COURSE OUTLINE

1 GENERAL

SCHOOL	School of Applied Biology and Biotechnology		
ACADEMIC UNIT	Department of Biotechnology		
LEVEL OF STUDIES	Postgraduate (Level 7)		
COURSE CODE	(To be assigned)	**SEMESTER**	2nd
COURSE TITLE	Pharmacognosy and Ethnobotany		
INDEPENDENT TEACHING ACTIVITIES *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, state the weekly teaching hours and the total credits*		**WEEKLY TEACHING HOURS**	**CREDITS**
Lectures & Guided Study (Virtual & Pre-recorded)		3	
Laboratory Exercises & Fieldwork		1	
TOTAL		4	6 ECTS
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail in section (4).			
COURSE TYPE *general background, special background, specialization, general education, skills development*	Specialization / Special Background		
PREREQUISITE COURSES	Prior exposure to plant biology, botany, organic chemistry, plant taxonomy, or pharmacology is recommended. Students are expected to be proficient in Microsoft Windows or macOS.		
LANGUAGE OF INSTRUCTION AND OF ASSESSMENT	English		
MODE OF TEACHING *in-person (%) synchronous distance learning (%) asynchronous distance learning (%) (In the case of synchronous distance learning, the total weekly duration of teaching is recorded)*	Synchronous distance learning (75%) Asynchronous distance learning (25%)		
AVAILABILITY TO ERASMUS STUDENTS	No		
COURSE WEBSITE (URL)	https://oeclass.aua.gr/eclass/		

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*
- *Brief Guide for drafting Learning Outcomes*

Upon successful completion of the course, students will be able to:

- Critically interpret the role of medicinal plants within both traditional and

contemporary healing systems.

- Recognize, classify, and document various medicinal and aromatic plants based on their biological and cultural importance.
- Analyze the macroscopic and microscopic characteristics of plant materials to ensure accurate identification.
- Apply field-based ethnobotanical research methods while adhering to professional documentation ethics.
- Develop comprehensive ethnobotanical profiles that bridge cultural usage with pharmacognostic and biological evidence.
- Collaborate effectively across diverse disciplines, such as life sciences, medicine, and cultural studies.
- Evaluate the practical integration of traditional medical knowledge into modern clinical and research environments.

General Competences

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

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

- Search for, analysis and synthesis of data and information, with the use of the necessary technology (through developing ethnobotanical database entries and using analytical software like Python or Excel).
- Working independently (demonstrated through the preparation of individual laboratory reports and the final manuscript-style report).
- Teamwork (facilitated through collaborative group oral presentations).
- Working in an international environment (as part of a program requiring high-level English communication and the study of global ethnomedicine).
- Criticism and self-criticism (developed via the critical evaluation of primary research and traditional healing roles).
- Production of free, creative and inductive thinking (evidenced by synthesizing traditional knowledge with modern scientific methodologies).
- Respect for difference and multiculturalism (through the exploration of medicinal plant use across world cultures).
- Respect for the natural environment (by focusing on the cultivation, harvesting, and sustainable processing of medicinal species).

3 COURSE SYLLABUS

This course provides a comprehensive examination of the cultural, biological, and therapeutic dimensions of medicinal plants. It focuses on integrating traditional

medicinal knowledge with contemporary scientific methodologies through both theoretical and practical applications.

Main Thematic Units

- Cultural & Historical Foundations: Exploring medicinal and aromatic plants across world cultures and the evolution of ethnomedicine.
- Research Methods & Ethics: Applying field-based ethnobotanical research methods while adhering to strict documentation ethics.
- Plant Science & Chemistry: Studying plant taxonomy, morphological characteristics, and the diversity of bioactive plant compounds.
- Production & Processing: Understanding the cultivation of medicinal plants, micropropagation, tissue culture, and post-harvest traditional processing (harvesting, drying).
- Therapeutic Integration: Bridging ethnobotanical data with modern clinical research and therapeutics.

Laboratory Exercises & Fieldwork

Practical sessions translate theory into hands-on skills for the production and evaluation of bioactive molecules:

- Field Taxonomy: Macroscopic identification of medicinal plant organs such as roots, leaves, bark, and seeds.
- Extraction Techniques: Model extraction of bioactive compounds using sonication, maceration, and hot water extraction.
- Bioactivity Assessment: Quantitative evaluation of plant extracts using DPPH, Folin, FRAP, and Flavonoid assays.
- Biological Testing: Assessment of antimicrobial activity and cytotoxicity of plant materials.
- Advanced Propagation: Practical training in tissue culture and plant micropropagation techniques.
- Formulation & Documentation: Demonstration of herbal preparations (encapsulation, liposomes) and the development of professional ethnobotanical database entries.

4 TEACHING AND LEARNING METHODS - ASSESSMENT

MODE OF TEACHING *Face-to-face, distance learning, etc.*	Hybrid Instructional Modality • Synchronous distance learning (75%): Includes live lectures, interactive laboratory demonstrations, and field case study discussions conducted via open e-class. • Asynchronous distance learning (25%): Involves independent study of recorded modules, review of reading materials, and documentation of ethnobotanical database entries.

	• Laboratory & Fieldwork: Practical sessions focused on plant taxonomy, extraction techniques, and bioactivity assessments.
MODE AND FREQUENCY OF COMMUNICATION WITH THE STUDENTS	• Student Consultation Hours: Instructors are available for direct consultation or by appointment. • Email Communication: The preferred contact method is via email, with an estimated reply within 24 hours during the business week (Monday–Friday, 8 AM–5 PM). • Graded Feedback: Students receive formalized feedback on their progress at least twice during the term, once before the withdrawal deadline and once before final examinations. • Course Updates: All changes to the schedule or assignments are communicated promptly via the LMS.
ENSURING THE MODE OF COMMUNICATION AMONG STUDENTS *Team assignments and discussions, collaborative learning platforms with the use of AI, video conference, QA sessions, κ.α.*	The course is designed to foster a collaborative learning environment, ensuring that students can interact effectively: • Collaborative Group Presentations: Students work in teams to critically evaluate primary research, requiring frequent peer interaction and coordination. • Peer Communication: Students are expected to communicate effectively in English with their teammates and peers throughout the course. • Collaborative Lab Work: Students engage in joint laboratory exercises and fieldwork, sharing data and analytical insights.
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, in laboratory training, in the communication with students*	The course utilizes a range of digital tools to facilitate the analysis of plant-derived data and collaborative research: • Learning Management System (LMS): Access to AUA e-class for all course materials, assignments, and schedule updates. • Data Analysis Tools: Use of Microsoft Excel or Python for the quantitative analysis of bioactive properties and ethnobotanical data. • Scientific Communication: Use of Microsoft Word for drafting scientific manuscripts and

	Microsoft PowerPoint for delivering oral group presentations. • Virtual Collaboration: High-definition video conferencing for synchronous sessions and virtual fieldwork demonstrations. • Analytical Databases: Development and use of ethnobotanical database entries for medicinal species.
TECHNOLOGICAL EQUIPMENT REQUIREMENTS	To successfully participate in this hybrid distance-learning course, students must have access to: • Personal Computer / Laptop: A system capable of running chemical drawing and analytical software. • High-Speed Internet Connection: Necessary for streaming high-resolution laboratory demonstrations and participating in synchronous sessions. • Communication: Installation of Zoom or other approved video conferencing platform for synchronous sessions. • Peripherals: A functional webcam and microphone for breakout sessions and oral presentations. • Operating Systems: Proficiency in and access to Microsoft Windows or macOS. • Internet Connectivity: A stable internet connection is required for accessing the LMS and participating in synchronous sessions. • Hardware: A computer capable of running data analysis software (Excel/Python) and video conferencing tools.
PLAGIARISM POLICY/ PLAGIARISM DETECTION TOOLS	The program maintains a zero-tolerance policy towards academic dishonesty and plagiarism, ensuring that all submitted work reflects the student's original research and critical thinking. • Plagiarism Policy: Plagiarism is defined as using the words, ideas, results, or images of others without proper attribution, as well as self-plagiarism (resubmitting prior work). • In alignment with the Agricultural University of Athens (AUA) regulations, all postgraduate assignments and the final thesis must comply with the institutional standards for originality.

	Plagiarism Detection Tools: • Turnitin: All written assignments (Manuscript Reports, Discussion Board posts, and the final Thesis) are systematically screened through the Turnitin plagiarism detection software. • Originality Reports: Instructors review detailed similarity reports generated by Turnitin to identify improperly cited content or excessive overlap with existing literature. • AI Writing Detection: The program utilizes Turnitin's AI writing detection feature to identify instances where generative AI tools may have been used outside the permitted guidelines. • Consequences: Instances of academic dishonesty are handled according to the procedures of the Office of Student Rights and Responsibilities (OSRR) at Purdue and the Assembly of the Department of Biotechnology at AUA. Sanctions may range from failure of the assignment to dismissal from the dual-degree program.
ARTIFICIAL INTELLIGENCE POLICY *(1) The use of Artificial Intelligence is prohibited in all circumstances* *(2) The use of Artificial Intelligence is allowed only with the permission of the instructor* *(3) The use of Artificial Intelligence is allowed only with an explicit reference to the literature* *(4) Students are free to use Artificial Intelligence*	(2) The use of Artificial Intelligence is allowed only with the permission of the instructor (3) The use of Artificial Intelligence is allowed only with an explicit reference to the literature Description & Implementation: In this course, a constructive but regulated approach to Generative AI (e.g., ChatGPT, Gemini) is adopted: • Permitted Use: Students are allowed to use AI tools primarily as "collaborative partners" for brainstorming, structuring outlines, or refining the linguistic clarity of their written reports (e.g., the final manuscript report). • Instructor Approval: Use of AI for specific assignments must be discussed with and approved by the instructor during the initial stages of the project. • Mandatory Disclosure: If AI tools are used, students must include a dedicated "AI Disclosure Statement" in their work, explicitly describing which tool was used and for which part of the assignment.

- Academic Integrity: Students remain 100% responsible for the accuracy and scientific validity of the final output. AI-generated text must be critically verified against primary peer-reviewed literature.

- Prohibited Use: Using AI to generate entire assignments, perform primary data analysis without disclosure, or bypass critical thinking components of the course is strictly prohibited and constitutes academic dishonesty.

ORGANISATION OF TEACHING

The mode and methods of teaching are described in detail.
Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, work placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artworks, etc.

The student's study hours for each learning activity are stated, as well as the hours of independent study, according to the principles of the ECTS.

Activity	***Semester workload***
Lectures (Synchronous distance learning - 3h/week)	39
Laboratory / Fieldwork sessions (Synchronous – 1h/week)	13
Independent study of asynchronous modules & digital content	13
Study and analysis of bibliography	35
Preparation of Laboratory Reports (4 reports)	15
Preparation of Group Oral Presentation	15
Preparation of Final Manuscript Report	10
Preparation for Final Written Examination	10
Course total	**150**

STUDENT ASSESSMENT

Description of the assessment method

Language of assessment, methods of assessment, formative or summative assessment, multiple choice questions test, short answer questions, essay questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory assignment, clinical examination of patient, art interpretation, other

Language of assessment: English

Methods of assessment:
The assessment is summative and reflects the sum of student achievement of learning outcomes throughout the semester. It consists of the following components:

- Laboratory Reports (20%): These reports assess the comprehension of hands-on

Specifically-defined evaluation criteria are given, and if and where they are accessible to students.	techniques for the production, extraction, and evaluation of bioactive molecules. • Oral Group Presentation (20%): This component emphasizes the critical evaluation of primary research and effective scientific communication. • Final Report – Manuscript Style (30%): Students are required to synthesize their findings into the format of a scientific manuscript. • Written Examination (30%): A final examination to evaluate the theoretical knowledge of pharmacognosy and ethnobotany principles. Evaluation Criteria: • Specifically defined criteria: Each assignment is graded according to a specific rubric provided to students. • Late Policy: Late work is penalized at a rate of 10% per day unless prior arrangements are made. • Feedback: Students will receive graded feedback at least twice during the term (once before the withdrawal deadline and once before finals). • Accessibility: All evaluation methods, exam schedules, and grading rubrics are explicitly detailed in the syllabus and accessible to students via the AUA e-class LMS from the start of the course.

5 RECOMMENDED BIBLIOGRAPHY

Suggested Textbook:

- Gokhale, S. B. Kokate, C.K., Purohit, A. P. Pharmacognosy, Nirali Prakashan, 2019
- Heinrich, M., Barnes, J., Prieto-Garcia, J., Gibbons, S., Williamson, E.M. Fundamentals of Pharmacognosy and Phytotherapy, Elsevier, 2023.
- Kintzios, S., Barberaki, M. Plants that Fight Cancer, CRC Press, 2021.
- Heinrich, M., & Jäger, A. Ethnopharmacology, Wiley-Blackwell, 2015.

• Sofowora, A. Medicinal Plants and Traditional Medicine in Africa, Spectrum Books, 2008.
• Evans, W.C. Trease and Evans' Pharmacognosy, 16th ed., Elsevier, 2012.
•Fabricant, D. & Farnsworth, N.R. The Value of Plants Used in Traditional Medicine for Drug Discovery, Environ. Health Perspect., 2001.
• Cox, P.A. The Ethnobotanical Approach to Drug Discovery: Strengths and Limitations, Ciba Found. Symp., 1994.

Related Scientific Journals:

- Journal of Ethnopharmacology
- Economic Botany
- Planta Medica
- Pharmacognosy Journal
- Frontiers in Pharmacology (Ethnopharmacology Section)