

<b>Updated On</b>	2021/09/28										
<b>Curricular Year / Period</b>	2021/22 / S2										
<b>Course</b>	Agronomia										
<b>Curricular Unit</b>	Pastagens e Forragens										
<b>Language(s) of Instruction</b>	Portugues										
<b>ECTS/tempo de trabalho (horas)</b>	<b>ECTS</b>	<b>Total</b>	<b>Horas de contacto semestral</b>								
	<b>6</b>	<b>160</b>	<b>T</b>	<b>TP</b>	<b>PL</b>	<b>S</b>	<b>TC</b>	<b>E</b>	<b>O</b>	<b>OT</b>	<b>EC</b>
			<b>64</b>		<b>32</b>						
<p>T - Theoretical; TP - Theoretical and practical; LP - Laboratory Practice; S - Seminar; TG - Tutorial guidance; FW - Fieldwork; T - Training; ; EC - Clinical teaching; O* - Other hours typified as Clinical Training under the Directive 77/453/EEC of June 27, adapted by Directive 2005/36/EC.</p>											
<b>Teacher in charge (GDPR consent)</b> <small>[complete name, email]</small>	Noémia Do Céu Machado Farinha / nfarinha@ippportalegre.pt										
<b>Prerequisites</b> <small>[Curricular Units that must precede and specific entry competences]</small>	Not applicable										
<b>Learning outcomes</b> <small>[Description of the overall and specific objectives] [Knowledge, skills and competences to be developed by students]</small>	<p>With the course of Pastures and Forages it is intended that students know the most relevant biological, physiological, and cultural aspects of pastures and forages, one of the most representative land occupations in the world and the main base of animal production. It is intended that students acquire knowledge about the main species, grasses and legumes, annual and perennial, with practical and / or forage interest, as well as their role as protection against erosion, CO2 sequestration and as an element of agro-silvo-pastoral system. The relationships between growth, stage of development and nutritional value of plants are referred to, and grazing systems and animal-pasture and animal-soil relationships are addressed. Observing the relationship between the soil and climatic conditions and the requirements of the plants, initiate students in the ability to suggest mixtures of species more adapted to a certain environmental constraint. Enable them to select cultural practices and define the most appropriate technical itinerary for the implantation and management of a pasture. Understand the relationship between availability and food needs, their fluctuations throughout the year, as well as recognize the consequent need for supplementation. To know the forage conservation processes as well as the factors that most influence the quality of hay and silage and the ways in which it can be evaluated. Arouse students' interest in applied research.</p>										
<b>Syllabus</b>	<ol style="list-style-type: none"> <li>1. INTRODUCTION <ol style="list-style-type: none"> <li>1.1 Definition of pasture and forage;</li> <li>1.2 Classification of pastures and forages;</li> <li>1.3 Note history;</li> <li>1.4 Economic and social importance;</li> <li>1.5 Fodder and pasture in the context of Portuguese agriculture;</li> <li>1.6 Importance of fodder and pasture for agrarian ecosystems and the environment;</li> <li>1.7 Main constraints on the production of pastures and forages;</li> </ol> </li> <li>2. MORPHOLOGICAL AND PHYSIOLOGICAL ASPECTS OF PRACTICAL AND FORAGE SPECIES: <ol style="list-style-type: none"> <li>2.1 Main morphological aspects;</li> <li>2.2 Stages of development;</li> <li>2.3 Physiology of growth;</li> <li>2.4 Relevant aspects for the production of pastures and forages;</li> </ol> </li> <li>3. MAIN SPECIES USED IN PASTURES: <ol style="list-style-type: none"> <li>3.1 Annual and perennial grasses;</li> <li>3.2 Annual and vivacious legumes;</li> <li>3.3 Associations;</li> </ol> </li> <li>4. PASTURE ESTABLISHMENT: <ol style="list-style-type: none"> <li>4.1 Choice of species;</li> <li>4.2 Preparation of the land;</li> <li>4.3 Seeding;</li> <li>4.4 Fertilization. Biological nitrogen fixation.</li> </ol> </li> <li>5. MAIN FORAGE SPECIES:</li> </ol>										

	<p>5.1 Cold season annuals; 5.2 Annual hot seasons; 5.3 Multiannuals; 6. FORAGE CUTTING AND CONSERVATION: 6.1 Machines; 6.2 Haying; 6.3 Silage. 7 USE OF PASTURES AND FORAGES: 7.1 Nutritional value and food value; 7.2 Use by grazing animals. Grazing systems. Header. Animal-pasture relationship. Animal-soil relations; 7.3 Example of balance between food needs and availability</p>
<p><b>Teaching methodologies (including assessment)</b> [Specify the types of assessment and the weights and evaluation criteria]</p>	<p><b>1 - Teaching methodologies</b> Theoretical framing and debate sessions; Presentation of demonstrative examples and their criticism; discussion of practical cases presented by the teacher and students, assuming the active participation of students in classes. Existence of at least 2 study visits, practical work to initiate research.</p> <p><b>2 - Period assessment</b> The assessment has essentially 2 components: theoretical assessment and practical assessment. The theoretical evaluation, with a weight of 70% in the final classification, consists of 2 tests throughout the semester, the first on chapters 1 to 3 and the second on chapters 4 to 7. Each test has a weight of 35% in the final classification. The practical work with a weight of 30% in the final classification, is an experimental work of initiation to investigation. Students are given a protocol for preparing the work. At each evaluation moment, the minimum classification is 10 points.</p> <p><b>3 - Examination assessment</b> In the Exam, the student can be evaluated on the whole subject (being approved if the final classification is &gt;= 10 points) or only on the components of the evaluation with a classification &lt;10 points. In case of failure, the evaluations of the theoretical components do not carry over to the following year.</p>
<p><b>Bibliography</b></p>	<p><b>1 - Main Bibliography</b></p> <ul style="list-style-type: none"> <li>-Cavaco, M.; Calouro, F. (coord). Produção Integrada das Culturas - pastagens e forragens. QARS/DGPC, Lisboa, Portugal. 52 p. + Anexos</li> <li>- Crespo, D.G. 1980. Pastagens, forragens e produção animal face à crise energética dos nossos dias. Pastagens e Forragens vol 1, Pág. 17-32.</li> <li>- Crespo, D.G. 1995. Pastagens, forragens e produção animal. Sistemas intensivos versus extensivos. Pastagens e Forragens vol 16, Pág. 71-73.</li> <li>- Huyghe, C., De Vlieghe, A. , van Gils, B., Peeters, A. (2014). Grasslands and herbivore production in Europe and effects of common policies. FRA : Éditions Quae. <a href="http://prodinra.inra.fr/record/256649">http://prodinra.inra.fr/record/256649</a></li> <li>- Moreira, N. 2002. Agronomia das forragens e pastagens. UTAD, Portugal.</li> <li>- Pardo, E.M., Garcia, R. 1991. Praderas y forrajes. Producción y aprovechamiento. Ediciones Mundi-Prensa, Madrid. Pastagens e Forragens.</li> <li>- Publicação periódica da Sociedade Portuguesa de Pastagens e Forragens. On-line em <a href="http://www.sppf.pt/seccoes.aspx?id_seccao=47&amp;ord=2">http://www.sppf.pt/seccoes.aspx?id_seccao=47&amp;ord=2</a></li> <li>- Salgueiro, T.A. 1981. Pastagens e forragens. Coleção agricultura moderna, Clássica Editora, Lisboa.</li> <li>- Serrano, J. E. 2006. Pastagens do Alentejo: bases sobre caracterização, pastoreio e melhoramento. Universidade de Évora-ICAM, Évora. 219 pp.</li> <li>- Teixeira, R. F. M., Domingos, T., Costa, A. P. S. V., Oliveira, R., Farropas, L., Calouro, F., Carneiro, J. P. B. G. (2011). Soil organic matter dynamics in Portuguese natural and sown rainfed grasslands. Ecological Modelling, 222(4), 993-1001</li> <li>- Vasconcelos, T., Monteiro, A., Torres, M. O., Sá, G., &amp; Forte, P. (2014). Infestantes de Pastagens. Plantas tóxicas e agressivas. Série didática Herbologia 6 (Monteiro A, Coord) ISA Press, Lisboa, 104pp.</li> </ul> <p><b>2 - Complementary Bibliography</b></p> <ul style="list-style-type: none"> <li>- Langer, R.H.M. 1990. Pastures. Their Ecology and Management. Oxford University Press. New Zealand.</li> <li>- Pearson, C.J., Ison, R.L. 1997. Agronomy of Grassland Systems. Cambridge University Press, UK.</li> <li>- Moreira, M.; B.; Coelho, I.S. 2008. A silvopastorícia na prevenção dos fogos rurais. ISAPress</li> </ul>

**Special Situations**

[Students with special status]

**1 - Period assessment - Students with special status**

Working student students can follow the previous evaluation components, or can, as an alternative to practical work that requires presence in the field, present a work with a similar structure, but done only based on bibliography. Weights remain the same.

**2 - Examination assessment - Students with special status**

Working student students follow the same rules as ordinary students.