

COURSE OUTLINE

1. GENERAL

SCHOOL	APPLIED BIOLOGY AND BIOTECHNOLOGY		
ACADEMIC UNIT	BIOTECHNOLOGY		
LEVEL OF STUDIES	BACHELOR OF SCIENCE		
COURSE CODE	3170	SEMESTER	6st (spring semester)
COURSE TITLE	PHARMACOGNOSY AND BIOACTIVE PRODUCTS		
INDEPENDENT TEACHING ACTIVITIES <i>if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits</i>	WEEKLY TEACHING HOURS	CREDITS	
Lectures	2	0,08	
Laboratory Courses	2	0,08	
Tutorials/essays/practice actions	2,3	0,09	
TOTAL ECTS (Table 4)		5,00	
<i>Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (4).</i>			
COURSE TYPE <i>general background, special background, specialised general knowledge, skills development</i>	Biotechnology Specialization		
PREREQUISITE COURSES:			
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	YES (in English)		
COURSE WEBSITE (URL)			

2. LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- ☞ Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area
- ☞ Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B
- ☞ Guidelines for writing Learning Outcomes

The course comprises the core introductory course to Pharmacognosy and Natural Bioactive Products, with an emphasis on products derived from plant sources.

The educational context aims to introducing students to the principles of Ethnobotany, Pharmacology and Pharmacognosy, covering a wide field of complementary topics, including extensive elements of botany, organic chemistry, biochemistry, medicine and cosmetology.

The course also refers to principles and methods of cultivation of Medicinal and Aromatic Plants as well as of the extraction, isolation and activity assessment of bioactive products at laboratory scale. In this way, students acquire a complete knowledge of processes and methods for utilizing the sources of bioactive products.

Finally, the course aims to provide to students the comprehension of the importance of natural bioactive products in modern economy, particularly in respect of the management and utilization of natural resources, while contributing to the perspective of a distinct career in the respective field.

Following the completion of the course, students will be able to:

- Understand the basic chemical and functional properties of natural bioactive compounds, their

- main classes, applications and main and alternative plant sources.**
- Apply skills to the cultivations of MAPs and isolation of bioactive products at laboratory scale.
 - Carry out quality assessment natural formulations and associated commercial products at laboratory scale.
 - Apply principles of Ethnobotany in order to prepare ethnobotanical profiles of selected plant species or application-wise.
 - Collaborate with other students in order to prepare and publicly present an ethnobotanical profile for a selected species, having in parallel acquired oral and written presentation skills.

General Competences
Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

<i>Search for, analysis and synthesis of data and information, with the use of the necessary technology</i>	<i>Project planning and management</i>
<i>Adapting to new situations</i>	<i>Respect for difference and multiculturalism</i>
<i>Decision-making</i>	<i>Respect for the natural environment</i>
<i>Working independently</i>	<i>Showing social, professional and ethical responsibility and sensitivity to gender issues</i>
<i>Team work</i>	<i>Criticism and self-criticism</i>
<i>Working in an international environment</i>	<i>Production of free, creative and inductive thinking</i>
<i>Working in an interdisciplinary environment</i>	<i>Others....</i>
<i>Production of new research ideas</i>	

- Autonomous work
- Team work
- Work in a multidisciplinary environment
- Production of new research ideas
- Respect for natural resources and environment
- Promotion of free, creative and inductive thought

3. SYLLABUS

1. The importance of Medicinal and Aromatic Plants (MAPs) in human civilization
2. Introduction to ethnobotany
3. Introduction to pharmacology
4. Human physiology
5. Main classes of bioactive products
6. Biosynthetic pathways
7. Terpenoids
8. Alkaloids
9. Other groups
10. Cultivation and utilization of selected MAPs.

4. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY <i>Face-to-face, Distance learning, etc.</i>	Class courses (amphitheater/lab courses room)	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY <i>Use of ICT in teaching, laboratory education, communication with students</i>	Power point presentations Distant educational support through the e-class electronic platform. Communication of assessment of student tests and group studies through e-mail	
TEACHING METHODS <i>The manner and methods of teaching are described in detail. Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography,</i>	Activity	Semester workload
	Lectures	26 h
	Laboratory courses in small student groups	26 h
	Group work (3-5 students): preparation of	20 h

<p>tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.</p> <p>The student's study hours for each learning activity are given as well as the hours of non- directed study according to the principles of the ECTS</p>	ethobotanical profiles of selected plant species	
	Filed excursion: visit to commercial uni(s) for extracting and for mulation bioactive products (e.g. cosmetics, pharmaceuticals)	10 h
	Autonomous study	43 h
	Total (25hours of working input per credit unit)	125 h (5 ECTS)
<p>STUDENT PERFORMANCE EVALUATION</p> <p>Description of the evaluation procedure</p> <p>Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other</p> <p>Specifically-defined evaluation criteria are given, and if and where they are accessible to students</p>	<p>I. Written Examination in theory (50%) including:</p> <ul style="list-style-type: none"> - Multiple choice questions - Critical assessment tests referring to the utilization of natural bioactive products - Comparative review of educational material. <p>II. Examination in laboratory courses (50%) including:</p> <ol style="list-style-type: none"> 1. Presentation of Group Study or/and 2. Written examination in laboratory courses including: <ul style="list-style-type: none"> - Multiple choice questions - Critical analysis questions <p>The final grade for the course is determined by the total results for the different parts of the examination.</p>	

5. ATTACHED BIBLIOGRAPHY

- Suggested textbooks::

- G. Samuelsson, Φαρμακευτικά Προϊόντα Φυσικής Προελεύσεως, Πανεπιστημιακές Εκδόσεις Κρήτης 2011
- W.C. Evans, Trease and Evans' Pharmacognosy, 16th ed.,Saunders, 2009
- Σ. Κατσιώτης., Π. Χατζοπούλου, Αρωματικά Φαρμακευτικά Φυτά και Αιθέρια Έλαια, Αφοι Κυριακίδη 2010
- S. Kintzios& M. Barberaki, Plants that Fight Cancer, Taylor & Francis, 2004

-Related scientific journals:

- Planta Medica
- Pharmacognosy Journal