



UNIVERSITY OF
PATRAS
ΠΑΝΕΠΙΣΤΗΜΙΟ ΠΑΤΡΩΝ

DEPARTMENT OF PHARMACY

SCHOOL OF HEALTH SCIENCES

UNIVERSITY OF PATRAS
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DEPARTMENT OF PHARMACY
POSTGRADUATE PROGRAM: **COSMETOLOGY - PREPARATION AND EVALUATION
OF COSMETIC PRODUCTS**

COURSE TITLE: **METHODS OF INSTRUMENTAL ANALYSIS FOR COSMETIC PRODUCTS**
CODE: **PHA-COS-23**

**METHODS OF INSTRUMENTAL ANALYSIS FOR COSMETIC PRODUCTS
COURSE OUTLINE**

1. GENERAL

SCHOOL	HEALTH SCIENCES		
ACADEMIC UNIT	DEPARTMENT OF PHARMACY		
PARTICIPATING INSTITUTIONS	-		
TITLE of POSTGRADUATE PROGRAM	COSMETOLOGY - PREPARATION AND EVALUATION OF COSMETIC PRODUCTS		
LEVEL	POSTGRADUATE		
COURSE CODE	PHA-COS-23	SEMESTER	B'
COURSE TITLE	METHODS OF INSTRUMENTAL ANALYSIS FOR COSMETIC PRODUCTS		
INDEPENDENT TEACHING ACTIVITIES	WEEKLY TEACHING HOURS	CREDITS	
Courses	3	6	
COURSE TYPE	Field of Science		
PREREQUISITE COURSES	None		
LANGUAGE of INSTRUCTION and EXAMINATIONS	Greek		
COURSE OFFERED to ERASMUS STUDENTS	No		
COURSE (URL)	http://www.pharmacy.upatras.gr/images/DS/PHA-COS-23_EN.pdf		

2. LEARNING OUTCOMES

Learning Outcomes
<p>By the end of this course the student will know the methods of supporting cosmetic product claims and will be able to develop corresponding test protocols and interpret their results. Specifically, students will be able to know</p> <ul style="list-style-type: none"> • the increased requirements at the level of quality control and quality assurance of cosmetic products • the procedures followed during the management of samples for the qualitative and quantitative determination of active substances, excipients and impurities in the various cosmetic forms • the analytical techniques used for the same purpose • how to solve problems related to the analysis of dangerous and prohibited impurities • develop and validate analytical methodologies.

General Competences
<p>By the end of this course the student will, furthermore, have develop the following general abilities (from the list above):</p> <p><i>Decision making</i> <i>Autonomous (Independent) work</i> <i>Group work</i></p>

3. SYLLABUS

<p>LECTURES</p> <ul style="list-style-type: none"> Instrumental techniques used in the analysis of cosmetic products. Theoretical Background, Principle of operation. Ultraviolet-Visible Spectroscopy, Infrared Spectroscopy, Atomic Absorption and Emission Spectroscopy, X-Ray Fluorescence Spectroscopy, Liquid Chromatography, Gas Chromatography, Mass Spectrometry. Applications of these techniques in the determination of preservatives (parabens), antioxidants, pigments, phthalates, formaldehyde, nitrosamines, allergens, UV filters, heavy metals in cosmetics. Preparation of samples of cosmetic products for analysis (Liquid extraction, solid phase extraction). Errors of analytical methods. Reliability of measurements. Analytical method validation.
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4. TEACHING and LEARNING METHODS - EVALUATION

DELIVERY	In the classroom										
USE of INFORMATION and COMMUNICATIONS TECHNOLOGY	Learning process support through the e-class electronic platform to exchange files and lectures and to communicate with students. Lectures and presentations are all done using Information and Communication Technologies (ICTs) and information is searched through relevant databases.										
TEACHING METHODS	<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;"><i>Activity</i></th> <th style="text-align: right;"><i>Semester Workload</i></th> </tr> </thead> <tbody> <tr> <td>Lectures</td> <td style="text-align: right;">60</td> </tr> <tr> <td>Literature study</td> <td style="text-align: right;">50</td> </tr> <tr> <td>Assignment – Presentation of a relevant topic from the international literature</td> <td style="text-align: right;">40</td> </tr> <tr> <td>Course Total (25 hours of work-load per ECTS credit)</td> <td style="text-align: right;">150</td> </tr> </tbody> </table>	<i>Activity</i>	<i>Semester Workload</i>	Lectures	60	Literature study	50	Assignment – Presentation of a relevant topic from the international literature	40	Course Total (25 hours of work-load per ECTS credit)	150
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Lectures	60										
Literature study	50										
Assignment – Presentation of a relevant topic from the international literature	40										
Course Total (25 hours of work-load per ECTS credit)	150										
STUDENT PERFORMANCE EVALUATION	<p>Language of Evaluation: Greek</p> <ol style="list-style-type: none"> Written final exam (80%) which includes <ul style="list-style-type: none"> Short development questions Critical thinking Questions Assignment – Presentation of an analytical problem from the international literature (20%) 										

5. RECOMMENDED BIBLIOGRAPHY

1. Analysis of Cosmetic Products, Amparo Salvado, Alberto Chisvert, Elsevier, 2nd Edition, 2017.
2. ΕΝΟΡΓΑΝΗ ΑΝΑΛΥΣΗ, ΘΕΜΙΣΤΟΚΛΗΣ Π. ΧΑΤΖΗΪΩΑΝΝΟΥ, ΜΙΧΑΗΛ Α. ΚΟΥΠΠΑΡΗΣ , 2014
3. ΕΝΟΡΓΑΝΗ ΧΗΜΙΚΗ ΑΝΑΛΥΣΗ, Ι. ΠΑΠΑΔΟΓΙΑΝΝΗΣ-Β. ΣΑΜΑΝΙΔΟΥ, 2η Έκδοση, Θεσσαλονίκη, 2011.
4. Φαρμακευτική ανάλυση, D.G. WATSON, , Επιμέλεια Ελληνικής Έκδοσης: Μ. Κουππάρης, Εκδόσεις Παρισιάνου, 2011.
5. ΘΕΜΕΛΙΩΔΕΙΣ ΑΡΧΕΣ ΑΝΑΛΥΤΙΚΗΣ ΧΗΜΕΙΑΣ, ΣΚΟΟΓ, D. A. Skoog, D. M. West, F. James Holler, S. R. Crouch, Επιμέλεια Ελληνικής Έκδοσης: Μ. Ι. Καραγιάννης, Κ. Η. Ευσταθίου, Εκδόσεις Κωσταράκη, 2016