Course Title	Natural Health Products				
Course Code	PHA702				
Course Category	Compulsory				
Level	Postgraduate (Master)				
Year / Semester	1st year, (1st semester)				
Teacher's Name	G.A. Karikas, P. Nobelos-Theodosis, D. Charambous				
ECTS	7	Lectures / Week	2	Laboratory / Week	-
Aim and objectives of the course	The course seeks to educate students in the subject of Chemistry and Biological activity of natural products, from plant organisms, which are the raw materials, for the preparation of cosmetics and nutritional supplements. You will be taught basic knowledge of the origin, biosynthesis and action of natural compounds, by chemical category and plant organism. Their mechanisms of action at the molecular level will be described, with particular emphasis on the antioxidant activity of natural biomolecules contained in cosmetics and supplements. Finally, emphasis will be placed on the utilization of flora and structurally modified products for the improvement and treatment of diseases related to free radicals and oxidative stress.				
Learning outcomes	Upon completion of the course students will be able to: (a) Describe the chemistry, and biological value of natural products. (b) Recognize bioactive molecules and plants, used in various categories of cosmetics (c) Analyze the causes of skin conditions. (d) Explain the antioxidant action and beneficial effects of natural products on the skin and body. (e) Evaluate the possibilities of improving new formulations.				
Pro-required	-	Co-required	-		
Course content	• Kingdoms of Life Classification • Biosynthesis of primary and classes of secondary metabolites, e.g. sugars, fatty acids, amino acids, proteins, essential oils, phenolic compounds - flavonoids, terpenes, alkaloids).				

	• Origin, isolation and chemical characteristics of natural products. • Biological properties of important natural products. • Aromatic and medicinal plants, used in Cosmetics, supplements and phytotherapy • Study of mechanisms of action at the molecular level, of bioactive natural ingredients • Oxidative stress, free radical chemistry. Oxygen and active forms of oxygen, their role and consequences in the body • Modern approaches to treating diseases, involving free radicals and oxidative stress • Antioxidant ingredients in cosmetics / nutritional supplements • Modification of the structure of natural products that lead to products of improved cosmetic value.
Teaching Methodology	Teaching Methods The theoretical part of the course is offered through lectures and discussions. Discussion with students includes questions / answers, pros / cons, role play and case studies. In addition, recent research findings and reviews are included. Detailed notes with PowerPoint are used in teaching.
Bibliography	**Bibliography in Greek**: • Natural Product Chemistry, Stephen P. Stanforth, Parisian Publications, 2010 • Medicinal Products of Natural Origin, Gunnar Samuelsson, University Publications of Crete, 2010 **Bibliography in English:** • Antioxidants. Edited by Emad Shalaby, 2019 • Hardback Progress in the Chemistry of Organic Natural Products, Edited by A. Douglas Kinghorn, Springer Nature Switzerland AG, 2019 • Pharmacognosy, GE Trease and WC Evans, Bailliere Tindall, 2010 • Medicinal natural products: a biosynthetic approach, P.M. Dewick, Published by Wiley, 2008
Evaluation	1. Final examination (60%) The final exam is a written exam and is scheduled during the exam period at the end of the semester. The subject matter is determined by the teacher and communicated in a timely manner to the students. 2. Mid-term examination (25%) The midterm exam is a written exam and is scheduled within the semester (6th - 8th week of courses). The subject matter is determined by the teacher and communicated in a timely manner to the students.

	3. Submission - Presentation of project (15%) This work is individual or group and concerns the elaboration of a small-scale research project. Students are expected to design and implement small-scale research, (including literature review, methodology, presentation of results and discussion) and present their research to their classmates as part of the course and assessment.
Language	Greek / Engish