty if NOT the veterinary one

Number of individuals assisting with teaching or preparation			
	practical work	clinical work	other work (indicate type)
Support staff	1 Technician		
Postgraduate students			
Undergraduate students			
Practitioners			

State **objective**(s) of theoretical part of teaching in this subject, if this has been defined.

The aim of this course is to complete the training of the students in matters relating to food, including the advances made in food processing and conservation and in the nutritional and health quality of the food.
* This subject is a summer course that is taught in the Centre of Regional Studies of Bajo Aragón in Caspe (a office of the Fernando el Católico Institution). Each theme is taught by specialists, most of them appointed to the University.

Main themes and hours of lectures in this subject

Theme/field	hours	Theme/field	hours
Historic development of Food Science and Technology	2	Honey and beehive products: Bromatological hygiene and nutritional aspects	2
Liquid dairy products: processing and nutritional value	2	How to preserve food whithout hardly affecting their quality: Combined processes	2
Cheese: tradicional versus modern techniques	2	Obesity: consequences and prevention measures	2
The importance of wine aroma on its quality. Production methods to boots its development	2	Food and agriculture research in Aragon: Future outlook	2
The food safety chemistry laboratory	2		
Mould and food: Beneficial and harmful effects	2		
Functional foods from vegetables. Prebiotics	2		
Variation factors in food consumption	2		
Proper food hygiene and handling	2		

(extend table as necessary)

Is attendance at lectures compulsory (YES/NO) If YES, is it verified, and how?

Yes. Calling the roll

State **objective**(s) of practical part of teaching in this subject, if this has been defined.

The main objective of the practical part is to know and carry out the processing stages of some dairy products manufactured in the Pilot Plant.

Outline of main practical sessions in this subject

practical session topic & duration	(hours)	type of session	class size	no. of 'stations'	no. of staff	location (room)	time allocation
Dairy products manufacturing	5	Pilot Plant	Those registered	30	2	Pilot Plant	5 h /day

(extend table as necessary)

Is attendance at practical work compulsory (YES/NO)† If yes, is it verified, and how?

Yes. It is verified calling the roll.

_____

Primary **course materials** students use for their work and leaning in this subject

The student have at their disposal the schemes and graphic material used in the theoretical classes and the guides of the practical classes are available in the reprography unit of the Faculty. The material is distributed in each class for free.

Examination format used (mark all that apply)	(none)	multiple-choice	oral	practical	written papers	
					short	long (essay)
During the semester	X					X
At the end of the subject	X					X

Can students choose when to present themselves for the examination (YES/NO)†

How many times is a student permitted to attempt the examinations ?

What are the prerequisites for taking this subject? To be a student of veterinary

For what other subjects is this examination a prerequisite? No

Proforma for information on a specific subject

Subject title:	80338 – Food industries	Semester of studies in which subject presented:	**A**
Department/unit responsible for teaching the subject.*	ANIMAL PRODUCTION AND FOOD SCIENCES	Number of academic staff responsible for teaching this subject:	**1**

✶ State which Faculty if NOT the veterinary one

Number of individuals assisting with teaching or preparation			
	practical work	clinical work	other work (indicate type)
Support staff			
Postgraduate students			
Undergraduate students			
Practitioners	5		

State **objective**(s) of theoretical part of teaching in this subject, if this has been defined.

The objective of this subject is to familiarize the student with the activities of different industtries of intereset in the agrofood sector of Aragón. Theory and practice are taught at the same time: there will be at least 4 visits thorought the academic year accompanied by a lecturer of the Food Technology Area to industries in the agro-food sector in Aragón. These visits (of aprox. 3 h) will include an informative chat with the aim of familirize the students with the activities of those companies.

Main themes and hours of lectures in this subject

Theme/field	hours	Theme/field	hours
Technology of beer production	6		
Technology of canned vegetables production	6		
Technology of dairy products production	6		
Technology of meat production	6		
Technology of chocolate	6		
Technology of ready-cooked meal	6		
Elaboration and account of a individual work	6		

(extend table as necessary)

Is attendance at lectures compulsory (YES/NO) If YES, is it verified, and how?

The attendance is verified calling the roll.

State **objective**(s) of practical part of teaching in this subject, if this has been defined.

Theory and practice are taught at the same time

Outline of main practical sessions in this subject

practical session topic & duration (hours)		type of session	class size	no. of 'stations'	no. of staff	location (room)	time allocation
= Theoretical part							

(extend table as necessary)

Is attendance at practical work compulsory (YES/NO)† If yes, is it verified, and how?

= Theoretical part

_____

Primary **course materials** students use for their work and leaning in this subject

Examination format used (mark all that apply) *	(none)	multiple-choice	oral	practical	written papers	
					short	long (essay)
During the semester						
At the end of the subject						

* **Elaboration and account of a individual work**

Can students choose when to present themselves for the examination (YES/NO)† YES

How many times is a student permitted to attempt the examinations ? 2

What are the prerequisites for taking this subject? To studying or have studied the subject Food Technology of 3rd year

For what other subjects is this examination a prerequisite? No

ANNEX n. 5

PLACEMENTS OFFERED IN 2003/2004 – PROVINCE OF ZARAGOZA

Institution	Dates	Maximum number of students	Activities
Subdirección Provincial de Salud Pública – 68, Ramón y Cajal Zaragoza	1st July – 16th July	1	Control of slaughterhouses, industries and food companies
	19th July – 30th July	1	
	2nd August – 13th August	1	
	1st September – 15th September	1	
	16th September – 30th September	1	
Veterinary zone in Alagón – 2, Baltasar Gracián St Telephone: 976 616070	1st July – 15th July	2	Control of slaughterhouses, industries and food companies
	16th July – 30th July	1	
	1st August – 15th August	1	
	15th August – 30th August	1	
	September (half-monthly or monthly)	2	

PLACEMENTS OFFERED IN 2003/2004 – PROVINCE OF TERUEL

Institution	Dates	Maximum number of students	Activities
Subdirección Provincial de Salud Pública – 1, Ronda de Liberación Teruel	15th July – 25th July	1	Control of slaughterhouses, industries and food companies
	26th July – 1st August	1	
	2nd August – 8th August	1	
	9th August – 15th August	1	
Veterinary zone in Alcorisa – 49, Marqués de Lama Telephone: 976 616070	1st week of July	2	Control of slaughterhouses, industries and food companies
	2nd week of July	1	
	3rd week of July	1	

PLACEMENTS OFFERED IN 2003/2004 – PROVINCE OF HUESCA

Institution	Veterinary speciality	Dates	Maximum number of students	Activities
Subdirección Provincial de Salud Pública – 30, Parque - Huesca	Food microbiology laboratory Slaughterhouse	July (monthly)	1	Control of slaughterhouses, industries and food companies
		August (monthly)	1	
		September (monthly)	1	
	Food Hygiene Zoonosis	July (half-monthly or monthly)	1	
		1st two weeks of August	1	
		September (monthly or half-monthly)	1	
	Bromatology	July (monthly)	1 or 2	
		August (monthly)	1 or 2	
Veterinary zone in Fraga 6, P. Barrón Sagoñe Tphn: 974474225		16th August – 30th September (half-monthly or monthly)	1	Control of slaughterhouses, industries and food companies
Veterinary zone in Castejón de Sos 39, El Real Av. – Tphn: 974553810		July (from 8 to 30 days)	1 or 2	Control of slaughterhouses, industries and food companies
		August (from 8 to 30 days)	1 or 2	
		September (from 8 to 30 days)	1 or 2	
Slaughterhouse Fribín (Binéfar)		July (monthly)	2	Slaughterhouses control
		August (monthly)	2	
		September (monthly)	2	

ANNEX n. 6

WORK DONE BY THE AUDIOVISUAL SERVICE IN 2004

SCANNING

Number of scans: 3127

DIGITAL TREATMENT OF IMAGES

Number of treatments: 460

CD RECORDING

Number of cds: 502

PRINTING

Total number of printings:
a) HQ 54
b) NOR 125

VIDEO COPIES

Number of copies: 31
Length: 1482 minutes

PRODUCTION

Number of produced videos: 4
Length: 138 minutes

CAPTURE AND MPG CONVERSION

Number of captures: 14
Length: 192 minutes

EDITION OF EXTERNAL PROGRAMMES

Number of programmes: 5
Length: 65 minutes

RECORDING

Number of recordings: 23

CAPTURE AND CONVERSION OF ANALOGIC AUDIO TO DIGITAL

Length: 242 minutes

NON PRICED WORKS CARRIED OUT BY THE AUDIOVISUAL SERVICE

- Video stills capture
- Video captures and conversion to AVI format for multimedia creations.
- AVI encoding (mpg1, VCD, mpg2, etc)
- Edition of programs not produced by the Service
- Video voicing not edited by the Service
- Creation of presentations using Powerpoint
- Illustrated report
- DVD master. With chapters
- DVD master. Without chapters
- Copies and data recording in DVD
- Cover design
- Analogic audio capture and conversion to digital

Recordings and important events where the Service has taken part

The Service took part in the 1st Horseshoeing and Podology Course, organised by EQUIZAR, broadcasting live in the Assembly Hall the practicals carried out in the Necropsy room. Two recordings were made that will be the base of two programs of upcoming edition.

In order to make the Faculty known in APERTA, the Service prepared a video and presentation in Powerpoint.

Supervision and use of the audiovisual and computer systems of the AVEPA Congress.

Preparation of an audiovisual montage for both the Veterinary Hospital and the Pilot Plant of Food Science and Technology inauguration, as well as the filming of the opening ceremony.

Images treatment from several thesis. Filming of five thesis presentations in public hearing. One of them has been edited and included in the Library Archives and another one is being edited at the present time.

The Service is also working in a thesis about Scrapie (three years of filming cases). The film is being edited at the present time.

The Audiovisual Service, together with the Animal Patology Group, participated in the designing of a web page. The service also participated in the visual design of the subject: *Animal Patology* for its later inclusion in the Digital Teaching Circle (add.unizar.es).

Creation and design of an Interactive Poster for the Surgery Area.

Estudio de las necesidades.....

Technical assistance to different audiovisual equipments.

ANNEX n.7

SHOWS OFFERED BY THE AUDIOVISUAL SERVICES

VIDEO

Video production

Filming without production

Edition of programs not edited by the Service

Video voicing of programs not edited by the Service

Video stills capture

Video captures in AVI format and encoding in different codecs (mpgq1, VCD, SVCD, mpg2)

DVD master, creating chapters

To pass from VHS or U-matic video to VHS
To pass from VHS video to VHS
To pass from 8 mm system to Super 8
To pass from 8 mm system or Super 8 to U-matic video
To pass from slides filming to VHS video
To pass from slides filming to U-Matic video
Video dubbing
3D Animation

AUDIO

Audio duplication
Capture of analogic audio and conversion to digital
MP3 compression

MULTIMEDIA PRESENTATIONS

Creation of Powerpoint presentations

DIGITAL IMAGING

Scanning of images (paper, slides, transparencies)
Digital treatment
Creation and design of covers, logos, posters...
Printing:

- DIN A-4
- 1720 pp paper
- HQ paper
- Film paper
- DIN A-4 transparencies

CD AND DVD RECORDING

CD recording
Copy of DVD's
DVD recording

DIGITAL PHOTOGRAPHY

Illustrated report

TECHNICAL SUPPORT

Technical support

ANNEX n. 8

LISTS OF RESEARCH PUBLICATIONS OF THE DEPARTMENTS:

- AGRICULTURE AND AGRARIAN ECONOMICS
- ANALYTICAL CHEMISTRY
- ANATOMY, EMBRIOLOGY AND ANIMAL GENETICS
- ANIMAL PRODUCTION AND FOOD SCIENCE
- APPLIED PHYSICS
- APPLIED MATHEMATICS
- BIOCHEMISTRY AND MOLECULAR BIOLOGY
- PHARMACOLOGY AND PHYSIOLOGY
- PHATOLOGICAL ANATOMY, LEGAL MEDICINE, TOXICOLOGY AND HEALTH LEGISLATION
- VETERINARY MEDICINE

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ANNEX n. 9

INCOME AND EXPENSES BUDGET'S SUMMARY

INCOME

CHAP.	DENOMINATION	EUROS
	CURRENT OPERATIONS	
III	FEES, PUBLIC PRICES AND OTHER INCOME	47,002,957
IV	CURRENT TRANSFERS	123,106,282
V	INCOME RESOURCES	682,030
	TOTAL CURRENT OPERATIONS	***170,791,269***
	CAPITAL OPERATIONS	
VI	REAL INVESTMENTS DISPOSAL	
VII	CAPITAL TRANSFERS	44,607,707
	TOTAL CAPITAL OPERATIONS	***44,607,707***
VIII	FINANCIAL ASSETS	
IX	FINANCIAL LIABILITIES	46,350
	TOTAL FINANCIAL OPERATIONS	***46,350***
	TOTAL INCOME BUDGET	***215,445,026***

EXPENSES

CHAP.	DENOMINATION	EUROS
	CURRENT OPERATIONS	
I	PERSONNEL EXPENSES	132,907,993
II	CURRENT GOODS AND SERVICES EXPENSES	33,080,274
III	FINANCIAL EXPENSES	120,000
IV	CURRENT INVESTMENTS	1,718,189
	TOTAL CURRENT OPERATIONS	***167,826,456***
	CAPITAL OPERATIONS	
VI	REAL INVESTMENTS	47,579,070
VII	CAPITAL TRANSFER	
	TOTAL CAPITAL OPERATIONS	***47,579,070***
VIII	FINANCIAL ASSETS	
IX	FINANCIAL LIABILITIES	39,500
	TOTAL FINANCIAL OPERATIONS	***39,500***
	TOTAL EXPENSES BUDGET	***215,445,026***