"NON TIMBER FOREST PRODUCTS" SYLLABUS

Basic data of the subject	
Academic Unit:	**Life and Environmental Sciences Faculty**
Course title:	**Non timber forest products**
Program:	**Forestry and Environmental Sciences**
Level:	**Bachelor**
Course status:	**Compulsory**
Study year:	**Second year, first semester**
Number of hours per week:	**3+2**
Credit value – ECTS:	**6**
Time / location:	**To be announced**
Lecturer:	**Prof. Asoc .Dr. Ylli Kortoçi**
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Course description:	Non-timber forest products, also known as small forest products, special, alternative and medium forest products are substances, materials and / or useful wares obtained from forests that do not require harvesting of wood material. They include fruits, seeds, flowers, bark, fungi, oils, leaves, medicinal plants, willow birches, resin, tannins, forage, coal, etc. Research on non-timber forest products has been focused on their ability to be used as a commodity to increase income in rural areas and their markets, for industries such as cosmetics, handicrafts and more. These products are also a key component of sustainable forest management and conservation strategies. All research promotes non-timber forest products as valuable wares and tools that can promote forest conservation.
Course objectives:	The purpose of this course is to familiarize with these products, their inventory, and management, collection according to all criteria, storage and post-harvest processing. Non-timber forest products are used and managed in complex socio-economic and ecological environments. In traditional forest communities, many non-timber forest products can be used for survival, either the primary or the only source of income. Some have significant cultural value; others have significant medicinal value and contribute to the health and well-being of the community. But as forest areas shrink, human populations grow, markets change, and traditional management institutions lose their authority, the sustainable production of many non-timber forest products is no longer secure.

Learning outcomes:	Upon completion of this course the student should be able to: 1. Identify aromatic-medicinal plants, plant essences, charcoal, forest products with food value (forest fruits and seeds, edible and poisonous mushrooms with which they can be confused, rules for their collection and storage), tannic substances, willow bark and resin; 2. To interpret, analyze and break down the chain of aromatic-medicinal plants, their use, harvesting methods; 3. To determine the ways and technologies of the production of essences, as well as the quality criteria. 4. To evaluate the basic techniques for carrying out inventory studies and monitoring of non-timber forest products. 5. To integrate the certification criteria of local non-timber forest products with European ones.

Contribution on student load (must correspond with learning outcomes)			
Activity	**Hours**	**Days/week**	**Total**
Lectures	3	15	45
Exercise theoretical/laboratory	2	15	30
Practice work	-	-	-
Contact with lecturer/consultations	1	15	15
Field exercises	1	15	15
Mid-terms, seminars	2	-	2
Homework	-	-	-
Individual time spent studying (at the library or home)	1	15	15
Final preparation for the exam	1	15	15
Time spent in evaluation (tests, quiz, final exam)	2	5	10
Projects, presentations, etc.	3	-	3
Total			**150 hours (6 ECTS)**

Teaching methods :	Lectures, discussions, laboratory exercises, outdoor research exercises, consultations, independent projects, homework assignments, colloquia, seminars. Assessments (I & II), exams.
Evaluation methods:	First assessment: 10%, Second assessment: 10%, Seminars or other engagements: 10%, Final exam: 70%, Total: 100%.
Literature	

Basic Literature:	Marla R Emery, Rebecca J Mclain 1st Edition (August 29, 2001) : Non-Timber Forest Products: Medicinal Herbs, Fungi, Edible Fruits and Nuts, and Other Natural Products from the Forest. Ankila Hiremath,Nitin D Rai,Gladëin Joseph, Uma Shaanker (2009) : Non-Timber Forest Products Conservation, Management and Policy in the Tropics.
Additional Literature:	Bilger, B. 2007. Letter from Oregon: The mushroom hunters. The New Yorker, Aug. 20, 2007. Emery, M. R. 2002. Historical Overview of Nontimber forest product uses in the Northeastern United States. In Jones, Eric T.,Rebecca J. McLain and James Weigand, eds. 2002. Nontimber Forest Products in the United States. Lawrence: UniversityPress of Kansas. Pp. 3-25.

Designed study plan:		
Week	**Lectures**	**Exercises**
First week:	Aromatic plants. Definition. Chain of medicinal aromatic plants. Evaluation of development potential and their inventory.	Acquaintance with some of the spontaneous aromatic plants found in our country (herbs, trees and shrubs). Passing (chain) from their harvesters to collectors and points of sale for spontaneous plants. Ways of inventorying them.
Second week:	Harvesting wild plants and cultivating part of them. Chemical components of aromatic medicinal plants. Usage of these plants.	Familiarity with medicinal plant species that can be cultivated. This will be done both in the laboratory and in the field trips. Use of these herbs. Their properties.
Third week:	Properties of medicinal plants. Quality management and critical harvesting points. Calendar for medicinal plants harvest. Management and processing plan. Storage, drying and conservation. Packaging and labeling.	Processing of medicinal plants in various pharmaceutical forms. Familiarity with the rules of collection. Calendar for the harvest of medicinal plants. Pressing, packaging, labeling.
Fourth week:	Herbal essences. Definition, description and classification. General knowledge of essences. Chemical	Important terpenic and non terpenic constituents of the essences. Getting to know their role in different plants.

	composition, origin and their role in plants.	
Fifth week:	Factors that condition the content of ether oil in plants. The main properties. Ways and technology of essence production. How essential oils are used. Quality criteria. Deposition, storage and labeling.	Changes of ether oil depending on annual and perennial development stages of the plant. How does the external environment affect changes in the content of ether essential oil? How does the method of plant collection and manipulation affect.
Sixth week:	Wood charcoal. Wood, the main source of charcoal production. Charcoal formation processes. The uses of charcoal. The main factors acting on charcoal formation processes.	Intermediate exam on medicinal plants and herbal essences.
Seventh week:	Furnace types. Organizing charcoal production sites. Standards, packaging, storage and distribution of charcoal. Comparative results of different charcoal production systems.	Familiarity with wood burning processes. The process of pyrolysis. Various visual demonstrations for the kiln construction and views of work processes on the organization of charcoal sites. Familiarity with different types of furnaces. Technical security measures.
Eighth week:	Nutritional valuable forest products. Forest fruits and seeds of interest for use. General knowledge on the fruits and seeds of nutritionally valuable forest plants.	Various visual demonstrations of working processes on fruit and forest seeds of interest in use and nutritional value. Chemical composition of fruits. The plants that their fruits can be eaten. Fruits collection and processing.
Ninth week:	The main forest species that produce edible fruits. Mushrooms. General knowledge on fungi. Rules for collection, manipulation and storage.	Familiarity with different parts of the fungus body. Familiarity with some edible mushrooms that grow in forests and pastures.
Tenth week:	Tannic substances. General knowledge and chemical composition of tannic herbs.	Some preventive and curative measures for fungal poisoning. Preserving edible mushrooms.

Eleventh week:	The content of tannins in some trees and shrubs and the production of tannin extract.	Chemical composition of tannins. Getting acquainted with some of the most important tannin herbs in our country.
Twelfth week:	Willow birches. Value and importance of willow birches.	The methods of the birch preparing and various machineries used for their whitening. Determination of the birch quality.
Thirteenth week:	The main types of birch-producing willows. Willow harvesting techniques. Preparation of birches and their quality.	Familiarity with the main resin producing forest species. Various visual demonstrations overlooking the work processes on the resin and its major by-products. Natural and artificial resin. The various consequences of rains.
Fourteenth week:	Resin. Resin and its major by-products. Anatomy of resin apparatus in pine wood. Resin formation and flow.	Intermediate exam on charcoal and willow birches.
Fifteenth week:	Factors affecting resin formation and aggregation. Resin technology, the main methods. Industrial processing.	Teaching excursion (field trip) to get acquainted with and to specifically see all processes and knowledge on all topics developed in this subject.
Academic policies and rules of conduct:		
Students are obliged to attend regular lectures, participate in field visits (excursion). Disconnection of mobile phones, timely access to the classroom and keeping quiet in the lesson are also mandatory.		