



General information	
Academic subject	Pharmacognosy
Degree course	<i>Pharmacy</i>
Year of study	<i>Third</i>
European Credit Transfer and Accumulation System (ECTS)	8
Language	<i>Italian</i>
Academic Year	<i>2022-2023</i>
Academic calendar (starting and ending date)	<i>February/June</i>
Attendance	<i>Compulsory</i>

Professor/ Lecturer Course A-E	
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Syllabus	
Learning Objectives	The course is mainly aimed at the study of drugs of natural origin for use in the field of herbal, cosmetic and dietetic health products. Emphasis is given to herbal drugs registered in the National and European Pharmacopoeia. The pharmacognostic aspects of the plant and drug source and the phytotherapeutic application are described (botanical description, phytochemical, purpose of use, pharmacological action).
Course prerequisites	<i>Knowledge of pharmacology, physiology and biochemistry</i>
Contents	<ul style="list-style-type: none">- Introduction. Definitions: medicinal and officinal plants; concept of general and specialized metabolism; active principle; drug; Total preparations and pure principles, definition of phytocomplex. Sources of variability in the content of active principles.- Chemical classification of active principles: Secondary metabolites: phenols, terpenes, alkaloids. Primary metabolites: polysaccharides and



	<p>lipids.</p> <ul style="list-style-type: none"> - From natural source to drug. Selection of plant material (wild and cultivated plants). Collection, preparation, and preservation of drugs. - From drug to active principles. Extraction and purification procedures. Extracts. Titration and standardization of extracts. - Quality control of drugs. Reference parameters according to the Official Pharmacopoeia (Ash content; Bitterness index; Stomatal index; Swelling index; hemolytic activity). - Special part: Monographs. Plants that act on the central and peripheral nervous system (Lavender, Valerian, Passionflower, Lemon Balm, Chamomile, Eschscholzia, St. John's Wort, Ginkgo, Coffee, Tea, Cocoa, Tobacco); plants that act on the cardiovascular system and venous insufficiency (Garlic, Hawthorn, Olive, Pomegranate, Digitalis, Hibiscus, Horse Chestnut, Fennelflower, Flax plant, Gotu Kola, Bilberry, Grape, Butcher's Broom, sweet clover, Melis, Maritime pine); plants that act on carbohydrate and lipid metabolism (Fermented Red Rice, Garlic, Goat's Rue, Fenugreek, artichoke, Commiphora mukul, Milk Thistle, Holy basil, Gymnema, White Mulberry, Cinnamon, Guranteed gum, Bergamot, Onion, Soy, Melanurca bella, Bitter melon, Ginseng, Sea Oak, Matè, Konjak, Hoodia, Caralluma, Ephedra, Bitter Orange, Garcinia); plants that act on pain and inflammation (Boswellia, Myrrh, Ginger, Devil's Claw, Parthenium, Turmeric, Hemp, Opium Poppy); plants that act on the respiratory system (Eucalyptus, Thyme, Elderberry); adaptogens and immunomodulators (Ginseng, Eleuthero, Rhodiola, Echinacea, Astragalus, Schisandra, Withania, Cat's claw, artocarpus tonkinensis cedrus deodara); plants that act on the gastrointestinal tract and laxatives (Aloe, Tea tree oil, Propolis, Chili, caraway seeds, Fraxinus ornus, Bran, Cassia, Tamarind, Olive oil, Rhubarb, Castor oil, Agrimonia, Tormentilla, Argentine plant, Gentian, Wormwood, Ginger, Fennel, Mint, Licorice, Psyllium, Senna, Cascara, Buckthorn); plants that act on the hepato-biliary system (Milk Thistle, Artichoke, Turmeric, Phyllantus, Dandelion,); plants that act on the urinary system (Horsetail, Bearberry, Nettle, Birch, Parsley, Juniper); plants that act on the reproductive system and galactagogues (Saw Palmetto, Soy, Chaste Tree); plants for the skin system (Arnica, Aloe, Calendula).
Books and bibliography	G. Mazzanti, M. Dell'Agli, A.A. Izzo - Farmacognosia e Fitoterapia- Piccin ed., 2020 Bruni A.- Farmacognosia generale ed applicata - Piccin ed., 1999
Additional materials	

Work schedule			
Total	Lectures	Hands on (Laboratory, working groups, seminars, field trips)	Out-of-class study hours/ Self-study hours
Hours			
80	70	10	120
ECTS			
8	7	1	
Teaching strategy			



	Lectures with projected teaching aids (i.e. power point presentations shared with the students)
Expected learning outcomes	The course is mainly aimed at the study of drugs of natural origin for use in the field of herbal, cosmetic and dietetic health products. Emphasis is given to herbal drugs registered in the National and European Pharmacopoeia. The pharmacognostic aspects of the plant and drug source and the phytotherapeutic application are described (botanical description, phytochemical, purpose of use, pharmacological action).
Knowledge and understanding on:	<ul style="list-style-type: none">• knowledge of medicinal plants and their active ingredients;• ability to classify and recognize plant organisms;• understanding of the relationships between cultivation practices and the quality of raw materials and processed products;• ability to understand the relationships between the structure of natural products and their activity in biological systems;• knowledge of extraction and analytical techniques applied to herbal;• cosmetic and dietetic products;• ability to prepare protocols for new formulations of herbal, cosmetic and dietetic products.• Knowledge of pharmacological properties of plant-derived drugs, their side effects and interactions
Applying knowledge and understanding on:	<ul style="list-style-type: none">• Ability to identify the plant drug and recognize the chemical structures that constitute the active principles, contextualizing their use in the therapeutic field or their application in other fields, such as health promotion.
Soft skills	<p><i>Making informed judgments and choices</i></p> <ul style="list-style-type: none">• ability to develop and apply protocols extraction and analytical for the obtaining of phytocomplexes or active principles• ability to apply protocols for the quality certification of phytopreparations, cosmetics and health products• ability to find and use data to formulate original answers to problems in the field of pharmaceutical sciences and technologies applied to the field of medicinal plants and products for health and cosmetic use <p><i>Communicating knowledge and understanding</i></p> <ul style="list-style-type: none">• communicate their conclusions, as well as their knowledge to their peers, superiors and all users of their business <p><i>Capacities to continue learning</i></p> <p>Graduates in Pharmacy must possess the ability to independently undertake advanced studies oriented towards further professional development within research doctorates, specialized schools, and master's programs.</p>
Assessment and feedback	
Methods of assessment	<i>Oral exam on the topic discussed during the course</i>



Evaluation criteria	<p><i>Knowledge and understanding</i></p> <ul style="list-style-type: none">• Ability to describe the botanical aspects of plants of pharmacological interest.• Ability to recognize the therapeutic applications of active principles of natural origin.• Knowledge of the mechanism of action of natural active principles.• Knowledge of possible interactions with drugs and food.• Knowledge of potential side effects and contraindications. <p><i>Applying knowledge and understanding</i></p> <ul style="list-style-type: none">• Ability to identify the plant drug and recognize the chemical structures that constitute the active principles, contextualizing their use in the therapeutic field or their application in other fields, such as health promotion. <p><i>Autonomy of judgment</i></p> <ul style="list-style-type: none">• Ability to independently assess preparations based on medicinal plants, providing information on efficacy, side effects, contraindications, pharmacological interactions, and toxicity of products based on medicinal plants. <p><i>Communicating knowledge and understanding</i></p> <ul style="list-style-type: none">• Clear and organized presentation• Use of appropriate terminology <p><i>Communication skills</i></p> <ul style="list-style-type: none">• Ability to articulate and skillfully cover various topics of the course.
Criteria for assessment and attribution of the final mark	<p>The final grade is awarded out of thirty. The exam is passed when the grade is greater than or equal to 18. To achieve a high evaluation, the student must have developed autonomy of judgment and adequate capacity for argumentation and presentation.</p> <ul style="list-style-type: none">• Knowledge and understanding: 50% of the final mark expressed out of thirty• Applying knowledge and understanding: 10% of the final mark expressed out of thirty• Autonomy of judgment: 20% of the final mark expressed out of thirty• Communicating knowledge and understanding: 10% of the final mark expressed out of thirty <p>Communication skills: 10% of the final mark expressed out of thirty</p>
Additional information	