

## AGRONOMY

### Year 1

Curriculum Units	Semester	Contact Hours	ECTS	Type	Obs
Biochemistry	I		6	C	
Economy and Taxation	I		6	C	
Mathematics and Statistics	I		6	C	
Meteorology and Climatology	I		3	C	
Pedology	I		3	C	
Ecology and Environment	I		3	C	
Introduction to Agricultural Production	II		3	C	
Management of the Agricultural Business	II		3	C	
Mechanization	II		6	C	
Plant Biology	II		6	C	
Plant Nutrition and Soil Fertility	II		6	C	
Biophysics	II		6	C	

C – Compulsory; PC – Personal Choice

 Curriculum Units available to foreign students according to conditions described

Curriculum Unit	Biochemistry
Contents	With the Biochemistry course it is intended that students acquire knowledge on key biological molecules, their genesis, function, interrelation and in particular its importance for the maintenance of life living beings. Knowledge of the phenomena of regulation, including enzymatic and non-enzymatic will also be given.
Methodologies and Evaluation	

Curriculum Unit	Economy and Taxation
Contents	

<b>Methodologies and Evaluation</b>	
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<b>Curriculum Unit</b>	<b>Mathematics and Statistics</b>
<b>Contents</b>	The course seeks to support mathematics as a tool of analysis, understanding and developing solutions, in other courses enabling the student to: ( i ) use statistical methods to summarize data and perform exploratory data analysis, (ii) understand the conditions underlying the applicability, validity and limitations of the theoretical models used for statistical analysis, (iii) analyze the results obtained, (iv) distinguish between cause-effect relationships and statistical associations between variables, (v) to acquire basic research skills and critical reading of technical and scientific documentation, (vi) be able to import, store, process, analyze and present data using the spreadsheet as a universal tool.
<b>Methodologies and Evaluation</b>	

<b>Curriculum Unit</b>	<b>Meteorology and Climatology</b>
<b>Contents</b>	

<b>Curriculum Unit</b>	<b>Pedology</b>
<b>Contents</b>	
<b>Methodologies and Evaluation</b>	

<b>Curriculum Unit</b>	<b>Ecology and Environment</b>
<b>Contents</b>	
<b>Methodologies and Evaluation</b>	

<b>Curriculum Unit</b>	<b>Introduction to Agricultural Production</b>
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<b>Contents</b>	
<b>Methodologies and Evaluation</b>	

<b>Curriculum Unit</b>	<b>Management of the Agricultural Business</b>
<b>Contents</b>	
<b>Methodologies and Evaluation</b>	

<b>Curriculum Unit</b>	<b>Mechanization</b>
<b>Contents</b>	With the course it is intended to provide students with the necessary knowledge about the identification, operation, maintenance and safety rules and hygiene of the tractor and agricultural machinery attached to the machine park of a farm in their different skills of agricultural production, animal, forestry and gardening.
<b>Methodologies and Evaluation</b>	

<b>Curriculum Unit</b>	<b>Plant Biology</b>
<b>Contents</b>	<ol style="list-style-type: none"> <li>1. External morphology <ol style="list-style-type: none"> <li>1.1 - Seed</li> <li>1.2 - Root</li> <li>1.3 - Stem</li> <li>1.5 - Leaf</li> <li>1.5 - Flower</li> <li>1.6 - Fruit</li> </ol> </li> <li>2. PLANT SYSTEMATICS <ol style="list-style-type: none"> <li>2.1. General concepts</li> <li>2.2 - Identification and Characterization of the major families of agricultural interest</li> <li>2.3 - Identification of weeds</li> </ol> </li> <li>3. PLANT PHYSIOLOGY <ol style="list-style-type: none"> <li>3.1 - Absorption and translocation of water and solutes in the plant</li> <li>3.2 - Sweating</li> <li>3.3 - Photosynthesis</li> <li>3.4 - Plant Productivity</li> <li>3.5 - Development of plants</li> <li>3.6 - Sexual reproduction of cultivated species</li> <li>3.7 - Vegetative propagation of cultivated species</li> </ol> </li> </ol>
<b>Methodologies and Evaluation</b>	<p>III. Evaluation</p> <ol style="list-style-type: none"> <li>1. Identification of cultivated species (10%) Practical test for identifying seeds (10%) Practical test for identifying plants (10%)</li> <li>2. Identification of weeds (work) - herborize three plants of different families; sort using dichotomous key (10%)</li> </ol>

	<p>3. Contribution to botanical showcase - all morphology classes - bring copies identified on the green and the previous class (10%)</p> <p>4. Demonstrate the acquisition and understanding of key concepts</p> <ul style="list-style-type: none"> <li>- A written test - Morphology (25%)</li> <li>- Written test 2 - Physiology (35%)</li> </ul> <p>Attendance To access the final exam students have to meet the Internal School Regulation, the conditions of attendance of at least 75% of academic activities (lectures / study tours).</p> <p>Student Workers Students with the status of student workers or other special statuses are exempted from obtaining the conditions of attendance. Thus, they have guaranteed access to the exam, regardless of whether or not to attend classes. However, it is recommended that they participate in the interim evaluation times for ease in obtaining positive rating in the discipline.</p> <p>Examination The examination is theoretical and practical, and the theoretical and practical test for the identification of seeds can be repeated.</p>
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Curriculum Unit	Plant Nutrition and Soil Fertility
<b>Contents</b>	
<b>Methodologies and Evaluation</b>	

Curriculum Unit	Biophysics
<b>Contents</b>	The course focus is on basic training in physics related to agricultural sciences, providing the theoretical knowledge background and their application for the various courses in the study plan; Also, aims at demonstrating the applicability and the role of the physical description and quantification of natural phenomena related to life sciences and engineering.

<b>Methodologies and Evaluation</b>	
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**Year 2**

Curriculum Units	Semester	Contact Hours	ECTS	Type	Obs
Techniques of Forest Production	I		6	C	
Animal Biology	I		6	C	
Plant Health	I		6	C	
Tree Crops	I		3	C	
Entrepreneurship	I		3	C	
Topography and Mapping	I		6	C	
Olive Growing and Viticulture	II		6	C	
Pastures and Forages	II		6	C	
Monogastric Production Techniques	II		6	C	
Vegetables and Fruit Growing	II		6	C	
Irrigation	II		6	C	
Elective I - English	II		3	PC	
Elective I - Drawing and Graphic Representation	II		3	PC	

C – Compulsory; PC – Personal Choice

 Curriculum Units available to foreign students according to conditions described

Curriculum Unit	Techniques of Forest Production
<b>Contents</b>	<ol style="list-style-type: none"> <li>1. Characterization of Portuguese forest</li> <li>2. Production of plants</li> <li>3. Forestry production systems</li> <li>4. Installation of forest</li> <li>5. Elementary notions of Dendrometry</li> <li>6. Forestry</li> <li>7. Interventions in the productive forest</li> <li>8. Management and forest management</li> <li>9. Defence against forest fires</li> </ol>
<b>Methodologies and Evaluation</b>	Activities and assessment tools Written interim evaluation (A) (Written test - Chapters 1 to 4) Written interim evaluation (B) (Written test - Chapters 5-9) Seminar (C) (Seminar - various topics) Report I (D) (Several short reports on various topics) Final exam (E) (Written exam covering all content)

Curriculum Unit	Animal Biology
<b>Contents</b>	<p>Students learn about the biological and physiological characteristics most relevant key species with zootechnical interest. The use of language and tools commonly used in biology and animal production is also encouraged, particularly with regard to the exterior of animals. Production parameters used to estimate the age by looking at the teeth and synchronization methods of heats and artificial insemination. Considering the importance that nutrition plays in animal production - performance, production systems and economic performance - it is intended that students master the chemical composition of foods (and their immediate principles determination), its use by animals (hold, ingestion, digestion, metabolic utilization) and their classification. Finally, students will become familiar with energy nutrition of ruminants, dominating the solution of concrete problems of fitness for dairy animals and carrion.</p>

<b>Methodologies and Evaluation</b>	
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<b>Curriculum Unit</b>	<b>Plant Health</b>
<b>Contents</b>	<ul style="list-style-type: none"> <li>1 - Introduction <ul style="list-style-type: none"> <li>1.1 - Importance of plant protection.</li> <li>1.2 - Definitions and general concepts.</li> <li>1.3 - Damage caused by the pest.</li> </ul> </li> <li>2 - Principles of plant pathology <ul style="list-style-type: none"> <li>2.1 - Concepts of disease and the causative agent.</li> <li>2.2 - Classification of diseases. Concepts of parasitism and pathogenicity.</li> <li>2.3 - Symptoms of a disease. Methods of diagnosis.</li> <li>2.4 - Cycle of a disease. Resistance to disease.</li> <li>2.5 - Main causative agents of plant diseases. <ul style="list-style-type: none"> <li>2.5.1 - Bacteria.</li> <li>2.5.2 - Fungi.</li> <li>2.5.3 - Virus.</li> <li>2.5.4 - nematodes.</li> <li>2.5.5 - Other staff.</li> </ul> </li> </ul> </li> <li>3 - Main principles of entomology and pest <ul style="list-style-type: none"> <li>3.1 - Definition of plague.</li> <li>3.2 - Types of damage caused by pests.</li> <li>3.3 - Main institutions that can assume the status of plague. <ul style="list-style-type: none"> <li>3.3.1 - Insects.</li> <li>3.3.2 - Mites.</li> <li>3.3.3 - Other bodies.</li> </ul> </li> </ul> </li> <li>4 - Principles of weed science <ul style="list-style-type: none"> <li>4.1 - Definition of weed.</li> <li>4.2 - Health hazard of weeds. <ul style="list-style-type: none"> <li>4.2.1 - Interference of weeds in agricultural crops.</li> <li>4.2.2 - Losses caused by weeds.</li> <li>4.2.3 - biological features of weeds.</li> </ul> </li> <li>4.3 - Classification of weeds.</li> <li>4.4 - Major weed species and families. <ul style="list-style-type: none"> <li>4.4.1 - Pteridophytes.</li> <li>4.4.2 - Monocotyledoneae.</li> <li>4.4.3 - dicots.</li> </ul> </li> </ul> </li> <li>5 - Basics Phytopharmacology <ul style="list-style-type: none"> <li>5.1 - Definitions and general concepts.</li> <li>5.2 - Classification and composition of plant protection products. <ul style="list-style-type: none"> <li>5.2.1 - Classification criteria.</li> <li>5.2.2 - Type of formulation.</li> <li>5.2.3 - Symbols and drug labels.</li> </ul> </li> <li>5.3 - Materials and techniques of application of plant protection products.</li> <li>5.4 - Safety standards in the application of plant protection products.</li> </ul> </li> <li>6 - Strategies and means of protection <ul style="list-style-type: none"> <li>6.1 - Measures of protection and types of struggle. <ul style="list-style-type: none"> <li>6.1.1 - preventive methods.</li> <li>6.1.2 - Methods cultural.</li> <li>6.1.3 - Methods of physical / mechanical.</li> <li>6.1.4 - Biological methods.</li> <li>6.1.5 - Biotechnical methods.</li> </ul> </li> </ul> </li> </ul>

	<p>6.1.6 - Chemical methods.</p> <p>6.2 - Integrated protection in combating the enemies of plants.</p> <p>6.2.1 - Development of methods of struggle.</p> <p>6.2.2 - Definition of Integrated Pest Management (PI).</p> <p>6.2.3 - Principles and components of the IP.</p> <p>6.2.4 - IP practices and methodologies.</p> <p>6.2.4.1 - The estimated risk of attack.</p> <p>6.2.4.2 - The economic attack (NEA).</p> <p>6.2.4.3 - The choice of methods of struggle.</p> <p>6.3 - Protection of plants in organic farming.</p> <p>7 - Control of the main enemies of the plants</p> <p>7.1 - Control of the enemies of the main crops.</p> <p>7.1.1 - Vine.</p> <p>7.1.2 - Olives.</p> <p>7.1.3 - Pomes fruit.</p> <p>7.1.4 - Cereals.</p> <p>7.2 - Control of the enemies of forest species.</p> <p>7.2.1 - softwood species.</p> <p>7.2.2 - broadleaf species</p> <p>7.3 - Control of pests of gardens and lawns.</p> <p>7.3.1 - Flores.</p> <p>7.3.2 - Shrubs and trees.</p> <p>7.3.3 - Lawns.</p> <p>8 - Legislation on plant</p> <p>8.1 - Legal framework on plant health.</p> <p>8.2 - Production, distribution and marketing of plants.</p> <p>8.3 - Import and export of plants.</p> <p>8.4 - prospecting programs. Plant quarantine.</p> <p>8.5 - Alerts phytosanitary services and information officers.</p>
<p><b>Methodologies and Evaluation</b></p>	<p>Activities and assessment tools</p> <p>Reports on study tours conducted (total weight 5%) Written work "Weeds in a culture" (5% weight)</p> <p>Oral Presentations Three individual oral presentations (each with a weight of 10% of the final grade): - Presentation of a disease of a culture - Presentation of a pest or a crop - Presentation of the report "Weeds in a culture"</p> <p>Written tests 2 partial tests (each with a weight of 30% in final grade), the first on the topics from 1 to 5 and the other on topics 6-8.</p> <p>Examination - Regular Season: - Test Part 1 (30%) + Regular Season Review Part 2 (30%) - Test Part 2 (30%) + Regular Season Review Part 1 (30%) - Examination Regular Season with the whole content (60%)</p>

<p><b>Curriculum Unit</b></p>	<p><b>Tree Crops</b></p>
<p><b>Contents</b></p>	
<p><b>Methodologies and Evaluation</b></p>	



<b>Curriculum Unit</b>	<b>Entrepreneurship</b>
<b>Contents</b>	1. Entrepreneurship 1.1 – What is entrepreneurship 1.2 – The entrepreneur profile 1.3 – How to measure entrepreneurship  2. Innovation 2.1 – What is innovation 2.2 – Some innovation models 2.3 – How to measure innovation 2.4 – The relationship between innovation and entrepreneurship 3. From the idea to a business 3.1 – Basic notions of mathematical finance 3.2 – Basic notions of accounting * Main financial statements * Analysis of financial statements 3.3 – Investment project * Investment planning * Financial planning * Provisional budgets * Descriptive information of a project 3.4 – Evaluation of investment projects
<b>Methodologies and Evaluation</b>	

<b>Curriculum Unit</b>	<b>Topography and Mapping</b>
<b>Contents</b>	
<b>Methodologies and Evaluation</b>	

<b>Curriculum Unit</b>	<b>Olive Growing and Viticulture</b>
<b>Contents</b>	
<b>Methodologies and Evaluation</b>	

<b>Curriculum Unit</b>	<b>Pastures and Forages</b>
<b>Contents</b>	The course is intended to teach students the biological, physiological and cultural aspects of pastures and forages. It is intended that students acquire knowledge about the main species of grasses and legumes, annuals and perennials as well as its role as a cover to protect against erosion, and CO2 sequestration as part of agro-forestry-pastoral. Reference is made to the relationships between growth, development stage and nutritional value of plants, and the approach to grazing systems and pasture-animal relations and animal-soil.
<b>Methodologies and Evaluation</b>	

<b>Curriculum Unit</b>	<b>Monogastric Production Techniques</b>
<b>Contents</b>	
<b>Methodologies and Evaluation</b>	

<b>Curriculum Unit</b>	<b>Vegetables and Fruit Growing</b>
<b>Contents</b>	
<b>Methodologies and Evaluation</b>	

<b>Curriculum Unit</b>	<b>Irrigation</b>
<b>Contents</b>	
<b>Methodologies and Evaluation</b>	

<b>Curriculum Unit</b>	<b>Elective I - English</b>
<b>Contents</b>	<b>Elective I- Drawing and Graphic Representation</b>
<b>Methodologies and Evaluation</b>	
<b>Curriculum Unit</b>	<b>Elective I- Drawing and Graphic Representation</b>
<b>Contents</b>	
<b>Methodologies and Evaluation</b>	

**Year 3**

Curriculum Units	Semester	Contact Hours	ECTS	Type	Obs
Economics and Agricultural Policy	I		3		C
Planning the Agricultural Activities	I		6		C
Product Transformation Technology	I		6		C
Ruminant Production Techniques	I		6		C
Management and Quality Control	I		6		C
Elective II - GIS and Spatial Planning	I		3		PC
Elective II - Marketing and Communication Techniques	I		3		PC
Elective II - Research Methodologies	I		3		PC
Internship	II		30		C

C – Compulsory; PC – Personal Choice

🇪🇺 Curriculum Units available to foreign students according to conditions described

Curriculum Unit	Economics and Agricultural Policy
Contents	It is intended to give students a basic understanding of economic and political environment surrounding the agricultural means, so that future success can proceed with the integration of the farms in the economy. Thus, it is intended that students first acquire notions about economic policy in general and, later on agricultural policies. The course ends with a strong component of the current Common Agricultural Policy and its objectives and evolution. Future farmers will have to acknowledge not only the current agricultural policy, but also their goals and progress in order to understand its operation and anticipate future developments.
Methodologies and Evaluation	

Curriculum Unit	Planning the Agricultural Activities
Contents	
Methodologies and Evaluation	

Curriculum Unit	Product Transformation Technology
Contents	
Methodologies and Evaluation	

Curriculum Unit	Ruminant Production Techniques
Contents	
Methodologies and Evaluation	

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Curriculum Unit	Management and Quality Control
<b>Contents</b>	<p>QUALITY MANAGEMENT</p> <p>I - INTRODUCTION</p> <ol style="list-style-type: none"> <li>1. Historical Introduction</li> <li>2. Models for excellence</li> <li>3. Society as a system in constant change</li> </ol> <p>II -</p> <ol style="list-style-type: none"> <li>1. Value Analysis</li> <li>2. Critical success factors</li> </ol> <p>III - QUALITY AND COMPETITIVENESS</p> <ol style="list-style-type: none"> <li>1. Perspective of the customer and supplier</li> <li>2. Qualitative classification of products / services</li> </ol> <p>IV - THE PHILOSOPHY OF QUALITY</p> <ol style="list-style-type: none"> <li>1. Zero errors / defects</li> <li>2. Vs. control. Inspection</li> <li>3. Quality control and not quality</li> </ol> <p>V - INSTALLATION OF QUALITY MANAGEMENT IN THE COMPANY</p> <ol style="list-style-type: none"> <li>1. General principles</li> <li>2. Customer Service</li> <li>3. Management and leadership</li> </ol> <p>VI - QUALITY INSTRUMENTS</p> <ol style="list-style-type: none"> <li>1. Quality circles</li> <li>2. Circles of progress</li> <li>3. Indicators of quality</li> <li>4. Management Indicators</li> <li>5. Poka-Yoke</li> <li>6. Six sigma</li> </ol> <p>VII - CERTIFICATION OF QUALITY</p> <ol style="list-style-type: none"> <li>1. Competent authorities and legislation</li> <li>2. Advantages and disadvantages</li> <li>3. Audits</li> </ol> <p>QUALITY CONTROL</p> <p>VIII - CONCEPT AND PRINCIPLES OF QUALITY</p> <ol style="list-style-type: none"> <li>1. Quality concept in view of agri-food</li> <li>2. Historical background on the quality control</li> <li>3. System design philosophy and quality control</li> </ol> <p>IX - FOOD CONTAMINATION AND CHANGES</p> <ol style="list-style-type: none"> <li>1. Biological (food microbiology)</li> <li>2. Microbial Ecology</li> <li>3. Main microorganisms responsible for the change in food</li> <li>4. Toxi-foodborne</li> <li>5. Physical-chemical and biochemical</li> </ol> <p>X - QUALITY CONTROL</p> <ol style="list-style-type: none"> <li>1. Control of water quality</li> <li>2. Hygienic and sanitary control of personnel and facilities</li> <li>3. Analytical control of</li> <li>4. The sensory analysis</li> <li>5. Statistical quality control</li> <li>6. Control charts</li> <li>7. Control of variables</li> <li>8. Control by attributes</li> <li>9. 10.6 Law of food labeling</li> </ol>

	<p>XI - FOOD ADDITIVES</p> <ol style="list-style-type: none"> <li>1. Definition</li> <li>2. Function and overall</li> </ol> <p>XII - Hygiene and sanitation AGRO-FOOD INDUSTRY</p> <ol style="list-style-type: none"> <li>12.1 Program of cleaning</li> <li>12.2 Factors influencing the choice of cleaning and disinfection</li> <li>12.3 Cleaning and sanitizing</li> </ol> <p>XIII - MAJOR SYSTEM CONCEPTS OF RISK ANALYSIS AND CRITICAL CONTROL POINT (HACCP)</p>
<b>Methodologies and Evaluation</b>	<p>Evaluation System</p> <p>Students must be present at 75% of the theoretical and practical lessons (except working students)</p> <p>2 Assessment Tests</p> <p>FINAL GRADE = Score 1 * Score 2 * 0.45 + 0.45 + 0.10 * Attendance</p> <p>The weighted average grades 1 and 2 ≥ 9.5 (no scores &lt;8.5)</p> <p>FINAL GRADE &lt;9.5 requirement to go to Examination</p>

<b>Curriculum Unit</b>	<b>Elective II - GIS and Spatial Planning</b>
<b>Contents</b>	
<b>Methodologies and Evaluation</b>	

<b>Curriculum Unit</b>	<b>Elective II - Marketing and Communication Techniques</b>
<b>Contents</b>	
<b>Methodologies and Evaluation</b>	

<b>Curriculum Unit</b>	<b>Elective II - Research Methodologies</b>
<b>Contents</b>	
<b>Methodologies and Evaluation</b>	

<b>Curriculum Unit</b>	<b>Internship</b>
<b>Contents</b>	<p>The Internship is essentially practical in nature and the undergraduate students are integrated into normal life of the organization / company / institution. The internship takes place in the 6th semester of the Curriculum and extends throughout the duration defined in the curriculum. In exceptional cases, the student can complete his internship in a different period if approved by the</p>

	<p>Course Director. The internship will be held in organizations, institutions or companies either public or private. Organizations, institutions or companies where the internship will occur will be defined by the School Board based on a proposal from the Course Director. Organizations, institutions or companies will be contacted in advance by the School Board or its representatives and a protocol will be signed for this purpose.</p> <p>Students can take the initiative to contact the organizations, institutions or companies where they wish to be placed. The organizations, institutions or companies to contact should operate in areas of activity consistent with the profile of the Curriculum or have departments or services similar in nature.</p>
<p><b>Methodologies and Evaluation</b></p>	<p>Each student or group of students will be supervised by a teacher at school (supervisor), under a proposal of the Course director. The organization, institution or company where the work placement takes place shall appoint a person responsible for its monitoring (advisor).</p> <p>The elements taken into account for assessment are as follows: internship plan; regular progress reports; quality assessment form for completion by the advisor; technical evaluation of the training venue; internship final report.</p>