

COURSE OF STUDY (AGRICULTURAL SCIENCES AND TECHNOLOGIES– RURAL SYSTEM MANAGEMENT (GSR)

ACADEMIC YEAR (2023-2024)

ACADEMIC SUBJECT AGRONOMY

General information	
Year of the course	<i>II Year</i>
Academic calendar (starting and ending date)	<i>I semester (25 sept/19 Jan)</i>
Credits (CFU/ETCS):	6
SSD	<i>AGR 02: AGRONOMY AND HERBACEOUS CROPS</i>
Language	<i>ITALIAN</i>
Mode of attendance	<i>OPTIONAL</i>

Professor/ Lecturer	
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Virtual room	
Office Hours (and modalities: e.g., by appointment, on line, etc.)	

Work schedule			
Hours			
Total	Lectures	Hands-on (laboratory, workshops, working groups, seminars, field trips)	Out-of-class study hours/ Self-study hours
<i>Es. 150</i>	<i>32</i>	<i>28</i>	<i>90</i>
CFU/ETCS			
<i>Es. 6</i>	<i>4</i>	<i>2</i>	

Learning Objectives	<p>The Agronomy course aims to study the agricultural system, allowing the student to develop the biology and botany knowledge acquired in the previous year's teachings in an anthropized system such as the agricultural system</p> <p>The agronomy course is highly professionalizing and will provide the student with a wide fields of knowledge in the context of the relationship between plant production and influence of environmental components, and how the anthropogenic component can affect it.</p> <p>Will be considered the environmental and economic sustainability of crop systems through the examination of the effects of the various agronomic techniques on crop productivity and the protection of environmental resources. Attention will be paid to the innovations that the agricultural sector proposes for the optimal management of production factors.</p>
Course prerequisites	The agronomy course deals with issues that require knowledge of various basic subjects, therefore for an optimal understanding of the lessons it is essential to know:

	Principles of arithmetic, mathematics and geometry Principles of Physics Principles of Chemistry and biochemistry Principles of Biology and botany
Teaching strategie	<i>Frontal lesson (inductive, deductive and dialogue), calculation exercises, video analysis, group exercises, farm visits</i>
Expected learning outcomes in terms of	
Knowledge and understanding on:	At the end of the course students will be able to: <ul style="list-style-type: none"> - Describe the environmental factors that influence agricultural crop production. - Describe the anthropic factors that can influence agricultural crop production. - Describe the physical and/or biological action mechanisms that determine these factors in the continuous soil/plant atmosphere system. - Classify irrigation methods. - Classify fertilizers and formulate fertilizing plans. - Classify soil tillage machines. - describe the preventive, physical or biological intervention strategies on weeds.
Applying knowledge and understanding on:	At the end of the course the student should be able to: <ul style="list-style-type: none"> - Evaluate the importance of the effects of agronomic and/or environmental factors acting on the production components. - recognize the productive potential of different types of soil based on their physical and chemical components. - know the main machines available for soil management. - know in the field the main agricultural arrangements for the regulation of excess and irrigation water - Know the nutrients, the main fertilizers, - set up and solve irrigation management problems - know how to manage weeds - Know the aspects inherent in the seed sector.
Soft skills	At the end of the course students will be able to: <ul style="list-style-type: none"> - hypothesize the effects that environmental components have on agricultural production and how to influence them - propose the most suitable agro-techniques to address the most frequent crop problems <p>Communication skills</p> <ul style="list-style-type: none"> -provide a sufficient range of practical examples of the application of agronomic cultivation techniques - use an appropriate and up-to-date agronomic technical lexicon <p>Ability to learn independently</p> <ul style="list-style-type: none"> -Ability to learn through the development of cognitive tools and logical elements related to the agronomic s
Syllabus	

<p>Content knowledge</p>	<p>Introduction of the course. Evolution of agriculture: historical aspects. Agriculture-environment relationships. Objectives and contents of General Agronomy. Structure of the discipline. Ecosystem concept. Agroecosystem concept. Modifications induced by anthropic interventions in the agroecosystem: nature of inputs and outputs and consequences on the balance between the components of the system.</p> <p>Agrometeorology: meteorological and climatic conditions, climatic factors and elements, radiation effects and radiative balance, light and photoperiodism, air humidity, air and soil temperature, hydrometeors, meteorological station Climate: definitions, factors and elements of climate. Climate classifications.</p> <p>Evapotranspiration (ET): functions of water, water consumption, evaporation and transpiration, types of ET; ET estimation, calculation examples</p> <p>The agricultural land. Intrinsic characteristics of the soil: origin, stratification, position and exposure, colour.</p> <p>The agricultural land. Extrinsic features of the terrain. structure, density and porosity, organic matter, cation exchange capacity, pH, soil types and tillage</p> <p>Water-soil relationships. potential and components, soil moisture, water balance, basics of water dynamics in the soil</p> <p>Irrigation. Purposes of irrigation, timing of irrigation, methods irrigate. Precision irrigation. Quality of irrigation water. case studies for the calculation of irrigation requirements</p> <p>Land tillage: purposes, types of machinery tillage, actions of the working bodies and working depth, burglary, plowing and construction sites</p> <p>traditional, vertical tillage, minimum tillage, band tillage, direct sowing</p> <p>soil nutritional function. Nutrient elements. Fertilisation: legislative and agronomic definitions, mineral fertilisers, slow release nitrogen fertilisers, organic, corrective, biostimulant and corroborating fertilisers, fertilization with minor elements, fertilization technique (types and periods), fertigation, fertilization response curve, Program of fertilization.</p> <p>Dry farming</p> <p>Elements of weed flora management</p> <p>Crop rotation and its environmental significance.</p> <p>The reproductive material in agriculture</p>
<p>Texts and readings</p>	<ul style="list-style-type: none"> - Lecture notes and teaching material distributed during the course. - Giardini, L. Agronomy to preserve the future. Patron Publisher 2012 - P. Ceccon, M. Fagnano, C. Grignani, M. Monti, S. Orlandini. Agronomy, Edises, 2017
<p>Notes, additional materials</p>	
<p>Repository</p>	
<p>Assessment</p>	
<p>Assessment methods</p>	<p>The final exam is divided into an initial written part based on numerical exercises, carried out during the exercises. The oral part of the interview includes further verification of the preparation by asking other questions in oral form. The execution of the exam is linked to the possible execution of the</p>

	<p>intermediate checks, foreseen during the specific periods. The communication of the evaluation will take place at the end of the performance</p>
Assessment criteria	<p>Knowledge and understanding</p> <ul style="list-style-type: none"> - Technical management skills of the various components of the agricultural agro-ecosystem. <p>Applying knowledge and understanding</p> <ul style="list-style-type: none"> - Knowing how to identify good agronomic practices <p>Autonomy of judgment</p> <ul style="list-style-type: none"> - Ability to carry out an environmental analysis of the rural system, knowing how to identify its critical issues and potential with reference to agricultural exercise. <p>Communicating knowledge and understanding</p> <ul style="list-style-type: none"> - Knowing how to explain and argue on complex agronomic issues both in written and oral form <p>Capacities to continue learning</p> <ul style="list-style-type: none"> - Knowing how to learn information from regulations and reference texts in the agronomic sector - Knowing how to use tools and new information technologies that guarantee continuous updating of knowledge in the specific professional sector and in the field of scientific research
Final exam and grading criteria	<p>The final score is given in thirtieths. The exam is considered passed when the grade is greater than or equal to 18/30. For the purposes of calculating the final mark, the intermediate tests, the written exercise, the oral part will be considered.</p> <p>The student's ability to develop independent judgment and adequate argumentation and exposition skills contributes to the assignment of a high grade or honors.</p>
Further information	
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